BOARD OF COMMISSIONERS

BOARD OF COUNTY COMMISSIONERS MEETING

9:00 AM, WEDNESDAY, NOVEMBER 29, 2023
Barnes Sawyer Rooms - Deschutes Services Building - 1300 NW Wall Street – Bend
(541) 388-6570 | www.deschutes.org

AGENDA

MEETING FORMAT: In accordance with Oregon state law, this meeting is open to the public and can be accessed and attended in person or remotely, with the exception of any executive session.

Members of the public may view the meeting in real time via YouTube using this link: http://bit.ly/3mmlnzy. To view the meeting via Zoom, see below.

Citizen Input: The public may comment on any topic that is not on the current agenda. Alternatively, comments may be submitted on any topic at any time by emailing citizeninput@deschutes.org or leaving a voice message at 541-385-1734.

When in-person comment from the public is allowed at the meeting, public comment will also be allowed via computer, phone or other virtual means.

Zoom Meeting Information: This meeting may be accessed via Zoom using a phone or computer.

- To join the meeting via Zoom from a computer, use this link: http://bit.ly/3h3oqdD.
- To join by phone, call 253-215-8782 and enter webinar ID # 899 4635 9970 followed by the passcode 013510.
- If joining by a browser, use the raise hand icon to indicate you would like to provide public comment, if and when allowed. If using a phone, press *6 to indicate you would like to speak and *9 to unmute yourself when you are called on.
- When it is your turn to provide testimony, you will be promoted from an attendee to a panelist. You may experience a brief pause as your meeting status changes. Once you have joined as a panelist, you will be able to turn on your camera, if you would like to.

Deschutes County encourages persons with disabilities to participate in all programs and activities. This event/location is accessible to people with disabilities. If you need accommodations to make participation possible, call (541) 388-6572 or email brenda.fritsvold@deschutes.org.

***Time estimates**: The times listed on agenda items are estimates only. Generally, items will be heard in sequential order and items, including public hearings, may be heard before or after their listed times.*

CALL TO ORDER

PLEDGE OF ALLEGIANCE

CITIZEN INPUT: Citizen Input may be provided as comment on any topic that is not on the agenda.

***Note:** In addition to the option of providing in-person comments at the meeting, citizen input comments may be emailed to citizeninput@deschutes.org or you may leave a brief voicemail at 541.385.1734.*

CONSENT AGENDA

1. Approval of Document No. 2023-1023 granting five permanent easements to the Oregon Department of Transportation over portions of County-owned property, and approval of Document No. 2023-1024 Terms of State's Offer

2. Approval of County Administrator signature of revised County Finance Policy No. F-15, Payments to Suppliers

3. Approval of Chair Signature of Document No. 2023-928, a Notice of Intent to Award a contract for the Smith Rock Way Bridge #15452 Replacement Project

4. Approval of Document No. 2023-1011, an amendment to the interlocal agreement with the Department of Education for Juvenile Crime Prevention funds

5. Consideration of Board Signature on letter appointing Travis Krieck as the Black Butte Ranch Rural Fire Protection District representative to the Deschutes County Ambulance Service Area Committee

6. Approval of minutes of the BOCC October 25 and 30 and November 1, 8 and 13, 2023 meetings

ACTION ITEMS

7. **9:10 AM** Public hearing and consideration of Resolution 2023-062 adopting a supplemental budget and reducing FY24 Beginning Working Capital and appropriations

Convening as the governing body of the Countywide Law Enforcement District

8. **9:20 AM** Consideration of Resolution 2023-063 adopting a supplemental budget which

recognizes additional funds, reduces FY24 Beginning Working Capital, and decreases appropriations within the Countywide Law Enforcement District Fund

Convening as the governing body of the Rural Law Enforcement District

9. **9:25 AM** Consideration of Resolution 2023-064 adopting a supplemental budget which recognizes additional funds, reduces FY24 Beginning Working Capital, and decreases appropriations within the Rural Law Enforcement District Fund

Reconvening as the governing body of Deschutes County

10. **9:30 AM** Multiple Unit Property Tax Exemption application for Jackstraw development at 310 & 350 SW Industrial Way

11. **9:35 AM** Second Reading of Ordinance No. 2023-025 – Stevens Road Tract Plan Amendment / Zone Change

12. **9:40 AM** Ordinance No. 2023-023 amending Deschutes County Code relating to the composition of the Historic Landmarks Commission

13. **9:50 AM** Resolution No. 2023-066, adding a new position of Information Security Manager to the IT Department and allocating funds to address immediate cybersecurity needs

14. **10:00 AM** Text Amendment for an Air Traffic Control Tower at the Bend Municipal Airport

15. **10:10 AM** Public Hearing: Draft 2020-2040 Transportation System Plan Update

OTHER ITEMS

These can be any items not included on the agenda that the Commissioners wish to discuss as part of the meeting, pursuant to ORS 192.640.

EXECUTIVE SESSION

At any time during the meeting, an executive session could be called to address issues relating to ORS 192.660(2)(e), real property negotiations; ORS 192.660(2)(h), litigation; ORS 192.660(2)(d), labor negotiations; ORS 192.660(2)(b), personnel issues; or other executive session categories.

Executive sessions are closed to the public; however, with few exceptions and under specific guidelines, are open to the media.

ADJOURN

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Approval of Document No. 2023-1023 granting five permanent easements to the Oregon Department of Transportation over portions of County-owned property, and approval of Document No. 2023-1024 Terms of State's Offer

RECOMMENDED MOTION:
Move approval of Board signature of Document No. 2023-1023 to grant five permanent easements to Oregon Department of Transportation over portions of County-owned property, and approval of Document No. 2023-1024 Terms of State's Offer

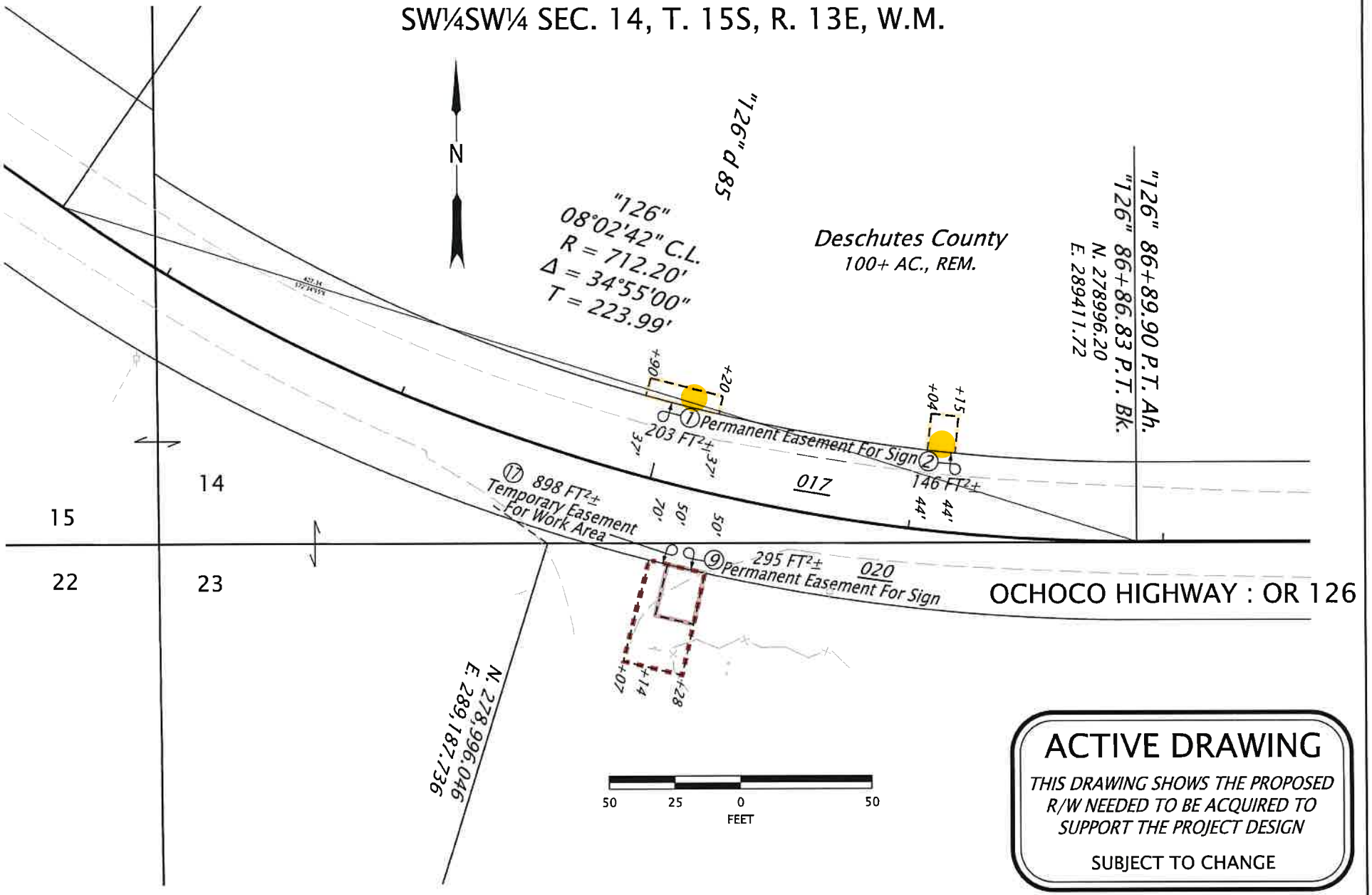
BACKGROUND AND POLICY IMPLICATIONS:
As part of the Oregon Department of Transportation (ODOT) project known as OR126: Redmond-Powell Butte, ODOT is requesting permanent signage easements overs five distinct areas totaling 665 square feet (0.01-acres) on County-owned property known as Map and Tax Lot 1513000000103 in East Redmond.

The five areas along the southern property line of Tax Lot 103 are adjacent to Hwy 126, and will accommodate new permanent highway signage. The third-party appraisal ordered by ODOT indicated consideration of $800 for the 665 square feet of permanent easement area.

BUDGET IMPACTS:
ODOT to pay $800 and recording fees for the permanent easements.

ATTENDANCE:
Kristie Bollinger, Property Manager

SW¼SW¼ SEC. 14, T. 15S, R. 13E, W.M.



ACTIVE DRAWING

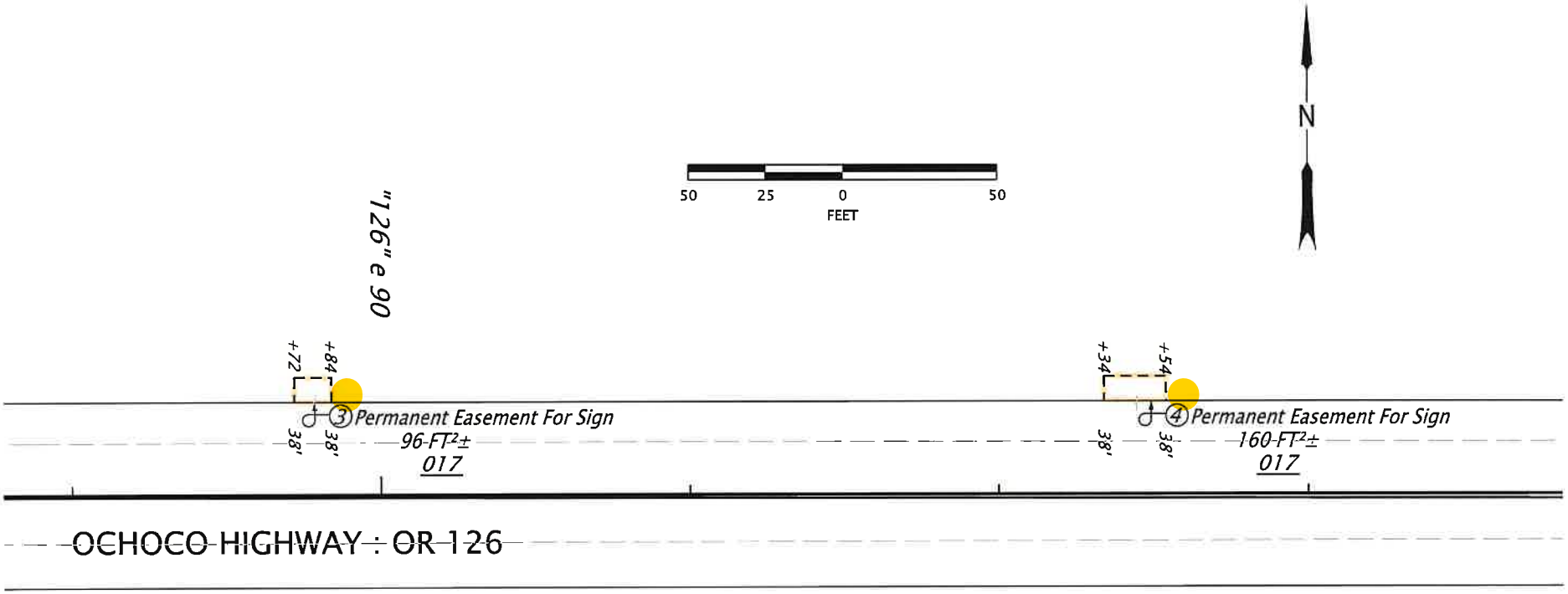
THIS DRAWING SHOWS THE PROPOSED R/W NEEDED TO BE ACQUIRED TO SUPPORT THE PROJECT DESIGN

SUBJECT TO CHANGE

OREGON DEPARTMENT OF TRANSPORTATION *RIGHT OF WAY ENGINEERING* *SKETCH MAP SHEET 1 OF 3*	SECTION	*OR126: REDMOND – POWELL BUTTE*	SCALE	*1" = 50'*
	HIGHWAY	*OCHOCO*	DATE	*OCTOBER, 2022*
	COUNTY	*DESCHUTES*	FILE	*9755017*
	PURPOSE	*RIGHT OF WAY ACQUISITION*	*SEE MAP RW9755M*	

SW¼SW¼ SEC. 14, T. 15S, R. 13E, W.M.

Deschutes County
100+ AC., REM.



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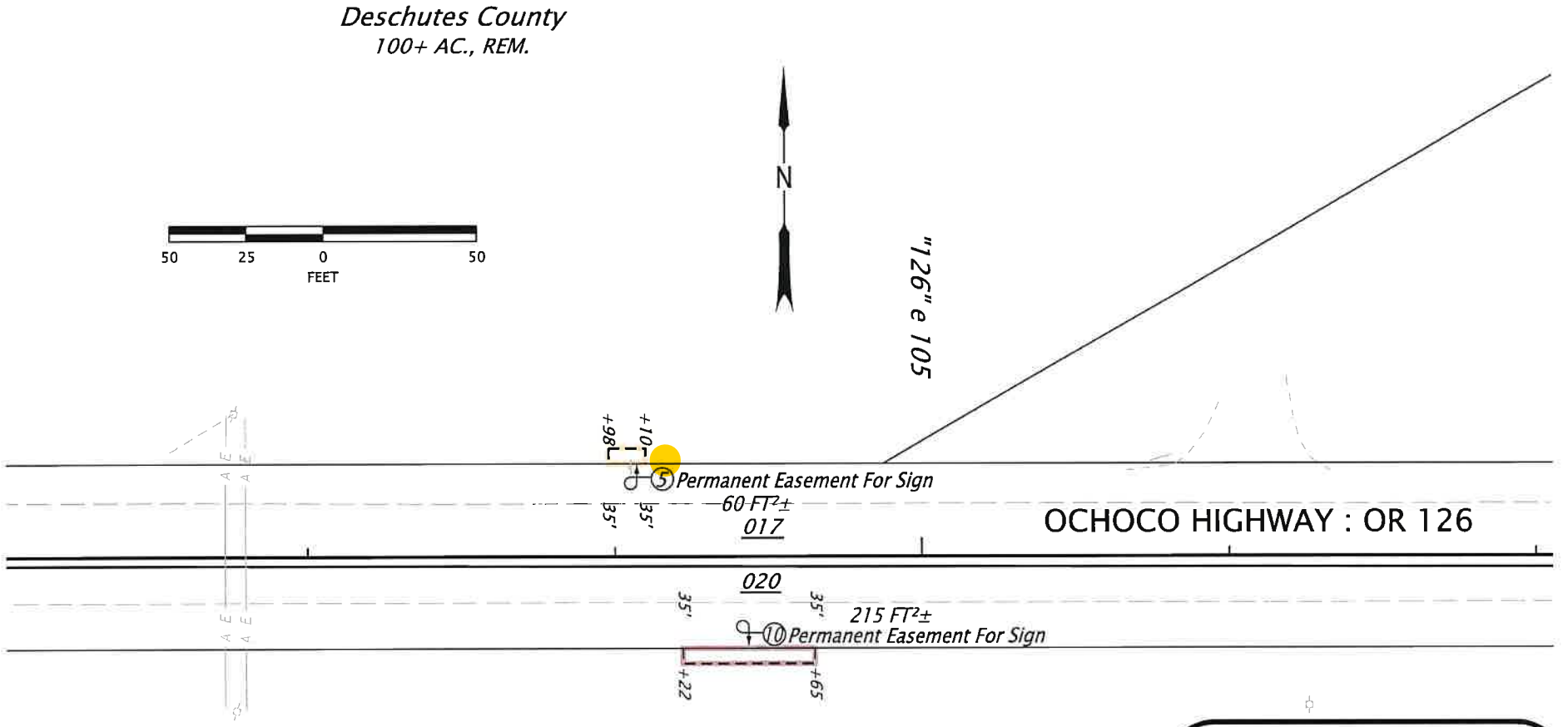
SUBJECT TO CHANGE

OREGON DEPARTMENT OF TRANSPORTATION *RIGHT OF WAY ENGINEERING* *SKETCH MAP SHEET 2 OF 3*	SECTION	*OR126: REDMOND – POWELL BUTTE*	SCALE	*1" = 50'*
	HIGHWAY	*OCHOCO*	DATE	*OCTOBER, 2022*
	COUNTY	*DESCHUTES*	FILE	*9755017*
	PURPOSE	*RIGHT OF WAY ACQUISITION*	*SEE MAP RW9755M*	

SE¼SW¼ SEC. 14, T. 15S, R. 13E, W.M.



ACTIVE DRAWING

THIS DRAWING SHOWS THE PROPOSED R/W NEEDED TO BE ACQUIRED TO SUPPORT THE PROJECT DESIGN

SUBJECT TO CHANGE

OREGON DEPARTMENT OF TRANSPORTATION *RIGHT OF WAY ENGINEERING* *SKETCH MAP SHEET 3 OF 3*	SECTION	*OR126: REDMOND – POWELL BUTTE*	SCALE	*1" = 50'*
	HIGHWAY	*OCHOCO*	DATE	*OCTOBER, 2022*
	COUNTY	*DESCHUTES*	FILE	*9755017*
	PURPOSE	*RIGHT OF WAY ACQUISITION*	*SEE MAP RW9755M*	

File 9755017
Drawing RW9755M

PERMANENT EASEMENT

DESCHUTES COUNTY, a political subdivision of the State of Oregon, Grantor, for the true and actual consideration of $800.00, does grant to the **STATE OF OREGON, by and through its DEPARTMENT OF TRANSPORTATION**, Grantee, its successors and assigns, a permanent easement for the construction, installation and maintenance of a highway sign, and appurtenances therefore, upon the property described as **Parcels 1, 2, 3, 4 and 5** on **Exhibit "A" dated 10/17/2022**, attached hereto and by this reference made a part hereof.

This easement does not convey any right or interest in the above-described property, except for the purpose stated herein; nor prevent Grantor from the use of said property; provided, however, that such use does not interfere with the rights herein granted.

Grantor covenants to and with Grantee, its successors and assigns, that Grantor is the owner of said property, and will warrant the easement rights herein granted from all lawful claims whatsoever.

Grantor agrees that the consideration recited herein is just compensation for the property or property rights conveyed, including any and all reduction in value to Grantor's remaining property, if any, which may result from the acquisition or use of said property or property rights. However, the consideration does not include damages resulting from any use or activity by Grantee beyond or outside of those uses expressed herein, if any, or damages arising from any negligence.

In construing this document, where the context so requires, the singular includes the plural and all grammatical changes shall be made so that this document shall apply equally to corporations and to individuals.

Map and Tax Lot #: 15130000000-103

AFTER RECORDING RETURN TO:
OREGON DEPARTMENT OF TRANSPORTATION
RIGHT OF WAY SECTION
4040 FAIRVIEW INDUSTRIAL DRIVE SE MS#2
SALEM OR 97302-1142

Property Address: 1002 NE 17th St
Redmond, OR 97756

File 9755017
Drawing RW9755M

It is understood and agreed that the delivery of this document is hereby tendered and that terms and obligations hereof shall not become binding upon the State of Oregon Department of Transportation, unless and until accepted and approved by the recording of this document.

Dated this _____ day of _____, 20____.

REVIEWED

_____
LEGAL COUNSEL

BOARD OF COUNTY COMMISSIONERS
OF DESCHUTES COUNTY, OREGON

_____
Chair

_____
Vice-Chair

ATTEST:

_____
Recording Secretary

_____
Commissioner

STATE OF OREGON)
) ss.
County of Deschutes)

Before me, a Notary Public, personally appeared _____, _____ and _____, the above-named Board of County Commissioners of Deschutes County, Oregon and acknowledged the foregoing instrument on behalf of Deschutes County, Oregon.

DATED this _____ day of _____

_____
Notary Public for Oregon

My Commission Expires: _____

Accepted on behalf of the Oregon Department of Transportation

_____

EXHIBIT A - Page 1 of 2

File 9755017
Drawing RW9755M
10/17/2022

Parcel 1 – Permanent Easement For Sign

A parcel of land lying in the SW¼SW¼ of Section 14, T 15 S, R 13 E, W.M., Deschutes County, Oregon; the said parcel being that portion of said property lying between lines at right angles to the center line of the relocated Ochoco Highway at Engineer's Stations 84+90.00 and 85+20.00 and included in a strip of land 37.00 feet in width, lying on the Northerly side of said center line, which center line is described as follows:

Beginning at Engineer's center line Station 80+00.00 P.O.T, said station being 272.50 feet North and 243.44 feet West of the Southwest corner of Section 14, Township 15 South, Range 13 East, W.M., Deschutes County, Oregon; thence South 55° 07' 25" East 252.81 feet; thence on a 712.20 foot radius curve left (the long chord of which bears South 72° 34' 55" East 427.34 feet) 434.02 feet to Engineers Station 86+86.83 Bk. Equals 86+89.90 feet Ah.; thence North 89° 57' 35" East 2,110.10 feet to Engineer's center line Station 108+00.00 P.O.T.

Bearings are based upon the Oregon Coordinate Reference System, Bend-Redmond-Prineville Zone, NAD83 (2011) epoch 2010.00.

This parcel of land contains 203 square feet, more or less.

Parcel 2 – Permanent Easement For Sign

A parcel of land lying in the SW¼SW¼ of Section 14, T 15 S, R 13 E, W.M., Deschutes County, Oregon; the said parcel being that portion of said property lying between lines at right angles to the center line of the relocated Ochoco Highway at Engineer's Stations 86+04.00 and 86+15.00 and included in a strip of land 44.00 feet in width, lying on the Northerly side of said center line, which center line is described in Parcel 1.

This parcel of land contains 146 square feet, more or less.

EXHIBIT A - Page 2 of 2

File 9755017
Drawing RW9755M
10/17/2022

Parcel 3 – Permanent Easement For Sign

A parcel of land lying in the SW¼SW¼ of Section 14, T 15 S, R 13 E, W.M., Deschutes County, Oregon; the said parcel being that portion of said property lying between lines at right angles to the center line of the relocated Ochoco Highway at Engineer's Stations 89+72.00 and 89+84.00 and included in a strip of land 38.00 feet in width, lying on the Northerly side of said center line, which center line is described in Parcel 1.

This parcel of land contains 96 square feet, more or less.

Parcel 4 – Permanent Easement For Sign

A parcel of land lying in the SW¼SW¼ of Section 14, T 15 S, R 13 E, W.M., Deschutes County, Oregon; the said parcel being that portion of said property lying between lines at right angles to the center line of the relocated Ochoco Highway at Engineer's Stations 92+34.00 and 92+54.00 and included in a strip of land 38.00 feet in width, lying on the Northerly side of said center line, which center line is described in Parcel 1.

This parcel of land contains 160 square feet, more or less.

Parcel 5 – Permanent Easement For Sign

A parcel of land lying in the SE¼SW¼ of Section 14, T 15 S, R 13 E, W.M., Deschutes County, Oregon; the said parcel being that portion of said property lying between lines at right angles to the center line of the relocated Ochoco Highway at Engineer's Stations 103+98.00 and 104+10.00 and included in a strip of land 35.00 feet in width, lying on the Northerly side of said center line, which center line is described in Parcel 1.

This parcel of land contains 60 square feet, more or less.

REGISTERED
PROFESSIONAL
LAND SURVEYOR

DIGITALLY SIGNED Dec 15 2022 9:43 AM

OREGON
NOVEMBER 10, 2010
TIMOTHY JOHN HUTCHISON
72563

RENEWS: 6-30-2023

FILE #: 9755-017__

TERMS OF STATE'S OFFER

THE STATE'S OFFER IS AS DESCRIBED IN THE ENCLOSED ACQUISITION SUMMARY STATEMENT AND ACQUISITION DOCUMENT(S) AND INCLUDES THE FOLLOWING ADDITIONAL TERMS:

1. The State will pay recording costs, title insurance premiums, and all other normal costs of sale.

2. Outstanding encumbrances, including taxes and other interests, may need to be paid out of the just compensation in order to provide sufficient title to the State.

3. Pursuant to ORS 311.412-311.414, the State will pay the taxes proportional to the part of the property acquired and prorated as of the date of the acquisition.

4. As part of this acquisition for this Project, the State will require the following actions:

   A. **Bonds.** The State and all subcontractors shall maintain a public works bond in full force and effect, as required by Oregon statutes, and shall obtain the mandatory insurance coverage required by the construction contract. The contractor shall verify subcontractors have filed a public works bond and required insurance certificates before the subcontractor begins work. All construction shall be completed in conformance with standard engineering and construction practices.

   B. **Utilities.** (Check appropriate box)
   ☒There will be no changes to public utilities to the property.
   ☐Public utilities will be reconnected to improvements on the remainder property, except for the following: _____.
   ☐Public utilities will be made available within the right-of-way adjacent to the remainder property, except for the following:_____.
   ☐Public utilities will not be available to the remainder property in the after.

   If a public utility on the property is not reconnected, just compensation (payment) is provided.

   C. **Access.** (Check appropriate box)
   ☒Access to the remainder property will remain the same.
   ☐There will be no access to the remainder property.
   ☐Access to the remainder property will remain the same, except for the following access:
   Access #1 located at: _____, is modified, relocated or closed as a result of:
   ☐the access modification letter dated: _____(attached)
   ☐this Project as follows: _____.
   Access #2 located at: _____, is modified, relocated or closed as a result of:
   ☐the access modification letter dated: _____(attached)

☐this Project as follows: _____.

Access #3 located at: _____, is modified, relocated or closed as a result of:

☐the access modification letter dated: _____(attached)

☐this Project as follows: _____.

After construction of the project, if any access to the property has been modified, relocated or closed, other than a reservation(s) of access noted in the acquisition document(s), the altered access shall be public access; said access before and after the Project is subject to the government's police powers.

The following access, **NA**, to be removed or modified as part of the project, shall remain open for access to the remainder property until the Project has completed construction of the new access as described above.

Access to the property shall remain open during construction with at least one lane for vehicle traffic, except for minimal closures (up to 2 hours) that are reasonably necessary pursuant to the Oregon Standard Specifications for Construction, Volume 2, Chapter 00220.02.

D. **Improvements.**

Private improvements in any easement areas shall be protected in place, or returned to a same or similar condition, except for the following: **NA**.

Any sidewalks in the acquisition area, that are impacted by the Project, will be reconnected to preexisting sidewalks, except at the following locations: **NA**.

E. **Fencing on the Property.**

☐Will not be affected.

☐Will be replaced as follows: **NA**.

☒Will not be replaced.

F. Other terms of offer:

203 Sq.Ft. Permanent Easement for Sign (Parcel 1), 146 Sq.Ft. Permanent Easement for Sign (Parcel 2), 96 Sq.Ft. Permanent Easement for Sign (Parcel 3), 160 Sq.Ft. Permanent Easement for Sign (Parcel 4), and 60 Sq.Ft. Permanent Easement for Sign (Parcel 5) will be acquired for the Project. The subject property's access to Highway 126 will remain unchanged.

5. To accept this offer, each of the persons listed on the attached signature page must (i) sign and return this document; and (ii) sign, notarize and deliver to ODOT all of the necessary acquisition document(s), in an original and unaltered form sufficient for transferring title and recording in the appropriate county recorder's office.

6. If this offer is addressed to multiple persons, it is a joint offer to all of those persons and must be accepted by all of the persons listed (or provide evidence showing any non-accepting persons do not have an interest in the

property). If accepted, the just compensation in a joint offer may be apportioned among the persons listed in any mutually agreed upon manner.

7. The persons executing this offer each warrant and represent that they have authority to act for and bind their respective party with respect to the transfer of the real property interests that are the subject of this offer.

8. The "Terms of State's Offer" may be signed in counterparts. Once the signature of each person as set forth on the attached signature page has been affixed to one or more counterparts and returned to ODOT, this document shall be deemed fully executed as if all of the signatures were contained in a single document.

9. The Terms of State's Offer does not apply to any uneconomic remainder as identified in the appraisal.

[*See attached Signature page*]

SIGNATURE PAGE FOR TERMS OF STATE'S OFFER

STATE OF OREGON, by and through its

DEPARTMENT OF TRANSPORTATION

_____ 8/9/2023

Jenny Adkins
Region 4 Right of Way and Survey Manager Date

_____ _____

Board of County Commissioners of Deschutes County Date

Chair

_____ _____

Board of County Commissioners of Deschutes County Date

Vice-Chair

_____ _____

Board of County Commissioners of Deschutes County Date

Commissioner

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Approval of County Administrator signature of revised County Finance Policy No. F-15, Payments to Suppliers

RECOMMENDED MOTION:
Move approval of County Administrator signature of revised County Finance Policy No. F-15, Payments to Suppliers, effective January 1, 2024.

BACKGROUND AND POLICY IMPLICATIONS:
On August 16, 2023, the Board conducted a public hearing to review proposed revisions to the County Contracting Code (DCC 2.36 and DCC 2.37) to implement provisions of SB 1047 and provide for increased signature authority for County departments and the Administrator. Following the public hearing, the Board approved first reading of Ordinance No. 2023-012; the Board subsequently approved second reading and adoption of the ordinance on August 30th. The ordinance takes effect on January 1, 2024.

As a result of these changes, staff reviewed Policy No. F-15, Payments to Suppliers, and updated this policy in accordance with the revised Contracting Code. The updates are summarized as follows:

- Increase department head signing authority from $25,000 to $50,000.
- Increase County Administrator signing authority from $150,000 to $250,000.
- Change the Board's authority from items more than $150,000 to items more than $250,000.
- Added "amendments and/or change orders" language to match the adopted Ordinance.
- Update the title from 'Finance Director' to 'Chief Financial Officer.'

The policy change is also scheduled to take effect on January 1, 2024.

BUDGET IMPACTS:
None

ATTENDANCE:
Robert Tintle, Chief Financial Officer

Deschutes County Finance Policy No. F-15
Effective Date: ~~7/12/2017~~01/01/2024
Original Adoption: 07/12/2017
Revised Adoption: 11/29/2023

COUNTY POLICY FOR PAYMENTS TO SUPPLIERS

STATEMENT OF POLICY
It is the policy of Deschutes County to establish and maintain a system of internal controls to ensure that all disbursements to suppliers are adequately documented, properly authorized and accurately accounted for in the County's accounting system.

APPLICABILITY
This policy applies to all non-payroll related disbursements in payment for goods and services procured by the County to carry out its purposes and objectives.

POLICY AND PROCEDURE
The County will maintain a system of internal controls that will ensure that payments for goods and services are properly approved, subject to budgetary limits, and properly documented. The system of internal controls includes the following.

1. Budget
The County is subject to local budget law requiring an adopted budget before any payments are made. The budget process involves the Departments, the Board of County Commissioners, three members of the public serving on the Budget Committee, the County Administrator and budget staff. The budget is adopted each year in June for the following fiscal year. The adopted budget is set forth in each budget resolution and adopts the budget at the program level (personnel, materials and services and capital outlay) for each fund. No expenditures can be made without the appropriate budget authority. The County accounting system will enforce budget restrictions on each disbursement.

2. Methods of Procurement
All requests for payment originate in departments with the entry of an invoice to pay for goods and services. Departments have four options to make payments to vendors for goods and services received. The four methods include Purchase Orders, Contracts, Direct Invoice Payments, and Purchasing Cards. All payment methods shall be designed with adequate internal controls to ensure that goods and services are acceptable for County use before payment is made, payments are within the appropriate budget authority, payments are sufficiently documented and verified as legitimate, and payments are properly recorded in the accounting system.

3. Vendors

The Finance Department will maintain the vendor file. Staff with access to the vendor file will be prohibited by system controls from processing any payments to vendors. Departments may request that vendors be created or updated by making such requests to the Finance Department. New vendors will be added, and existing vendor files will be updated once those requests are approved. Vendor taxpayer identification numbers will be secured in the County system and will be required for every vendor before any payments can be made. Such information will be verified with the IRS prior to activating a vendor.

4. Accounting System

The Finance Department, with assistance from the IT Department, will maintain the accounting system to ensure that sufficient internal controls are embedded in the system to properly account for each transaction and to ensure that each transaction is properly authorized and documented. The County will use electronic approvals whenever possible to generate a sufficient audit trail to track each transaction in the system. Payments to vendors may be made by check, ~~or~~ by electronic funds transfer (EFT), or by purchasing card.

5. Departments

Department Heads are responsible for all transactions in their department. Their responsibility includes ensuring that every obligation is incurred to further the mission of the department and to carry out the department's Board approved goals and objectives related to the services it provides. Departments are responsible for entering all payment information in the accounting system and for approving payments to vendors. Department Heads are authorized to approve purchase orders, contracts, amendments and/or change orders, or direct payments to vendors up to $~~25~~50,000. ~~The Health Department Head is authorized to approve up to $50,000.~~ Department Heads may delegate approval up to $10,000 to Managers in their department. Such delegation shall be in writing and must be maintained by the Department.

6. ~~Finance Director~~Chief Financial Officer

The ~~Finance Director~~Chief Financial Officer is responsible for reviewing the list of disbursements each week prior to the printing of checks to provide an overview of the reasonableness of the payments to be made. Any payments called into question will be investigated further and may be deferred pending further inquiries. The ~~Finance Director~~Chief Financial Officer shall officially approve the disbursement as modified before printing checks or releasing electronic payments.

7. County Administrator

The County Administrator is authorized to approve purchase orders, contracts, amendments and/or change orders, or direct payments to vendors up to $~~150~~250,000. The system of internal controls will take this approval level into account and require electronic approvals for each such transaction by the County Administrator as applicable. The County Administrator will receive a list of all payments made each week for information purposes and may request additional information from departments or the Finance Department on any payment.

8. Board of County Commissioners

The Board of County Commissioners are authorized to approve purchase orders, contracts, amendments and/or change orders, or direct payments to vendors for more than $~~150~~250,000. The system of internal controls will take this approval level into account and require electronic approvals for each such transaction on behalf of the Board of County Commissioners as applicable. The Board may request any additional information related to such expenditures from departments or the Finance Department.

9. Payment Cycle

The County Finance Department will manage the disbursement process. Checks will be issued on Friday of each week. Only those invoices that have been entered and approved through workflow by Wednesday at 5:00pm will be included in the Friday check processing cycle. All other proposed payments will be held until a later cycle. Manual, out of cycle checks, are discouraged but may be processed as needed with approval of the ~~Finance Director~~Chief Financial Officer.

10. Special Payments

A number of payments are exempt from purchasing and authorization rules and will not be processed through the normal disbursement process. These include but are not limited to debt service payments, investment purchases, pass-through payments, software maintenance agreements and other special payments. The Finance Department will be responsible for making such payments, recording them in the accounting system and ensuring proper treatment in the County's ~~F~~financial ~~S~~statements.

Approved by the Deschutes County Board of Commissioners _____(date)_____.

_____

Nick Lelack
County Administrator

Deschutes County Finance Policy No. F-15
Effective Date: 01/01/2024
Original Adoption: 07/12/2017
Revised Adoption: 11/29/2023

COUNTY POLICY FOR PAYMENTS TO SUPPLIERS

STATEMENT OF POLICY

It is the policy of Deschutes County to establish and maintain a system of internal controls to ensure that all disbursements to suppliers are adequately documented, properly authorized and accurately accounted for in the County's accounting system.

APPLICABILITY

This policy applies to all non-payroll related disbursements in payment for goods and services procured by the County to carry out its purposes and objectives.

POLICY AND PROCEDURE

The County will maintain a system of internal controls that will ensure that payments for goods and services are properly approved, subject to budgetary limits, and properly documented. The system of internal controls includes the following.

1. Budget

The County is subject to local budget law requiring an adopted budget before any payments are made. The budget process involves the Departments, the Board of County Commissioners, three members of the public serving on the Budget Committee, the County Administrator and budget staff. The budget is adopted each year in June for the following fiscal year. The adopted budget is set forth in each budget resolution and adopts the budget at the program level (personnel, materials and services and capital outlay) for each fund. No expenditures can be made without the appropriate budget authority. The County accounting system will enforce budget restrictions on each disbursement.

2. Methods of Procurement

All requests for payment originate in departments with the entry of an invoice to pay for goods and services. Departments have four options to make payments to vendors for goods and services received. The four methods include Purchase Orders, Contracts, Direct Invoice Payments, and Purchasing Cards. All payment methods shall be designed with adequate internal controls to ensure that goods and services are acceptable for County use before payment is made, payments are within the appropriate budget authority, payments are sufficiently documented and verified as legitimate, and payments are properly recorded in the accounting system.

3. Vendors

The Finance Department will maintain the vendor file. Staff with access to the vendor file will be prohibited by system controls from processing any payments to vendors. Departments may request that vendors be created or updated by making such requests to the Finance Department. New vendors will be added, and existing vendor files will be updated once those requests are approved. Vendor taxpayer identification numbers will be secured in the County system and will be required for every vendor before any payments can be made. Such information will be verified with the IRS prior to activating a vendor.

4. Accounting System

The Finance Department, with assistance from the IT Department, will maintain the accounting system to ensure that sufficient internal controls are embedded in the system to properly account for each transaction and to ensure that each transaction is properly authorized and documented. The County will use electronic approvals whenever possible to generate a sufficient audit trail to track each transaction in the system. Payments to vendors may be made by check, by electronic funds transfer (EFT), or by purchasing card.

5. Departments

Department Heads are responsible for all transactions in their department. Their responsibility includes ensuring that every obligation is incurred to further the mission of the department and to carry out the department's Board approved goals and objectives related to the services it provides. Departments are responsible for entering all payment information in the accounting system and for approving payments to vendors. Department Heads are authorized to approve purchase orders, contracts, amendments and/or change orders, or direct payments to vendors up to $50,000. Department Heads may delegate approval up to $10,000 to Managers in their department. Such delegation shall be in writing and must be maintained by the Department.

6. Chief Financial Officer

The Chief Financial Officer is responsible for reviewing the list of disbursements each week prior to the printing of checks to provide an overview of the reasonableness of the payments to be made. Any payments called into question will be investigated further and may be deferred pending further inquiries. The Chief Financial Officer shall officially approve the disbursement as modified before printing checks or releasing electronic payments.

7. County Administrator

The County Administrator is authorized to approve purchase orders, contracts, amendments and/or change orders, or direct payments to vendors up to $250,000. The system of internal controls will take this approval level into account and require electronic approvals for each such transaction by the County Administrator as applicable. The County Administrator will receive a list of all payments made each week for information purposes and may request additional information from departments or the Finance Department on any payment.

8. Board of County Commissioners

The Board of County Commissioners are authorized to approve purchase orders, contracts, amendments and/or change orders, or direct payments to vendors for more than $250,000. The system of internal controls will take this approval level into account and require electronic approvals for each such transaction on behalf of the Board of County Commissioners as applicable. The Board may request any additional information related to such expenditures from departments or the Finance Department.

9. Payment Cycle

The County Finance Department will manage the disbursement process. Checks will be issued on Friday of each week. Only those invoices that have been entered and approved through workflow by Wednesday at 5:00pm will be included in the Friday check processing cycle. All other proposed payments will be held until a later cycle. Manual, out of cycle checks, are discouraged but may be processed as needed with approval of the Chief Financial Officer.

10. Special Payments

A number of payments are exempt from purchasing and authorization rules and will not be processed through the normal disbursement process. These include but are not limited to debt service payments, investment purchases, pass-through payments, software maintenance agreements and other special payments. The Finance Department will be responsible for making such payments, recording them in the accounting system and ensuring proper treatment in the County's financial statements.

Approved by the Deschutes County Board of Commissioners on _____.

_____

Nick Lelack
County Administrator

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Approval of Chair Signature of Document No. 2023-928, a Notice of Intent to Award a contract for the Smith Rock Way Bridge #15452 Replacement Project

RECOMMENDED MOTION:
Move approval of Board Chair signature of Document No. 2023-928.

BACKGROUND AND POLICY IMPLICATIONS:
Deschutes County Road Department prepared bid solicitation documents for the Smith Rock Way Bridge #15452 Replacement project. The project scope includes removal and replacement of the existing bridge on Smith Rock Way, installation of new guardrail and other miscellaneous improvements. The project was advertised in the *Daily Journal of Commerce* on October 27, 2023 and *The Bulletin* on October 25, 2023. The Department opened bids at 2:00 P.M. on November 15, 2023.

Eight (8) bids were received for this project. The bid results are as follows:

BIDDER	TOTAL BID AMOUNT
MARCUM AND SONS LLC	$ 917,865.16
DESCHUTES CONSTRUCTION CORP.	$ 963,062.50
CASCADE CIVIL CORP.	$1,053,633.00
WALDRON AND SONS, INC.	$1,065,555.15
JAL CONSTRUCTION	$1,066,868.00
BENT LLC	$1,164,183.00
OREGON STATE BRIDGE CONST. INC.	$1,290,016.50
GRANITE CONSTRUCTION	$1,493,546.00
Engineer's Estimate	$1,559,053.45

This action issues a Notice of Intent to Award the contract to the apparent low bidder, MARCUM AND SONS LLC and allows seven days for concerned parties to protest the award. If there is no protest within the seven-day period, the contract will be awarded to

the apparent low bidder. The bid tabulation, including the Engineer's estimate, is attached.

BUDGET IMPACTS:

The project cost is included in the proposed Road Capital Improvement Plan budget for Fiscal Year 2024.

ATTENDANCE:

Cody Smith, County Engineer/Assistant Road Department Director

BOARD OF COUNTY COMMISSIONERS

November 29, 2023

Posted on the Deschutes County, Oregon Bids and RFPs website at http://www.deschutescounty.gov/rfps prior to 5:00 PM on the date of this Notice.

Subject: **Notice of Intent to Award Contract**
SMITH ROCK WAY BRIDGE #15452 REPLACEMENT

To Whom It May Concern:

On November 29, 2023, the Board of County Commissioners of Deschutes County, Oregon considered proposals for the above-referenced project. The Board of County Commissioners determined that the successful bidder for the project was MARCUM AND SONS LLC, with a bid of Nine Hundred Seventeen Thousand, Eight Hundred Sixty-five dollars and 16/100 Dollars ($917,865.16).

This Notice of Intent to Award Contract is issued pursuant to Oregon Revised Statute (ORS) 279C.375. Any entity which believes that they are adversely affected or aggrieved by the intended award of contract set forth in this Notice may submit a written protest within seven (7) calendar days after the issuance of this Notice of Intent to Award Contract to the Board of County Commissioners of Deschutes County, Oregon, at Deschutes Services Building, 1300 NW Wall Street, Bend, Oregon 97703. **The seven (7) calendar day protest period will end at 5:00 PM on December 6, 2023.**

Any protest must be in writing and specify any grounds upon which the protest is based. Please refer to Oregon Administrative Rules (OAR) 137-047-0740. If a protest is filed within the protest period, a hearing will be held at a regularly-scheduled business meeting of the Board of County Commissioners of Deschutes County Oregon, acting as the Contract Review Board, in the Deschutes Services Building, 1300 NW Wall Street, Bend, Oregon 97703 within two (2) weeks of the end of the protest period.

If no protest is filed within the protest period, this Notice of Intent to Award Contract becomes an Award of Contract without further action by the County unless the Board of County Commissioners, for good cause, rescinds this Notice before the expiration of the protest period.

If you have any questions regarding this Notice of Intent to Award Contract or the procedures under which the County is proceeding, please contact Deschutes County Legal Counsel: telephone (541) 388-6625; FAX (541) 383-0496; or e-mail to david.doyle@deschutescounty.gov.

Be advised that if no protest is received within the stated time period, the County is authorized to process the contract administratively.

Sincerely,

_____
Anthony DeBone, Chair

SMITH ROCK WAY BRIDGE #15452 REPLACEMENT
DESCHUTES COUNTY, OREGON

PROJECT # W66106

BID RESULTS

BID OPENING : 2:00 PM 11/15/2023

	ITEM	UNIT	QTY	ENGINEER'S ESTIMATE		MARCUM AND SONS LLC 336 SW BLACK BUTTE BLVD. REDMOND, OR 97756		DESCHUTES CONSTRUCTION CORP. 494 SW VETERANS WAY, SUITE 5 REDMOND, OR 97756		CASCADE CIVIL CORP 255 SE BLACK BUTTE BLVD. REDMOND, OR 97756	
				UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL
1	Mobilization	LS	1	$152,440.78	$152,440.78	$71,120.00	$71,120.00	$84,044.00	$84,044.00	$62,895.00	$62,895.00
2	Temporary Work Zone Traffic Control, Complete	LS	1	$59,676.69	$59,676.69	$22,000.00	$22,000.00	$7,080.00	$7,080.00	$19,000.00	$19,000.00
3	Temporary Work Access and Containment	LS	1	$25,000.00	$25,000.00	$1,000.00	$1,000.00	$1,882.00	$1,882.00	$3,500.00	$3,500.00
4	Erosion Control	LS	1	$30,000.00	$30,000.00	$1,000.00	$1,000.00	$1,568.00	$1,568.00	$1,100.00	$1,100.00
5	Sediment Barrier, Type 3	FOOT	400	$8.00	$3,200.00	$5.00	$2,000.00	$2.90	$1,160.00	$2.50	$1,000.00
6	Check Dam, Type 3	EACH	4	$100.00	$400.00	$200.00	$800.00	$236.00	$944.00	$132.00	$528.00
7	Plastic Sheeting	SQYD	200	$1.00	$200.00	$2.50	$500.00	$4.50	$900.00	$11.00	$2,200.00
8	Pollution Control Plan	LS	1	$2,000.00	$2,000.00	$50.00	$50.00	$660.00	$660.00	$1,500.00	$1,500.00
9	Construction Survey Work	LS	1	$20,787.38	$20,787.38	$11,000.00	$11,000.00	$7,608.00	$7,608.00	$13,000.00	$13,000.00
10	Removal of Structures and Obstructions	LS	1	$19,483.51	$19,483.51	$3,040.00	$3,040.00	$1,400.00	$1,400.00	$3,500.00	$3,500.00
11	Clearing and Grubbing	LS	1	$16,537.39	$16,537.39	$3,570.00	$3,570.00	$2,350.00	$2,350.00	$3,500.00	$3,500.00
12	General Excavation	CUYD	263	$65.00	$17,095.00	$43.16	$11,351.08	$50.00	$13,150.00	$46.00	$12,098.00
13	Subgrade Geotextile	SQYD	1,210	$4.00	$4,840.00	$1.50	$1,815.00	$3.00	$3,630.00	$1.80	$2,178.00
14	Loose Riprap, Class 50	CUYD	20	$200.00	$4,000.00	$96.00	$1,920.00	$120.00	$2,400.00	$215.00	$4,300.00
15	Drainage Curbs	FOOT	60	$25.00	$1,500.00	$40.00	$2,400.00	$45.00	$2,700.00	$47.00	$2,820.00
16	Bridge Removal Work	LS	1	$65,400.00	$65,400.00	$13,650.00	$13,650.00	$17,000.00	$17,000.00	$35,000.00	$35,000.00
17	Strucutre Excavation	LS	1	$29,640.00	$29,640.00	$15,210.00	$15,210.00	$25,000.00	$25,000.00	$19,000.00	$19,000.00
18	Granular Structure Backfill	LS	1	$26,400.00	$26,400.00	$15,420.00	$15,420.00	$14,500.00	$14,500.00	$22,000.00	$22,000.00
19	Furnish Pile Driving Equipment	LS	1	$40,000.00	$40,000.00	$13,470.00	$13,470.00	$20,000.00	$20,000.00	$25,500.00	$25,500.00
20	Furnish PP 16 X 0.5 Steel Piles	FOOT	235	$75.00	$17,625.00	$77.87	$18,299.45	$75.00	$17,625.00	$120.00	$28,200.00
21	Drive PP 16 X 0.5 Steel Piles	EACH	12	$1,800.00	$21,600.00	$800.00	$9,600.00	$240.00	$2,880.00	$250.00	$3,000.00
22	Reinforced Pile Tips	EACH	12	$275.00	$3,300.00	$425.00	$5,100.00	$630.00	$7,560.00	$330.00	$3,960.00
23	PP 16 X 0.5 Steel Pile Splices	EACH	3	$415.00	$1,245.00	$10.00	$30.00	$560.00	$1,680.00	$200.00	$600.00
24	Reinforcement, Grade 60	LS	1	$20,896.70	$20,896.70	$16,190.00	$16,190.00	$14,000.00	$14,000.00	$20,000.00	$20,000.00
25	General Structural Concrete, Class 4000	LS	1	$68,800.00	$68,800.00	$56,020.00	$56,020.00	$50,000.00	$50,000.00	$53,000.00	$53,000.00
26	Reinforced Concrete Bridge Approach Slabs	SQYD	148	$450.00	$66,600.00	$362.09	$53,589.32	$400.00	$59,200.00	$208.00	$30,784.00
27	30 Inch Precast Prestressed Slabs	FOOT	665	$900.00	$598,500.00	$597.59	$397,397.35	$604.00	$401,660.00	$710.00	$472,150.00
28	3 Tube Steel Rail	FOOT	142	$295.00	$41,890.00	$346.63	$49,221.46	$292.00	$41,464.00	$260.00	$36,920.00
29	Aggregate Base and Shoulders	TON	750	$55.00	$41,250.00	$35.21	$26,407.50	$65.00	$48,750.00	$55.00	$41,250.00
30	Level 3, 1/2 Inch ACP Mixture	TON	380	$150.00	$57,000.00	$105.00	$39,900.00	$126.00	$47,880.00	$128.00	$48,640.00
31	Level 3, 1/2 Inch ACP Mixture in Leveling	TON	40	$250.00	$10,000.00	$105.00	$4,200.00	$126.00	$5,040.00	$128.00	$5,120.00
32	Extra for Asphalt Approaches	EACH	2	$1,500.00	$3,000.00	$750.00	$1,500.00	$1,100.00	$2,200.00	$915.00	$1,830.00
33	Guardrail Anchors, Type 1 Modified	EACH	4	$4,999.00	$19,996.00	$785.00	$3,140.00	$853.00	$3,412.00	$1,060.00	$4,240.00
34	Guardrail Transition	EACH	4	$5,000.00	$20,000.00	$3,100.00	$12,400.00	$3,370.00	$13,480.00	$4,220.00	$16,880.00
35	Guardrail Terminals, Non-Flared, Test Level 3	EACH	4	$4,500.00	$18,000.00	$3,925.00	$15,700.00	$4,266.00	$17,064.00	$5,300.00	$21,200.00
36	Midwest Guardrail System, Type 3	FOOT	25	$150.00	$3,750.00	$110.00	$2,750.00	$120.00	$3,000.00	$150.00	$3,750.00
37	Milepost Marker Posts	EACH	2	$250.00	$500.00	$350.00	$700.00	$272.00	$544.00	$200.00	$400.00
38	Longitudinal Pavement Markings - Paint	FOOT	1,800	$2.00	$3,600.00	$1.38	$2,484.00	$3.00	$5,400.00	$3.30	$5,940.00
39	Remove Existing Signs	LS	1	$500.00	$500.00	$200.00	$200.00	$628.00	$628.00	$1,000.00	$1,000.00
40	Remove and Reinstall Existing Signs	LS	1	$1,000.00	$1,000.00	$500.00	$500.00	$1,882.00	$1,882.00	$2,000.00	$2,000.00
41	Permanent Seeding, Mix No. 1	ACRE	1	$8,000.00	$4,000.00	$6,200.00	$3,100.00	$6,739.00	$3,369.50	$7,500.00	$3,750.00
42	Type 1 Fence	FOOT	70	$80.00	$5,600.00	$20.00	$1,400.00	$18.00	$1,260.00	$30.00	$2,100.00
43	12 Foot Single Gates	EACH	1	$1,800.00	$1,800.00	$1,500.00	$1,500.00	$2,008.00	$2,008.00	$4,300.00	$4,300.00
44	Relocate Existing Irrigation Line	EACH	1	$10,000.00	$10,000.00	$5,220.00	$5,220.00	$3,100.00	$3,100.00	$8,000.00	$8,000.00
				TOTAL =	**$1,559,053.45**	**TOTAL =**	**$917,865.16**	**TOTAL =**	**$963,062.50**	**TOTAL =**	**$1,053,633.00**

SMITH ROCK WAY BRIDGE #15452 REPLACEMENT
DESCHUTES COUNTY, OREGON

PROJECT # W66106

BID RESULTS

BID OPENING : 2:00 PM 11/15/2023

	ITEM	UNIT	QTY	ENGINEER'S ESTIMATE		WALDRON AND SONS, INC. 64330 OLD BEND-REDMOND HWY. BEND, OR 97703		JAL CONSTRUCTION 123 SE 4TH STREET BEND, OR 97702	
				UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL
1	Mobilization	LS	1	$152,440.78	$152,440.78	$104,877.08	$104,877.08	$100,000.00	$100,000.00
2	Temporary Work Zone Traffic Control, Complete	LS	1	$59,676.69	$59,676.69	$32,777.00	$32,777.00	$25,000.00	$25,000.00
3	Temporary Work Access and Containment	LS	1	$25,000.00	$25,000.00	$19,700.00	$19,700.00	$10,000.00	$10,000.00
4	Erosion Control	LS	1	$30,000.00	$30,000.00	$2,125.00	$2,125.00	$6,000.00	$6,000.00
5	Sediment Barrier, Type 3	FOOT	400	$8.00	$3,200.00	$6.00	$2,400.00	$4.50	$1,800.00
6	Check Dam, Type 3	EACH	4	$100.00	$400.00	$125.00	$500.00	$100.00	$400.00
7	Plastic Sheeting	SQYD	200	$1.00	$200.00	$7.00	$1,400.00	$1.00	$200.00
8	Pollution Control Plan	LS	1	$2,000.00	$2,000.00	$1,777.00	$1,777.00	$1,500.00	$1,500.00
9	Construction Survey Work	LS	1	$20,787.38	$20,787.38	$9,900.00	$9,900.00	$12,000.00	$12,000.00
10	Removal of Structures and Obstructions	LS	1	$19,483.51	$19,483.51	$16,500.00	$16,500.00	$11,000.00	$11,000.00
11	Clearing and Grubbing	LS	1	$16,537.39	$16,537.39	$22,750.00	$22,750.00	$10,000.00	$10,000.00
12	General Excavation	CUYD	263	$65.00	$17,095.00	$19.75	$5,194.25	$65.00	$17,095.00
13	Subgrade Geotextile	SQYD	1,210	$4.00	$4,840.00	$1.67	$2,020.70	$1.50	$1,815.00
14	Loose Riprap, Class 50	CUYD	20	$200.00	$4,000.00	$100.00	$2,000.00	$90.00	$1,800.00
15	Drainage Curbs	FOOT	60	$25.00	$1,500.00	$29.77	$1,786.20	$35.00	$2,100.00
16	Bridge Removal Work	LS	1	$65,400.00	$65,400.00	$68,000.00	$68,000.00	$35,000.00	$35,000.00
17	Strucutre Excavation	LS	1	$29,640.00	$29,640.00	$7,695.00	$7,695.00	$15,000.00	$15,000.00
18	Granular Structure Backfill	LS	1	$26,400.00	$26,400.00	$7,700.00	$7,700.00	$8,500.00	$8,500.00
19	Furnish Pile Driving Equipment	LS	1	$40,000.00	$40,000.00	$27,700.00	$27,700.00	$30,000.00	$30,000.00
20	Furnish PP 16 X 0.5 Steel Piles	FOOT	235	$75.00	$17,625.00	$64.00	$15,040.00	$95.00	$22,325.00
21	Drive PP 16 X 0.5 Steel Piles	EACH	12	$1,800.00	$21,600.00	$777.00	$9,324.00	$200.00	$2,400.00
22	Reinforced Pile Tips	EACH	12	$275.00	$3,300.00	$275.00	$3,300.00	$300.00	$3,600.00
23	PP 16 X 0.5 Steel Pile Splices	EACH	3	$415.00	$1,245.00	$350.00	$1,050.00	$1.00	$3.00
24	Reinforcement, Grade 60	LS	1	$20,896.70	$20,896.70	$16,750.00	$16,750.00	$20,000.00	$20,000.00
25	General Structural Concrete, Class 4000	LS	1	$68,800.00	$68,800.00	$40,777.00	$40,777.00	$75,000.00	$75,000.00
26	Reinforced Concrete Bridge Approach Slabs	SQYD	148	$450.00	$66,600.00	$327.77	$48,509.96	$500.00	$74,000.00
27	30 Inch Precast Prestressed Slabs	FOOT	665	$900.00	$598,500.00	$597.00	$397,005.00	$600.00	$399,000.00
28	3 Tube Steel Rail	FOOT	142	$295.00	$41,890.00	$371.13	$52,700.46	$360.00	$51,120.00
29	Aggregate Base and Shoulders	TON	750	$55.00	$41,250.00	$40.17	$30,127.50	$40.00	$30,000.00
30	Level 3, 1/2 Inch ACP Mixture	TON	380	$150.00	$57,000.00	$105.00	$39,900.00	$110.00	$41,800.00
31	Level 3, 1/2 Inch ACP Mixture in Leveling	TON	40	$250.00	$10,000.00	$105.00	$4,200.00	$110.00	$4,400.00
32	Extra for Asphalt Approaches	EACH	2	$1,500.00	$3,000.00	$800.00	$1,600.00	$800.00	$1,600.00
33	Guardrail Anchors, Type 1 Modified	EACH	4	$4,999.00	$19,996.00	$1,250.00	$5,000.00	$840.00	$3,360.00
34	Guardrail Transition	EACH	4	$5,000.00	$20,000.00	$6,000.00	$24,000.00	$3,315.00	$13,260.00
35	Guardrail Terminals, Non-Flared, Test Level 3	EACH	4	$4,500.00	$18,000.00	$4,175.00	$16,700.00	$4,200.00	$16,800.00
36	Midwest Guardrail System, Type 3	FOOT	25	$150.00	$3,750.00	$100.00	$2,500.00	$115.00	$2,875.00
37	Milepost Marker Posts	EACH	2	$250.00	$500.00	$60.00	$120.00	$200.00	$400.00
38	Longitudinal Pavement Markings - Paint	FOOT	1,800	$2.00	$3,600.00	$6.00	$10,800.00	$1.50	$2,700.00
39	Remove Existing Signs	LS	1	$500.00	$500.00	$177.00	$177.00	$350.00	$350.00
40	Remove and Reinstall Existing Signs	LS	1	$1,000.00	$1,000.00	$277.00	$277.00	$350.00	$350.00
41	Permanent Seeding, Mix No. 1	ACRE	1	$8,000.00	$4,000.00	$7,000.00	$3,500.00	$6,630.00	$3,315.00
42	Type 1 Fence	FOOT	70	$80.00	$5,600.00	$18.50	$1,295.00	$50.00	$3,500.00
43	12 Foot Single Gates	EACH	1	$1,800.00	$1,800.00	$1,600.00	$1,600.00	$2,000.00	$2,000.00
44	Relocate Existing Irrigation Line	EACH	1	$10,000.00	$10,000.00	$2,500.00	$2,500.00	$3,500.00	$3,500.00
					TOTAL = $1,559,053.45		**TOTAL = $1,065,555.15**		**TOTAL = $1,066,868.00**

SMITH ROCK WAY BRIDGE #15452 REPLACEMENT
DESCHUTES COUNTY, OREGON

PROJECT # W66106

BID RESULTS

BID OPENING : 2:00 PM 11/15/2023

	ITEM	UNIT	QTY	ENGINEER'S ESTIMATE		BENT LLC 36750 RICHARDSON GAP RD. SCIO, OR 97374		OREGON STATE BRIDGE CONSTRUCTION INC. PO BOX 310 STAYTON, OR 97383		GRANITE CONSTRUCTION CO. 16821 SE MCGILLIVRAY BLVD., SUITE 210B VANCOUVER, WA 98683	
				UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL
1	Mobilization	LS	1	$152,440.78	$152,440.78	$101,600.00	$101,600.00	$129,000.00	$129,000.00	$145,000.00	$145,000.00
2	Temporary Work Zone Traffic Control, Complete	LS	1	$59,676.69	$59,676.69	$25,000.00	$25,000.00	$50,000.00	$50,000.00	$64,862.00	$64,862.00
3	Temporary Work Access and Containment	LS	1	$25,000.00	$25,000.00	$20,000.00	$20,000.00	$50,000.00	$50,000.00	$6,460.00	$6,460.00
4	Erosion Control	LS	1	$30,000.00	$30,000.00	$3,000.00	$3,000.00	$7,750.00	$7,750.00	$8,460.00	$8,460.00
5	Sediment Barrier, Type 3	FOOT	400	$8.00	$3,200.00	$8.00	$3,200.00	$6.50	$2,600.00	$7.00	$2,800.00
6	Check Dam, Type 3	EACH	4	$100.00	$400.00	$150.00	$600.00	$200.00	$800.00	$350.00	$1,400.00
7	Plastic Sheeting	SQYD	200	$1.00	$200.00	$2.00	$400.00	$4.00	$800.00	$8.00	$1,600.00
8	Pollution Control Plan	LS	1	$2,000.00	$2,000.00	$500.00	$500.00	$2,500.00	$2,500.00	$1,040.00	$1,040.00
9	Construction Survey Work	LS	1	$20,787.38	$20,787.38	$11,000.00	$11,000.00	$11,000.00	$11,000.00	$12,200.00	$12,200.00
10	Removal of Structures and Obstructions	LS	1	$19,483.51	$19,483.51	$2,100.00	$2,100.00	$11,500.00	$11,500.00	$1,320.00	$1,320.00
11	Clearing and Grubbing	LS	1	$16,537.39	$16,537.39	$4,500.00	$4,500.00	$25,000.00	$25,000.00	$5,140.00	$5,140.00
12	General Excavation	CUYD	263	$65.00	$17,095.00	$45.00	$11,835.00	$67.00	$17,621.00	$98.00	$25,774.00
13	Subgrade Geotextile	SQYD	1,210	$4.00	$4,840.00	$2.00	$2,420.00	$2.00	$2,420.00	$2.00	$2,420.00
14	Loose Riprap, Class 50	CUYD	20	$200.00	$4,000.00	$160.00	$3,200.00	$205.00	$4,100.00	$300.00	$6,000.00
15	Drainage Curbs	FOOT	60	$25.00	$1,500.00	$25.00	$1,500.00	$70.00	$4,200.00	$14.00	$840.00
16	Bridge Removal Work	LS	1	$65,400.00	$65,400.00	$80,000.00	$80,000.00	$55,000.00	$55,000.00	$38,200.00	$38,200.00
17	Strucutre Excavation	LS	1	$29,640.00	$29,640.00	$17,500.00	$17,500.00	$35,000.00	$35,000.00	$43,200.00	$43,200.00
18	Granular Structure Backfill	LS	1	$26,400.00	$26,400.00	$16,000.00	$16,000.00	$30,000.00	$30,000.00	$30,600.00	$30,600.00
19	Furnish Pile Driving Equipment	LS	1	$40,000.00	$40,000.00	$30,000.00	$30,000.00	$35,000.00	$35,000.00	$41,000.00	$41,000.00
20	Furnish PP 16 X 0.5 Steel Piles	FOOT	235	$75.00	$17,625.00	$90.00	$21,150.00	$77.50	$18,212.50	$66.00	$15,510.00
21	Drive PP 16 X 0.5 Steel Piles	EACH	12	$1,800.00	$21,600.00	$1,000.00	$12,000.00	$1,000.00	$12,000.00	$300.00	$3,600.00
22	Reinforced Pile Tips	EACH	12	$275.00	$3,300.00	$275.00	$3,300.00	$500.00	$6,000.00	$940.00	$11,280.00
23	PP 16 X 0.5 Steel Pile Splices	EACH	3	$415.00	$1,245.00	$1.00	$3.00	$1.00	$3.00	$670.00	$2,010.00
24	Reinforcement, Grade 60	LS	1	$20,896.70	$20,896.70	$15,000.00	$15,000.00	$25,000.00	$25,000.00	$18,400.00	$18,400.00
25	General Structural Concrete, Class 4000	LS	1	$68,800.00	$68,800.00	$57,000.00	$57,000.00	$70,000.00	$70,000.00	$92,900.00	$92,900.00
26	Reinforced Concrete Bridge Approach Slabs	SQYD	148	$450.00	$66,600.00	$520.00	$76,960.00	$420.00	$62,160.00	$430.00	$63,640.00
27	30 Inch Precast Prestressed Slabs	FOOT	665	$900.00	$598,500.00	$685.00	$455,525.00	$610.00	$405,650.00	$970.00	$645,050.00
28	3 Tube Steel Rail	FOOT	142	$295.00	$41,890.00	$325.00	$46,150.00	$370.00	$52,540.00	$380.00	$53,960.00
29	Aggregate Base and Shoulders	TON	750	$55.00	$41,250.00	$55.00	$41,250.00	$65.00	$48,750.00	$40.00	$30,000.00
30	Level 3, 1/2 Inch ACP Mixture	TON	380	$150.00	$57,000.00	$105.00	$39,900.00	$105.00	$39,900.00	$140.00	$53,200.00
31	Level 3, 1/2 Inch ACP Mixture in Leveling	TON	40	$250.00	$10,000.00	$105.00	$4,200.00	$105.00	$4,200.00	$180.00	$7,200.00
32	Extra for Asphalt Approaches	EACH	2	$1,500.00	$3,000.00	$750.00	$1,500.00	$750.00	$1,500.00	$1,540.00	$3,080.00
33	Guardrail Anchors, Type 1 Modified	EACH	4	$4,999.00	$19,996.00	$785.00	$3,140.00	$785.00	$3,140.00	$800.00	$3,200.00
34	Guardrail Transition	EACH	4	$5,000.00	$20,000.00	$3,100.00	$12,400.00	$3,100.00	$12,400.00	$3,150.00	$12,600.00
35	Guardrail Terminals, Non-Flared, Test Level 3	EACH	4	$4,500.00	$18,000.00	$3,925.00	$15,700.00	$3,925.00	$15,700.00	$3,990.00	$15,960.00
36	Midwest Guardrail System, Type 3	FOOT	25	$150.00	$3,750.00	$110.00	$2,750.00	$110.00	$2,750.00	$110.00	$2,750.00
37	Milepost Marker Posts	EACH	2	$250.00	$500.00	$350.00	$700.00	$350.00	$700.00	$150.00	$300.00
38	Longitudinal Pavement Markings - Paint	FOOT	1,800	$2.00	$3,600.00	$1.60	$2,880.00	$3.50	$6,300.00	$1.00	$1,800.00
39	Remove Existing Signs	LS	1	$500.00	$500.00	$200.00	$200.00	$200.00	$200.00	$360.00	$360.00
40	Remove and Reinstall Existing Signs	LS	1	$1,000.00	$1,000.00	$500.00	$500.00	$500.00	$500.00	$1,680.00	$1,680.00
41	Permanent Seeding, Mix No. 1	ACRE	1	$8,000.00	$4,000.00	$6,200.00	$3,100.00	$6,200.00	$3,100.00	$6,300.00	$3,150.00
42	Type 1 Fence	FOOT	70	$80.00	$5,600.00	$120.00	$8,400.00	$120.00	$8,400.00	$120.00	$8,400.00
43	12 Foot Single Gates	EACH	1	$1,800.00	$1,800.00	$3,120.00	$3,120.00	$3,120.00	$3,120.00	$3,170.00	$3,170.00
44	Relocate Existing Irrigation Line	EACH	1	$10,000.00	$10,000.00	$3,000.00	$3,000.00	$13,500.00	$13,500.00	$2,030.00	$2,030.00
				TOTAL =	**$1,559,053.45**	**TOTAL =**	**$1,164,183.00**	**TOTAL =**	**$1,290,016.50**	**TOTAL =**	**$1,493,546.00**

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Approval of Document No. 2023-1011, an amendment to the interlocal agreement with the Department of Education for Juvenile Crime Prevention funds

RECOMMENDED MOTION:
Move approval of Chair signature on Document No. 2023-1011, Amendment 1 to the interlocal agreement with the Department of Education for Juvenile Crime Prevention funds (IGA #15668).

BACKGROUND AND POLICY IMPLICATIONS:
The County is awarded a formula-based allocation for Juvenile Crime Prevention funding administered through the Youth Development Division of the Oregon Department of Education. The Juvenile Department administers will utilize the majority of these funds on Moral Reconation Therapy (MRT) groups for medium- and high-risk youth. The County has facilitated MRT groups for several years with the goal of helping youth address criminal thinking. Each youth served is assessed, served and reassessed to see if crime risks have decreased, and then further reassessed to determine if new criminal referrals were received after services. Funding will also be used to continue efforts with restorative practices which will include training, materials, and staff development.

BUDGET IMPACTS:
The amendment brings the total allocation of these funds to $450,448. $224,904 was previously received has been expended. An additional $225,544 is expected to be received upon execution of this amendment.

ATTENDANCE:
Trevor Stephens, Deschutes County Community Justice Business Manager
Michele Winters, Juvenile Division Management Analyst

Reinstatement and Amendment No. 1 to Grant No. 15668

This is Reinstatement and Amendment No. 1 to Grant Agreement No. 15668, effective July 1, 2023 (as amended from time to time, the "Grant"), between the State of Oregon, acting by and through its Oregon Department of Education ("Agency") and Deschutes County ("Grantee"), each a "Party" and together, the "Parties". Upon receipt of all required approvals and execution by both Parties, this Reinstatement and Amendment shall be effective on July 1, 2023 ("Amendment Effective Date").

The Grant expired on June 30, 2023 and the Parties now desire to reinstate the Grant in its entirety and amend the Grant provided herein.

The Parties acknowledge and agree that Agency has not made any payment for activities performed after June 30, 2023.

The Grant is amended as follows (new language is indicated by **underlining and bold** and deleted language is indicated by ~~strikethrough~~):

1. Section 3 of the Grant is amended as follows:

   SECTION 3: EFFECTIVE DATE AND DURATION

   When all Parties have executed this Grant, and all necessary approvals have been obtained ("Executed Date"), this Grant is effective and has a Grant funding start date as of July 1, 2021 ("Effective Date"), and, unless extended or terminated earlier in accordance with its terms, will expire on ~~June 30, 2023~~ **June 30, 2025**.

2. Section 6 of the Grant is amended as follows:

   SECTION 6: GRANT FUNDS

   In accordance with the terms and conditions of this Grant, Agency will provide Grantee up to ~~$224,904.00~~ **450,448.00** ("Grant Funds") for the Project. Agency will pay the Grant Funds from monies available through its General Fund ("Funding Source").

3. Exhibit A Section V of the Grant is deleted and replaced with the following revised Exhibit A Section V, effective as of the Amendment Effective Date.

SECTION V. PROJECT EVALUATION/REPORTING REQUIREMENTS

Using Agency provided reporting templates, Grantee will submit required reports, related reports and information as Agency may reasonably require. Required reports include Quarterly Reports and the Final Report. Grantee must submit the reports as indicated below:

REPORT	DUE DATE
Quarterly Reports	Within 30 days after the end of each quarter listed below: Quarter 1: July 1, 2023 – September 30, 2023 Quarter 2: October 1, 2023 - December 31, 2023 Quarter 3: January 1, 2024 – March 31, 2024 Quarter 4: April 1, 2024 - June 30, 2024 Quarter 5: July 1, 2024 – September 30, 2024 Quarter 6: October 1, 2024 - December 31, 2024 Quarter 7: January 1, 2025 – March 31, 2025 Quarter 8: April 1, 2025 - June 30, 2025
Final Report	By August 1, 2025

Except as expressly amended above, all other terms and conditions of the Grant are still in full force and effect. Grantee certifies that the representations, warranties and certifications contained in the Grant are true and correct as of the Amendment Effective Date and with the same effect as though made at the time of this Amendment.

[Signature on next page]

EACH PARTY, BY SIGNATURE OF ITS AUTHORIZED REPRESENTATIVE, HEREBY ACKNOWLEDGES IT HAS READ THIS REINSTATEMENT AND AMENDMENT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. The Parties further agree that by the exchange of this Reinstatement and Amendment electronically, each has agreed to the use of electronic means, if applicable, instead of the exchange of physical documents and manual signatures. By inserting an electronic or manual signature below, each authorized representative acknowledges that it is their signature, that each intends to execute this Reinstatement and Amendment, and that their electronic or manual signature should be given full force and effect to create a valid and legally binding agreement.

IN WITNESS WHEREOF, the Parties have executed this Reinstatement and Amendment as of the dates set forth below.

STATE OF OREGON acting by and through its Department of Education

By: Philip Hofmann _____ November 8, 2023
Contracting Officer Date

Deschutes County

By: _____ _____
Authorized Signature Date

_____ _____
Printed Name Title

_____
Federal Tax ID Number

Approved for Legal Sufficiency in accordance with ORS 291.047

By: via email _____ 09/25/2023
Kevin Gleim, Assistant Attorney General Date

Deschutes County

Juvenile Crime Prevention Plan

2023 - 2025

Plan Elements

1. Planning Process

Existing Deschutes County Juvenile Crime Prevention plan programming has yielded positive results. NPC's last biennial evaluation showed that 88% of young people served with JCP services in our county did not have a criminal referral within one year. Most common risk factors for involvement with juvenile justice included family conflict, academic failure and peers who had dropped out or been suspended from school, with most significant risk reduction coming in areas of truancy, aggressive behavior at school, and problematic substance use.[1]

The 2023-2025 Deschutes County Juvenile Crime Prevention Plan will build on the existing strengths and partnerships that created these outcomes to identify relevant and effective ways to meet the needs of young people today. Some elements of the plan remain the same, with one key difference. We are transitioning resources from Functional Family Therapy, which the program supported for many years, to providing evidence-based cognitive programming for young men that addresses antisocial attitudes, values and beliefs, and antisocial peers. The cornerstones of our plan are to:

- Prevent juvenile justice referrals and harm in the community by strengthening organizational and professional relationships with school- and community-based restorative practice and equity efforts; and
- Continue to provide young people referred to the juvenile department with evidence-based group opportunities to identify for themselves who the best versions of themselves are, and what changes and supports they need to move forward in their lives.

Prevention and Equity through Restorative-based Community and School Engagement

Inequitable and alienating experiences at school related to race, ethnicity and culture can lead to poor school outcomes. Poor school outcomes increase risk to offend or otherwise be referred to the juvenile department, including for example a physical or social media altercation arising from racial harassment. These disparities affect young people of color in Deschutes County. We see this in self-report and in statistical calculations of disparity. Youth of color attending the Restorative Justice and Equity third Town Hall on Race in December 2019 consistently shared that their primary need is to create and sustain affinity spaces to share their experiences with other students, hear that they are not alone, and build alliances with other students[2]. Listening sessions conducted by the Bend La-Pine school district with students and families of color elicited similar themes: school isn't a safe place for all students to learn and participate (p.8), and forums to share student experiences (p.11) and student to student initiatives (p.5) are valued and needed[3]. The nexus of racism and justice system involvement often leads to poorer outcomes for people and youth of color than their white counterparts. In 2022, Deschutes County youth identified as Black, Hispanic, Asian and Native American all experienced 1.3 to 2.6 times more likelihood of being referred to the juvenile department than their white counterparts, a consistent trend over the past several years for many communities.[4] Together with key partner Restorative Justice and Equity and other partners, we will continue to utilize JCP funding to provide juvenile staff time and training as community cadre members – individuals working in the schools to implement restorative practices which are both proactive and help respond when problems arise. Working with partners, we will center the solutions and

[1] NPC Research. July 1 2019-June 30 2021 Juvenile Crime Prevention Data Summary, page. 7
[2] Restorative Justice & Equity 3rd Town Hall on Race – Youth Survey questions 4, 5 and 8.
[3] Bend La-Pine School District and Better Together Fall 2019 Excellence in Equity Listening Sessions.
[4] Juvenile Justice Information System Annual Report. Deschutes County Relative Rate Index 2022

needs articulated by youth and families of color. We are excited to support this work with the use of restorative practice and restorative justice, both initiatives with a strong foundation in the department we hope to grow in the coming biennium.

Evidence-based Practices with Referred Youth

Deschutes County's juvenile justice landscape has irrevocably altered in the past 10 years, like most juvenile justice agencies in the state and across the nation. This includes historically low numbers of law enforcement referrals, the emphasis on utilizing evidence-based practices to effect long-term change - including how to engage and partner with families, and reckoning with the nation's legacy of race and injustice.

While the COVID-19 pandemic fast-tracked the decade-long trend in shrinking referral numbers, referrals have begun to grow again in the past year. While the numbers, reasons and characteristics of the youth referred has shifted over the last decade, what has not changed is our attempt to work creatively, consistently and equitably to provide evidence-based supervision and services to all young people and their families to achieve long-term behavior change. For youth referred and whose risk/needs profile indicates that supervision is warranted, the division continues using the Effective Practices in Community Supervision (EPICS) supervision model, providing MRT and Functional Family Therapy, and offering youth a restorative community service program.

This biennium, JCP funding will support young men to receive Moral Reconation Therapy (MRT), a cognitive-behavioral therapy (CBT) program that combines education, group and individual counseling, and structured exercises designed to foster moral development. MRT is facilitated by designated department staff (CBT Specialists) trained in the curriculum by trainers authorized by the creator of the model. MRT addresses beliefs and reasoning and works to change antisocial attitudes, values and beliefs. This programming change to our JCP Plan correlates with JCP evaluation results that show we had the least amount of risk reduction in the areas of antisocial attitudes, values and beliefs, and antisocial peers[5].

This intervention engages the youth around criminal thinking and works with them to understand and develop more pro-social attitudes, values, and beliefs. We use regular fidelity and quality assurance measures such as group observations, co-facilitation, and clinical supervision support. We plan to use JCP funding to support .5FTE of one of our MRT facilitators. The hope is that by working with youth in this program Deschutes County will specifically address criminogenic risk and needs around anti-social cognition and behavior and prevent further intrusion into the juvenile justice system while also impacting youth recidivism rates. Through MRT's volunteer requirement component and emphasis on personal goal setting for participants, we also see great opportunity to connect young men in MRT with culturally responsive supports in the community, built through existing partnerships with community-based agencies from our diverse Central Oregon communities.

We will also be doing some analysis on our referrals for youth who identify as female to better understand our department need for gender specific CBT services. We plan to utilize FTE supported by the JCP to help do some of the initial research into options and curriculum available for gender specific CBT. We will also utilize this FTE to support the program development needed once we determine the type of service we will be offering. We recognize the need for a CBT option for youth who identify as female, however we want to ensure we build a program that is gender responsive, recognizes the intersectionality of youth

[5] NPC Research. July 1 2019-June 30 2021 Juvenile Crime Prevention Data Summary, page. 7

identities, and also meets the needs of our department in terms of referral numbers and our female client census. We will be looking for a service that is gender specific, evidence based, culturally responsive and trauma informed. We anticipate it will be a group based service, but it may also be something more individual or small group based depending on our projected referral numbers.

Key Plan Partners

The juvenile justice system has never been able to work alone to effect change for individual youth or community. The following agencies are key partners in this biennium's Deschutes County juvenile crime prevention system and in varying ways support all young people who are at risk for, or who come into contact with the juvenile justice system.

- *Restorative Justice & Equity*, a community-based organization devoted to creating equitable and welcoming school cultures in Deschutes County, currently focused in all Bend-LaPine high schools.
- *Better Together* (central Oregon collective impact movement) workgroups dealing with restorative justice and equity, Latino student success, family support and youth in the transition between 8th and 9th grade.
- *School safety threat assessment team* (all districts in the county, social services and law enforcement).
- *System of Care Executive Committee*, the regional Community Care Organization's implementation oversight body.
- The *Local Public Safety Coordinating Council* (LPSCC), which reviews and approves biennial JCP plans submitted to the state. LPSCC provided approval for this plan at its March 2, 2021 meeting.

2. Population to be served

Strategy / Program Name / Assessment /Activities	Age Range	Gender and Race/Ethnic Identities Served	Legal Status	Risk Profile	Referral Process
Cognitive Behavioral Therapy (CBT); Moral Reconation Therapy (MRT) will serve at least 40 young men over the biennium who are referred from their juvenile Community Justice Officer (CJO). If appropriate for MRT, the youth participate in an orientation and are placed in one of our MRT groups. The groups require a youth to follow a workbook and complete 12 steps. Youth attend group weekly but only present a step when ready so the length of the program can vary. Youth could complete all steps in as little as 12 weeks but on average youth take 18-20 weeks to complete. Youth will receive a JCP	12-17	Gender: Male Race / Ethnic Identities: All accepted;	Formal or Informal Supervision	Medium or High Risk on the JCP Assessment	CJO refers youth to MRT facilitator for orientation and group placement.

assessment before entering the program and will receive a JCP assessment upon completion or termination from the program. Administrative staff maintain completed assessments for data entry in Data Manager (when available).					
Restorative Practices/School and Community-based organizational support (training, staff time, materials and services). The division will provide training, planning coordination and dedicate staff time to support preventative restorative practices in identified schools, particularly those with active community cadre teams. Juvenile staff will work to provide restorative practice response efforts with referred youth, particularly from schools with community cadre teams. Youth referred will be assessed with the Juvenile Crime Prevention screen in JJIS by juvenile division staff. Those with medium or higher risk level will be assigned a CJO, have case supervision and be reassessed every 6 months.	12-17	Gender: Male and female Race/ Ethnic Identities: Prevention: Black, Indigenous and youth of color Response: All	Not referred and referred.	For referred: 6+ risks in 2+ JCP Assessment Domains	Schools, Law Enforcement

3. Services/programs to be funded

This 2023-25 JCP Plan builds on long-term and new successes implemented as part of our previous plans, and continues to support the continuum of youth-serving programs found in the county.

A. Cognitive Behavioral Therapy for Young Men

Lead Agency: Deschutes County Juvenile Community Justice
Program Contact Information: Michele Winters, Management Analyst
Address: 63360 Britta Street Building One Bend, OR 97703
Email: michele.winters@deschutes.org
Telephone: 541-385-1722

Moral Reconation Therapy (MRT) is a cognitive-behavioral therapy (CBT) program that combines education, group and individual counseling, and structured exercises designed to foster moral development. MRT is facilitated by designated department staff (CBT Specialists) trained in the curriculum by trainers authorized by the creator of the model. MRT addresses beliefs and reasoning and works to change criminal thinking. MRT aims to change attitudes, values, and anti-social feelings while increasing intrinsic motivation to change. The program consists of specific step exercises that target self-control, problem solving, and the management of goals. MRT also aims to reduce problems associated with drug and alcohol use while preventing relapse as well as increasing positive outcomes of family dynamics.

MRT is a revolving entry, step-by-step group counseling treatment approach that will last between 12 and 20 sessions, dependent on the youth's participation. Deschutes County Juvenile Community Justice will keep MRT group limited to no more than six (6) participants per group and will cycle in new youth as other participants graduate the program. The MRT program is a 16 step program. Formal MRT classes terminate after the 12th step and the CBT specialist has a final follow up meeting with youth to review Steps 13-16 within two weeks of completion by phone or personal appointment. There is no requirement that all the participants be on the same step. Research has shown that it is beneficial to have a class with participants at different steps in the MRT program.

B. Restorative Practices

Lead Agency: Deschutes County Juvenile Community Justice and Restorative Justice & Equity
County Program Contact Information: Sonya Littledeer-Evans
Address: 63360 Britta Street Building One Bend, OR 97703
Email: sonyale@deschutes.org
Telephone: 541-385-1728
RJE Program Contact Information: Beth Hoover (beth.hoover@rjande.org) Dalton Miller-Jones (dalton.millerjones@rjande.org)

The juvenile division will continue to utilize JCP funding in 2023-2025 to continue work began in the 2019-21 biennium to increase justice equity for local youth of color, particularly within the school environment. For the past two years, juvenile division staff have worked with the community-based organization Restorative Justice & Equity (RJE) to plan and align mutual goals of restorative justice for students of color, provide facilitation and support for RJE's annual Town Hall Symposium on race for high school students of color (most recent town hall was March 2023), participate and support training of juvenile justice staff and community members in the International Institute on Restorative Practices curriculum, and support RJE's community-based "Community Cadre" team in creating restorative school cultures. RJE's goals are to support the Bend-LaPine school district to use restorative justice practices to raise academic and social engagement as well as retention and graduation rate for low income students and students of color. These goals dovetail with the juvenile justice department goals for youth involved in our system. With JCP funding assistance, we will assist in bringing training opportunities to juvenile staff and community, allowing staff to work in school as community cadre members, and supporting education and program development between partners involved in the effort.

4. JCP Risk Assessment Tool

All youth referred to the MRT program or served with restorative practices after referral will have an initial assessment in the Juvenile Justice Information System (JJIS) before entering the program and will be re-assessed in JJIS once they complete or are terminated from the program. We will ensure that all facilitators and staff are trained in how to administer the JCP via JCP training provided by OJDDA trainer(s) and utilizing JCP fidelity training materials. Facilitators and supervising Community Justice Officers will collaborate to work with the youth on identified criminogenic factors, and youth and family case plans will be updated to reflect goals, strategies, interventions and outcomes that target identified risk, criminogenic need and responsivity factors from the JCP assessments. Additionally, work within MRT group will be adjusted to address identified criminogenic factors from the JCP. We will pay close attention to the

dimensions referenced in attachment B1. The facilitator or our administrative staff will enter the assessments into JJIS and for tracking.

5. Evidence-Based Practice

The county is committed to providing evidence-based practices, including with JCP Prevention funding. See **Attachments B1 and B2** (Evidence-based Practice Checklist) for our proposed program's alignment with evidence-based practices.

6. Cultural appropriateness

See appendix C and D below

7. Relationship of JCP Prevention Services to the JCP Basic and Diversion funds

See Attachment 1

8. Budget

Anticipated Biennium Resources		**$ 225,544**
Program Name	**Narrative**	***Biennial JCP Expenses***
Cognitive Behavioral Therapy	At least 20 youth served each year- .5 FTE Deschutes County personnel [wages + benefits],	*$ 130,000*
Cognitive Behavioral Therapy Supplies	Supplies (MRT Books and supplies, Moving On books and supplies, Reinforcers)	*$ 9,990*
Restorative Practices	Training, materials, town halls, supplies and staff time	*$ 63,000*
Administrative Costs	Internal Services, Grant Management, Reporting	*$ 22,554*
Total Expenditures		***$ 225,544***

APPENDIX A – Sample planning partners list

Education representatives	Bend La-Pine School District, Redmond School District, Sisters School District, School Safety Threat Assessment Team.
Public health representatives	Deschutes County Public Healthy, System of Care Executive Committee
Alcohol and drug services	Rim Rock Trials and New Priorities
Representatives of the court system	Deschutes County Circuit Court
Mental health representatives	Deschutes County Behavioral Health
City or municipal representatives	Deschutes County District Attorney
Local public safety coordinating councils	Deschutes County Local Public Safety Coordinating Council
Community based organizations	Better Together, Restorative Justice & Equity
Youth and families	Deschutes County Juvenile Family Functional Therapy Intercept (Youth Villages)
Culturally specific organizations	Papalaxsimisha
Workforce boards and services	

Also Please see Attachment 1

Appendix B – Evidence-Based Practice Checklist

JCP FUNDED PROGRAM (fill out a form for each funded program):
Cognitive Behavioral Therapy (CBT): Moral Reconation Therapy (MRT)

PROGRAM TYPE (e.g. mentoring, family therapy/counseling, skill building):
Group Therapy

BRIEF DESCRIPTION OF FUNDED PROGRAM:
Moral Reconation Therapy (MRT) is a cognitive-behavioral therapy program that combines education, group and individual counseling, and structured exercises designed to foster moral development. MRT is facilitated by designated department staff (CBT Specialists) trained in the curriculum by trainers authorized by the creator of the model. MRT addresses beliefs and reasoning and works to change criminal thinking. MRT aims to change attitudes, values, and anti-social feelings while increasing intrinsic motivation to change. The program consists of specific step exercises that target self-control, problem solving, and the management of goals. MRT also aims to reduce problems associated with drug and alcohol use while preventing relapse as well as increasing positive outcomes of family dynamics. MRT is a systematic, step-by-step group counseling treatment approach that will last on average between 18 and 20 weeks

TARGET POPULATION:
Youth on informal or formal supervision who identify as male and who are medium or high risk on the JCP risk assessment.

EVIDENCE-BASED PROGRAM
Program model is cited on (e.g. SAMHSA, OJJDP):
SAMHSA: National Registry of Evidence-Based Programs and Practices
OJJDP: Model Program Guide Cognitive-Behavioral Treatment. Reference CBT as highly effective.

RESEARCH AND THEORY
Based on empirically valid research and theory – multiple sources including clinical and outcomes based research. See https://ojjdp.ojp.gov/model-programs-guide/literature-reviews/cognitive_behavioral_treatment.pdf and https://www.moral-reconation-therapy.com/assets/treating-youtful-offenders.pdf

RISK PRINCIPLE
Uses a validated risk assessment tool (JCP) at pre- and post-therapy. Addresses risk in family, school, peer group, and other relevant social settings.

NEED (CRIMINOGENIC) PRINCIPLE
Intervention is geared to those factors closely linked to criminal offending rather than an array of needs that are less related to criminal conduct.
Services target dynamic factors and needs associated with criminal behavior: antisocial attitudes, values, beliefs; difficulties with self-control and problem solving; substance abuse;
Intervention is comprehensive and across systems, and addresses many aspects of youths' lives – health, education, employment, cognitive and social skills.

RESPONSIVITY PRINCIPLE

A principle of MRT and CBT group facilitation is to meet the client where they are at. Facilitators work individually with youth on short and long term goal setting and present material in a way that best fits the youth's learning style. Facilitators work to provide individual instruction and assistance for youth outside of group and help support each youth during group to help navigate successful completion of the program. Youth are offered various options to communicate with facilitators (i.e. phone calls, texting, Zoom meetings) to help meet the standards of the group and successfully complete. Facilitators work to reduce any barriers to youth attending group via an electronic platform by strategizing ways to support the youth and family for consistent group attendance (i.e. providing access to electronic devices, internet services, etc.)

QUALITY SERVICE DELIVERY

Staff have relevant education, training, and experience, including being trained in the MRT curriculum by the curriculum creators. Staff receive regular quality assurance checks for fidelity to the model.

COLLABORATION

Facilitator and CJOs work closely together. CJOs are aware of youth's progress and staff regularly problem solve challenges or recognize youth successes as a team. Group progress, staffing and collateral contacts are tracked in the Juvenile Justice Information System, which increases communication between facilitators and CJOs. Facilitators meet regularly with management and a clinical facilitator for additional support. MRT offers monthly fidelity calls that facilitators can participate in and request guidance from clinical staff from MRT and other agencies utilizing the MRT curriculum.

COGNITIVE-BEHAVIORAL PRINCIPLE

MRT is a Cognitive–Behavioral Therapy/Treatment (https://ojjdp.ojp.gov/model-programs-guide/literature-reviews/cognitive_behavioral_treatment.pdf)

CBT is a problem-focused approach to helping people identify and change the dysfunctional beliefs, thoughts, and patterns of behavior that contribute to their problems. Its underlying principle is that thoughts affect emotions, which then influence behaviors. CBT combines two very effective kinds of psychotherapy: cognitive therapy and behavioral therapy.

CULTURAL ADAPTATION

All of our staff who facilitate MRT receive on-going training and dialogue in racial equity, racial justice, restorative justice and restorative practices. The program will conduct outreach with culturally specific community-based agencies with whom the Juvenile department has relationships and collaborations to create relationships, mentorships and volunteer opportunities for young men in the program who need to find volunteer opportunities as part of the MRT curriculum.

TECHNICAL ASSISTANCE NEEDS

N/A.

JCP FUNDED PROGRAM (fill out a form for each funded program):
Restorative Practices in Schools as part of collective impact system

PROGRAM TYPE (e.g. mentoring, family therapy/counseling, skill building):
International Institute for Restorative Practices (IIRP) school-based normative and responsive practices to build culture and manage disruptions. Developed with collective impact partners also working on trauma and resilience, support for Latinx students and other systemic challenges to social equity for Black, Indigenous students and families of color.

BRIEF DESCRIPTION OF FUNDED PROGRAM:
Training, consultation and staff time participating in IIRP-based "Community Cadres" in identified Bend LaPine high schools and middle schools. Will include attending, planning, ongoing training and debrief meetings; proactive and response circle facilitation within schools; response coordination with schools when / if referrals are made to the juvenile division for school-based incidents at Community Cadre school site.

TARGET POPULATION:
Middle and high school Black, Indigenous, Latino/x, Asian, and students of color, as well as students from lower income families, to thrive by creating anti-racist and restorative practice cultures that prevent and holistically manage disruptions including racialized harassment or bullying, and create environments that address and heal historical and intergenerational trauma.

EVIDENCE-BASED PROGRAM
Program model is cited on (e.g. SAMHSA, OJJDP): International Institute for Restorative Practices, RAND Corporation.

RESEARCH AND THEORY
Theories include: Shame and Affect Theory; Emerging social science related to connection and belonging including school-based research that "when students feel stronger bonds and levels of connection with those around them, they are less likely to misbehave and harm others" (Department of Education 2014). Data includes: Lowering suspension rates for elementary students, Black students, students from low-income families and female students (Pittsburgh); Impact of and working effectively to heal historical and intergenerational trauma; and Impact of institutionalizing restorative practices at school sites[6].

RISK PRINCIPLE
We will use a validated risk assessment tool (JCP) for any youth referred to the Juvenile department from a "Community Cadre" school-based incident. Addresses risk in family, school, peer group, and other relevant social settings. Only youth with higher risk levels will receive direct services and supervision.

NEED (CRIMINOGENIC) PRINCIPLE
Intervention is geared to those factors closely linked to criminal offending rather than an array of needs that are less related to criminal conduct.
Services target dynamic factors and needs associated with criminal behavior: antisocial attitudes, values, beliefs; antisocial peer association; family problems with supervision, communication, engagement; difficulties with self-control and problem solving; substance abuse;
Intervention will be based on what youth risk/needs profile indicates, in partnership with school building lead staff in relation to responding to a school-based incident.

[6] Miller-Jones, D and Rubin, M. Journal of Public Management and Social Policy. "Achieving Equity in Education: A Restorative Justice Approach." Fall 2020. V27:1 and 2

RESPONSIVITY PRINCIPLE

The Juvenile department will work with responsivity as indicated on any identified youth's assessment and intake information. As these will be youth referred from a Community Cadre school, the juvenile department will attend to racial and ethnic identity and cultural identity as a primary responsivity factor, working in partnership with the school and other Community Cadres to support students of color and white students in healthy cultural identity.

QUALITY SERVICE DELIVERY

Juvenile Community Justice Officers or Community Justice Specialists will participate as Community Cadres with school officials and staff, as well as volunteers.

COLLABORATION

The Community Cadre program is run by the community-based Restorative Justice and Equity program, dozens of community volunteers, and schools identified as Community Cadre sites. The Juvenile division currently attends and participates in Restorative Justice and Equity monthly meetings, program development and trainings.

COGNITIVE-BEHAVIORAL PRINCIPLE

Youth referred to the juvenile department from a Community Cadre site will be assessed and offered services and supervision consistent with the division's EPICS supervision model (Effective Practices in Community Supervision) which utilizes CBT interventions as part of the supervision structure.

CULTURAL ADAPTATION

The Community Cadre and Restorative Justice and Equity are specifically tailored to create a just, welcoming and equitable school culture for Black, Indigenous, Latino/x, Asian and students of color. From training materials, research methods, community collaboration and approach, Community Cadres understand a student's racial, ethnic and/or cultural identity to be a paramount category of identity and shall tailor personalized responses, and school normative cultural responses in a way that explicitly honors and protects each student's healthy cultural identities.

TECHNICAL ASSISTANCE NEEDS

N/A.

Appendix C – Cultural Appropriateness

As listed on page one of this plan, there are a number of ways that young people have reported to us, and/or that are represented in data, where racial and ethnic disparities in education, community and justice area experienced by young people of color in Deschutes County. This plan makes explicit efforts to identify, interrupt and create equitable outcomes within the scope of our control and through partnerships with key youth-serving agencies.

Racial and Ethnic Disparity

In addition to self-report and the formal statistical calculation of Relative Rate Index, which has shown disparity in referrals (see page 1 of this plan), we also note areas of disproportionality in other juvenile justice decision points in our county, where there are insufficient numbers to perform the formal RRI calculation. These include the following 2022 data from JJIS Annual Reports:

- Detention Admission Data: Asian youth represent 1.7% of youth age 10-17 in Deschutes County but represent 11.1% of our detention admissions; Black youth represent 1.5% of youth age 10-17 in Deschutes County but represent 4.8% of our detention admissions; Hispanic youth represent 13.7% of youth age 10-17 In Deschutes County but represent 18.2% of our warrant-based detention admissions[7]
- Disposition Data: Black youth represent 1.5% of youth age 10-17 in Deschutes County but represent 2.4% of our youth dispositions; Indigenous youth represent .8% of our youth age 10-17 in Deschutes County but represent 1.2% of our dispositions[8].

Building An Inclusive Organization

The JCP-specific supports described in this Plan are facilitated by Juvenile Community Justice, which has as one of its 2030 strategic goals to eliminate racial and ethnic disparities thorough equitable and inclusive practices. Staff and partners involved in the JCP-specific programming are also involved in:

- Quarterly staff restorative practice circles focusing on definitions, concepts and theories related to racial and ethnic disparity;
- Staff-based affinity group meetings as a method of training/modeling, creating shared language and vocabulary, and creating healing where necessary;
- Utilizing the Government Alliance for Racial Equity (GARE) racial equity toolkit when designing all yearly team goals, to include analysis of quantitative and qualitative data that shares the experiences that youth of color have in Deschutes County and our region, and how those experiences should inform the type and manner of service delivery once youth enter the juvenile justice system; and
- Recent addition of community-based agency contracts to help support youth who come into detention who may identify as Indigenous.
- Provision of interpretation services through contract for youth whose primary language is Spanish or whose parent/guardian's primary language is Spanish, or American Sign Language.
- The majority of our regularly used documents and forms have been translated to Spanish.
- Staff representatives who are bilingual in Spanish/English who are trained in Intake procedures, JCP, Case Management, and EPICS. These staff have specialty caseloads to meet the needs of our Spanish speaking youth and families.

[7] 2022 JJIS Annual Report: Dispositions and Detention Admissions
[8] 2022 JJIS Annual Report: Dispositions and Detention Admissions

Youth Engagement in JCP Plan

In 2022 the Juvenile Community Justice Restorative Practices staff cohort looked to the "Little Book of Restorative Justice and Youth Engagement"[9] to inform one area of continuing improvement across youth-serving agencies, which is co-creating services *with* youth, not *for* them. The department is currently engaged in creating a regional, inclusive, youth-centered engagement council with youth and community partners including Better Together, Restorative Justice and Equity, Behavioral Health and schools, amongst others. That work is ongoing, and is a long-term journey. For this 2023-2025 JCP Plan specifically, we continued to look at secondary data and qualitative sources of information where young people have already spoken, sometimes repeatedly. We do not yet have the groundwork in place to co-create reciprocal, equitable partnership where young people have shared ownership of engagement, goals and plans. To engage youth in this process before those relationships and trust are built runs the risk of tokenism. We look forward to reporting back on progress in this regard during the course of 2023-2025.

The largest school in Deschutes County, the Bend La-Pine school district, is currently finalizing a report on Bias Incidents in 2022-2023. Recently, the district has implemented a bias incident reporting process and system. This new method allows for data collection in terms of Bias Incident reporting. Preliminary data indicates more than 300 bias incidents reported in that timeframe, with more than 50% categorized as bias incidents related to race and ethnicity. The majority of those who have experienced harm are students, by other students. Incidents are taking place in/at hallways, classrooms, outside/recess, school bus, events/activities and through electronic devices. The district is responding in a variety of ways such as immediate relationship-based support for the individual who has been harmed, compassionate and comprehensive investigations, family communication and partnerships, suspension, loss of privileges, education and reflection and repair through restorative practices. They are taking proactive steps to work with the community groups who support the restorative justice and equity effort by engaging them on a plan to help address the bias specifically around race and ethnicity. We look forward to working collaboratively and restoratively with schools on incidents that reach juvenile justice referral level, and as partners in prevention efforts.

[9] Anita Wadhwa, Evelín Aquino, and Heather Bligh Manchester. "Youth Engagement in Restorative Justice: Intergenerational Partnerships for Just and Equitable Schools." The Little Books of Justice & Peacebuilding. 2021

Appendix D - Best practices for LGBTQ+ youth

Juvenile Community Justice continues to focus on creating inclusive environments for young people from all of the diverse identities and experiences that exist in Central Oregon. We are aware of the vulnerability that LGBTQ+ young people share based on the manner in which their sexual orientation and/or gender identities can be received by their families, peers and dominant heteronormative culture that relies on outdated understanding of gender binaries. In our department we led our systemic work on inclusion and equity through the lens of race, because, as GARE states "we also know that other groups of people are still marginalized, including based on gender, sexual orientation, ability and age, to name but a few. Focusing on racial equity provides the opportunity to introduce a framework, tools and resources that can also be applied to other areas of marginalization."

Our current efforts to provide inclusive and supportive service environment for LGBTQ+ youth include:

- We invite youth at the time of intake to self-identify their race, ethnicity, gender and gender identity, without regard to the way that the Juvenile Justice Information System (JJIS) may or may not have ability to identify them.
- The identities that young people share and prefer are the identities that we honor in our interactions.
- We note each youth's preferred pronouns and gender preference in JJIS, via low level alerts, creating ways that all who come into contact with youth know and use any preferred name and/or pronouns.
- Policy and expectations for our entire department are to provide supervision and services that recognized the youth's self-identified gender and to utilize their preferred pronouns.
- Staff have attended training on working with transgender youth and understanding their options, decisions related to their health care and health decisions. This includes trainings on pronouns and identity as well as LGTBQ youth specific trainings.

The largest school in Deschutes County, the Bend La-Pine school district, is currently finalizing a report on Bias Incidents in 2022-2023. Recently, the district has implemented a bias incident reporting process and system. This new method allows for data collection in terms of Bias Incident reporting. Preliminary data indicates more than 300 bias incidents reported in that timeframe, with more than 30% categorized as bias incidents related to gender identity/expression. The majority of those who have experienced harm are students, by other students. Incidents are taking place in/at hallways, classrooms, outside/recess, school bus, events/activities and through electronic devices. The district is responding in a variety of ways such as immediate relationship-based support for the individual who has been harmed, compassionate and comprehensive investigations, family communication and partnerships, suspension, loss of privileges, education and reflection and repair through restorative practices. They are taking proactive steps to work with the community groups who support the restorative justice and equity effort by engaging them on a plan to help address the bias specifically around gender identity and expression. We look forward to working collaboratively and restoratively with schools on incidents that reach juvenile justice referral level, and as partners in prevention efforts.

APPENDIX E – BUDGET

BUDGET CATEGORY	Amount
Personnel • .5 FTE Community Justice Specialist	$130,000.00
Fringe Benefits	(include above based on total FTE cost)
Travel	
Equipment	
Supplies (MRT Books and supplies, Moving On books and supplies, Reinforcers)	$9,990.00
Consultants/Contracts	
Other Costs Restorative Practices: Trainings, Materials, Town Halls, Staff Time	$63,000.00
Grant Administration Applicant's administration of the grant funds, including indirect costs.	$22,554.00
Total	$225,544.00

COUNTY CONTACTS

Authorized Contract Signer Contact Information:
(County Administrator of BOCC Chair)
Name: Tony DeBone
Title: BOCC Chair
Address: P.O. Box 6005, Attn: BOCC, Bend, Oregon 97703
Email: board@deschutes.org
Telephone: 541-388-6570

Lead Agency:
(Juvenile or Prevention Department Director)
Lead Agency Director Contact Information:
Name: Deevy Holcomb
Title: Director
Address: 63360 Britta Street Building #1 Bend, OR 97703
Email: deevyh@deschutes.org
Telephone: 541-322-7644

County/Lead Agency Fiscal Contact Information:
Name: Trevor Stephens
Title: Business Manager
Address: 63360 Britta Street Building #1 Bend, OR 97703
Email: trevor.stephens@deschutes.org
Telephone: 541-330-8261

Electronic Grant Management System (EGMS) Contact
(Who will submit financial claims?)
Name: Michele Winters
Title: Management Analyst
Address: 63360 Britta Street Building #1 Bend, OR 97703
Email: michele.winters@deschutes.org
Telephone: 541-385-1722

Please submit your plan by March 31, 2023, via email to JCP@ode.oregon.gov

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Public hearing and consideration of Resolution 2023-062 adopting a supplemental budget and reducing FY24 Beginning Working Capital and appropriations

RECOMMENDED MOTION:
Move approval of Resolution 2023-062 reducing Beginning Working Capital and appropriations within 2023-24 Deschutes County Budget.

BACKGROUND AND POLICY IMPLICATIONS:
During the budgeting process, departments calculate an estimate of ending fund balances in February and March. These estimates are based on information known at the time, but often change given the timing and/or final cost of expenditures. This budget adjustment is to reduce Beginning Working Capital (BWC) and appropriations within funds where BWC FY24 actuals are less than budget. Reducing BWC and requirements ensures that a fund does not have appropriations greater than available resources.

In the American Rescue Plan Act Fund (ARPA), previously received Federal grant revenue was budgeted as carryover in BWC. However, due to accounting standards, unexpended funds must be recognized in the Federal grants account line. Accordingly, this adjustment lowers BWC and increases Federal grants revenue within the ARPA Fund.

The supplemental budget for Law Library, ARPA, Communications System Reserve and CDD – Groundwater Partnership changes budgeted resources by more than 10%; therefore, a public hearing is required.

BUDGET IMPACTS:
Adjustment will decrease BWC and appropriations by the same amounts within the following funds:

• Law Library	$	(27,871)
• PERS Reserve	$	(4,140)
• Foreclosed Land Sales	$	(3,657)

- Transient Room Tax – 7% $ (197,825)
- Video Lottery $ (6,649)
- Communications System Reserve $ (49,600)
- Health Services $ (13,399)
- CDD – Groundwater Partnership $ (7,531)
- Community Development $ (28,123)
- Surveyor $ (36,019)
- Fair & Expo $ (223,942)
- Administrative Services $ (28,637)
- Finance $ (23,088)
- Legal $ (20,125)
- Human Resources $ (72,953)
- Information Technology $ (4,590)

Within the ARPA fund, BWC will decrease by $14,316,680 and Federal grant revenue will increase by $11,828,064, decreasing overall program expense appropriations by $2,488,616.

ATTENDANCE:
Dan Emerson, Budget & Financial Planning Manager

REVIEWED

_____
LEGAL COUNSEL

For Recording Stamp Only

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

A Resolution Decreasing Appropriations	*	
Within the 2023-24 Deschutes County	*	RESOLUTION NO. 2023-062
Budget	*	

WHEREAS, the Deschutes County Finance department presented to the Board of County Commissioners on 11/29/23, with regards to decreasing Beginning Working Capital and appropriations within several funds, and

WHEREAS, ORS 294.471 & 294.473 allows a supplemental budget adjustment when authorized by resolution of the governing body, and

WHEREAS, it is necessary to decrease appropriations to accommodate this request; now, therefore,

BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON, as follows:

Section 1. That Beginning Working Capital be decreased in the 2023-24 County Budget within the following funds:

• Law Library	$	(27,871)
• PERS Reserve	$	(4,140)
• Foreclosed Land Sales	$	(3,657)
• Transient Room Tax – 7%	$	(197,825)
• Video Lottery	$	(6,649)
• ARPA	$	(14,316,680)
• Communications System Reserve	$	(49,600)
• Health Services	$	(13,399)
• CDD – Groundwater Partnership	$	(7,531)
• Community Development	$	(28,123)
• Surveyor	$	(36,019)
• Fair & Expo	$	(223,942)
• Administrative Services	$	(28,637)
• Finance	$	(23,088)

- Legal $ (20,125)
- Human Resources $ (72,953)
- Information Technology $ (4,590)

Section 2. That Federal Grant revenue be recognized in the 2023-24 County Budget within the following fund:

- ARPA $ 11,828,064

Section 3. That Program Expense appropriations be decreased in the 2023-24 County Budget within the following funds:

- ARPA $ (2,488,616)
- CDD – Groundwater Partnership $ (7,531)
- Human Resources $ (8,700)

Section 4. That Contingency appropriations be decreased in the 2023-24 County Budget within the following funds:

- Law Library $ (27,871)
- Foreclosed Land Sales $ (3,657)
- Video Lottery $ (6,649)
- Surveyor $ (36,019)
- Fair & Expo $ (223,942)
- Administrative Services $ (28,637)
- Finance $ (23,088)
- Legal $ (20,125)
- Human Resources $ (64,253)
- Information Technology $ (4,590)

Section 5. That Reserves for Future Expenditures be decreased in the 2023-24 County Budget within the following funds:

- PERS Reserve $ (4,140)
- Transient Room Tax – 7% $ (197,825)
- Communications System Reserve $ (49,600)
- Health Services $ (13,399)
- Community Development $ (28,123)

Section 6. That the Chief Financial Officer make the appropriate entries in the Deschutes County Financial System to show the above appropriations:

DATED this_____ day of November 2023.

BOARD OF COUNTY COMMISSIONERS OF
DESCHUTES COUNTY, OREGON

ANTHONY DEBONE, Chair

ATTEST:

PATTI ADAIR, Vice-Chair

Recording Secretary

PHIL CHANG, Commissioner

Deschutes County
Supplemental Budget

REVENUE

Item	Project Code	Segment 2	Org	Object		Description	Current Budgeted Amount	To (From)	Revised Budget
1			1200350	301000		Beginning Working Capital	$ 137,867	$ (27,871)	$ 109,996
2			1350750	301000		Beginning Working Capital	4,679,796	(4,140)	4,675,656
3			1401050	301000		Beginning Working Capital	157,123	(3,657)	153,466
4			1609450	301000		Beginning Working Capital	4,725,187	(197,825)	4,527,362
5			1650350	301000		Beginning Working Capital	1,047,460	(6,649)	1,040,811
6			2001750	301000		Beginning Working Capital	14,717,884	(14,316,680)	401,204
7			2001850	331001		Federal Grants	2,311,073	2,311,072	4,622,145
8			2001750	331001		Federal Grants	-	9,516,992	9,516,992
9			2553450	338035		LED #1 Countywide	-	1,250,000	1,250,000
10			2553450	338036		LED #2 Rural	11,348,550	(1,250,000)	10,098,550
11			2553350	338035		LED #1 Countywide	2,036,438	137,642	2,174,080
12			2553350	338036		LED #2 Rural	2,422,710	(137,642)	2,285,068
13			2561750	301000		Beginning Working Capital	326,000	(49,600)	276,400
14			2762250	301000		Beginning Working Capital	618,760	(13,399)	605,361
15			2963650	301000		Beginning Working Capital	63,878	(7,531)	56,347
16			3013650	301000		Beginning Working Capital	6,532,337	(22,134)	6,510,203
17			3023650	301000		Beginning Working Capital	821,646	(5,990)	815,656
18			3285050	301000		Beginning Working Capital	291,912	(36,019)	255,893
19			6159651	301000		Beginning Working Capital	754,000	(206,236)	547,764
20			6169651	301000		Beginning Working Capital	539,152	(17,705)	521,447
21			6250850	301000		Beginning Working Capital	207,520	(28,637)	178,883
22			6301450	301000		Beginning Working Capital	17,837	(23,088)	(5,251)
23			6402750	301000		Beginning Working Capital	174,000	(20,125)	153,875
24			6503150	301000		Beginning Working Capital	187,150	(72,953)	114,197
25			6600950	301000		Beginning Working Capital	385,017	(4,590)	380,427
						TOTAL	**$ 54,503,297**	**$ (3,236,765)**	**$ 51,266,532**

APPROPRIATION

Item	Project Code	Segment 2	Org	Object	Category (Pers, M&S, CapEx, Transfers, Contingency)	Description (Object, e.g. Time Mgmt, Temp Help, Computer Hardware)	Current Budgeted Amount	To (From)	Revised Budget
1			1200350	501971	Contingency	Contingency	$ 33,401	$ (27,871.00)	$ 5,530
2			1350750	521851	Reserves	Reserves for Future Expenditure	4,693,996	(4,140)	4,689,856
3			1401050	501971	Contingency	Contingency	161,051	(3,657)	157,394
4			1609450	521851	Reserves	Reserves for Future Expenditure	1,999,500	(197,825)	1,801,675
5			1650350	501971	Contingency	Contingency	1,014,424	(6,649)	1,007,775
6			2001750	450920	M&S	Grants & Contributions	4,065,704	(2,488,616)	1,577,088
7			2561750	521851	Reserves	Reserves for Future Expenditure	382,800	(49,600)	333,200
8			2762250	521851	Reserves	Reserves for Future Expenditure	625,813	(13,399)	612,414
9			2963650	450920	M&S	Grants & Contributions	69,978	(7,531)	62,447
10			3013650	521851	Reserves	Reserves for Future Expenditure	6,821,089	(22,134)	6,798,955
11			3023650	521851	Reserves	Reserves for Future Expenditure	753,300	(5,990)	747,310
12			3285050	501971	Contingency	Contingency	186,261	(36,019)	150,242
13			6159651	501971	Contingency	Contingency	238,854	(206,236)	32,618
14			6169651	501971	Contingency	Contingency	245,910	(17,705)	228,205
15			6250850	501971	Contingency	Contingency	61,970	(28,637)	33,333
16			6301450	501971	Contingency	Contingency	80,937	(23,088)	57,849
17			6402750	501971	Contingency	Contingency	53,305	(20,125)	33,180
18			6503150	501971	Contingency	Contingency	64,253	(64,253)	-
19			6503150	410101	Personnel	Regular Employees	1,034,044	(8,700)	1,025,344
20			6600950	501971	Contingency	Contingency	124,626	(4,590)	120,036
						TOTAL	**$ 22,711,216**	**$ (3,236,765)**	**$ 19,474,451**

A supplemental budget is required to reduce Beginning Working Capital and appropriations in several funds.

Fund:	Various
Dept:	Various
Requested by:	Dan Emerson
Date:	11.29.23

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Consideration of Resolution 2023-063 adopting a supplemental budget which recognizes additional funds, reduces FY24 Beginning Working Capital, and decreases appropriations within the Countywide Law Enforcement District (District 1) Fund.

RECOMMENDED MOTION:
Move approval of Resolution 2023-063, recognizing additional Property Tax revenue, reducing Beginning Working Capital, and decreasing appropriations within the 2023-24 Countywide Law Enforcement District Budget

BACKGROUND AND POLICY IMPLICATIONS:
During the budgeting process, departments calculate an estimate of ending fund balances in February and March. These estimates are based on information known at the time, but often change given the timing and/or final cost of expenditures. The ending fund balance in the Countywide Law Enforcement District Fund was less than estimated; therefore, this is a budget adjustment to reduce Beginning Working Capital (BWC) by $1,061,116 and decrease appropriations by $915,178 within the Countywide Law Enforcement District Fund. Reducing BWC and requirements ensures the fund does not have appropriations greater than available resources.

BUDGET IMPACTS:
- **Revenue**
  - Recognizes $145,938 in additional tax Property Tax revenue
  - Decreases Beginning Working Capital by $1,061,116
- **Expenditures**
  - Increases Intergovernmental payments to the Sheriff's Office by $1,387,642
  - Reduces Contingency by $2,302,820; revised contingency is $6,358,217

Total reduction in revenue and appropriations is $915,178 within the Countywide Law Enforcement District Fund.

ATTENDANCE:
Dan Emerson, Budget & Financial Planning Manager

REVIEWED

_____
LEGAL COUNSEL

For Recording Stamp Only

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON ACTING AS THE GOVERNING BODY OF THE COUNTYWIDE LAW ENFORCEMENT DISTRICT (DISTRICT1)

A Resolution to Decrease Appropriations	*	
Within the 2023-24 Countywide Law	*	RESOLUTION NO. 2023-063
Enforcement District (District 1) Budget	*	

WHEREAS, the Deschutes County Finance department presented to the Board of County Commissioners on 11/29/23, with regards to decreasing Beginning Working Capital and appropriations within the Countywide Law Enforcement Fund, and

WHEREAS, ORS 294.471 & 294.473 allows a supplemental budget adjustment when authorized by resolution of the governing body, and

WHEREAS, it is necessary to decrease appropriations to accommodate this request; now, therefore,

BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON ACTING AS THE GOVERNING BODY OF THE COUNTYWIDE LAW ENFORCEMENT DISTRICT (DISTRICT 1), as follows:

Section 1. That Beginning Working Capital be decreased and the following revenue be recognized in the 2023-24 Budget:

Countywide Law Enforcement	
Beginning Working Capital	$ (1,061,116)
Property Taxes Current Year	145,938
Total	**$ (915,178)**

Section 2. That the following expenditures be appropriated in the 2023-24 Budget:

Countywide Law Enforcement	
Public Safety	$ 1,387,642
Contingency	(2,302,820)
Total	**$ (915,178)**

Section 3. That the Chief Financial Officer make the appropriate entries in the Deschutes County Financial System to show the above appropriations:

DATED this_____ day of November, 2023.

BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON ACTING AS THE GOVERNING BODY OF COUNTYWIDE LAW ENFORECEMENT DISTRICT (DISTRICT 1)

ANTHONY DEBONE, Chair

ATTEST:

PATTI ADAIR, Vice-Chair

Recording Secretary

PHIL CHANG, Commissioner

Deschutes County
Supplemental Budget

REVENUE

Item	Project Code	Segment 2	Org	Object		Description	Current Budgeted Amount	To (From)	Revised Budget
1			7011750	301000		Beginning Working Capital	$ 10,589,316	$ (1,061,116)	$ 9,528,200
2			7011750	311100		Property Taxes Current Year	37,860,124	145,938	38,006,062
						TOTAL	**$ 48,449,440**	**$ (915,178)**	**$ 47,534,262**

APPROPRIATION

Item	Project Code	Segment 2	Org	Object	Category (Pers, M&S, CapEx, Transfers, Contingency)	Description (Object, e.g. Time Mgmt, Temp Help, Computer Hardware)	Current Budgeted Amount	To (From)	Revised Budget
1			7011750	470042	M&S	Intergov-Deschutes County	$ 40,382,403	$ 1,387,642	$ 41,770,045
2			7011750	501971	Contingency	Contingency	8,661,037	(2,302,820)	6,358,217
						TOTAL	**$ 49,043,440**	**$ (915,178)**	**$ 48,128,262**

Fund:	701
Dept:	CW Law Enforcement
Requested by:	Dan Emerson
Date:	11.29.23

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Consideration of Resolution 2023-064 adopting a supplemental budget which recognizes additional funds, reduces FY24 Beginning Working Capital, and decreases appropriations within the Rural Law Enforcement District (District 2) Fund

RECOMMENDED MOTION:
Move approval of Resolution 2023-064 recognizing additional Property Tax revenue, reducing Beginning Working Capital, and decreasing appropriations within the 2023-24 Rural Law Enforcement District Budget.

BACKGROUND AND POLICY IMPLICATIONS:
During the budgeting process, departments calculate an estimate of ending fund balances in February and March. These estimates are based on information known at the time, but often change given the timing and/or final cost of expenditures. The ending fund balance in the Rural Law Enforcement District Fund was less than estimated; therefore, this is a budget adjustment to reduce Beginning Working Capital (BWC) by $1,122,821 and decrease appropriations by $1,043,223 within the Rural Law Enforcement District Fund. Reducing BWC and requirements ensures the fund does not have appropriations greater than available resources.

BUDGET IMPACTS:
- **Revenue**
  - Recognizes $79,598 in additional Property Tax revenue
  - Decreases Beginning Working Capital by $1,122,821
- **Expenditures**
  - Decreases Intergovernmental payments to the Sheriff's Office by $1,387,642
  - Increases Contingency by $344,419; revised Contingency is $937,775

Total reduction in revenue and appropriations is $1,043,223 within the Rural Law Enforcement District Fund.

ATTENDANCE:
Dan Emerson, Budget & Financial Planning Manager

REVIEWED

_____
LEGAL COUNSEL

For Recording Stamp Only

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON ACTING AS THE GOVERNING BODY OF THE RURAL LAW ENFORCEMENT DISTRICT (DISTRICT 2)

A Resolution to Decrease Appropriations	*	
Within the 2023-24 Rural Law	*	RESOLUTION NO. 2023-064
Enforcement District (District 2) Budget	*	

WHEREAS, the Deschutes County Finance department presented to the Board of County Commissioners on 11/29/23, with regards to decreasing Beginning Working Capital and Appropriations within the Rural Law Enforcement Fund, and

WHEREAS, ORS 294.471 & 294.473 allows a supplemental budget adjustment when authorized by resolution of the governing body, and

WHEREAS, it is necessary to decrease appropriations to accommodate this request; now, therefore,

BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON ACTING AS THE GOVERNING BODY OF THE RURAL LAW ENFORCEMENT DISTRICT (DISTRICT 2), as follows:

Section 1. That Beginning Working Capital be decreased and the following revenue be recognized in the 2023-24 Budget:

Rural Law Enforcement	
Beginning Working Capital	$ (1,122,821)
Property Taxes Current Year	79,598
Total	**$ (1,043,223)**

Section 2. That the following expenditures be appropriated in the 2023-24 Budget:

Rural Law Enforcement	
Public Safety	$ (1,387,642)
Contingency	344,419
Total	**$ (1,043,223)**

Section 3. That the Chief Financial Officer make the appropriate entries in the Deschutes County Financial System to show the above appropriations:

DATED this_____ day of November, 2023.

BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON ACTING AS THE GOVERNING BODY OF RURAL LAW ENFORECEMENT DISTRICT (DISTRICT 2)

ANTHONY DEBONE, Chair

ATTEST:

PATTI ADAIR, Vice-Chair

Recording Secretary

PHIL CHANG, Commissioner

Deschutes County
Supplemental Budget

REVENUE

Item	Project Code	Segment 2	Org	Object		Description	Current Budgeted Amount	To (From)	Revised Budget
1			7021750	301000		Beginning Working Capital	$ 2,595,835	$ (1,122,821)	$ 1,473,014
2			7021750	311100		Property Taxes Current Year	15,110,056	79,598	15,189,654
						TOTAL	**$ 17,705,891**	**$ (1,043,223)**	**$ 16,662,668**

APPROPRIATION

Item	Project Code	Segment 2	Org	Object	Category (Pers, M&S, CapEx, Transfers, Contingency)	Description (Object, e.g. Time Mgmt, Temp Help, Computer Hardware)	Current Budgeted Amount	To (From)	Revised Budget
1			7021750	470042		Intergov-Deschutes County	$ 17,297,535	$ (1,387,642)	$ 15,909,893
2			7021750	501971		Contingency	593,356	344,419	937,775
						TOTAL	**$ 17,890,891**	**$ (1,043,223)**	**$ 16,847,668**

Fund:	702
Dept:	Rural Law Enforcement
Requested by:	Dan Emerson
Date:	11.29.23

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Multiple Unit Property Tax Exemption application for Jackstraw development at 310 & 350 SW Industrial Way

RECOMMENDED MOTION:
Move approval of the application from Killian Pacific for a Multiple Unit Property Tax Exemption relating to property at 310 & 350 SW Industrial Way in Bend.

BACKGROUND AND POLICY IMPLICATIONS:
In August 2022, the Bend City Council adopted a Multiple Unit Property Tax Exemption (MUPTE) program to support development and redevelopment goals in Bend's core and transit-oriented areas. The program is available for multi-story residential projects in certain areas of Bend that provide three or more units and provide at least three defined public benefits.

The Jackstraw mixed-use project is in the process of building 313 apartment units, 16,019 square feet of retail, 332 bicycle parking spaces, and 457 parking spaces. Additionally, the project will include construction of a multi-modal publicly accessible shared use drive aisle and a shared use path. For this project, the three identified public benefits will be:

- High Standard of Energy Efficiency/Green Building Features through Energy Trust New Buildings Path to Net Zero (priority public benefit);
- Mobility Supportive Amenities; and
- Wrapped Parking Structure.

Numerous additional public benefits beyond the requirements are listed in the attached project description. According to information submitted by the applicant and reviewed by an independent financial consultant, this project approaches financial feasibility only with a MUPTE award, and can still be viewed as a challenged project with higher risk even with the lowered property tax burden. In order for this project to qualify for the tax exemption, it must be approved by the boards which represent at least 51% of the combined levy of taxing districts.

More information is available online at:
Multiple Unit Property Tax Exemption Program | City of Bend (bendoregon.gov)

BUDGET IMPACTS:
Because this exemption, if approved, would only affect the Bend Urban Renewal Agency's Core Area Tax Increment Finance Fund, it would not result in direct budget impacts to any of Deschutes County's taxing districts.

ATTENDANCE:
Nick Lelack, County Administrator
Cate Schneider, Senior Management Analyst, City of Bend

The Jackstraw mixed-use project is located at 310 & 350 SW Industrial Way, between Bend's Old Mill District and Downtown. The building will have 313 apartment units, 17,500 square feet of retail, 325 bicycle parking spaces, and 443 parking spaces. Additionally, The Jackstraw includes construction of a multi-modal publicly accessible Woonerf (living street) along private Lava Road which connects Arizona Ave to Industrial Way. The project received land-use approval in September 2022 and has submitted for its building (Phase 2), foundation (Phase 1), and site improvement (SIMP) permits. As of May 2023, the project has received the infrastructure (INFR), drainage, grading, and demolition permits. Construction commenced in April 2023 and completion is anticipated for October 2025.

We will also look at opportunities to provide a percentage of apartments as workforce housing. The project has selected the Energy Trust New Buildings – Path to Net Zero, Wrapped Parking Structure, and Mobility Supportive Amenities public benefits, however, we have incorporated additional public benefits beyond the requirements.

- The project is tracking to be certified LEED Gold for Multifamily and Fitwel.
- The project has also committed to providing 2 townhomes units at 60% of area median income (AMI) and was granted an expedited review by the housing department.
- These 2 townhomes offered at 60% AMI are designed to allow their tenants to operate in-home childcare to hopefully make a positive contribution in the face of Bend's childcare crises.
- The project will be completing major public improvements for Sisemore Street and Industrial Way, and developing Lava Road as an enhanced privately owned but publicly accessible multi-modal Woonerf (living street).
- The project will also incorporate public art adjacent to the Lava Road Woonerf and along the northside of the building that will extend beyond the lifetime of the exemption.
- The project has been engineered to retain and treat stormwater exceeding a 25-year storm event.
- The project's landscaping will incorporate native, pollinator-friendly and water-wise landscaping best practices.
- We will also be engaging with a third party to house pollinating beehives onsite.
- We are targeting 25% of total construction costs to be awarded to businesses owned by underrepresented members of our community including women, minorities, LGBTQ individuals, and persons with disabilities, and 25% of construction journey and apprentice hours to be completed by underrepresented members of those same communities.
- Car charging stations to accommodate 31 electric vehicles will be provided with an additional 31 parking stalls accommodating slower-speed Level 2 electric vehicle car charging. Additionally, conduit will be constructed to allow for easier installation of car charging stations in the future.

Economic Development Division
City of Bend
mupte@bendoregon.gov
710 NW Wall Street, Bend OR 97703

This submittal form is to be completed as part of your Multiple Unit Property Tax Exemption (MUPTE) application with the City of Bend. *Download this form before completing fillable fields*, then upload with your application through the Online Permit Center at www.bendoregon.gov/permitcenter.

MUPTE PUBLIC BENEFITS CHECKLIST

Use the following checklist to identify which public benefits you plan to utilize to meet the public benefit requirements of the MUPTE program as defined in Bend Code 12.35.025 and further explained in the MUPTE Program Guidelines. **Projects must provide a minimum of three public benefits including at least one priority public benefit.**

Priority Public Benefits (must select at least one)

- ☐ 10% of units deed-restricted as Affordable Housing
- ☐ 30% of units deed-restricted as Middle Income Housing
- ☐ Childcare Facilities
- ☐ Open Space and Publicly Accessible Park or Plaza Space
  - ☐ Please confirm that you have a letter from Bend Park and Recreation District included in your application.
- ■ High Standard of Energy Efficiency/Green Building Features (if yes, please select which pathway)
  - ■ Energy Trust New Buildings Path to Net Zero
  - ☐ LEED Platinum
  - ☐ Earth Advantage Platinum or higher

Additional Public Benefits

☐ Energy Efficiency/Green Building Features (if yes, select which pathway)
- ☐ Energy Trust of Oregon New Building Whole Building
- ☐ Energy Trust Multifamily Market Solutions Best
- ☐ Earth Advantage Silver or higher
- ☐ LEED Silver or higher
- ☐ Solar installation that will supply some of the building's energy using solar

☐ Transit Supportive Amenities
- ☐ Please confirm you have a letter from Cascade East Transit to include in your application.

☑ Mobility Supportive Amenities

☐ Ground floor commercial (more than 35% of the ground floor as commercial uses)

☐ Stormwater
- ☐ Confirm that you have submitted stormwater credit program application form as part of your application

☐ Environmental Remediation
- ☐ Confirm that you have submitted documentation of recent site clean up efforts and current DEQ status of site.

☐ Public Facilities
Please provide a short description of proposed public facility:

☐ Enhanced Landscaping
- ☐ Please confirm that you have submitted landscape plan as part of site plan
- ☐ Please confirm that you have submitted a proposed water budget as part of your application

☐ Electric Vehicle (EV) charging

☑ Wrapped Parking Structure

☐ Other Public Benefit (must be authorized by City Council)
If using this, please provide a description of the proposed public benefit:

Accommodation Information for People with Disabilities
To obtain this information in an alternate format such as Braille, large print, electronic formats, etc. please contact Development services at development@bendoregon.gov, 541-388-5580; Relay Users Dial 7-1-1.

INDUSTRIAL WAY SITE PLAN

LOCATED IN THE NW 1/4 OF THE NE 1/4 OF SECTION 05, TOWNSHIP 18 SOUTH, RANGE 12 EAST, WILLAMETTE MERIDIAN, CITY OF BEND, DESCHUTES COUNTY, OREGON

CONTACT INFORMATION

OWNER

INDUSTRIAL WAY QOZB LLC
1615 SE 3RD AVE #100
PORTLAND, OR 97214

DEVELOPER

KILLIAN PACIFIC
1615 SE 3RD AVE #100
PORTLAND, OR 97214

PLANNING CONSULTANT

BLACKMORE PLANNING AND DEVELOPMENT SERVICES, LLC
CONTACT: GREG BLACKMORE, PRINCIPAL PLANNER
19454 SUNSHINE WAY
BEND, OR 97702
(541) 419-1455

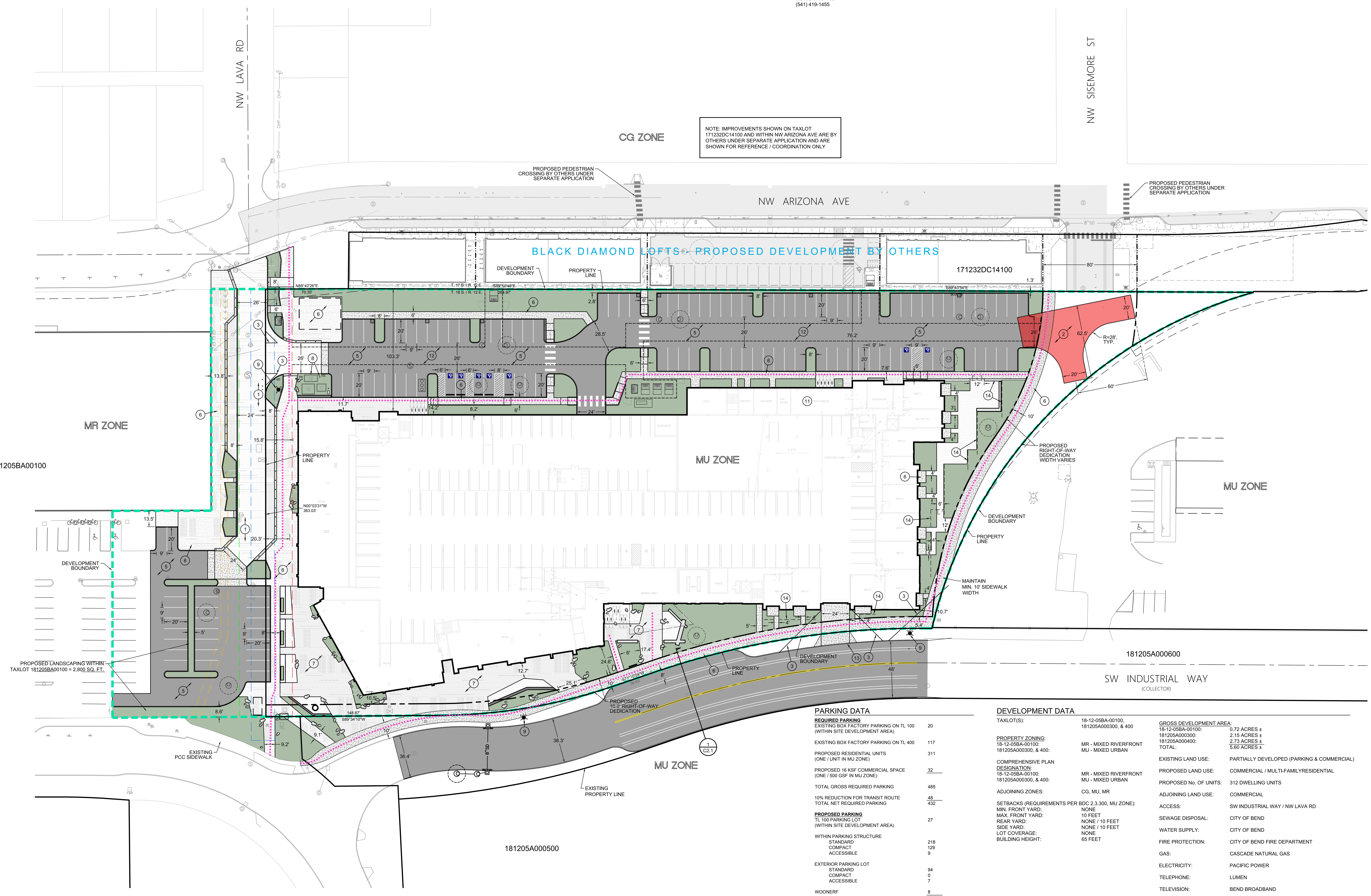
ARCHITECT

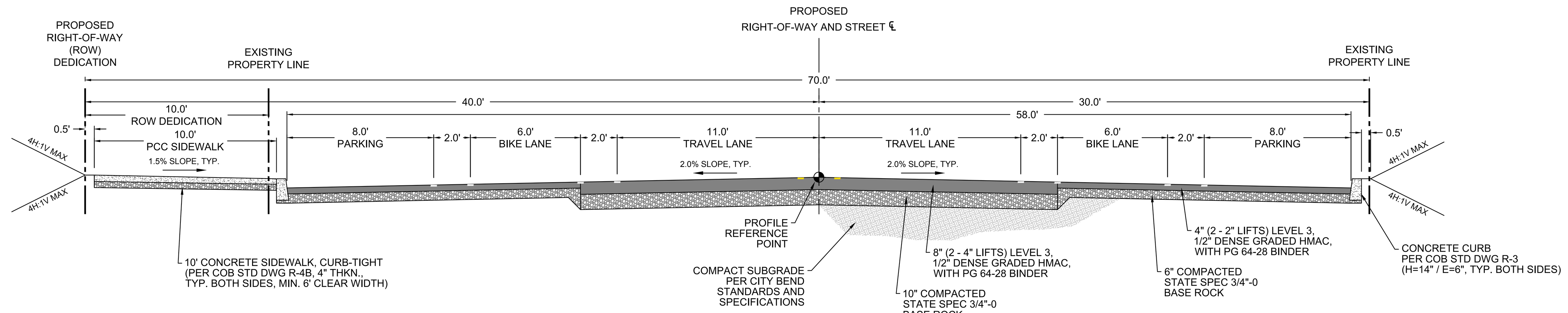
SERA
CONTACT: ARTUR GROCHOWSKI
338 NW 5TH AVE
PORTLAND, OR 97209
(503) 445-7372

CIVIL ENGINEER

HWA
CONTACT: SEAN PASSAGE, PE & GRANT HARDGRAVE, PE
62930 O.B. RILEY ROAD, SUITE 100
BEND, OR 97703
(541) 389-9351

NOTE: IMPROVEMENTS SHOWN ON TAXLOT 171232DC14100 AND WITHIN NW ARIZONA AVE ARE BY OTHERS UNDER SEPARATE APPLICATION AND ARE SHOWN FOR REFERENCE / COORDINATION ONLY





1 / C2.1 COLLECTOR STREET (SW INDUSTRIAL WAY)
SCALE: NOT TO SCALE

PARKING DATA

REQUIRED PARKING	
EXISTING BOX FACTORY PARKING ON TL 100 (WITHIN SITE DEVELOPMENT AREA)	20
EXISTING BOX FACTORY PARKING ON TL 400	117
PROPOSED RESIDENTIAL UNITS (ONE / UNIT IN MU ZONE)	311
PROPOSED 16 KSF COMMERCIAL SPACE (ONE / 500 GSF IN MU ZONE)	32
TOTAL GROSS REQUIRED PARKING	485
10% REDUCTION FOR TRANSIT ROUTE	48
TOTAL NET REQUIRED PARKING	432
PROPOSED PARKING	
TL 100 PARKING LOT (WITHIN SITE DEVELOPMENT AREA)	27
WITHIN PARKING STRUCTURE	
STANDARD	218
COMPACT	129
ACCESSIBLE	9
EXTERIOR PARKING LOT	
STANDARD	94
COMPACT	0
ACCESSIBLE	7
WOONERF	8
TOTAL PROPOSED PARKING	492

DEVELOPMENT DATA

TAXLOT(S):	18-12-05BA-00100, 181205A000300, & 400
PROPERTY ZONING:	
18-12-05BA-00100:	MR - MIXED RIVERFRONT
181205A000300, & 400:	MU - MIXED URBAN
COMPREHENSIVE PLAN DESIGNATION:	
18-12-05BA-00100:	MR - MIXED RIVERFRONT
181205A000300, & 400:	MU - MIXED URBAN
ADJOINING ZONES:	CG, MU, MR
SETBACKS (REQUIREMENTS PER BDC 2.3.300, MU ZONE):	
MIN. FRONT YARD:	NONE
MAX. FRONT YARD:	10 FEET
REAR YARD:	NONE / 10 FEET
SIDE YARD:	NONE / 10 FEET
LOT COVERAGE:	NONE
BUILDING HEIGHT:	65 FEET

GROSS DEVELOPMENT AREA:	
18-12-05BA-00100:	0.72 ACRES ±
181205A000300:	2.15 ACRES ±
181205A000400:	2.73 ACRES ±
TOTAL:	5.60 ACRES ±
EXISTING LAND USE:	PARTIALLY DEVELOPED (PARKING & COMMERCIAL)
PROPOSED LAND USE:	COMMERCIAL / MULTI-FAMILYRESIDENTIAL
PROPOSED No. OF UNITS:	312 DWELLING UNITS
ADJOINING LAND USE:	COMMERCIAL
ACCESS:	SW INDUSTRIAL WAY / NW LAVA RD
SEWAGE DISPOSAL:	CITY OF BEND
WATER SUPPLY:	CITY OF BEND
FIRE PROTECTION:	CITY OF BEND FIRE DEPARTMENT
GAS:	CASCADE NATURAL GAS
ELECTRICITY:	PACIFIC POWER
TELEPHONE:	LUMEN
TELEVISION:	BEND BROADBAND
SOLID WASTE DISPOSAL:	BEND GARBAGE AND RECYCLING
IRRIGATION DISTRICT:	SWALLEY IRRIGATION DISTRICT
WATER RIGHTS:	NONE PRESENT

SITE KEY NOTES

1. PROPOSED WOONERF
2. PROPOSED FIRE APPARATUS HAMMERHEAD TURNAROUND
3. CLEAR VISION AREA
4. PROPOSED ACCESSIBLE ROUTE TO PUBLIC RIGHT-OF-WAY
5. PROPOSED HMAC PAVEMENT
6. PROPOSED PCC PAVEMENT
7. PROPOSED PAVERS
8. PROPOSED FIRE VAULT ASSEMBLY WITH PIV & FDC
9. PROPOSED FIRE HYDRANT ASSEMBLY
10. PROPOSED ACCESSIBLE PARKING
11. PROPOSED BIKE STORAGE ROOM
12. PROPOSED FIRE LANE
13. PROPOSED DRIVEWAY APRON
14. PROPOSED FENCE

LEGEND

- PROPERTY BOUNDARY
- DEVELOPMENT BOUNDARY
- PROPOSED RIGHT-OF-WAY DEDICATION
- PROPOSED CONCRETE CURB
- CLEAR VISION AREA
- PROPOSED ACCESSIBLE ROUTE
- PROPOSED HMAC PAVEMENT
- PROPOSED PCC PAVEMENT

SCALE: 1" = 30'

SERA
ARCHITECTURE
URBAN DESIGN + PLANNING
INTERIOR DESIGN
PORTLAND | OAKLAND
SERADESIGN.COM

REGISTERED PROFESSIONAL ENGINEER — OREGON — SEAN C. PASSAGE — PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2022

HWA
CIVIL ENGINEERING | SURVEYING | PLANNING
62930 O.B. RILEY ROAD, STE. 100, BEND, OR 97703
(541)389-9351
WWW.HWA-INC.ORG
HWA PROJECT No.: 210813

INDUSTRIAL WAY

KILLIAN PACIFIC
310/350 SW INDUSTRIAL WAY
BEND, OR 97702

REVISIONS

CHECKED BY:	GMH
ISSUE DATE:	2022.03.18
PROJECT NO:	2103057

SITE PLAN
C2.1

DRAFT LAND USE SUBMITTAL

SeanP S:\Land Projects\210813-Killian Pacific, Industrial Way Project\dwg\CIVIL\SD\SHEETS\210813_SD.dwg Fri Mar 18, 2022 - 3:20pm
2022/02/21 13:37:52
SERA Design and Architecture, Inc.

KEYED NOTES - SITE PLAN

1 INSERT NOTE HERE

GENERAL NOTES - SITE PLAN

A. SITE PLAN KEYED NOTES APPLY TO A050 SHEET SERIES. ALL KEYED NOTES MAY NOT OCCUR ON THIS SHEET AND DO NOT APPLY TO ANY OTHER SHEETS EXCEPT THOSE NOTED.

B. ARCHITECTURAL REFERENCE ELEVATION 100'-0" = XX.XX' ON SURVEY AND CIVIL DOCUMENTS.

C. REFERENCE CIVIL AND LANDSCAPE DRAWINGS FOR ADDITIONAL SITEWORK INFORMATION.

D. WORK IN THE RIGHT OF WAY IS SHOWN FOR REFERENCE ONLY. REFER TO SEPARATE RIGHT OF WAY IMPROVEMENT DRAWINGS FOR INFORMATION.

E. REFERENCE ELECTRICAL DRAWINGS FOR LIGHTING SCHEDULE.

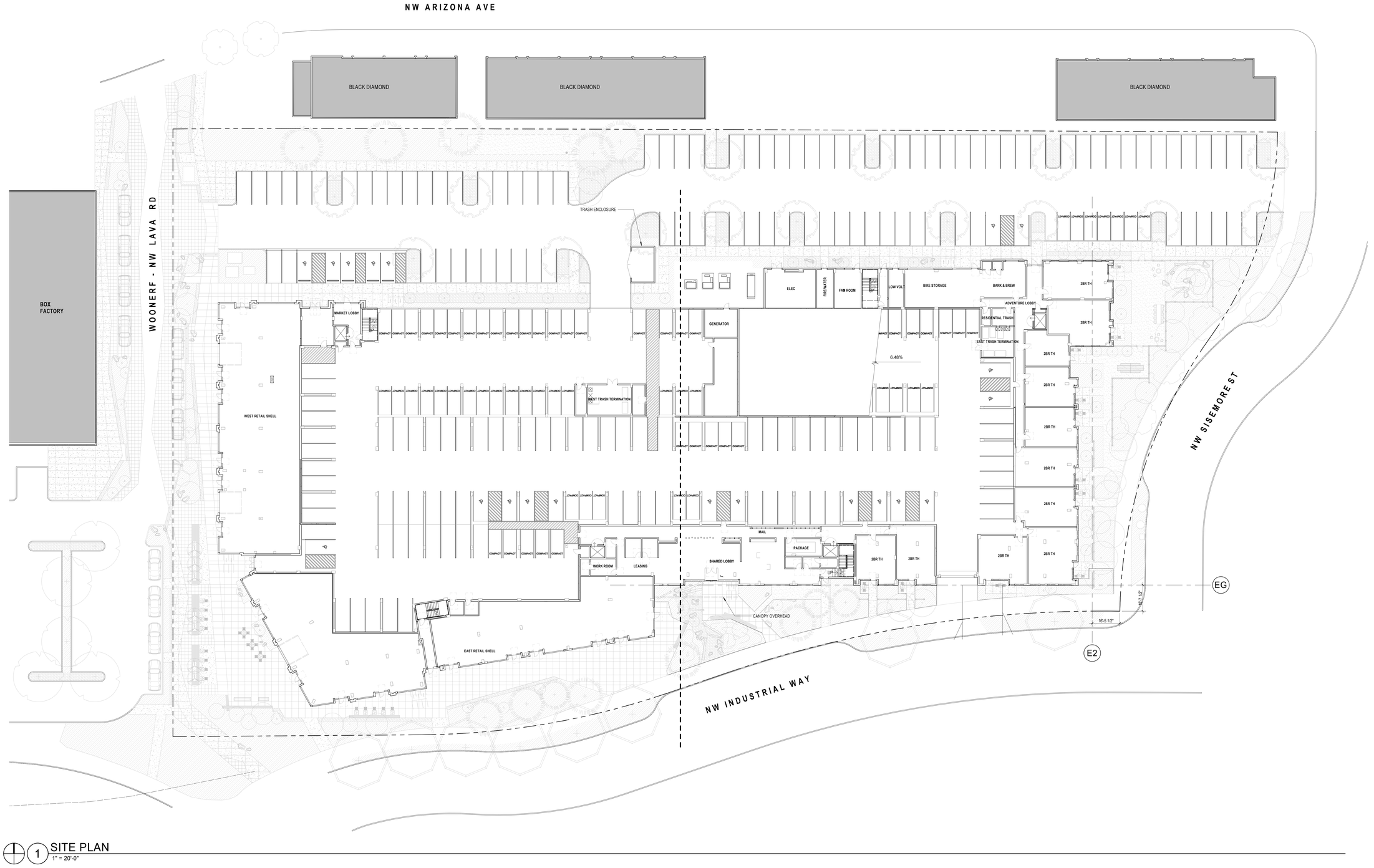
ADDITIONAL SITE INFORMATION

A. ADD ALL OF THE EXTRA SITE INFORMATION NOTES HERE THAT DOESN'T FIT ANYWHERE ELSE.

RESERVED FOR JURISDICTIONAL PROCESSING

LEGEND - SITE PLAN

- EXISTING PAVING AND/OR LANDSCAPE AREA
- ASPHALT PAVING
- EXISTING CONCRETE PAVING TO REMAIN
- CONCRETE PAVING
- EXISTING STRUCTURE TO REMAIN
- PARKING AND DRIVE STRIPING
- LANDSCAPE AREAS



1 SITE PLAN
1" = 20'-0"

SERA
ARCHITECTURE
URBAN DESIGN + PLANNING
INTERIOR DESIGN
PORTLAND|OAKLAND
SERADESIGN.COM

REGISTERED ARCHITECT
3680
KURT K. SCHULTZ
PORTLAND,OR
STATE OF OREGON

JACKSTRAW
INDUSTRIAL WAY OOZR, LLC
21035 SW INDUSTRIAL WAY
BEND, OR 97702

REVISIONS

PODIUM

CHECKED BY:	ARG
ISSUE DATE:	2023.02.13
PROJECT NO:	2103057

SITE PLAN

A051

GMP SET

2/13/2023 1:02:30 PM SERA Design and Architecture, Inc.

REVIEW OF FINANCIAL FEASIBILITY

JACKSTRAW PROJECT KILLIAN DEVELOPMENT

MUPTE PROGRAM APPLICATION

Prepared for: City of Bend, Oregon

Prepared by: PNW Economics, LLC

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Contents

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1. Executive Summary

Introduction

PNW ECONOMICS, LLC was retained by the City of Bend to review the Killian Development Jackstraw Project Multi-Unit Property Tax Exemption ("MUPTE") program application as part of City review of the project application. Specifically, PNW ECONOMICS was tasked with:

- Reviewing project application assumptions including rent income, non-rent income, operating expenses, bank underwriting assumptions, and other pertinent assumptions;
- Evaluating projected return on investment for the project without MUPTE and with MUPTE, which grants a ten-year property tax exemption for the project in order to incentivize its financial performance such that investment and development is possible and positively contributes to the Bend economy in place of property underutilization; and
- Communicating all analysis and findings appropriately for review by community members and elected officials.

This document represents completion of these tasks for review by the City of Bend and its partners and stakeholders.

Summary of Findings

An independent pro forma analysis was conducted by PNW ECONOMICS for the proposed Jackstraw project in the Old Mill District of Bend. The following table provides a concise summary of the outcome of not awarding and awarding a MUPTE to the project, which comprises 313 apartment units and 17,500 square feet of retail space.

Table 1 – Jackstraw Project Measures of Return With & Without MUPTE: 313 Units & 17,500 Sq. Ft. Retail

NO MUPTE	Residential	Retail	Total
Net Operating Income (NOI)	$6,878,606	$691,909	$7,570,515
Total Development Cost			$171,197,197
		Return on Investment (Cost) - NO MUPTE	4.4%
YES MUPTE	Residential	Retail	Total
Net Operating Income (NOI)	$8,056,220	$734,534	$8,790,754
Total Development Cost			$171,197,197
		Return on Investment (Cost) - MUPTE	5.1%

<u>Without MUPTE Conclusion:</u> The Jackstraw project has very challenging financial feasibility on its own.

- Employing a minimum Return on Investment (Cost) measure of return of 6% as a result of thumb for project pursuit, the Jackstraw project's income does not justify its operating expenses, with an ROI of only 4.4%. The rule-of-thumb minimum ROI of 6% would indicate the project would be difficult to pull, all things equal.

<u>With MUPTE Conclusion:</u> The Jackstraw project approaches financial feasibility with the MUPTE and only with the tax exemption compared to the No MUPTE scenario.

- A MUPTE awarded that would reduce a roughly $1.2 million property tax burden for the development is estimated to enhance ROI for the project to 5.1% compared to 4.4% without the MUPTE.
- Although a MUPTE award would significantly enhance expected feasibility of the project and enhance assurance of its success, the estimated ROI with the MUPTE still does not fully rise to the applied 6% rule-of-thumb minimum. In other words, the MUPTE is a critical aid in this project happening, but it can still be viewed as a challenged project with higher risk.

Review of all development and financial assumptions in the MUPTE Application for the Jackstraw project yielded the following other general finds and comments:

- The Jackstraw project has rents and operating assumptions that are seemingly consistent with market conditions in Bend among newer projects.
- Development costs of the project are seemingly consistent with current construction market conditions, as verified by a comparable, planned project in the Eugene downtown market.

Otherwise overall, it was found that the Jackstraw MUPTE Application financial analysis used reasonable assumptions. Much of the independent pro forma analysis in this report utilizes similar assumptions as the Applicant. Differences in assumptions are noted in this document. The most notable difference would be that PNW ECONOMICS estimates property tax burden of this project, and the value of the MUPTE, are slightly higher than estimated by the Applicant.

2. Financial Feasibility Analysis

Financial Feasibility ("Pro Forma") Assumptions

Debt vs. Equity & Project Financing

Table 2 provides a summary of project permanent financing assumptions considered in this analysis. The Applicant documents that 49% of total development cost will be debt financed, while 51% will be equity-financed. Although extremely unusual just a few years ago, a 50%-50% debt and equity split is consistent with observed market on other projects.

Table 2 – Jackstraw Project Permanent Debt Finance Assumptions

	313 Units 2023 Dollars
Total Development Cost	$171,197,197
Permanent Loan	$84,000,000
Equity	$87,197,197
Percent Financed	49%

Development Costs

The Applicant declares in the Jackstraw MUPTE application a total development cost of $171,197,198 development cost for the 313-unit, 480,000 square-foot improvement. The project's more urban orientation, combined parking structure and size make it a bit incomparable to Bend projects of recent development for comparisons. Accordingly, PNW Economics compares the project to the Riverfront 3A mixed-use development in Eugene as somewhat of a peer comparable for size, parking, mix of uses, and vintage of cost information. Table 3 provides a comparison of both projects with appropriate details.

The Jackstraw project overall has development cost metrics not unlike the peer reviewed Eugene Riverfront 3A project.

- Total Cost per Unit: $546,956 (Jackstraw) vs. $534,904 (Riverfront 3A)
- Total Cost per Sq. Ft.: $357 (Jackstraw) vs. $464 (Riverfront 3a)

Table 3 – Jackstraw Project Permanent Debt Finance Assumptions

	Bend Jackstraw	Eugene Riverfront 3A
Units	**313**	**237**
Total Sq. Ft.	**480,000**	**272,983**
Land Acquisition	$7,662,931	$2,782,504
Hard Costs	$127,186,251	$96,444,138
Soft Costs & Contingencies	$36,348,016	$27,545,538
Total Development Costs	**$171,197,198**	**$126,772,180**
Total Cost Per Unit	$546,956	$534,904
Total Cost per Sq. Ft.	$357	$464

Both projects have similar scale, though Jackstraw is larger: more residential units, slightly more commercial space, and certainly more parking spaces. Per square foot costs are lower at Jackstraw, though cost per unit is higher at Jackstraw largely by virtue of a larger parking garage and public street improvements taken on by Jackstraw that the Eugene project does not have. On the other hand, the Eugene project had significant non-clean fill soil removal and at-cost disposal costs. Overall, the

cost comparison indicates Jackstraw development costs are on-par with market for larger mid-rise, mixed-use redevelopment in urban Oregon markets.

Assumed Rents & Escalation

Table 4 provides a summary of apartment rents utilized in the pro forma analyses in this section. Rents assumed are planned rents for each of the unit types as proposed by the Applicant. Annually after 2023, rents are assumed to escalate by 3% annually.

Table 4 – Jackstraw Project Market Apartment Rent Assumptions – 313 Units

MARKET RATE Unit Type	Unit Mix Units	Percentage	Average Unit Size (Sq. Ft.)	Monthly Rent	Rent per Square Foot
Studio	15	5%	483	$1,824	$3.78
One bedroom	189	61%	669	$2,167	$3.24
Two bedroom	91	29%	1,091	$2,993	$2.74
Three bedroom	16	5%	1,460	$3,360	$2.30
Subtotals/Averages	**311**	**100%**	**824**	**$2,453**	**$2.98**
INCOME RESTRICTED Unit Type	**Unit Mix Units**	**Percentage**	**Average Unit Size (Sq. Ft.)**	**Monthly Rent**	**Rent per Square Foot**
Studio	0	0%	0	$0	$0.00
One bedroom	0	0%	0	$0	$0.00
Two bedroom (TH)	2	100%	1,481	$1,080	$0.73
Subtotals/Averages	**2**	**100%**	**1,481**	**$1,080**	**$0.73**

Rents overall appear slightly higher than most other new market rate projects, though that is to be expected from under construction/newest product being delivered to the market. The Jackstraw project also has superior mixed-use district location, grocery store proximity and river/trail compared to most other newer projects, thus some kind of rent premium for superior location would be expected. Examples of going market projects include:

- **The Nest** (1609 SW Chandler Avenue, Bend): 1,049 square foot 2 bed/2 bath for $2,637 average ($2.51 per square foot)
- **Solis at Petrosa** (63190 Deschutes Market Road):
  - 620 square foot 1 bed/1 bath for $1,770 average ($2.85 per square foot).
  - 901 square foot (average) 2 bed/2 bath for $2,250 average ($2.50 per square foot).
  - 1,109 square foot 3 bed/2 bath for $2,545 ($2.29 per square foot).
- **The Eddy Apartments** (801 SW Bradbury Way): 640 square foot 1 bed/1 bath for $1,800 average ($2.81 per square foot).

As was stated, Jackstraw rents are slightly higher than current market rents at newer projects. Between a rent premium for being the absolutely newest project in the peer group, as well as having the best single location for a mixed-use project in the Old Mill District, slightly higher rents at Jackstraw should be expected. From a MUPTE-modeling perspective, higher rents in the pro forma will tend to make the need for a MUPTE less likely. That is, higher rent income will tend to increase cash flow for a project

after debt service is accounted. Project rents that are inexplicably low relative to market would run the risk of overstating MUPTE need. That is not the case here.

Non-Rent Revenues

Table 5 summarizes the various sources of revenue for the project in addition to standard rent planned for the occupancy for units. The key feature of the project will be secured parking (212 spaces) for residential tenants for $150 per space in 2023, as well as 133 spaces for $75 per month as an option for residents, but with shared access with visitors. Retail tenants and customers will not pay parking fees under the Jackstraw plan.

Table 5 – Jackstraw Project Mixed-Use Non-Rent Income Assumptions

	Monthly	Jackstraw - Annual	
Non-Rent Revenue	**Jackstraw**	**Units**	**2023**
Parking - Residential	$150	212	$381,600
Parking - Shared Residential	$75	133	$119,700
Other (Misc. Fees, Deposits)			$739,103
Total Non-Rent Revenue:			**$1,240,403**

Operating Expenses

Apartment Operating Expenses

Table 6 below provides a comparison of annual operations expenses per unit anticipated by the Applicant. For context, annual per-unit operating expenses for Penn Avenue, a different proposed apartment project applying for a City of Bend MUPTE as well as recent urban apartment MUPTE applicants in the City of Eugene are compared. Based upon these findings, it was assumed that operations expenses at the project are reasonable if not somewhat low, though the larger scale of the development allows lower cost-per-unit spread.

Table 6 – Jackstraw Project Operating Expenses Per Unit vs. Comparable Projects

	Per Unit Expenses Annually		
	Jackstraw	**Penn Avenue**	**Eugene Projects***
Before Property Tax Expenses: Stabilized	$4,903	$4,679	$6,700

*Non-55+ active community projects

For pro forma financial analysis in the next section of this report, PNW ECONOMICS assumes operating expenses supplied by the Applicant. While a bit lower, lower estimated expenses will tend to give more optimistic financial performance projections that would tend to reduce the importance of tax exemption on the bottom line, all things equal. It is also acknowledged that annually, the Jackstraw project expects $75,056 in annual operating expenses for the 17,500 square feet of planned retail ($4.29 per square foot annually, or $0.36 per square foot monthly). Relatively speaking, retail operating expenses are minor compared to the much larger residential units' operating expenses attribution and do not seem unreasonable.

Property Taxes

Table 7 provides estimates for property taxes that will be paid on both the land as well as expected improvements value on a "Cost of Replacement" basis – the total development cost of improvements alone if built new.

Parcel taxable assessed value (TAV) data is directly from the Deschutes County Assessor's Office parcel database online (DIAL). Taxable assessed value estimated for the value of improvements assumes total improvement development costs as expressed by the Applicant and then converted to Measure 50 TAV via the Deschutes County 2023 Multifamily Exception Value Ratio of 0.461 and Commercial Exception Value Ratio of 0.441. Finally, the tax rate of $15.8378 per $1,000 of TAV was utilized for Tax Code Area 1128 that includes the project addresses of 310 SW Industrial and 350 SW Industrial in Bend, Oregon.

Table 7 –Jackstraw Project Estimated Property Tax: Land & Improvements in FY 23

			Cost of Replacement - Improvements	$157,572,080		
			Exception Value Ratio - Multifamily (7)	0.461		
			FY 23 Taxable Assessed Value	**$72,640,729**		
			Cost of Replacement - Retail Improvements	$5,962,187		
			Exception Value Ratio - Commercial (2)	0.441		
			FY 23 Taxable Assessed Value	**$2,629,324**		
					Taxable Assessed Value (FY 23)	
Parcel	**Account #**	**Acres**	**Zoning**	**Land**	**Improvements**	**Total**
310 SW Industrial Way	167373	2.15	301 - Industrial	$469,390	$0	$469,390
			Tax Code Area 1128 (per $1,000 TAV)	15.8378	15.8378	15.8378
			Total Property Tax - Land Only	**$7,434**	**$0**	**$7,434**
350 SW Industrial Way	167955	2.73	231 - Commercial	$1,306,550	$0	$1,306,550
			Tax Code Area 1128 (per $1,000 TAV)	15.8378	15.8378	15.8378
			Total Property Tax - Land Only	**$20,693**	**$0**	**$20,693**
310-350 SW Industrial Way		4.88	231 - Commercial	$1,775,940	$75,270,053	$77,045,993
			Tax Code Area 1128 (per $1,000 TAV)	15.8378	15.8378	15.8378
			Total Property Tax - Combined	**$28,127**	**$1,192,112**	**$1,220,239**

Financial Feasibility Analysis of the Jackstraw Project

Introduction to Terms

To evaluate whether or not a project is financially feasible, that is whether or not the project meets investment rates of return benchmarks, a pro forma analysis is conducted. A pro forma is simply a financial modeling exercise to examine how a development project performs as a business investment over a specified period of time.

Variables that are modeled, or estimated, in this report are as follows:

Apartment Rent Income: The annual rent income if all apartment units in a project were occupied and charging full, assumed market rent.

Gross Project Income: The sum of Apartment Rent Income, Retail Lease Income and Other Income streams such as parking, storage fees, electric vehicle parking fees, bike storage fees, electric bike charging fees and other related fee streams.

Vacancy: 5% of apartment space and retail space is assumed to always be vacant and represent income loss.

Lease-Up Vacancy & Concessions: This category of expense reflects different sources of loss to revenue as a result of project vacancy and discounts to apartment rents to realize and keep an average 5% vacancy rate.

Effective Gross Income: Gross Project Income less Vacancy and Lease-Up Vacancy & Concessions.

Apartment Operating Expense: Annual operating expenses of $4,903 per apartment unit starting in year 1.

Retail Operating Expense: $4.29 per square foot annually in retail space operating expenses for the project.

MUPTE: When included, MUPTE is a 10-year exemption from local property taxes levied on the value of the improvement constructed in place, in this case the Jackstraw project. Based on an estimated cost-of-replacement of $75,270,053 million in 2023 dollars and a local, existing total property tax rate of $0.0158378 (Tax Code Area 1128), the estimated MUPTE exemption beginning in year 1 would be $1,220,239. This would increase by an assumed 3% annually, consistent with the annual maximum under Oregon property tax law.

Net Operating Income (NOI): Effective Gross Income less Project Operating Expense plus the MUPTE (if assumed).

Equity: The share of total development cost that is funded by invested dollar assets rather than by debt.

Debt Service: The annual, fixed debt service payment made by the developer for permanent debt financing of the project.

Return on Investment (Cost): The measure of financial return for the real estate development in question of this analysis, Jackstraw. The Applicant reports Net Operating Income and total development costs, leaving the primary measure of return for evaluation for the project to be Return on Investment. ROI is calculated as Net Operating Income divided by Total Development Cost. There is no hard rule for acceptable ROI for a real estate development project, but a common minimum ROI for moving forward with a development is 6%. Developers will vary on required ROI to go through with a project, but a minimum of 6% is a common minimum.

Jackstraw Project Pro Forma Without MUPTE

Table 8 reports the Return on Investment (Cost) pro forma for the Jackstraw project without a MUPTE.

Table 8 – Jackstraw Project NOI and ROI Without MUPTE

	Residential	Retail	Total
Income			
Lease Income	$9,159,010	$614,250	$9,773,260
Other Income	$1,002,453	$237,950	$1,240,403
Less: Vacancy Loss	($508,073)	($42,610)	($550,683)
Gross Income	$9,653,390	$809,590	$10,462,980
Expenses			
Pre-Tax Operating Expenses	($1,534,570)	($75,056)	($1,609,626)
Property Taxes	($1,177,614)	($42,625)	($1,220,239)
MUPTE Awarded	**$0**	**$0**	**$0**
Capital Reserves	($62,600)	$0	($62,600)
Total Operating Expenses	($2,774,784)	($117,681)	($2,892,465)
Net Operating Income (NOI)	**$6,878,606**	**$691,909**	**$7,570,515**
Total Development Cost			**$171,197,197**
	Return on Investment (Cost) - NO MUPTE		**4.4%**

Combining all development assumptions of the Applicant reviewed in this document, a well as some calculations that slightly vary from Applicant math – namely the likely property tax generated by the development based on cost of replacement – project ROI without a MUPTE is calculated to be 4.4%.

4.4% is certainly below the rule-of-thumb minimum ROI of 6% for a project to get lending and/or equity investment. The project without a MUPTE would be considered a challenging project to finance and/or would require very patient capital for equity investment.

PNW ECONOMICS figures vary a bit from Applicant documentation, namely in attribution of taxable land value to portions of the project, whether residential or retail. This report also estimates that property tax owed on the project will be slightly higher than what the Applicant has estimated. This greater tax owed in this analysis would only serve to show the MUPTE is more consequential than what the Applicant demonstrates.

Jackstraw Project Pro Forma WITH MUPTE

Table 9 reports the Return on Investment (Cost) pro forma for the Jackstraw project with a MUPTE. All operations findings are the same as the Without MUPTE scenario, except for the addition of the

property tax exemption each year equal to the value of the property taxes paid on improvements put in place.

Table 9 – Jackstraw Project NOI and ROI WITH MUPTE

	Residential	Retail	Total
Income			
Lease Income	$9,159,010	$614,250	$9,773,260
Other Income	$1,002,453	$237,950	$1,240,403
Less: Vacancy Loss	($508,073)	($42,610)	($550,683)
Gross Income	$9,653,390	$809,590	$10,462,980
Expenses			
Pre-Tax Operating Expenses	($1,534,570)	($75,056)	($1,609,626)
Property Taxes	($1,177,614)	($42,625)	($1,220,239)
MUPTE Awarded	**$1,177,614**	**$42,625**	**$1,220,239**
Capital Reserves	($62,600)	$0	($62,600)
Total Operating Expenses	($1,597,170)	($75,056)	($1,672,226)
Net Operating Income (NOI)	**$8,056,220**	**$734,534**	**$8,790,754**
Total Development Cost			**$171,197,197**
	Return on Investment (Cost) - MUPTE		**5.1%**

Assuming a MUPTE is awarded to the project, Net Operating Income for the Jackstraw is enhanced by more than $1.2 million. The result is a Return on Investment (Cost) for the project with a MUPTE equal to 5.1% in this analysis.

Award of a MUPTE certainly enhances the ROI for the project closer to the minimum rule-of-thumb 6%. The MUPTE does not, however, push the rate of return over the minimum threshold but makes the project significantly more compelling as an investment.

As already noted, different developers will use not only different measures of return, but also different criteria for a minimum and/or successful rate of return for that measure. This analysis employs a rule-of-thumb minimum of 6% return on cost for a project to be worth the risk. On this measure alone, MUPTE makes the Jackstraw project significantly more compelling than without the MUPTE. If the Applicant internally employs a lower threshold ROI for project evaluation, such as 5%, then it can be said the MUPTE not only makes the project more compelling but certainly assures the project would worth the risk and expense in a way that would not be possible without the MUPTE.

PNW Economics

Evidenced-Based Real Estate, Land Use, & Economic Development Due Diligence

MEMORANDUM

To: Cate Schneider
Senior Management Analyst
CITY OF BEND, OREGON

From: Bill Reid, Principal
PNW ECONOMICS, LLC

Subject: Revised MUPTE Return on Investment Findings: Jackstraw Project

Date: November 21, 2023

This memorandum summarized revised return on investment calculations for the Jackstraw project in Bend, Oregon for the purposes of Mixed-Use Property Tax Exemption (MUPTE) benefit consideration by the City of Bend and its partners.

On October 7, 2023, PNW Economics submitted to the City of Bend a review of Jackstraw development MUPTE application financial pro formas required by City ordinance for the MUPTE incentive program. On November 20, 2023 City of Bend staff identified two math errors in the findings of that October 2023 review. The identified errors in Table 9 of the October 2023 review were as follows:

- MUPTE on the taxable assessed value of land upon which the Jackstraw project would be built: A tax exemption of $28,127 starting in 2023 was erroneously credited to the Jackstraw project as part of return on investment calculations. MUPTE should not apply to the value of land, only improvements put into place. The error has been corrected in Table 1 of this memorandum.
- MUPTE on the taxable assessed value of commercial retail development in the Jackstraw project: A tax exemption of $42,625 for the taxable assessed value of the retail commercial component was erroneously credited to the Jackstraw project as part of return on investment calculations. The MUPTE, per State statue, does apply to the retail commercial portion of the project. The error has been corrected in Table 1 of this memorandum.

Table 1 on the following page provides revised calculations of Return on Investment (Return on Cost) that should replace Table 9 in the October 2023 MUPTE review of the Jackstraw. In combined total, correction of the errors above reduce the value of the MUPTE for the Jackstraw project by $70,752. This has the following effects upon ROI calculations:

- Revised MUPTE of $1,149,487 awarded to the Jackstraw (and increasing by Measure 50-allowed 3% annually thereafter);
- Total Operating Expenses increased to $1,742,978;
- Net Operating Income (NOI) decreased to $8,720,002;
- Return on Investment (Cost) with a MUPTE of 5.1%.

In what may seem surprising, the ROI with a MUPTE did not change from the previous rounded calculation of 5.1%. This is so because despite a reduction in the MUPTE of $70,752, the Jackstraw project is both so

expensive to develop ($171.2 million) and annual Net Operating Income is so large ($8.72 million), that the downward correction of the MUPTE award is basically rounding error on the ROI calculation. In fact, not rounding ROI to one decimal place would display the following:

- ROI before error correction: 5.135%
- ROI after error correction: **5.09%**

Table 1 – Revised Return on Investment (Return on Cost) Calculation for the Jackstraw: Yes for a MUPTE

	Residential	Retail	Total
Income			
Lease Income	$9,159,010	$614,250	$9,773,260
Other Income	$1,002,453	$237,950	$1,240,403
Less: Vacancy Loss	($508,073)	($42,610)	($550,683)
Gross Income	$9,653,390	$809,590	$10,462,980
Expenses			
Pre-Tax Operating Expenses	($1,534,570)	($75,056)	($1,609,626)
Property Taxes	($1,177,614)	($42,625)	($1,220,239)
MUPTE Awarded	**$1,149,487**	**$0**	**$1,149,487**
Capital Reserves	($62,600)	$0	($62,600)
Total Operating Expenses	($1,625,297)	($117,681)	($1,742,978)
YES MUPTE	**Residential**	**Retail**	**Total**
Net Operating Income (NOI)	**$8,028,093**	**$691,909**	**$8,720,002**
Total Development Cost			**$171,197,197**
		Return on Investment (Cost) - MUPTE	**5.1%**

We hopes this clarifies the issue for the City of Bend and its partners, and we apologize for the math error.

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Second Reading of Ordinance No. 2023-025 – Stevens Road Tract Plan Amendment / Zone Change

RECOMMENDED MOTIONS:

1. Move approval of second reading of Ordinance No. 2023-025 by title only
2. Move adoption of Ordinance No. 2023-025 amending Deschutes County Code Title 23, the Deschutes County Comprehensive Plan, to change the Comprehensive Plan Map Designation for certain property From Rural Residential Exception Area to Bend Urban Growth Boundary, and amending Deschutes County Code Title 18, the Deschutes County Zoning Map, to change the Zone Designation for certain property from Multiple Use Agricultural to Urbanizable Area

BACKGROUND AND POLICY IMPLICATIONS:

The applicant, City of Bend, requests approval to change the Comprehensive Plan designation (land use file no. 247-23-000415-PA) of the subject property from Rural Residential Exception Area to Bend Urban Growth Boundary, and approval to change the zone (land use file no. 247-23-000416-ZC) of the subject properties from Multiple Use Agricultural to Urbanizable Area. The subject property is referred to as the Stevens Road Tract and House Bill 3318 allows this property to be brought into the Bend Urban Growth Boundary and developed with a variety of uses, including affordable housing. The first reading of Ordinance No. 2023-025 was held on November 8, 2023.

The entirety of the record can be viewed from the project website at: https://www.deschutes.org/cd/page/247-23-000415-pa-247-23-000416-zc-stevens-road-comprehensive-plan-amendment-and-zone-change

BUDGET IMPACTS:

None.

ATTENDANCE:

Audrey Stuart, Associate Planner

REVIEWED_____

LEGAL COUNSEL

For Recording Stamp Only

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

An Ordinance Amending Deschutes County Code Title 23, the Deschutes County Comprehensive Plan, to Change the Comprehensive Plan Map Designation for Certain Property From Rural Residential Exception Area to Bend Urban Growth Boundary, and Amending Deschutes County Code Title 18, the Deschutes County Zoning Map, to Change the Zone Designation for Certain Property From Multiple Use Agricultural to Urbanizable Area.	* * * * * * *	ORDINANCE NO. 2023-025

WHEREAS, City of Bend, applied for changes to both the Deschutes County Comprehensive Plan Map (247-23-000415-PA) and the Deschutes County Zoning Map (247-23-000416-ZC), to change the comprehensive plan designation of the subject property from Rural Residential Exception Area (RREA) to a Bend Urban Growth Area designation, and a corresponding zone change from Multiple Use Agricultural (MUA-10) to Urbanizable Area (UA); and

WHEREAS, after notice was given in accordance with applicable law, a public hearing was held on October 11, 2023, before the Deschutes County Hearings Officer and, on October 24, 2023, the Hearings Officer recommended approval of the Comprehensive Plan Map Amendment and Zone Change;

WHEREAS, pursuant to DCC 22.28.030(B), in considering all quasi-judicial zone changes and those quasi-judicial plan amendments on which the Hearings Officer has authority to make a decision, the Board of County Commissioners shall, in the absence of an appeal or review initiated by the Board, adopt the Hearings Officer's decision. No argument or further testimony will be taken by the Board; now, therefore,

THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON, ORDAINS as follows:

Section 1. AMENDMENT. DCC Title 23, Deschutes County Comprehensive Plan Map, is amended to change the plan designation for certain property described in Exhibit "A" and depicted on the map set forth as Exhibit "B" from RREA to Bend Urban Growth Area, with both exhibits attached and incorporated by reference herein.

Section 2. AMENDMENT. DCC Title 18, Zoning Map, is amended to change the zone designation from MUA-10 to UA for certain property described in Exhibit "A" and depicted on the map set forth as Exhibit "C", with both exhibits attached and incorporated by reference herein.

Section 3. AMENDMENT. DCC Section 23.01.010, Introduction, is amended to read as described in Exhibit "D" attached and incorporated by reference herein, with new language underlined.

Section 4. AMENDMENT. Deschutes County Comprehensive Plan Section 5.12, Legislative History, is amended to read as described in Exhibit "E" attached and incorporated by reference herein, with new language underlined.

Section 5. FINDINGS. The Board adopts as its findings in support of this Ordinance the Decision of the Hearings Officer as set forth in Exhibit "F" and incorporated by reference herein.

Section 6. EFFECTIVE DATE. This Ordinance takes effect on the 90th day after the date of adoption.

Dated this _____ of _____, 2023

BOARD OF COUNTY COMMISSIONERS
OF DESCHUTES COUNTY, OREGON

_____
ANTHONY DEBONE, Chair

_____
PATTI ADAIR, Vice Chair

ATTEST:

_____
Recording Secretary

_____
PHIL CHANG, Commissioner

Date of 1st Reading: _____ day of _____, 2023.

Date of 2nd Reading: _____ day of _____, 2023.

Record of Adoption Vote:

Commissioner	Yes	No	Abstained	Excused
Patti Adair	___	___	___	___
Anthony DeBone	___	___	___	___
Phil Chang	___	___	___	___

Effective date: _____ day of _____, 2023.

ATTEST

_____
Recording Secretary

Exhibit "A" to Ordinance 2023-025

Legal Descriptions of Affected Property

LAND LOCATED IN THE NORTHEAST 1/4, SOUTHEAST 1/4, AND SOUTHWEST 1/4 OF SECTION 11, TOWNSHIP 18 SOUTH, RANGE 12 EAST, WILLAMETTE MERIDIAN, DESCHUTES COUNTY, OREGON, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 11, SAID CORNER BEING MARKED BY A 2-1/2" BRASS CAP IN A MONUMENT BOX;

THENCE ALONG THE NORTH LINE OF SECTION 11, NORTH 89°34'56" WEST 1292.41 FEET TO A POINT ON THE WESTERLY LINE OF A PG&E GAS TRANSMISSION COMPANY NORTHWEST NATURAL GAS PIPELINE SYSTEM EASEMENT, SAID POINT BEING MARKED BY A 2" ALUMINUM CAP INSCRIBED "BECON";

THENCE ALONG SAID WESTERLY LINE, SOUTH 18°14'18" WEST 5558.25 FEET TO A POINT ON THE SOUTH LINE OF SAID SECTION 11, SAID POINT BEING MARKED BY A 2" ALUMINUM CAP INSCRIBED "BECON";

THENCE ALONG SAID SOUTH LINE, SOUTH 89°44'11" EAST 352.26 FEET TO THE SOUTH 1/4 CORNER OF SECTION 11, SAID CORNER BEING MARKED BY A 2" BRASS CAP;

THENCE CONTINUING ALONG SAID SOUTH LINE, SOUTH 89°44'33" EAST 2651.99' TO THE SOUTHEAST CORNER OF SECTION 11, SAID CORNER BEING MARKED BY A 2' BRASS CAP IN CONCRETE;

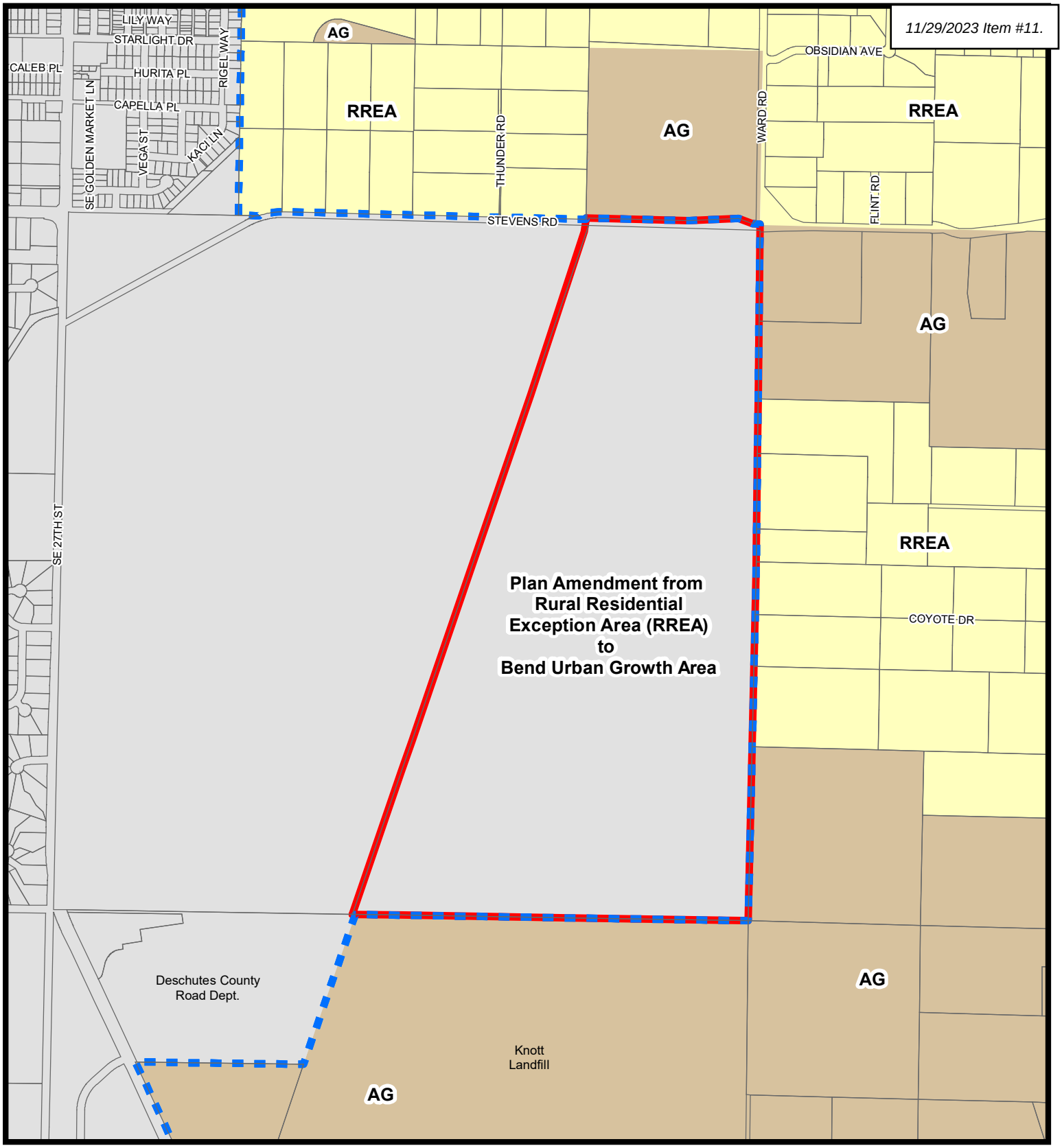
THENCE ALONG THE EAST LINE OF SECTION 11, NORTH 00°38'57" EAST 2644.75 FEET TO THE EAST 1/4 CORNER OF SECTION 11, SAID CORNER BEING MARKED BY A 5/8" IRON ROD WITH NO CAP;

THENCE CONTINUING ALONG THE EAST LINE OF SECTION 11, NORTH 00°02'56" WEST 2638.55 FEET TO THE POINT OF BEGINNING.

CONTAINS 261.66 ACRES, MORE OR LESS.

THIS PROPERTY IS SUBJECT TO ALL OTHER EASEMENTS, RESTRICTIONS, AND RIGHTS OF WAY OF RECORD PERTAINING TO THE ABOVE DESCRIBED LANDS.

BEARINGS BASED ON THE NORTH LINE OF SECTION 11 PER CS03485, DESCHUTES COUNTY SURVEY RECORDS.



Legend

- Plan Amendment Boundary
- Bend Urban Growth Boundary

Comprehensive Plan Designation

- AG - Agriculture
- RREA - Rural Residential Exception Area
- URA - Urban Reserve Area
- Bend Urban Growth Area

PROPOSED PLAN AMENDMENT

Exhibit "B"
to Ordinance 2023-025

0 500 1,000 2,000 Feet

November 1, 2023

BOARD OF COUNTY COMMISSIONERS
OF DESCHUTES COUNTY, OREGON

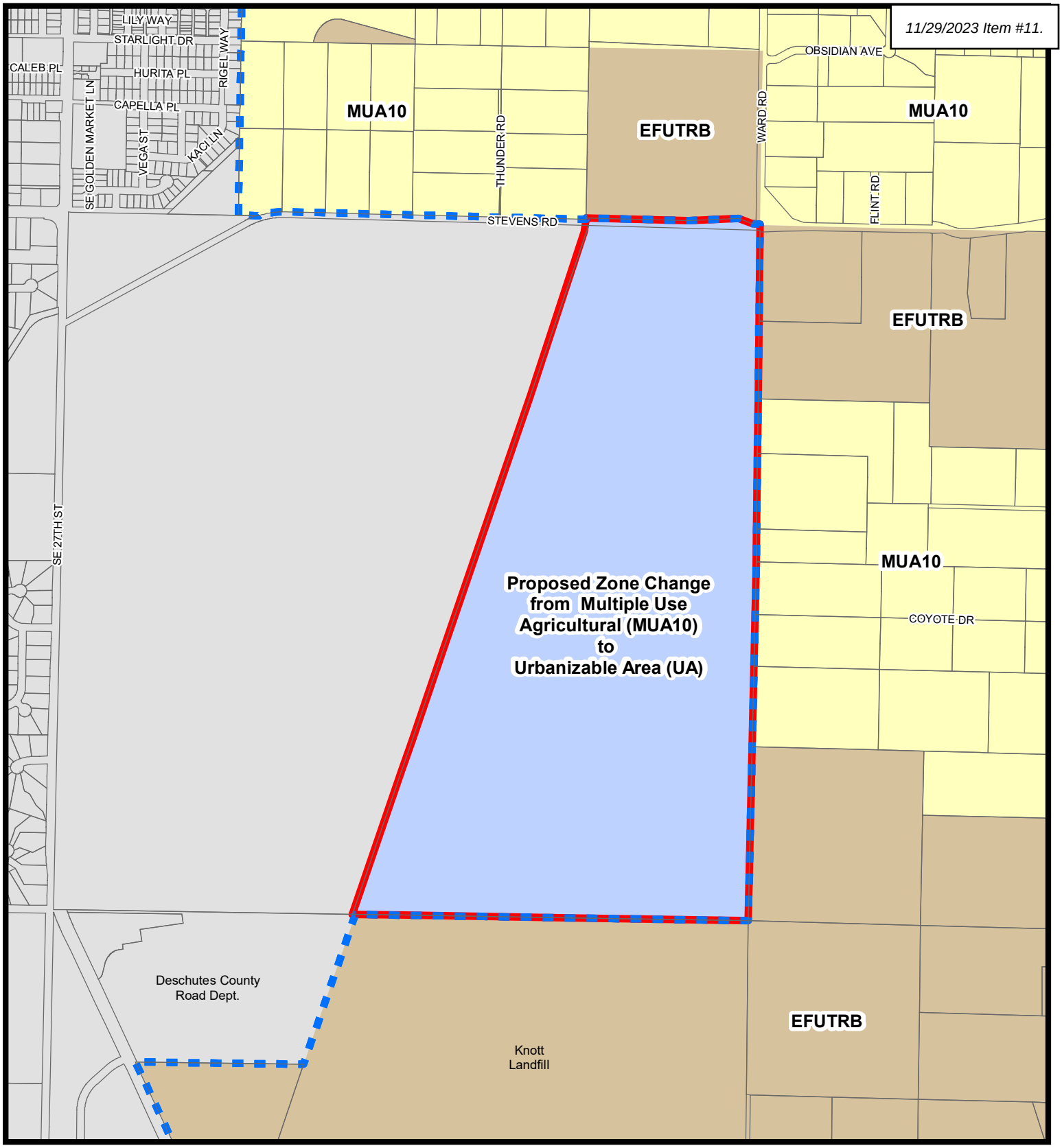
_____
Tony DeBone, Chair

_____
Patti Adair, Vice Chair

_____
Phil Chang, Commissioner

_____
ATTEST: Recording Secretary

Dated this _____ day of _____, 2023
Effective Date: _____, 2023



PROPOSED ZONING

Exhibit "C"
to Ordinance 2023-025

Legend

- Plan Amendment Boundary
- Bend Urban Growth Boundary

County Zoning

- EFUTRB - Tumalo/Redmond/Bend Subzone
- MUA10 - Multiple Use Agricultural
- UA - Urbanizable Area

0 500 1,000 2,000 Feet

November 1, 2023

BOARD OF COUNTY COMMISSIONERS
OF DESCHUTES COUNTY, OREGON

_____
Tony DeBone, Chair

_____
Patti Adair, Vice Chair

_____
Phil Chang, Commissioner

_____
ATTEST: Recording Secretary

Dated this _____ day of _____, 2023
Effective Date: _____, 2023

Exhibit "D" to Ordinance 2023-025

TITLE 23 COMPREHENSIVE PLAN

CHAPTER 23.01 COMPREHENSIVE PLAN

A. The Deschutes County Comprehensive Plan, adopted by the Board in Ordinance 2011-003 and found on the Deschutes County Community Development Department website, is incorporated by reference herein.

B. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2011-027, are incorporated by reference herein.

C. [Repealed by Ordinance 2013-001, §1]

D. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2012-005, are incorporated by reference herein.

E. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2012-012, are incorporated by reference herein.

F. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2012-016, are incorporated by reference herein.

G. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2013-002, are incorporated by reference herein.

H. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2013-009, are incorporated by reference herein.

I. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2013-012, are incorporated by reference herein.

J. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2013-007, are incorporated by reference herein.

K. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2014-005, are incorporated by reference herein.

L. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2014-006, are incorporated by reference herein.

M. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2014-012, are incorporated by reference herein.

N. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2014-021, are incorporated by reference herein.

O. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2014-027, are incorporated by reference herein.

P. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2015-021, are incorporated by reference herein.

Exhibit "D" to Ordinance 2023-025

Q. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2015-029, are incorporated by reference herein.

R. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2015-018, are incorporated by reference herein.

S. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2015-010, are incorporated by reference herein.

T. [Repealed by Ordinance 2016-027 §1]

U. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2016-022, are incorporated by reference herein.

V. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2016-005, are incorporated by reference herein.

W. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2016-027, are incorporated by reference herein.

X. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2016-029, are incorporated by reference herein.

Y. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2017-007, are incorporated by reference herein.

Z. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2018-002, are incorporated by reference herein.

AA. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2018-006, are incorporated by reference herein.

AB. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2018-011, are incorporated by reference herein.

AC. [repealed by Ord. 2019-010 §1, 2019]

AD. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2018-008, are incorporated by reference herein.

AE. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2019-002, are incorporated by reference herein.

AF. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2019-001, are incorporated by reference herein.

AG. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2019-003, are incorporated by reference herein.

AH. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2019-004, are incorporated by reference herein.

Exhibit "D" to Ordinance 2023-025

AI. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2019-011, are incorporated by reference herein.

AJ. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2019-006, are incorporated by reference herein.

AK. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2019-019, are incorporated by reference herein.

AL. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2019-016, are incorporated by reference herein.

AM. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2020-001, are incorporated by reference herein.

AN. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2020-002, are incorporated by reference herein.

AO. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2020-003, are incorporated by reference herein.

AP. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2020-008, are incorporated by reference herein.

AQ. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2020-007, are incorporated by reference herein.

AR. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2020-006, are incorporated by reference herein.

AS. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2020-009, are incorporated by reference herein.

AT. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2020-013, are incorporated by reference herein.

AU. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2021-002, are incorporated by reference herein.

AV. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2021-005, are incorporated by reference herein.

AW. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2021-008, are incorporated by reference herein.

AX. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2022-001, are incorporated by reference herein.

AY. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2022-003, are incorporated by reference herein.

Exhibit "D" to Ordinance 2023-025

AZ. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2022-006, are incorporated by reference herein.

BA. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2022-010, are incorporated by reference herein.

BB. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2022-011, are incorporated by reference herein. (superseded by Ord. 2023-015)

BC. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2022-013, are incorporated by reference herein.

BD. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2023-001, are incorporated by reference herein.

BE. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2023-007, are incorporated by reference herein.

BF. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2023-010 are incorporated by reference herein.

BG. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2023-018, are incorporated by reference herein.

BH. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2023-015, are incorporated by reference herein.

BI. The Deschutes County Comprehensive Plan amendments, adopted by the Board in Ordinance 2023-025, are incorporated by reference herein.

Click here to be directed to the Comprehensive Plan (http://www.deschutes.org/compplan)

HISTORY
Amended by Ord. 2011-027 §10 on 11/9/2011
Adopted by Ord. 2011-003 §2 on 11/9/2011
Amended by Ord. 2011-017 §5 on 11/30/2011
Amended by Ord. 2012-012 §1, 2, 3, 4 on 8/20/2012
Amended by Ord. 2012-005 §1 on 11/19/2012
Amended by Ord. 2013-002 §1 on 1/7/2013
Repealed by Ord. 2013-001 §1 on 1/7/2013
Amended by Ord. 2013-005 §1 on 1/23/2013
Amended by Ord. 2012-016 §1 on 3/4/2013
Amended by Ord. 2013-009 §1 on 5/8/2013
Amended by Ord. 2013-012 §1 on 8/8/2013
Amended by Ord. 2013-007 §1 on 8/28/2013

Exhibit "D" to Ordinance 2023-025

Amended by Ord. 2014-005 §2 on 2/26/2014
Amended by Ord. 2014-006 §2 on 3/15/2014
Amended by Ord. 2014-012 §1 on 8/6/2014
Amended by Ord. 2014-021 §1 on 11/26/2014
Amended by Ord. 2015-029 §1 on 11/30/2015
Amended by Ord. 2015-010 §1 on 12/21/2015
Amended by Ord. 2015-021 §1 on 2/22/2016
Amended by Ord. 2015-018 §1 on 3/28/2016
Amended by Ord. 2016-001 §1 on 4/5/2016
Amended by Ord. 2016-022 §1 on 9/28/2016
Repealed & Reenacted by Ord. 2016-027 §1, 2 on 12/28/2016
Amended by Ord. 2016-005 §1 on 2/27/2017
Amended by Ord. 2016-029 §1 on 3/28/2017
Amended by Ord. 2017-007 §1 on 11/1/2017
Amended by Ord. 2018-002 §1 on 1/25/2018
Amended by Ord. 2018-005 §2 on 10/10/2018
Amended by Ord. 2018-008 §1 on 10/26/2018
Amended by Ord. 2018-008 §1 on 10/26/2018
Amended by Ord. 2018-008 §1 on 10/26/2018
Amended by Ord. 2018-006 §1 on 11/20/2018
Amended by Ord. 2018-011 §1 on 12/11/2018
Amended by Ord. 2019-004 §1 on 3/14/2019
Amended by Ord. 2019-003 §1 on 3/14/2019
Amended by Ord. 2019-002 §1 on 4/2/2019
Amended by Ord. 2019-001 §1 on 4/16/2019
Amended by Ord. 2019-010 §1 on 5/8/2019
Amended by Ord. 2019-011 §1 on 5/17/2019
Amended by Ord. 2019-006 §1 on 6/11/2019
Amended by Ord. 2019-019 §2 on 12/11/2019
Amended by Ord. 2020-001 §26 on 4/21/2020
Amended by Ord. 2020-003 §1 on 5/26/2020
Amended by Ord. 2020-002 §1 on 5/26/2020
Amended by Ord. 2020-008 §5 on 9/22/2020
Amended by Ord. 2020-007 §1 on 10/27/2020
Amended by Ord. 2020-006 §1 on 11/10/2020
Amended by Ord. 2020-009 §4 on 11/17/2020
Amended by Ord. 2020-013 §1 on 11/24/2020
Amended by Ord. 2021-002 §3 on 4/27/2021
Amended by Ord. 2021-005 §1 on 6/16/2021
Amended by Ord. 2021-008 §1 on 6/30/2021
Amended by Ord. 2022-001 §2 on 7/12/2022
Amended by Ord. 2022-003 §2 on 7/19/2022
Amended by Ord. 2022-006 §2 on 7/22/2022
Amended by Ord. 2022-010 §1 on 10/25/2022

Exhibit “D” to Ordinance 2023-025

Amended by Ord. 2023-001 §1 on 3/1/2023
Amended by Ord. 2022-013 §2 on 3/14/2023
Amended by Ord. 2023-007 §19 on 4/26/2023
Amended by Ord. 2023-010 §1 on 6/21/2023
Amended by Ord. 2023-018 §1 on 8/30/2023
Amended by Ord. 2023-015 §3 on 9/13/2023
Amended by Ord. 2023-025 §1 on 11/29/2023

Section 5.12 Legislative History

Background

This section contains the legislative history of this Comprehensive Plan.

Table 5.12.1 Comprehensive Plan Ordinance History

Ordinance	Date Adopted/ Effective	Chapter/Section	Amendment
2011-003	8-10-11/11-9-11	All, except Transportation, Tumalo and Terrebonne Community Plans, Deschutes Junction, Destination Resorts and ordinances adopted in 2011	Comprehensive Plan update
2011-027	10-31-11/11-9-11	2.5, 2.6, 3.4, 3.10, 3.5, 4.6, 5.3, 5.8, 5.11, 23.40A, 23.40B, 23.40.065, 23.01.010	Housekeeping amendments to ensure a smooth transition to the updated Plan
2012-005	8-20-12/11-19-12	23.60, 23.64 (repealed), 3.7 (revised), Appendix C (added)	Updated Transportation System Plan
2012-012	8-20-12/8-20-12	4.1, 4.2	La Pine Urban Growth Boundary
2012-016	12-3-12/3-4-13	3.9	Housekeeping amendments to Destination Resort Chapter
2013-002	1-7-13/1-7-13	4.2	Central Oregon Regional Large-lot Employment Land Need Analysis
2013-009	2-6-13/5-8-13	1.3	Comprehensive Plan Map Amendment, changing designation of certain property from Agriculture to Rural Residential Exception Area
2013-012	5-8-13/8-6-13	23.01.010	Comprehensive Plan Map Amendment, including certain property within City of Bend Urban Growth Boundary
2013-007	5-29-13/8-27-13	3.10, 3.11	Newberry Country: A Plan for Southern Deschutes County

Exhibit "E" to Ordinance 2023-025

2013-016	10-21-13/10-21-13	23.01.010	Comprehensive Plan Map Amendment, including certain property within City of Sisters Urban Growth Boundary
2014-005	2-26-14/2-26-14	23.01.010	Comprehensive Plan Map Amendment, including certain property within City of Bend Urban Growth Boundary
2014-012	4-2-14/7-1-14	3.10, 3.11	Housekeeping amendments to Title 23.
2014-021	8-27-14/11-25-14	23.01.010, 5.10	Comprehensive Plan Map Amendment, changing designation of certain property from Sunriver Urban Unincorporated Community Forest to Sunriver Urban Unincorporated Community Utility
2014-021	8-27-14/11-25-14	23.01.010, 5.10	Comprehensive Plan Map Amendment, changing designation of certain property from Sunriver Urban Unincorporated Community Forest to Sunriver Urban Unincorporated Community Utility
2014-027	12-15-14/3-31-15	23.01.010, 5.10	Comprehensive Plan Map Amendment, changing designation of certain property from Agriculture to Rural Industrial
2015-021	11-9-15/2-22-16	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from Agriculture to Surface Mining.
2015-029	11-23-15/11-30-15	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from Tumalo Residential 5-Acre Minimum to Tumalo Industrial
2015-018	12-9-15/3-27-16	23.01.010, 2.2, 4.3	Housekeeping Amendments to Title 23.

Exhibit "E" to Ordinance 2023-025

2015-010	12-2-15/12-2-15	2.6	Comprehensive Plan Text and Map Amendment recognizing Greater Sage-Grouse Habitat Inventories
2016-001	12-21-15/04-5-16	23.01.010; 5.10	Comprehensive Plan Map Amendment, changing designation of certain property from, Agriculture to Rural Industrial (exception area)
2016-007	2-10-16/5-10-16	23.01.010; 5.10	Comprehensive Plan Amendment to add an exception to Statewide Planning Goal 11 to allow sewers in unincorporated lands in Southern Deschutes County
2016-005	11-28-16/2-16-17	23.01.010, 2.2, 3.3	Comprehensive Plan Amendment recognizing non-resource lands process allowed under State law to change EFU zoning
2016-022	9-28-16/11-14-16	23.01.010, 1.3, 4.2	Comprehensive plan Amendment, including certain property within City of Bend Urban Growth Boundary
2016-029	12-14-16/12/28/16	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from, Agriculture to Rural Industrial
2017-007	10-30-17/10-30-17	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from Agriculture to Rural Residential Exception Area
2018-002	1-3-18/1-25-18	23.01, 2.6	Comprehensive Plan Amendment permitting churches in the Wildlife Area Combining Zone

Exhibit "E" to Ordinance 2023-025

2018-006	8-22-18/11-20-18	23.01.010, 5.8, 5.9	Housekeeping Amendments correcting tax lot numbers in Non-Significant Mining Mineral and Aggregate Inventory; modifying Goal 5 Inventory of Cultural and Historic Resources
2018-011	9-12-18/12-11-18	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from Agriculture to Rural Residential Exception Area
2018-005	9-19-18/10-10-18	23.01.010, 2.5, Tumalo Community Plan, Newberry Country Plan	Comprehensive Plan Map Amendment, removing Flood Plain Comprehensive Plan Designation; Comprehensive Plan Amendment adding Flood Plain Combining Zone purpose statement.
2018-008	9-26-18/10-26-18	23.01.010, 3.4	Comprehensive Plan Amendment allowing for the potential of new properties to be designated as Rural Commercial or Rural Industrial
2019-002	1-2-19/4-2-19	23.01.010, 5.8	Comprehensive Plan Map Amendment changing designation of certain property from Surface Mining to Rural Residential Exception Area; Modifying Goal 5 Mineral and Aggregate Inventory; Modifying Non-Significant Mining Mineral and Aggregate Inventory
2019-001	1-16-19/4-16-19	1.3, 3.3, 4.2, 5.10, 23.01	Comprehensive Plan and Text Amendment to add a new zone to Title 19: Westside Transect Zone.

Exhibit "E" to Ordinance 2023-025

2019-003	02-12-19/03-12-19	23.01.010, 4.2	Comprehensive Plan Map Amendment changing designation of certain property from Agriculture to Redmond Urban Growth Area for the Large Lot Industrial Program
2019-004	02-12-19/03-12-19	23.01.010, 4.2	Comprehensive Plan Map Amendment changing designation of certain property from Agriculture to Redmond Urban Growth Area for the expansion of the Deschutes County Fairgrounds and relocation of Oregon Military Department National Guard Armory.
2019-011	05-01-19/05-16/19	23.01.010, 4.2	Comprehensive Plan Map Amendment to adjust the Bend Urban Growth Boundary to accommodate the refinement of the Skyline Ranch Road alignment and the refinement of the West Area Master Plan Area 1 boundary. The ordinance also amends the Comprehensive Plan designation of Urban Area Reserve for those lands leaving the UGB.
2019-006	03-13-19/06-11-19	23.01.010,	Comprehensive Plan Map Amendment, changing designation of certain property from Agriculture to Rural Residential Exception Area
2019-016	11-25-19/02-24-20	23.01.01, 2.5	Comprehensive Plan and Text amendments incorporating language from DLCD's 2014 Model Flood Ordinance and Establishing a purpose statement for the Flood Plain Zone.

Exhibit "E" to Ordinance 2023-025

2019-019	12-11-19/12-11-19	23.01.01, 2.5	Comprehensive Plan and Text amendments to provide procedures related to the division of certain split zoned properties containing Flood Plain zoning and involving a former or piped irrigation canal.
2020-001	12-11-19/12-11-19	23.01.01, 2.5	Comprehensive Plan and Text amendments to provide procedures related to the division of certain split zoned properties containing Flood Plain zoning and involving a former or piped irrigation canal.
2020-002	2-26-20/5-26-20	23.01.01, 4.2, 5.2	Comprehensive Plan Map Amendment to adjust the Redmond Urban Growth Boundary through an equal exchange of land to/from the Redmond UGB. The exchange property is being offered to better achieve land needs that were detailed in the 2012 SB 1544 by providing more development ready land within the Redmond UGB. The ordinance also amends the Comprehensive Plan designation of Urban Area Reserve for those lands leaving the UGB.
2020-003	02-26-20/05-26-20	23.01.01, 5.10	Comprehensive Plan Amendment with exception to Statewide Planning Goal 11 (Public Facilities and Services) to allow sewer on rural lands to serve the City of Bend Outback Water Facility.

Exhibit "E" to Ordinance 2023-025

2020-008	06-24-20/09-22-20	23.01.010, Appendix C	Comprehensive Plan Transportation System Plan Amendment to add roundabouts at US 20/Cook-O.B. Riley and US 20/Old Bend-Redmond Hwy intersections; amend Tables 5.3.T1 and 5.3.T2 and amend TSP text.
2020-007	07-29-20/10-27-20	23.01.010, 2.6	Housekeeping Amendments correcting references to two Sage Grouse ordinances.
2020-006	08-12-20/11-10-20	23.01.01, 2.11, 5.9	Comprehensive Plan and Text amendments to update the County's Resource List and Historic Preservation Ordinance to comply with the State Historic Preservation Rule.
2020-009	08-19-20/11-17-20	23.01.010, Appendix C	Comprehensive Plan Transportation System Plan Amendment to add reference to J turns on US 97 raised median between Bend and Redmond; delete language about disconnecting Vandevert Road from US 97.
2020-013	08-26-20/11/24/20	23.01.01, 5.8	Comprehensive Plan Text And Map Designation for Certain Properties from Surface Mine (SM) and Agriculture (AG) To Rural Residential Exception Area (RREA) and Remove Surface Mining Site 461 from the County's Goal 5 Inventory of Significant Mineral and Aggregate Resource Sites.
2021-002	01-27-21/04-27-21	23.01.01	Comprehensive Plan Map Designation for Certain Property from Agriculture (AG) To Rural Industrial (RI)

Exhibit "E" to Ordinance 2023-025

2021-005	06-16-21/06-16-21	23.01.01, 4.2	Comprehensive Plan Map Amendment Designation for Certain Property from Agriculture (AG) To Redmond Urban Growth Area (RUGA) and text amendment
2021-008	06-30-21/09-28-21	23.01.01	Comprehensive Plan Map Amendment Designation for Certain Property Adding Redmond Urban Growth Area (RUGA) and Fixing Scrivener's Error in Ord. 2020-022
2022-001	04-13-22/07-12-22	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from Agriculture (AG) to Rural Residential Exception Area (RREA)
2022-003	04-20-22/07-19-22	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from Agriculture (AG) to Rural Residential Exception Area (RREA)
2022-006	06-22-22/08-19-22	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from Rural Residential Exception Area (RREA) to Bend Urban Growth Area
2022-011	07-27-22/10-25-22 (superseded by Ord. 2023-015)	23.01.010	Comprehensive Plan Map Designation for Certain Property from Agriculture (AG) To Rural Industrial (RI)
2022-013	12-14-22/03-14-23	23.01.010	Comprehensive Plan Map Designation for Certain Property from Agriculture (AG) to Rural Residential Exception Area (RREA)

Exhibit "E" to Ordinance 2023-025

2023-001	03-01-23/05-30-23	23.01.010, 5.9	Housekeeping Amendments correcting the location for the Lynch and Roberts Store Advertisement, a designated Cultural and Historic Resource
2023-007	04-26-23/6-25-23	23.01.010	Comprehensive Plan Map Designation for Certain Property from Agriculture (AG) to Rural Residential Exception Area (RREA)
2023-010	06-21-23/9-17-23	23.01.010	Comprehensive Plan Map Designation for Certain Property from Agriculture (AG) to Rural Residential Exception Area (RREA)
2023-018	08-30-23/11-29-23	23.01.010	Comprehensive Plan Map Designation for Certain Property from Agriculture (AG) to Rural Residential Exception Area (RREA)
2023-015	9-13-23/12-12-23	23.01.010	Comprehensive Plan Map Designation for Certain Property from Agriculture (AG) to Rural Industrial (RI)
2023-025	11-29-23/2/27/24	23.01.010	Comprehensive Plan Map Amendment, changing designation of certain property from Rural Residential Exception Area (RREA) to Bend Urban Growth Area

Exhibit "F" to Ordinance 2023-025

HEARINGS OFFICER DECISION

FILE NUMBER(S): 247-23-000415-PA, 247-23-000416-ZC

SUBJECT PROPERTY/ OWNER: Mailing Name: STATE OF OREGON
Map and Tax lot: 1812110000100
Account: 151657
Situs Address: 61200 27TH ST, BEND, OR 97702
(the "Subject Property")

APPLICANT: Eric King, City of Bend

REQUEST: Amendment to the Comprehensive Plan designation and a Zone Change of the Subject Property from Rural Residential Exception Area (RREA) and Multiple Use Agricultural ("MUA10") Zone to Bend Urban Growth Boundary (UGB) Area and Urbanizable Area (UA), respectively. The subject proposal is in conjunction with House Bill 3318 ("HB 3318"), to bring the Stevens Road Tract into the City of Bend UGB.

STAFF CONTACT: Audrey Stuart, Associate Planner
Phone: 541-388-6679
Email: Audrey.Stuart@deschutes.org

RECORD: Record items can be viewed and downloaded from: https://www.deschutes.org/cd/page/247-23-000415-pa-247-23-000416-zc-stevens-road-comprehensive-plan-amendment-and-zone-change.

HEARINGS OFFICER: Gregory J Frank

I. APPLICABLE CRITERIA

Title 18 of the Deschutes County Code, the County Zoning Ordinance:
- Chapter 18.32, Multiple Use Agricultural (MUA10).
- Chapter 18.136, Amendments

Title 19A of the Deschutes County Code, Bend Urbanizable Area (UA) District
Title 22, Deschutes County Development Procedures Ordinance
Deschutes County Comprehensive Plan
- Chapter 1, Comprehensive Planning
- Chapter 2, Resource Management
- Chapter 4, Urban Growth Management
- Chapter 5, Supplemental Sections

Appendix C-Transportation System Plan
Oregon Administrative Rules ("OAR"), Chapter 660
Division 12, Transportation Planning
Division 15, Statewide Planning Goals and Guidelines
Division 24, Urban Growth Boundaries
Oregon Revised Statutes ("ORS")
ORS 197.298, Priority of Land to be Included with Urban Growth Boundary

II. Overview Findings

A public hearing was held on October 11, 2023 (the "Hearing") providing the Applicant, Deschutes County Planning Staff ("County Staff") and members of the public an opportunity to provide oral and written comments related to the application in this case. Only the Applicant (City of Bend Planning Staff and City Attorney representatives) and County Staff offered testimony and written comments at the Hearing. No person or entity, at the Hearing, provided the Hearings Officer any testimony or written comments in opposition to the Applicant's proposal or the evidence and findings set forth in the Staff Report.

The Staff, in the Staff Report and during its presentation at the Hearing, expressed a level of uncertainty related to the relationship of various County planning policies to the House Bill 3318 statutory processes. Staff, in the Staff Report (page 29), stated the following[1]:

> *"The language of HB 3318 appears to refer to the planning amendments the City of Bend must undertake in order to receive approval for bringing the subject property within the Bend UGB.*
>
> *Section (2)(4) of HB 3318 includes the following definition: "Stevens Road planning amendments' means amendments to the city's comprehensive plans, land use regulations or zoning maps that affect the development of the Stevens Road tract' [emphasis added].*
>
> *The language of the House Bill does not specify the process, if any, that the County must undertake for the corresponding amendment to the County Comprehensive Plan. Absent that guidance, the subject request has been processed as a request for a Comprehensive Plan Amendment and Zone Change pursuant to Deschutes County Code. It is not apparent to staff whether the House Bill exempts the subject application from demonstrating compliance with Statewide Planning Goals, Deschutes County Comprehensive Plan policies, or other provisions of Deschutes County Code.*
>
> *Staff requests the Hearings Officer make specific findings regarding whether the provisions of HB 3318 are applicable approval criteria for the subject amendment to Deschutes County's Comprehensive Plan, as well as the proposed Zone Change of the subject property."*

The Hearings Officer agrees with Staff that HB 3318 is focused on actions that must be taken by the City of Bend. The Hearings Officer finds no clear reference, in HB 3318, to any planning process or

[1] See also County Senior Transportation Planner comments related to relevant/applicability of Statewide Goal 12 (Staff Report, page 5).

procedures that must be undertaken by the County. The Hearings Officer concurs with Staff that HB 3318 references to planning amendments are references to the City of Bend's comprehensive plan, land use regulations and zoning maps.

Staff asked the Hearings Officer to determine if the Statewide Planning Goals are applicable to the application in this case. The Applicant provided the following comments related to this issue:

> *"The purpose of this finding is to show that the Statewide Planning Goals are not applicable to this proposal because of the above-cited language in Section 3 of HB 3318. Section 9 of HB 3318 provides that standards in the bill apply to the Stevens Road Tract in lieu of statewide planning goals. Section 3(1)(a) of HB 3318 states that actions taken under sections 2 through 9 of this 2021 Act are not land use decisions, as defined in ORS 197.015. Under this statute, ORS 197.015(10) defines a land use decision as one that includes under (10)(a)(A) a final decision or determination made by a local government or special district that concerns the adoption, amendment, or application of the goals. The goals in this context refer to the Statewide Planning Goals."*

The Hearings Officer does not disagree with the Applicant's above-quoted comments as they relate to City of Bend applications and processing of the Stevens Road Tract. However, based upon the lack of clear and objective language relating to the ***County*** processing of the Stevens Road Tract, the Hearings Officer makes the following findings.

The Hearings Officer finds that HB 3318 does not explicitly or inferentially limit or restrict consideration of County planning processing requirements. The Hearings Officer finds that the County application processing requirements for Comprehensive Plan amendments, and other relevant provisions of the Deschutes County Code ("DCC"), do require consideration of statewide planning goals. The Hearings Officer finds the County processing requirements, including consideration of statewide planning goals, do apply in the processing of this land use application. The Hearings Officer acknowledges that Staff, in the Staff Report, provided findings for the County Comprehensive Plan and other relevant provisions of the DCC. The Applicant, during Hearing testimony, expressed agreement with the Staff Report findings related to the statewide planning goals.

Staff, in several instances, requested the Hearings Officer consider supplementing Staff findings. The Hearings Officer addresses those requests in the findings for the relevant criterion.[2]

Finally, the Hearings Officer reiterates that no person or entity testified at the Hearing or asserted in any written document contained in the public record opposition to the Applicant's proposal. With the exception of findings set forth in this section (Overview of Findings) and in the modified findings related to specific sections (see footnote 2) the Hearings Officer has adopted the Staff Findings from the Staff Report as the findings for this decision.

[2] See findings for DCC 18.136.020 B (Staff Report page 8), DCC 18.136.020 C.2 (Staff Report page 10); Comprehensive Plan sections 2.5 (Staff Report page 14), 3.6 Goal 1 (Staff Report page 22 & 23) and 3.7 (Staff Report page 23).

III. BASIC FINDINGS

LOT OF RECORD: The Subject Property is a legal lot of record together with Tax Lot 200, which borders the Subject Property to the west, pursuant to Deschutes County files 247-17-000726-PA, 727-ZC.

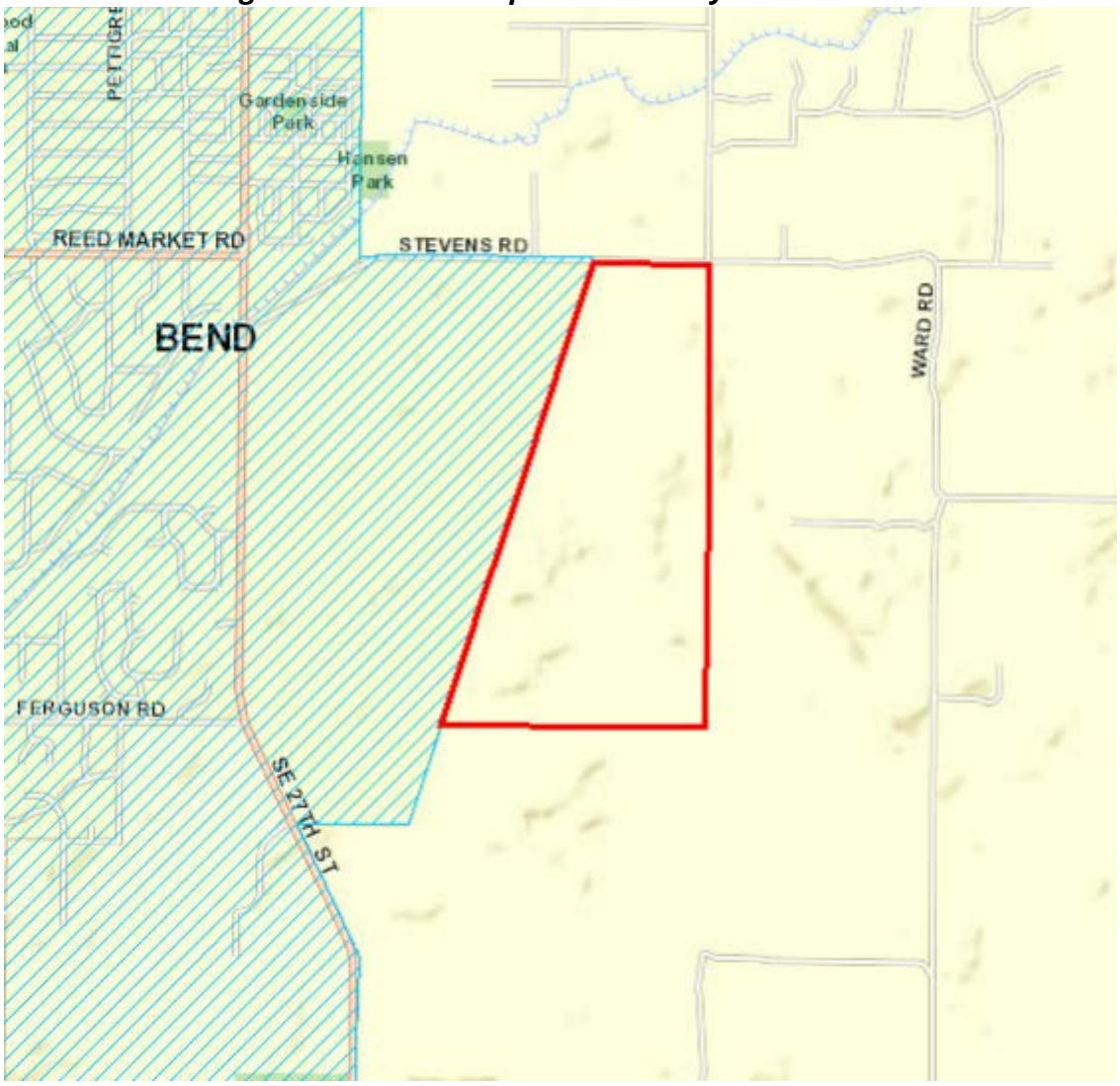
SITE DESCRIPTION: The Subject Property is 261.66 acres in size and is bordered on the north by Stevens Road, which turns into Ward Road. The Subject Property is bordered to the west by a TransCanada natural gas pipeline and 13 acres of the Subject Property are within an easement associated with the pipeline. The application materials provide the following description of the Subject Property:

> *"The Stevens Road Tract property today is undeveloped rural land with informal trail systems meandering through the site. It is comprised of scattered junipers and occasional ponderosa pine trees, with sagebrush and other low-coverage understory vegetation. There are rock outcrops that form localized high points and subtle ridges throughout the site, rising between approximately 10 and 20 feet above grade."*

The Subject Property is zoned Multiple Use Agricultural (MUA10) and is not within any overlay zones. There is no mapped floodplain on the Subject Property, and it does not contain any wetlands mapped on statewide or national inventories.

As described below, the Subject Property was approved for a UGB expansion through HB 3318. There are associated City of Bend planning processes for the Subject Property, and the Subject Property is referred to as Stevens Road Tract in those documents. For the purpose of this review, Hearings Officer uses the terms 'Subject Property' and 'Stevens Road Tract' or 'SRT' interchangeably.

Figure 1: Location Map and Proximity to Bend UGB



PROPOSAL: The Applicant requests approval of a Comprehensive Plan Map Amendment to change the designation of the Subject Property from a Rural Residential Exception Area (RREA) designation to Bend Urban Growth Area. The Applicant also requests approval of a corresponding Zoning Map Amendment to change the zoning of the Subject Property from Multiple Use Agricultural (MUA10) to Urbanizable Area (UA) District. The purpose of the amendments is to provide dense, master-planned development that includes affordable housing and workforce housing, pursuant to the process outlined in HB 3318. The submitted application materials include the following additional details:

> *"In 2021, the Oregon Legislature passed HB 3318 (See Exhibit G). Through this legislation, HB 3318 provides an alternative process for the City of Bend to include the Stevens Road Tract in the Bend UGB (See Section 6 of HB 3318). The bill is limited in use to including only the 261.66 acre tract and no other properties in the Bend UGB. The legislation further requires a two-step process for planning this property that includes development and approval of a concept plan, and subsequent approval of what HB 3318 refers to as planning amendments (See Section 9 of HB 3318) that outline what amendments to the Bend Comprehensive Plan and Development Code the City must adopt to support subsequent master planning of the Stevens Road Tract. The legislation was crafted with the*

participation and consent of DSL, to facilitate the property for sale and future urban development."

SURROUNDING LAND USES: The area surrounding the Subject Property is defined by the City of Bend's UGB to the west; land to the north, east, and south of the Subject Property are outside of the UGB and contain a mix of residential use, small-scale agriculture, and public facilities. Neighboring rural lands are zoned Multiple Use Agricultural (MUA10) and Exclusive Farm Use (EFU).

The submitted application materials include the following additional details on adjacent properties:

"North. The area north of Stevens Road includes several rural residential parcels developed with homes and outbuildings. The County Comprehensive Plan designations in this area include Agriculture and Rural Residential Exception Area. Most of the area is zoned MUA10, Multiple Use Agricultural. One property approximately 38 acres in size and located at the northwest corner of Ward Road and Stevens Road is zoned Exclusive Farm Use-Tumalo/Redmond/Bend subzone. The area outside of the UGB includes properties from five to 40 acres in size. A Central Oregon Irrigation District (COID) Canal runs southwest to northeast between properties inside and outside the UGB. The area north and west of the COID canal is inside the UGB and has been developed with detached houses in the RS, Urban Standard Residential Zone.

West. The area west of the SRT consists of the area described above as the Stevens Ranch Major Community Master Plan. The master plan includes land designated for housing, commercial uses, and industrial uses. The plan includes a 50-acre large lot industrial site located to the south and abutting property owned by Deschutes County that is also north of the Knott Landfill.

South. The area due south of the SRT is owned by Deschutes County, is undeveloped, and has similar topography and vegetation. This area is designated as Agriculture on the County's Comprehensive Plan map and zoned EFUTRB. The County also owns land south of the SRT that has been developed as the Knott Landfill, designated Surface Mining, and zoned for Surface Mining. To the south and west of the SRT are a number of non-residential uses along 27th Street south of Ferguson Rd, including the County's Road Department, Humane Society of Central Oregon, and Central Oregon Electric Cooperative.

East. The area due east of the SRT includes several rural residential parcels south of Ward Road and west of Ward/Larsen Road. The properties in this area are designated either Rural Residential Exception Area or Agriculture and zoned accordingly. This area is approximately one-half mile in depth between the SRT's eastern boundary line and Ward/Larsen Road. Non-residential uses include Bend Community Farm and the Bend Kitty Lodge."

PUBLIC AGENCY COMMENTS: The Planning Division mailed notice on June 8, 2023, to several public agencies and received the following comments:

<u>Deschutes County Senior Transportation Planner, Tarik Rawlings</u>

"I have reviewed the transmittal materials for file 247-23-000415-PA, 416-ZC for a Plan Amendment and Zone Change for affordable housing on 261.66 acres to the north of the City of

Bend at 61200 27th St, Bend, OR 97702 aka County Assessor's Map 18-12-11, Tax Lot 100. The proposal is related to House Bill 3318 (2021), and the subject property is referred to as the Stevens Road Tract. The subject property currently has a Comprehensive Plan designation of Rural Residential Exception Area (RREA) and is zoned as Multiple Use Agriculture (MUA-10). The proposal would annex the area and change the designation to the City's Urbanizing Area (UA).

HB 3318 Section 3 specifically states that actions taken under Sections 2 to 9, including Plan Amendments and Zone Changes, are not land use decisions as defined in ORS 197.015 and, therefore, are not required to comply with Statewide Planning Goal 12 (Transportation), which is implemented by the Transportation Planning Rule (TPR) - OAR 660-012-0060. However, local codes still require traffic analysis, specifically Deschutes County Code (DCC) 18.116.310(C)(3) and 18.116.310(E)(4), which may apply to the subject proposal.

The subject property will be brought into the City of Bend as a result of the proposal. There currently is no specific proposal to develop the land, but the City's transportation consultant had prepared an assessment dated (May 17, 2022) reviewing the potential trip generation of the property and planned improvements to affected City facilities. There were no adverse effects outlined in the assessment. Under the Joint Area Management Agreement between City of Bend and Deschutes County, jurisdictional transfer of roads are accomplished as part of annexation. The site is currently served by Stevens Road (County designated Rural Collector) to the north. Adequacy of current and future transportation facilities will be reviewed per the Bend development code as the land is proposed to develop. Finally, HB 3318 exempts the subject property from any Statewide Planning Goals, including Goal 12 (Transportation) as the subject property includes affordable housing and that the proposal is not a land use decision. Therefore, the Transportation Planning Rule (TPR) at OAR 660-012, does not apply nor does Deschutes County Code (DCC) 18.116.310. Staff finds this goal is met."

The following agencies did not respond to the notice: Arnold Irrigation District, Bend Fire Department, City of Bend Planning Department, City of Bend Growth Management Department, Oregon Department of Agriculture, Oregon Department of Land Conservation and Development, Department of State Lands, Deschutes County Assessor, Deschutes County Building Division, Deschutes County Road Department, and District 11 Watermaster.

PUBLIC COMMENTS: The Planning Division mailed notice of the application to all property owners within 750 feet of the subject property on June 8, 2023. The Applicant also complied with the posted notice requirements of Section 22.24.030(B) of Title 22. The Applicant submitted a Land Use Action Sign Affidavit indicating the Applicant posted notice of the land use action on June 12, 2023. Two public comments were received into the record. The first, from John Heylin (6/23/2023 email) expressed support for the application proposal. The second, from David and Theresa Douglas (10/11/2023 email) expressed concerns related to roadway access if and when the Subject Property is developed. The Douglas email did not set forth any objections to the application in this case.

NOTICE REQUIREMENT: On September 1, 2023, the Planning Division mailed a Notice of Public Hearing to all property owners within 750 feet of the Subject Property and public agencies. A Notice of Public Hearing was published in the Bend Bulletin on Sunday, September 3, 2023. Notice of the

first evidentiary hearing was submitted to the Department of Land Conservation and Development on September 3, 2023.

REVIEW PERIOD: According to Deschutes County Code 22.20.040(D), the review of the proposed quasi-judicial plan amendment and zone change application is not subject to the 150-day review period.

IV. GENERAL FINDINGS & CONCLUSIONS

Title 19A of the Deschutes County Code, Bend Urbanizable Area District

Section 19A.01.010 Purpose, Applicability And Definitions

1. ***Purpose. The Urbanizable Area (UA) District is intended to preserve large areas of undeveloped or rural land for future urban development prior to annexation. The UA District promotes the livability, stability, safety and improvement of the City of Bend by allowing orderly development consistent with the Bend Comprehensive Plan.***
2. ***Applicability. The provisions of the UA District apply to all land inside the Urban Growth Boundary but outside the city limits, except for the land withdrawn from the City of Bend by the County by City Resolution 2459. The City of Bend is responsible for administering Title 19A using the Bend Development Code (BDC). The UA District will automatically be removed upon annexation to the City, and the zoning that implements the Bend Comprehensive Plan designation for the property will apply.***

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"As described above, the applicant proposes to change the zoning of the subject property to Urbanizable Area, which will function as a holding zone until the property is annexed into the Bend city limits. Staff finds that DCC 19A.01.010 is a purpose statement, which sets forth a general expression of a goal or objective to maintain large areas of undeveloped or rural land for future urban development prior to annexation. See Beck v. City of Tillamook, 20 Or LUBA 178, 185-86 (1990). Staff therefore finds DCC 19A.01.010 is not an approval criterion for the subject application."

Title 18 of the Deschutes County Code, County Zoning

Chapter 18.136, Amendments

Section 18.136.010, Amendments

DCC Title 18 may be amended as set forth in DCC 18.136. The procedures for text or legislative map changes shall be as set forth in DCC 22.12. A request by a property owner for a quasi-judicial map amendment shall be accomplished by filing an application on

forms provided by the Planning Department and shall be subject to applicable procedures of DCC Title 22.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant, also the property owner, has requested a quasi-judicial plan amendment and filed the applications for a plan amendment and zone change. The Applicant has filed the required Planning Division's land use application forms for the proposal. The application will be reviewed utilizing the applicable procedures contained in Title 22 of the Deschutes County Code."

Section 18.136.020, Rezoning Standards

The applicant for a quasi-judicial rezoning must establish that the public interest is best served by rezoning the property. Factors to be demonstrated by the applicant are:

A. That the change conforms with the Comprehensive Plan, and the change is consistent with the plan's introductory statement and goals.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant provided the following response in its submitted burden of proof statement:

'The proposed amendment will be consistent with the applicable elements of the Comprehensive Plan Vision Statement. The expansion of the Bend UGB to include the Stevens Road Tract is a necessary step before completing planning amendments required under HB 3318. This legislation requires certain elements to be addressed in planning amendments adopted by the City after an approved UGB expansion, which will also be consistent with these elements of the Vision Statement as follows:

- *The beauty, boundary, and richness of a healthy natural environment. The proposal will satisfy this element because future master planning will be based upon an inventory of significant historical artifacts, cultural sites, and natural resources, and land use regulations for their protection and preservation (See Section 9(1)(a) and (b) of HB 3318)*
- *A strong and diverse economy. The proposal will satisfy this element because the Concept Plan for the Stevens Road Tract contemplates approximately five (5) acres of land for Commercial plan designations, and another seven (7) for Mixed Employment. In addition, the Concept Plan Alternative 3 shows the potential for over 2,400 new housing units that can support the commercial areas to the west within the Stevens Ranch Master Plan.*
- *Access to a wide variety of outdoor recreational opportunities. The proposal meets this element because the Concept Plan proposes: 1) a 29-acre Community Park adjacent to the Stevens Ranch Master plan; 2) a green loop of trails around the perimeter of the tract and within the tract along the planned local and collector streets, and; 3) an additional three (3) acres of undesignated open spaces that would be determined as part of future master planning for the Stevens Road Tract.*

- *The rural character of the region. The proposal is consistent with this element because master planning for the Stevens Road Tract will be based on an inventory of significant natural resources, including significant trees and rock outcrops, and these resources will be protected and preserved through land use regulations incorporated in the Bend Development Code.'*

Staff concurs with the Applicant's response to the Community Vision section of the Comprehensive Plan. The Applicant identified specific Comprehensive Plan Goals and policies that apply to the proposal and has provided a response to each. These findings are listed in the Comprehensive Plan section of this staff report in further detail. Staff agrees with the Applicant's analysis and finds the above provision to be met based on Comprehensive Plan conformance as demonstrated in subsequent findings."

B. That the change in classification for the subject property is consistent with the purpose and intent of the proposed zone classification.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant provided the following response in the submitted burden of proof statement:

'The proposal meets this criterion because the proposed change in classification for the SRT is consistent with the purpose and intent of the proposed zone classification. The proposal is to change the zoning of the SRT from MUA10, Multiple Use Agricultural, to UA, Urbanizable Area. The intent of applying the UA is to limit the development of the SRT, and maintain this tract as one block of land, until such time as the DSL surpluses the property to a developer. The City will then collaborate with a developer to ensure a final master plan submitted to the city for approval satisfies the planning amendments adopted to satisfy the requirements of Section 9 of HB 3318. Once the master plan is approved and the SRT annexed, the City's zoning map will be changed to reflect those City Comprehensive Plan designations applied to the SRT through the master plan.'

The purpose of the UA Zone is described in DCC 19A.01.010, which is addressed above. Staff finds the proposed Zone Change will allow orderly development consistent with the Bend Comprehensive Plan by retaining the subject property as undeveloped land until it is annexed, at which time Bend Comprehensive Plan designations will be applied. The provisions of the UA Zone are intended to preserve land for future urbanization by regulating land divisions, allowed uses, and other development standards. Staff finds the UA Zone is an appropriate zoning designation for the subject property, based on the intended use of future annexation.

Staff finds the Applicant has demonstrated the change in classification is consistent with the purpose and intent of the UA Zone, and asks the Hearings Officer to amend or add to these findings as the Hearings Officer sees fit."

The Hearings Officer finds that the Applicant has submitted substantial evidence that the change in classification is consistent with the purpose and intent of the UA Zone.

C. That changing the zoning will presently serve the public health, safety and welfare considering the following factors:

1. The availability and efficiency of providing necessary public services and facilities.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"*Although there are no plans to develop the properties in their current state, the above criterion specifically asks if the proposed zone exchange will presently serve public health, safety, and welfare. The Applicant provided the following response in the submitted burden of proof statement:*

> *'The proposal satisfies criterion (3)(1) because public services and facilities are available and can be provided efficiently to the SRT. As evidence in support of these Proposal, the applicant has included in the record the June 2023 Stevens Road Tract Concept Plan (See Exhibit H) and the Plan's Technical Appendices (See Exhibit I). The Concept Plan includes evidence that transportation facilities, water, and wastewater collection infrastructure can be provided to the SRT to serve future housing, commercial, mixed use, and open space (parks) development. These provisions of the Concept Plan are required by HB 3318 to be in the City's planning amendments adopted after UGB expansion.'*

No issues have been identified in the record regarding service provision to the subject property. The Bend UGB is adjacent to the west side of the subject property, and the neighboring 382-acre parcel to the west is the Stevens Ranch Master Plan property. This neighboring property has not been developed yet but underwent a master planning process that accounted for parks, a new elementary school, and other public facilities necessary to serve the proposed residential commercial, and industrial uses. Staff finds the proximity to the Bend UGB will allow for efficient provision of public services. In addition, the master planning projects on the subject property and surrounding vicinity will ensure adequate land is provided for public facilities.

The subject property is bordered to the north by Stevens Road, which is classified as a County-maintained Rural Collector. This road connection provides direct access to land within the Bend UGB as well as surrounding rural lands. In addition, the Concept Plan submitted with the application materials demonstrates a future road network within the subject property has been planned for. The Stevens Road Tract Concept Plan submitted with the application materials also provides an overview of water, sewer, and stormwater infrastructure that would be required to serve property. These supporting materials indicate the Applicant has collected preliminary comments regarding the system upgrades that would be required, and the approximate locations of road and sewer extensions.

There are no known deficiencies in public services or facilities that would negatively impact public health, safety, or welfare. In addition, the application materials indicate coordination has begun with Avion Water and public agencies to ensure necessary public facilities and services can be provided.

Prior to development of the properties, the Applicant would be required to comply with the applicable requirements of the Deschutes County Code or the Bend Development Code, if development occurs

after annexation whether. Through these development review processes, assurance of adequate public services and facilities will be verified. Staff finds this provision is met."

2. The impacts on surrounding land use will be consistent with the specific goals and policies contained within the Comprehensive Plan.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The proposed Zone Change from MUA10 to UA will not generate additional development or impacts to surrounding properties. The UA Zone will function as a holding zone to preserve the subject property in its current configuration until it is brought into the City of Bend, and new urban zoning designations are assigned. If any development occurs while the property remains within Deschutes County zoning, all necessary land use permits will need to be obtained and compatibility with surrounding uses will be evaluated.

The Applicant provided specific findings for each relevant Comprehensive Plan goal and policy, which are addressed below. Staff finds the Applicant has demonstrated the impacts on surrounding land use will be consistent with the specific goals and policies contained within the Comprehensive Plan, and asks the Hearings Officer to amend or add to these findings as the Hearings Officer sees fit."

The Hearings Officer finds that Applicant has adequately, with substantial evidence in the record, demonstrated that the impacts on surrounding land use will be consistent with the specific goals and policies contained within the Comprehensive Plan.

D. That there has been a change in circumstances since the property was last zoned, or a mistake was made in the zoning of the property in question.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant proposed to rezone the properties from MUA10 to UA and re-designate the properties from Rural Residential Exception Area to Bend Urban Growth Boundary. The Applicant provided the following response in the submitted burden of proof statement:

'The proposal meets this criterion, because there has been a change of circumstances since the property (aka SRT) was last zoned. The property owner, the Division of State Lands or DSL, obtained approval of quasi-judicial plan and zone map amendments for the SRT in 2018. Through Ordinance 2018-11, the County approved a quasi-judicial change to the plan designation from Agriculture to Rural Residential Exception Area, and a change to the zoning from Exclusive Farm Use-Tumalo/Redmond/Bend subzone to Multiple Use Agricultural (MUA10). In 2021, the Oregon Legislature passed HB 3318, providing for an alternative process to bring the SRT into the Bend UGB. HB 3318 passed both chambers, was signed by Governor Brown on July 19, 2021, and became effective on September 25, 2021. The Bend City Council subsequently approved a Concept Plan for the Stevens Road Tract in June 2022.'

Staff finds the adoption of House Bill 3318 represents a change in circumstances because it modifies the process for the subject property to be brought into the Bend UGB. This legislation is specific to the subject property, and represents a clear change in the conditions that apply to this property and the subject application. Staff finds this criterion is met."

Deschutes County Comprehensive Plan

Chapter 1, Comprehensive Planning

Section 1.3, Land Use Planning

Goal 1, Maintain an open and public land use process in which decisions are based on the objective evaluation of facts.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"Planning and development of the subject property will involve public processes led by the State of Oregon, Deschutes County, and City of Bend. First, legislation was passed to allow the subject property to be brought into the Bend UGB for the purpose of developing affordable housing. The language of HB 3318 includes an objective evaluation of facts regarding the subject property, including: the property is not in a resource zone, the property has no associated water rights, the property is held by the Common School Fund, and the property is adjacent to a UGB. The passage of this state legislation was not subject to Deschutes County's Procedures Ordinance, however, staff finds it involved an open and public process.

The subject application is being evaluated based on an objective review of compliance with Statewide Planning Goals, Deschutes County Comprehensive Plan policies, and Oregon Administrative Rules. A public hearing will be held before a Hearings Officer on October 11, 2023, and members of the public can attend and testify at that hearing. Pursuant to DCC 22.28.030, the Board of County Commissioners will take final action on the application and may choose to either adopt the Hearings Officer findings or conduct their own hearing. This Comprehensive Plan Amendment and Zone Change application will be evaluated through an open process that allows for public input and follows Deschutes County's Procedures Ordinance.

The City of Bend is undertaking parallel planning efforts to amend their Comprehensive Plan, develop a Concept Plan for the subject property, draft Code amendments specific to the subject property, and eventually annex the subject property and facilitate a master planning process. The application materials document public open houses that have been held for the Stevens Road Tract Concept Plan project, as well as public meetings with the City's Planning Commission and City Council. These City-led efforts allow for greater public involvement in the planning and development of the subject property, even though they are not directed specifically at the subject Comprehensive Plan Amendment and Zone Change application.

Staff finds that within each of the steps described above, there is an open and public process that is based on an objective evaluation of facts. This criterion will be met."

Goal 2, Promote regional cooperation and partnerships on planning issues.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The subject application is the result of a collaborative effort between City of Bend, Deschutes County, and the State of Oregon. The application represents a regional effort to address a key planning issue, housing affordability, through the implementation of HB 3318. There are a number of parallel processes that are being undertaken by partner agencies in order to eventually master plan and develop the subject property with a variety of uses, including deed-restricted affordable housing.

The City of Bend has developed a concept plan for the subject property, and is amending their own Comprehensive Plan and development code to reflect this concept plan. Once the County's Comprehensive Plan amendment and the City's development code amendments are both completed, Department of State Lands can initiate the process to transfer the property ownership to City of Bend. These multi-step planning processes are interrelated and require regional coordination, and staff finds they demonstrate cooperation and partnership between the County, City, and State agencies."

Chapter 2, Resource Management

Section 2.2, Agricultural Lands Policies

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Subject property has a Comprehensive Plan designation of Rural Residential Exception Area and is therefore not categorized as agricultural lands. In addition, staff finds there is nothing in the record that indicates the property is in farm use. Agricultural lands policies do not apply."

Section 2.3, Forests

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The subject property has a Comprehensive Plan designation of Rural Residential Exception Area and is therefore not categorized as forest land. Staff therefore finds forest land policies do not apply."

Section 2.4, Goal 5 Overview Policies

Goal 1, Protect Goal 5 Policies

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant provided the following response to this criterion in their submitted Burden of Proof:

> *The proposal will be consistent with this goal because the applicant has reviewed the County's Inventory of Goal 5 resources and confirmed that none were identified and mapped on the SRT. The Concept Plan also includes planned actions to protect significant trees and rock outcrops, inventory and protect cultural resources, and identify locations for open spaces (e.g., community parks, loop trail) on the SRT. These provisions of the Concept Plan are required by HB 3318 to be in the City's planning amendments adopted after UGB expansion.*

Staff concurs with this analysis, and notes the Applicant does not propose to repeal or modify any Goal 5 policies as part of this application.

The County's Goal 5 policies are partially implemented through the Landscape Management Combining Zone, which regulates development within designated scenic corridors. The subject property is not within the Landscape Management Combining Zone. In addition, the subject property does not contain any jurisdictional wetlands mapped on a statewide or national wetland inventory. The Applicant does not propose to remove any Goal 5-related overlay zones from the subject property or change mapped resources. Eventual development of the subject property will be regulated by the Bend Development Code and any applicable State regulations. The application materials indicate a thorough review of resources within the site has been conducted, and no Goal 5 resources have been identified.

For these reasons, staff finds the proposed Comprehensive Plan Amendment and Zone Change will not have an adverse impact on Goal 5 policies."

Section 2.5, Water Resources Policies

Goal 6, Coordinate land use and water policies.

> ***Policy 2.5.24 Ensure water impacts are reviewed and, if necessary, addressed for significant land uses or developments.***

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant has not proposed a specific development application at this time. Below, the Applicant argues they are therefore not required to address water impacts associated with development. Instead, water impacts would be reviewed during development of the subject property, under any necessary land use applications.

> *'The applicant finds that the goals and policies of Section 2.5 are not applicable to review of the proposed amendments because the proposed amendments will not have the effect of impacting*

or potentially impacting water resources. The subject property does not have any water rights associated with it and is not adjacent to or bisected by either a river or stream. The proposed amendments themselves would have the effect of amending the Bend urban growth boundary to include the subject property and changing its plan designation and
zoning. No development is proposed at this time that would affect either surface or subsurface water resources. The application materials include the Stevens Road Tract Concept Plan (See Exhibit H) and the Technical Appendices (See Exhibit I). These documents, including Appendix L document how domestic water will be provided to the Stevens Road Tract by the Avion Water Company.'

The Stevens Road Concept Plan also includes the following analysis of water provision to the subject property, which staff finds relevant in addressing this policy.

'The City contacted Avion regarding water infrastructure needed to serve the proposed future development that may result from this Concept Plan and Avion identified the key infrastructure improvements needed to provide water to the Tract. These improvements include: a 1.5-million-gallon day tank and a booster plant for the tank. Detailed locations of water lines by size will be determined in the future along with local road locations and final land use designations.'

If this criterion does require an analysis of the water impacts that will be generated by future urban development of the subject property, staff finds the application materials demonstrate these water impacts have been reviewed. However, staff requests the Hearings Officer amend or add to these findings as the Hearings Officer sees fit."

The Hearings Officer incorporates the Overview Findings as additional findings for this section. The Hearings Officer finds that the Applicant has submitted substantial evidence to demonstrate that relevant water impacts have been reviewed and addressed.

Section 2.6, Wildlife

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"There are no Goal 5-listed wildlife species present on the subject property, based on the Goal 5 inventory nor threatened or endangered species. There is no identified wildlife habitat on the subject property."

Section 2.7, Open Spaces, Scenic Views and Sites

Goal 1, Coordinate with property owners to ensure protection of significant open spaces and scenic view and sites.

Policy 2.7.1 Goal 5 open spaces, scenic views and sites inventories, ESEEs and programs are retained and not repealed.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The applicant provided the following response to this policy:

'The applicant finds that the proposal is consistent with this plan policy because it does not propose to either remove or repeal any scenic views, site inventories, ESEE analyses, or programs for protection of open spaces and scenic view under Statewide Planning Goal 5. The proposed amendments include two amendments to the Deschutes County Comprehensive Plan map to include the subject property within the Bend Urban Growth Boundary and change its plan designation from Rural Residential Exception Area to Urban Growth Boundary. The proposed amendments also include amendments to the County's Zoning Map to change to the zoning for the subject property from MUA10 to UA, Urbanizable Area. No amendments to the text of the County's Goal 5 inventories are proposed.

The applicant has evaluated whether any Goal 5 resources would be affected by the development of the Stevens Road Tract through the work on Stevens Road Tract Concept Plan (See Exhibit H). The application materials provided with the application also include the technical appendices to the Concept Plan (See Exhibit I), which includes Appendix E – Historic, Cultural, and Natural Resources Technical Memorandum. This memorandum provides the results of the project staff's research, using the County's adopted Goal 5 inventories, to determine what resources would potentially be impacted by development of the Stevens Road Tract. The memorandum documents the review of the existing inventories and found that there are no Goal 5 open space, scenic view, or site inventories that would be impacted by development of the Tract.'

Staff concurs with the Applicant's response and finds this criterion has been met."

Policy 2.7.2 Cooperate with stakeholders to establish a comprehensive system of connected open spaces.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The applicant provided the following response to this policy:

'The proposed amendment will be consistent with this policy because the amendment to the UGB has been preceded by the adoption of a Concept Plan for the Stevens Road Tract (See Exhibit H) that includes a proposed green-loop trail system, and this system's development can be coordinated with the development of other trails in the area. The application materials include the approved Concept Plan for the Stevens Road Tract. This document shows that incorporation of a trail system (aka green-loop) was incorporated in the transportation planning for the Tract. In addition, the materials submitted with the proposed amendments include the Technical Appendices (See Exhibit I), which includes a Planning Context technical memorandum (Appendix C) that draws on and incorporates the most recent work on trail development by the Bend Park and Recreation District from their 2018 Comprehensive Plan.'

Staff finds the applicant's response, above, demonstrates coordination has already begun to ensure trails and parks within the subject property are part of a connected network."

Policy 2.7.3 Support efforts to identify and protect significant open spaces and visually important areas including those that provide a visual separation between communities such as the open spaces of Bend and Redmond or lands that are visually prominent.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The application materials include diagrams and photographs of the subject property that inventory existing natural features and conditions on the site. This inventory maps features such as existing trails, mature trees, rock outcrops, and views of Three Sisters, Broken Top, and Mt. Bachelor. The application materials demonstrate an effort to identify significant open space and visually important areas by conducting a thorough analysis of the site's existing natural conditions.

The policy language above specifically references open space of Bend, which staff finds applicable to the subject proposal. The high-level Concept Plan for the subject property indicates 29 acres of land will be protected for a community park, in addition to other land preserved for trails. The public ownership of the subject property, and the Master Plan process that will be required, presents a unique opportunity to designate land early in the planning process as future park land. Approval of the proposed Comprehensive Plan Amendment is one step towards formally preserving this open space through park creation, and therefore supports this policy."

Policy 2.7.4 Encourage a variety of approaches that protect significant open spaces and scenic views and sites.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Stevens Road Tract Concept Plan includes the following statement regarding the importance of preserving open space during the planning process:

> *'The natural beauty of the site – key trees, outcrops, views – should be retained so they can be enjoyed by all in the future. Parks and open space provide a great opportunity to retain these special features for all members of the community. Locating multifamily and affordable housing in prime locations with close proximity and access to parks and open space, ensures equitable access and opportunity for all to enjoy the natural features that make this area unique.'*

The application materials indicate a variety of approaches will be utilized to preserve open spaces and scenic views on the site. These approaches include strategically locating new zoning designations,

coordinating with BPRD on the location and design of a community park, and building a connected trails system within the property."

Policy 2.7.5 Encourage new development to be sensitive to scenic views and sites.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"No development or new uses are proposed on the subject property at this time, but a concept plan has been approved by the Bend City Council. While the approved concept plan is not an applicable approval criterion under Deschutes County Code, it provides context on the type of development planned for the subject property. As noted above, the eventual development of the subject property will occur after it has been annexed into the City of Bend, and future development will therefore be subject to the Bend Development Code."

Section 2.8, Energy Policies

Goal 1, Promote energy conservation.

Goal 2, Promote affordable, efficient, reliable and environmentally sound energy systems for individual home and business consumers.

Goal 3, Promote affordable, efficient, reliable and environmentally sound commercial energy facilities.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant proposes to rezone the subject property to UA and bring it within the Bend UGB. No specific development is proposed at this time, therefore review of specific energy systems is not applicable. However, the Applicant provided the following description of how the future development of the subject property will align with these goals:

'The proposed amendments are a necessary step to implementing the Stevens Road Tract Concept Plan (See Exhibit H). The Concept Plan included an Alternative 3 that was supported by the City Council because it included a multi-modal transportation system that proposes future infrastructure for making trips by walking, bicycling, and taking transit. This alternative's design also proposes location of land uses so that housing is within walkable distances of main streets (e.g., Wilderness Way), the commercial areas along Wilderness Way, and to the proposed Community Park. In addition, proposed medium and high-density housing has been located along Wilderness Way so that children have the option to walk to
the school site within the Stevens Ranch Master Plan.'

Staff concurs with this analysis and finds energy conservation has been considered throughout the application materials. Figures included on pages 71-72 of the Stevens Road Tract Concept Plan

indicate that of the three alternatives that were proposed, the one selected would lead to the greatest energy conservation. The selected land use concept had the lowest estimated energy consumption per household and the lowest estimated carbon emissions per household. To the extent these goals apply to the subject application, staff finds they have been met."

Section 2.9, Environmental Quality

Goal 1. Maintain and improve the quality of the air, water and land.

Goal 2. Promote sustainable building practices that minimize the impacts on the natural environment.

Goal 3. Encourage and increase recycling

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Stevens Road Tract Concept Plan includes the following statement on sustainable building practices.

'Energy efficiency in home and building design are very important. All of the housing and non-residential buildings in the development will be new and, therefore, more efficient than older homes.'

The application materials demonstrate impacts on water, energy usage, and carbon emissions have been evaluated. The building materials and specific design will occur at a later date and will be reviewed by the City of Bend. The proposed zoning designation, UA, is intended to serve as a holding zone while the property remains undeveloped. The Applicant is not required to provide detailed information on future building practices and building materials as part of a Comprehensive Plan Amendment application. However, staff finds the applicant has demonstrated the future Bend Development Code amendments will promote sustainability and consider impacts to resources within the subject property.

Finally, staff notes the subject property is located approximately 0.3 miles north of a Deschutes County-owned property with a garbage and recycling transfer station. The application materials do not list specific measures that will be taken to encourage and increase recycling within the Stevens Road Tract. However, the proximity to established recycling facilities will afford benefits to future developments within the subject property."

Section 2.10, Surface Mining

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The subject property is not designated as a surface mine on the Deschutes County Comprehensive Plan. The Applicant does not seek to modify or amend the County's Goal 5 Aggregate and Mineral inventory list or the Goal 5 program. Staff finds this criterion does not apply."

Section 2.11, Cultural and Historic Resources

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The application materials include a memorandum from Damian Syrnyk, City of Bend Senior Planner, regarding previous inventories of cultural resources that have been conducted on the subject property. The March 28, 2022, memorandum, titled Stevens Road Tract Concept Plan- Historic, Cultural, and Natural Resources, included the following statement:

> *'The County's Goal 5 inventory of Cultural and Historic Resources (See Section 5.9) has not identified any cultural or historic buildings/resources on the Tract. The closest historic buildings/cultural resources are the Agnes Mae Allen Sottong and Henry J. Sottong House and Barn (See No. 35) located roughly two miles to the south on Tekampe Road. The DSL has completed prior archeological surveys for the Tract and the DSL property included in the Bend urban growth boundary (UGB) in 2016. Attached to this memorandum is a January 11, 2022 "Cultural Review of DSL's Stevens Road Tract" prepared by Gary Curtis of DSL. DSL has conducted six (6) cultural resource surveys of the original Section 11, with the most recent survey of the Tract completed in 1996. The report does not indicate that either historic or cultural resources were identified by this or previous surveys. The CTWS recommended completing a new archeological survey given the age of the last survey (1996) and because the last survey did not cover the entire Tract.'*

The memorandum also indicates two meetings were held with the Confederated Tribes of Warm Springs and one meeting was held with the State Historic Preservation Office to review these findings. The methodology and outcomes of this previous work indicate cultural and historic resources have been factored in throughout the concept planning of the subject property. The application materials also note that:

> *'HB 3318 requires future planning amendments to include: '(a)n inventory of significant historical artifacts, cultural sites and natural resources' (see Section 9(1)(a) of HB 3318).'*

Based on the extensive work that has been done to survey cultural and historic resources on the subject property, and the requirements of HB 3318, staff finds the proposal will comply with this Comprehensive Plan section."

Chapter 3, Rural Growth

Section 3.3, Rural Housing Policies

Goal 1, Maintain the rural character and safety of housing in unincorporated Deschutes County

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant provided the following response to this section in their burden of proof:

'The applicant finds that this goal is not appliable to the proposed amendments. The proposed amendments would have the effect of including the Stevens Road Tract within the Bend urban growth boundary, changing its plan designation to Bend Urban Growth Boundary, and changing the zoning to UA, Urbanizable Area. Should the County conclude the goal is applicable, the applicant provides the following finding to show the proposal complies with this goal.

The proposed amendments would have the effect of including the subject property, the Stevens Road Tract, within the Bend Urban Growth Boundary. This is a necessary step to development of the property for housing, as envisioned through 2021 HB 3318. The application materials include a copy of the Concept Plan for the Stevens Road Tract (See Exhibit H), which considered several land use and open space alternatives. Each alternative considered more land for RS, Urban Standard Residential, development toward the eastern boundary of the tract, which is adjacent to rural residential development that has occurred between the Tract and Larsen Road. The alternatives provide the opportunity for larger residential lots along this property boundary that can provide more of a transition between the urban development to the west within the Tract and the rural residential areas to the east. Based on this finding, the applicant finds that the proposal is also consistent with Goal 1.'

Staff concurs with this analysis and finds no new rural housing is proposed."

Policy 3.3.1, Except for parcels in the Westside Transect Zone, the minimum parcel size for new rural residential shall be 10 acres.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"No land division is proposed as part of the subject application. Staff therefore finds this criterion does not apply."

Policy 3.3.2, Incorporate farm and forest housing reports into a wider system for tracking the cumulative effects of rural housing development.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The subject Comprehensive Plan Amendment and Zone Change does not review or approve any new uses or construction on the subject property. In addition, the proposed UA zoning is not a farm or forest zone, therefore new residential construction would not be subject to this reporting requirement. Staff therefore finds this criterion does not apply."

Policy 3.3.4, Encourage new subdivisions to incorporate alternative development patterns, such as cluster developments, that mitigate community and environmental impacts.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"No land divisions, including subdivisions, are proposed with the subject application. Future division of the subject property will occur after annexation and will be reviewed by the City of Bend. Staff finds future land divisions will meet the intent of this policy, because they will be guided by the Stevens Road Concept Plan and the site-specific amendments to the Bend Development Code, which are designed to mitigate community and environmental impacts."

Policy 3.3.5, Maintain the rural character of the County while ensuring a diversity of housing opportunities, including initiating discussions to amend State Statute and/or Oregon Administrative Rule to permit accessory dwelling units in the Exclusive Farm Use, Forest and Rural Residential zones.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The applicant provided the following response to this criterion:

> *'The applicant finds that this policy is not applicable because the proposed amendments do not propose any changes to either the County's Comprehensive Plan or Zoning Ordinance that would have the effect of allowing accessory dwelling units in the Exclusive Farm Use, Forest or Rural Residential Zones. The proposed amendments would have the effect of amending the County's Comprehensive Plan map to include the Stevens Road Tract, change its plan designation to Bend Urban Growth Boundary, and change is zoning to Urbanizable Area on the County's Zoning Map. The proposed amendments do not include any concurrent amendments to the County's Zoning Ordinance that would permit accessory dwelling units in above-cited zones.'*

Staff concurs that the portion of this policy regarding accessory dwelling units does not apply. Future development of the subject property will provide a diversity of opportunities including both market-rate housing and deed-restricted affordable housing, which may be developed as a combination of single-family and multi-family housing. Staff notes the development of housing on the subject property will be subject to a City of Bend review process and will not occur under the proposed UA zoning. No development is proposed during the time the subject property remains in the UA Zone, and no impacts to the rural character of the property are anticipated. Prior to development, the subject property will be annexed into the Bend city limits and the Comprehensive Plan protections on rural land will no longer apply to the property. Staff therefore finds the proposal complies with the applicable sections of this policy, namely those regarding rural character and provision of housing opportunities."

Goal 2, Support agencies and non-profits that provide affordable housing

Policy 3.3.6 Support Central Oregon Regional Housing Authority and other stakeholders to meet the housing needs of all Deschutes County residents.

a. Assist as needed in coordinating and implementing housing assistance programs.

b. Support efforts to provide affordable and workforce housing in urban growth boundaries and unincorporated communities.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant provided the following response in their Burden of Proof:

'The proposed amendments are consistent with this goal because the planning for the Stevens Road Tract includes identifying specific lands for deed-restricted affordable housing. Section 9(2) requires at least 20 net acres of land to be identified for deed-restricted affordable housing. This has been reflected in the Concept Plan for the Stevens Road Tract and is reflected in a recorded agreement between the City and DSL for the City to purchase these acres and develop them for affordable housing, as required by HB 3318. These provisions of the Concept Plan are required by HB 3318 to be in the City's planning amendments adopted after UGB expansion.'

Staff finds the Applicant has demonstrated compliance with this policy. The proposed UGB expansion will be reviewed by the Department of Land Conservation and Development for conformance with the provisions of HB 3318, including the requirements to designate land within the subject property for affordable housing. The development and management of these affordable housing units will require multiagency coordination, and the application materials indicate this stakeholder coordination is underway.

Staff finds the proposed Comprehensive Plan Amendment will support the eventual development of workforce housing within an urban growth boundary. This criterion will be met."

Policy 3.3.7, Utilize block grants and other funding to assist in providing and maintaining low and moderate income housing.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The application materials include an Affordable Housing Memorandum, dated January 25, 2022, and prepared by ECONorthwest consulting group. This memorandum provides an analysis of various funding sources that can be utilized in developing affordable housing, such as the Low Income Housing Tax Credit (LIHTC). The memorandum also provides a detailed analysis of the different housing types and ownership models that are likely to be developed within the subject property based on the preliminary zoning concept.

The memorandum also provided the following information on existing programs that can provide gap funding or otherwise assist in providing affordable housing.

'The City of Bend has some financial tools that can assist in incentivizing affordable housing and influencing financial feasibility.

- *Affordable Housing Fund. The City of Bend levies a Construction Excise Tax on the value of building permits that goes towards supporting the development of affordable housing. Currently, the fund is used to acquire land for deed-restricted affordable housing, develop the land, construct homes, or rehabilitate homes.*
- *Community Development Block Grants (CDBGs). Each year the City of Bend allocates some of its CDBG funds to affordable housing projects being developed by nonprofit affordable housing providers.*
- *City Surplus Property. Bend routinely sells or conveys some of its excess land holdings to affordable housing providers.*
- *Low-Income Rental Property Tax Exemptions. The City awards a 20-year renewable property tax exemption to qualifying affordable rental housing projects.*
- *System Development Charge Exemptions. All City system development charges (SDCs) are exempted for deed-restricted units at or below 80% of AMI. (Parks SDCs charged by Bend Parks and Recreation District are not exempted.)'*

The language of HB 3318 describes the acres of land that must be dedicated to housing for different income levels. The application materials indicate the Applicant has evaluated how to leverage a variety of funding sources to provide affordable housing in a way that complies with the House Bill."

Section 3.4, Rural Economy Policies

Goal 1, Maintain a stable and sustainable rural economy, compatible with rural lifestyles and a healthy environment.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant provided the following response to this criterion:

'The applicant finds that the proposed amendments will result in the subject property being included in the Bend urban growth boundary for development of urban housing, affordable housing, and some commercial and mixed employment uses. Once amended, the County's Comprehensive Plan will show the property within the Bend urban growth boundary and designated Bend Urban Growth Boundary, and the Zoning map will show the property zoned UA, Urbanizable Area. While the property will not be available for rural economic uses under the MUA10 Zone, the Concept Plan for the Stevens Road Tract does include land for commercial uses (five acres), and mixed employment uses (seven acres). The applicant finds the proposed amendments will be consistent with this policy because land will be provide for economic development, jobs, and services and available to urban and rural residents.'

Staff concurs with this statement and notes the subject application will not limit commercial uses on surrounding rural lands. Surrounding rural lands are zoned MUA10 and EFU, which allow for limited commercial uses subject to land use review. Amending the Comprehensive Plan to include the subject property in the Bend UGB will not impact the zoning designation or allowed uses on neighboring properties outside of the Bend UGB."

Section 3.6, Public Facilities and Services

Goal 1, Support the orderly, efficient and cost-effective siting of rural public facilities and services.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"In a letter dated July 14, 2023, the Applicant provided the following response to this criterion:

'The purpose of this UGB amendment is to facilitate the development of the Stevens Road Tract under HB 3318, which would result in urban levels of housing, including affordable housing. The property is served by the Avion Water Company, and the applicant has completed some public facility planning to serve the tract. This level of public facility planning plans for urban streets, water, and sewer infrastructure.'

Staff generally agrees with the above analysis and notes the subject application is not for the purpose of developing rural public facilities or services. As the Applicant notes, urban public facilities will be provided for the future development within the subject property. The application materials demonstrate this public facility planning is underway, with early coordination allowing for more orderly and efficient service provision. The water, sewer, and road improvements described in the application materials will not be constructed until the property is brought within the Bend city limits and subject to the Bend Development Code. These described infrastructure upgrades will serve future residents of the subject property, not the surrounding rural area.

Staff therefore presents alternate findings that this criterion does not apply because the Applicant does not propose any changes to rural public facilities or services. No development is proposed on the subject property while it remains in the UA Zone, so no additional public services will be required to serve the property while it remains in rural zoning. Staff requests the Hearings Officer amend these findings as they see fit."

The Hearings Officer concurs with the final paragraph comments quoted immediately above. The Hearings finds no development is proposed in this application therefore no additional public services will be required to serve the Subject Property.

Section 3.7, Transportation

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"Deschutes County's Senior Transportation Planner Tarik Rawlings submitted the following comments, dated June 21, 2023:

> *'The subject property will be brought into the City of Bend as a result of the proposal. There currently is no specific proposal to develop the land, but the City's transportation consultant had prepared an assessment dated (May 17, 2022) reviewing the potential trip generation of the property and planned improvements to affected City facilities. There were no adverse effects outlined in the assessment. Under the Joint Area Management Agreement between City of Bend and Deschutes County, jurisdictional transfer of roads are accomplished as part of annexation. The site is currently served by Stevens Road (County designated Rural Collector) to the north. Adequacy of current and future transportation facilities will be reviewed per the Bend development code as the land is proposed to develop. Finally, HB 3318 exempts the subject property from any Statewide Planning Goals, including Goal 12 (Transportation) as the subject property includes affordable housing and that the proposal is not a land use decision. Therefore, the Transportation Planning Rule (TPR) at OAR 660-012, does not apply nor does Deschutes County Code (DCC) 18.116.310. Staff finds this goal is met.'*

Staff finds these comments demonstrate compliance in regard to any transportation-related goals or policies that may apply. Staff presents additional findings regarding the Comprehensive Plan policies and Statewide Planning Goals that apply to the subject proposal, under the House Bill 3318 section later in this staff report. The Hearings Officer may choose to edit these findings as they see fit, and provide additional guidance on what criteria, if any, the subject application is exempted from by HB 3318. In the event the Hearings Officer finds the Transportation section of the Comprehensive Plan does apply to the subject application, staff presents the Transportation Planner comments above as evidence this criterion is met."

The Hearings Officer finds that Applicant's transportation submissions/comments and Staff's additional comments contained in the transportation section of the Comprehensive Plan provides substantial and adequate evidence this goal has been met.

Section 3.8, Rural Recreation

Goal 1, Promote a variety of passive and active park and recreation opportunities through a regional system that includes federal and state parks and local park districts.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Stevens Road Tract Concept Plan submitted with the application materials provides the following analysis of proposed park facilities:

> *"Recreational opportunities and open space were identified as key components in the conceptual planning for the Stevens Road Tract. Working in close coordination with Bend Park and Recreation District (BPRD), the three Concept Plan Alternatives were created to ensure adequate parks, open*

space, trails, and recreational opportunities for the existing community and future residents of this area.

The adopted 2018 BPRD Comprehensive Plan calls for a target of 7.85 acres of neighborhood and community parks per 1,000 residents and a neighborhood or community park within a ½ mile walking distance from most homes. Additionally, trails – as both recreational amenities and longer-distance transportation routes – are identified as important recreational and functional parts of the parks system. The three Concept Plan Alternatives for the Stevens Road Tract provide different options aimed at meeting these targets.

…

The park(s) would be developed to provide opportunities for a mix of active (e.g., ball fields and playgrounds) and passive recreational activities (e.g., trails and open space).'

The application materials indicate Bend Park and Recreation District, a local park district, has been involved in the concept planning of the subject property. The Stevens Road Tract Concept Plan presented three alternatives, and the alternative that was ultimately selected was the one with the most amount of land dedicated to parks. This design includes a 29-acre community park, as well as trail connections that take advantage of the existing natural gas pipeline easement. The applicant proposes a looped trail system that goes around the perimeter of the subject property, which will provide benefits to neighboring properties both inside and outside of the Bend UGB.

The applicant does not propose new federal or state parks within the subject property. However, staff finds the proposed park development within the subject property will bolster the regional parks network and provide additional recreation opportunities for residents both inside and outside of the Bend UGB."

Policy 3.8.1, Cooperate with public agencies and local park districts to provide park and recreation lands, facilities, and opportunities.

a. The Statewide Comprehensive Outdoor Recreation Plan and State Park Master Plans shall serve as a basis for coordination on County-wide park and recreation issues.

b. Support exceptions to Statewide Planning Goals for urban fringe areas owned or acquired by and operated by park and recreation districts.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"As described above, the application materials indicate ongoing cooperation between City of Bend and Bend Park and Recreation District. The subject application for a Zone Change and Comprehensive Plan Amendment will not immediately lead to the development of new park facilities. However, it is a necessary step towards an eventual Master Plan and development of the subject property, which will provide new recreation opportunities.

The Applicant does not request an exception to a Statewide Planning Goal. Staff therefore finds subsection (b), above, does not apply."

Chapter 4, Urban Growth Management

Section 4.2, Urbanization Policies

Goal 1, Coordinate with cities, special districts and stakeholders to support urban growth boundaries and urban reserve areas that provide an orderly and efficient transition between urban and rural lands.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The Applicant provided the following response in their submitted Burden of Proof:

'The proposal is consistent with this goal because the City has coordinated with Deschutes County, the Bend Park and Recreation District, and other stakeholders to support the concept planning for the Stevens Road Tract and the amendment of the Bend UGB to include it. The Concept Plan (See Exhibit H) documents the City's coordination with the Park District, Cascades East Transit, and Avion Water Company to plan for an orderly and efficient transition between urban and rural lands for the Stevens Road Tract. These provisions of the Concept Plan are required by HB 3318 to be in the City's planning amendments adopted after UGB expansion.'

Staff concurs with the Applicant's analysis and finds they have demonstrated coordination between Deschutes County, the City of Bend, and special districts. The outreach process for the Stevens Road Concept Plan included three community meetings with stakeholders, which were held in 2021 and 2022. The application materials also list the following special districts and public agencies that were consulted during this process:

'Collaboration with Bend Park and Recreation District, Bend-La Pine School District, Cascades East Transit, Deschutes County, DSL, Oregon Department of Land Conservation and Development, and Oregon Department of Transportation.'

The larger planning process to develop the subject property pursuant to HB 3318 has involved coordination with a range of agencies and stakeholders. While the development of the Stevens Road Tract Concept Plan was led by the City of Bend, staff finds the coordination during that process is relevant in addressing this criterion."

Policy 4.2.1, Participate in the processes initiated by cities in Deschutes County to create and/or amend their urban growth boundaries.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The subject application was initiated by a city in Deschutes County as part of a larger process to amend its urban growth boundary. The subject Comprehensive Plan Amendment will bring the

property within the Bend UGB, which will allow the City of Bend to initiate amendments to its Development Code and eventually rezone the property for urban uses. As noted above, the subject property is owned by the State of Oregon, and the jurisdictional and ownership transfer of the property therefore requires the coordination of multiple land use processes. The applicant has coordinated with various agencies, including Deschutes County, to align these interrelated planning efforts.

Staff finds this UGB amendment and subsequent development of the subject property through a master planning process are only possible with County participation and coordination, including review of the subject application. Therefore, the County's role in this application will function to increase participation in city-led UGB amendments."

Policy 4.2.2, Promote and coordinate the use of urban reserve areas.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The subject property is not designated as Urban Reserves. Staff therefore finds this policy does not apply."

Goal 2, Coordinate with cities, special districts and stakeholders on urban growth area zoning for lands inside urban growth boundaries but outside city boundaries.

Goal 3, Coordinate with cities, special districts and stakeholders on policies and zoning for lands outside urban growth boundaries but inside urban reserve areas

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The proposed zoning designation, UA, will serve as a holding zone while the subject property is inside the Bend UGB but outside city boundaries. The application materials document ongoing coordination between the City of Bend, Deschutes County, State of Oregon and service providers regarding how the property will be managed during the time period it remains outside city boundaries but within the Bend UGB."

Goal 4, To build a strong and thriving regional economy by coordinating public investments, policies and regulations to support regional and state economic development objectives in Central Oregon.

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements:

"The subject property presents a unique opportunity to leverage public investments because the property is owned by the State of Oregon and its sale will generate revenue for the Common School

Fund. Increasing workforce housing is a regional and state economic development objective, and development of the subject property will be leveraged to provide housing for school district employees.

In addition to providing workforce housing, the subject property will be zoned to include five acres of commercial land and seven acres of mixed employment land. The public ownership of the subject property, and the provisions of HB 3318, provide a unique opportunity to maximize public benefit by master planning the subject property. The master planning process for the subject property will result in a walkable community with services and employment located near a range of housing types. High-level zoning diagrams indicate commercial areas will be concentrated near the proposed community park in a "main street"-style design where the commercial area functions as a community center. The Concept Plan also indicates seven acres of mixed employment land will be provided in the southwest corner of the subject property, and this area is adjacent to other industrial uses and will allow for a mix of commercial and light industrial uses. Providing employment land within the subject property will support regional economic development by bolstering the local economy.

Commercial uses will not be established on the subject property until it is annexed into the City of Bend and rezoned. The eventual commercial development will be subject to the Bend Development Code and will be within the city limits of Bend, and will be close to unincorporated lands and provide economic benefit to the surrounding rural area."

HOUSE BILL 3318

FINDING: The Hearings Officer incorporates as additional findings for this section the Overview Findings. The Hearings Officer finds that the Staff comments below are supported by substantial evidence and, as supplemented by the Overview Findings, are legally correct. Staff findings are set forth below in italics.

"The proposed expansion of the Bend UGB to include the subject property is in response to the passage of HB 3318. This House Bill is specific to the Stevens Road Tract and outlines a unique process the City of Bend may utilize when adding this property to its UGB. The Applicant has proposed findings, below, to demonstrate compliance with applicable sections of HB 3318.

> *<u>SECTION 3. Stevens Road planning generally.</u>*
> *(1) Actions taken under sections 2 to 9 of this 2021 Act:*
> *(a) Are not land use decisions, as defined in ORS 197.015.*

***FINDING:** The purpose of this finding is to show that the Statewide Planning Goals are not applicable to this proposal because of the above-cited language in Section 3 of HB 3318. Section 9 of HB 3318 provides that standards in the bill apply to the Stevens Road Tract in lieu of statewide planning goals. Section 3(1)(a) of HB 3318 states that actions taken under sections 2 through 9 of this 2021 Act are not land use decisions, as defined in ORS 197.015. Under this statute, ORS 197.015(10) defines a land use decision as one that includes under (10)(a)(A) a final decision or determination made by a local government or special district that concerns the adoption, amendment, or application of the goals. The goals in this context refer to the Statewide Planning Goals.*

SECTION 6. Stevens Road urban growth boundary expansion.

(1) Notwithstanding ORS 197.286 to 197.314, 197.626 or 197A.320 or any statewide land use planning goal related to housing or urbanization, the Department of Land Conservation and Development shall approve an expansion of the urban growth boundary submitted by the city and approved by the city by ordinance, if the department determines that:

FINDING: *The following findings address compliance with Section 6 of HB 3318 (See Exhibit F). To address Section 6 of HB 3318, these findings refer to sections of HB 3318 where the bill itself refers to a section of this 2021 Act. Regarding Section 6(1), the applicant finds that this section directs actions of the Oregon Department of Land Conservation and Development regarding the Stevens Road Tract. This section directs the Department to approve an expansion of the UGB that has been approved by and subsequently submitted by the City of Bend based on the criteria below under Section 6(1)(a) through (1)(c).*

(a) The department has received the letters required by section 4 of this 2021 Act;

FINDING: *The proposal satisfies criterion (1)(a) because the City has submitted, and the Department of Land Conservation and Development has received the letters required by Section 4 of HB 3318. Section 4 of HB 3318 required the following letters to be submitted to the Department with the Stevens Road Tract Concept Plan:*

Section 4(1) requires a letter from the City of Bend expressing the city's nonbinding intent to consider a concept plan under Section 5 of HB 3318, and;

Section 4(2) requires a letter from the Department of State Lands (DSL or Department) that gives its consent to the City to pursue an urban growth boundary expansion and planning amendments under Sections 6 through 9 of HB 3318. This same letter from DSL must also establish an agreement with the City that is binding on the successors of the owners, is contingent up on the final approval of the planning amendments, and establishes the essential terms, including price per acre, but not requiring specific lands to be designated, for the Department's conveyances to the city of real property consistent with Section 9 (2) and (3) of HB 3318.

The City provided both letters to the Department of Land Conservation and Development (DLCD) by electronic mail on June 23, 2022. This email and the attached letters are enclosed as Exhibit J. DLCD acknowledged receipt of the letter and materials through an electronic mail message dated August 29, 2022. Through this same message, DLCD submitted a copy of their letter approving the concept plan dated August 29, 2022 (See Exhibit K).

(b) The department has approved the city's conceptual plan under section 5 of this 2021 Act; and

FINDING: *The proposed UGB expansion satisfies criterion (1)(b) because the department (DLCD) has approved the city's conceptual plan under Section 5 of HB 3318. As stated above under the*

forgoing finding address criterion (1)(a), the Department (DLCD) submitted an August 29, 2022, letter to the City through an email of the same approving the Concept Plan. This electronic mail message and August 29, 2022, letter are enclosed as Exhibit K.

> *(c) The proposed urban growth boundary expansion adds all of the Stevens Road tract and no other lands to the area within the city's urban growth boundary.*

FINDING: *The proposed UGB expansion satisfies criterion (1)(c) above because the City has proposed to expand the UGB to include only the Stevens Road Tract, and all the land within the tract. The proposal described above in this proposed set of findings states that the only land included in this proposed expansion of the Bend UGB is the Stevens Road Tract and all the land within the tract would be included in the UGB. This property is described as Tax Lot 100 on Deschutes County Tax Assessor's Map 18-12-11 and is also described as Property 1 in a decision dated September 19, 2019, approving a property line adjustment under file no. PZ-10-0550, being 261 acres (See Exhibit B).*

> *(2) The city shall include the lands brought within the city's urban growth boundary under this section in the city's inventory of buildable lands under ORS 197.296 (3)(a).*

FINDING: *The proposal will satisfy criterion (2) because the City has proposed to include the lands brought within the UGB in the City's inventory of buildable lands under ORS 197.296(3)(a). The proposal includes a copy of a proposed amendment to Appendix J, the 2016 Buildable Lands Inventory, of the Bend Comprehensive Plan (See Exhibit M). This proposed amendment is attached as Exhibit I and proposes to add the 198 acres of buildable land within the Stevens Road Tract to the BLI. These acres would not be designated for either housing or employment until such as the City adopts planning amendments for guiding master planning of the Stevens Road Tract that include the required elements from Section 9 of HB 3318 and mirror the proposed plan designations as shown in Alternative 3 of the Concept Plan.*

The language of HB 3318 appears to refer to the planning amendments the City of Bend must undertake in order to receive approval for bringing the subject property within the Bend UGB.

Section (2)(4) of HB 3318 includes the following definition: "'Stevens Road planning amendments" means amendments to the city's comprehensive plans, land use regulations or zoning maps that affect the development of the Stevens Road tract' [emphasis added].

The language of the House Bill does not specify the process, if any, that the County must undertake for the corresponding amendment to the County Comprehensive Plan. Absent that guidance, the subject request has been processed as a request for a Comprehensive Plan Amendment and Zone Change pursuant to Deschutes County Code. It is not apparent to staff whether the House Bill exempts the subject application from demonstrating compliance with Statewide Planning Goals, Deschutes County Comprehensive Plan policies, or other provisions of Deschutes County Code.

Staff requests the Hearings Officer make specific findings regarding whether the provisions of HB 3318 are applicable approval criteria for the subject amendment to Deschutes County's Comprehensive Plan, as well as the proposed Zone Change of the subject property."

OREGON ADMINISTRATIVE RULES CHAPTER 660, LAND CONSERVATION AND DEVELOPMENT DEPARTMENT

DIVISION 15, STATEWIDE PLANNING GOALS AND GUIDELINES

OAR 660-015, Division 15, Statewide Planning Goals and Guidelines

FINDING: The Hearings Officer adopts as findings for this decision the following Staff Report statements (in italics):

"The applicant asserts the Statewide Planning Goals are not applicable to the subject application because it is being processed pursuant to HB 3318. The Burden of Proof includes the following analysis in support of this claim.

'The purpose of this finding is to show that the Statewide Planning Goals are not applicable to this proposal because of the above-cited language in Section 3 of HB 3318. Section 9 of HB 3318 provides that standards in the bill apply to the Stevens Road Tract in lieu of statewide planning goals. Section 3(1)(a) of HB 3318 states that actions taken under sections 2 through 9 of this 2021 Act are not land use decisions, as defined in ORS 197.015.'

Staff also cites Section (6)(1) of HB 3318, below, which references Statewide Planning Goals in regard to the Stevens Road tract UGB expansion.

SECTION 6. Stevens Road urban growth boundary expansion. (1) Notwithstanding ORS 197.286 to 197.314, 197.626 or 197A.320 or any statewide land use planning goal related to housing or urbanization [emphasis added], the Department of Land Conservation and Development shall approve an expansion of the urban growth boundary submitted by the city and approved by the city by ordinance, if the department determines that:

(a) The department has received the letters required by section 4 of this 2021 Act;

(b) The department has approved the city's conceptual plan under section 5 of this 2021 Act; and

(c) The proposed urban growth boundary expansion adds all of the Stevens Road tract and no other lands to the area within the city's urban growth boundary.

The proposed Comprehensive Plan Amendment and Zone Change are for the purpose of bringing the property into the Bend UGB and are subject to applicable provisions of Deschutes County Code as well as state law. The language of HB 3318 does not provide clear direction on whether an amendment to the County's Comprehensive Plan is subject to Statewide Planning Goals, and if so, which goals are applicable. Staff requests the Hearings Officer make specific findings on this topic. In the event the Hearings Officer finds the Statewide Planning Goals apply, staff has provided alternate findings below demonstrating compliance."

Goal 1, Citizen Involvement. To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

FINDING: *A land use action sign was posted on the subject property on June 12, 2023, and a Notice of Application was mailed to nearby property owners on June 8, 2023. A public hearing will be held before a Hearings Officer and a second public hearing will be held before the Board of County Commissioners. Notice of all public hearings will be mailed to impacted individuals and a notice will also be printed in the Bend Bulletin newspaper. The published and mailed notices will all comply with the requirements of DCC 22.12.020.*

Goal 2, Land Use Planning. To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.

FINDING: *This proposal satisfies this goal because the applications were handled pursuant to the procedures applicable to plan amendments in the County's Comprehensive Plan and zoning ordinance.*

Goal 3, Agricultural Lands. To preserve and maintain agricultural lands.

FINDING: *The subject property is not designated as agricultural lands on the Deschutes County Comprehensive Plan. Staff notes the subject property previously received approval for a Comprehensive Plan Amendment from Agriculture to Rural Residential Exception Area, on the basis the subject property does not meet the definition of agricultural land.*

Goal 4, Forest Lands. To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

FINDING: *The subject property does not contain any forest lands and therefore this goal is not applicable.*

Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces. To protect natural resources and conserve scenic and historic areas and open spaces.

FINDING: *The subject property does not contain any inventoried Goal 5 resources. An assessment of natural resources, scenic and historic areas, and open space was conducted as part of the conceptual planning process done by the City of Bend. Appendix E to the Stevens Road Tract Concept Plan is a memo dated March 28, 2022, titled Historic, Cultural, and Natural Resources. This memo includes a review of different types of Goal 5 resources and notes the subject property does not contain any area within the Surface Mining Impact Area, Wildlife Area Combining Zone, or Landscape Management Combining Zone.*

Goal 6, Air, Water, and Land Resources Quality. To maintain and improve the quality of the air, water, and land resources of the state.

FINDING: *The proposal is consistent with Goal 6 based on the analysis provided in the Stevens Road Tract Concept Plan and other supplemental application materials. These materials demonstrate future development of the subject property will be designed to minimize carbon emissions and will reduce single-occupancy vehicles trips by planning for transit and bicycle connections. No development is proposed at this time and future uses will be established under urban zoning designations. In a letter dated July 14, 2023, the Applicant provides the following statement on impacts to water resources.*

> *'No development is proposed at this time that would affect either surface or subsurface water resources.'*

Staff concurs and notes the subject application only reviews the impacts of rezoning the subject property to UA and changing the Comprehensive Plan designation to Bend UGB. Future annexation will be subject to a separate land use application and impacts to natural resources will be evaluated again at that time. Staff finds the Stevens Road Tract Concept Plan is not the subject of this review but provides relevant context on how the planned uses of the subject property will comply with Goal 6.

Goal 7, Areas Subject to Natural Disasters and Hazards. To protect people and property from natural hazards.

FINDING: *The applicant provided the following statement regarding wildfire and flood risk on the subject property:*

> *'The proposed amendments are consistent with this goal because the Concept Plan guiding future development of the Stevens Road Tract has accounted for the natural hazard of wildfire. The proposed amendments would change the County's Comprehensive Plan map to include the subject property within the Bend urban growth boundary, change the Plan designation to Bend Urban Growth Boundary, and change the zoning on the County's Zoning map to UA, Urbanizable Area. The purpose behind these amendments is to facilitate the development of the subject property according to the Stevens Road Tract Concept Plan (See Exhibit H). The materials submitted with the plan amendment and zone change applications include the Technical Appendices to the Concept Plan (See Exhibit I), which also include a technical memorandum addressing wildfire risk and identifying several strategies for mitigation (See Appendix F). The subject property does not abut or is impacted by a flood plain.'*

Staff finds wildfire risk is the primary natural disaster concern on the subject property.

The adopted concept plan indicates transportation access to other areas of the City of Bend will improve as a road network is developed within the subject property. Staff notes the new roads and improved access will provide benefits if a natural disaster were to occur and the subject property

either needed to be evacuated or needed to be accessed by emergency service providers. Future annexation of the subject property will also allow it to be served by urban service providers.

Goal 8, Recreational Needs. To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

FINDING: *The Stevens Road Tract Concept Plan presented three high-level alternatives for future development of the subject property. The concept plan that was ultimately approved by Bend City Council includes a 29-acre centrally located community park, seven acres of trail corridors, and three acres of open space. This concept plan factors in trail and bicycle connections to existing and proposed trail networks.*

The Stevens Road Tract Concept Plan also provides an evaluation of existing natural features, such as rock outcroppings and trails along the utility easements, and how these features can be preserved and incorporated into developed parks and recreation opportunities.

Goal 9, Economy of the State. To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

FINDING: *The intended use of the subject property is future annexation by the City of Bend and a master planning process for development. The adopted Stevens Road Tract Concept Plan proposes a mix of commercial and residential uses, and HB 3318 requires land to be zoned for commercial uses in accordance with the City's most recent economic opportunity analysis.*

As described below, the Stevens Road Tract master plan will provide housing affordable for those earning 80 percent or less of the area median income, with priority given to employees of an education provider. Staff finds the provision for workforce housing will benefit the local economy.

Goal 10, Housing. To provide for the housing needs of citizens of the state.

FINDING: *Section (9)(2) of HB 3318 stipulates that at least 20 net acres of land within the Stevens Road Tract must be conveyed to the City of Bend and remain as income-restricted housing for a period of no less than 50 years. Of this land area that is set aside for income-restricted housing, at least 12 net acres must be available to households earning 60 percent or less of the area median income. In addition, six net acres must be made available to households earning 80 percent or less of the area median income, with priority given to employees of education providers. Finally, at least two net acres must be restricted so that at least 80 percent of the units in each contiguous development tract are affordable to households earning 80 percent or less of the area median income, which includes at least one acre where preference is given to employees of an education provider.*

HB 3318 provides additional guidance on the development of market-rate housing, to ensure adequate opportunities for the development of all needed housing types. Housing in the Stevens Road Tract must exceed a minimum density of nine units per gross residential acre, and the ratio of single-

family to multifamily housing must exceed what is required in the city's most recently adopted housing needs analysis. Staff notes no housing development is proposed under the UA zoning designation, and future development will be reviewed according to the City of Bend's Development Code and Comprehensive Plan. However, staff finds the subject Comprehensive Plan Amendment and Zone Change will promote the creation of new housing units by completing a necessary step towards eventual development of the subject property.

Goal 11, Public Facilities and Services. To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

FINDING: *The application materials indicate the subject property is currently served by Avion Water Company, and planning has begun regarding domestic water service for the future build-out of the property. The appendixes to the Steven Road Tract Concept Plan also include technical memorandums regarding water infrastructure, sewer infrastructure, and transportation improvements. Staff finds interagency planning is underway to ensure a smooth transition of services when the subject property is brought into the Bend city limits and developed. Beginning this coordination at the concept planning phase allows for timely input from service providers, which increases the likelihood of orderly and efficient public facilities.*

Goal 12, Transportation. To provide and encourage a safe, convenient and economic transportation program.

FINDING: *The Stevens Road Tract Concept Plan indicates 20 percent of the unconstrained land area is planned for future public right of way, which amounts to approximately 50 acres of land. The application materials also provide an analysis of the intersection and roadway improvements that would be required to build out the subject property, and information on how those improvements relate to the goals of the City of Bend's Transportation System Plan.*

Staff finds the applicant has demonstrated that different modes of transportation will be planned for, and that direct road and transit connections will be provided between the subject property and other neighborhoods within Bend. Although these transportation improvements will not be built out until the property is annexed into the City of Bend, there is significant evidence that transportation planning is underway and is being accounted for. For these reasons, staff finds the proposed Zone Change and Comprehensive Plan Amendments are a step towards developing a safe, convenient, and economic transportation network within the subject property.

Goal 13, Energy Conservation. To conserve energy.

FINDING: *The application materials indicate the subject property will be developed with high-density housing, walkable commercial centers, and will be served by transit. Three alternatives were presented in the Stevens Road Concept Plan, and the option that was selected had the "least impact per household for water usage, energy usage, and carbon emissions" (Stevens Road Tract Concept Plan page 70).*

Goal 14, Urbanization. To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

FINDING: *The subject property will be annexed into the City of Bend and developed through a master planning process that accounts for parks, walkable neighborhoods, transit access, commercial uses, and a variety of housing types. Staff finds this master planning process will encourage the development of the subject property as a livable community that accommodates urban housing and urban employment. As described above, the planning process for the subject property has been a coordinated effort with involvement from the City of Bend, Deschutes County, and the State of Oregon. The unique factors of the subject property, particularly that it is under public ownership and was approved for a UGB expansion through HB 3318, will allow an orderly and efficient transition from the current rural use of the land to its future urban uses.*

Goal 15, Willamette Greenway.

FINDING: *This criterion does not apply because the subject property is not located in the Willamette Greenway.*

Goals 16 through 19.

FINDING: *These goals do not apply to land in Central Oregon.*

Staff finds that if the Statewide Planning Goals do apply, compliance with them has been effectively demonstrated. Staff requests the Hearings Officer make specific findings regarding whether the Statewide Planning Goals apply to the subject application."

V. CONCLUSION

The Hearings Officer finds that the Applicant has met the burden of proof necessary to justify changing the Comprehensive Plan Designation of the Subject Property from Rural Residential Exception Area to Bend Urban Growth Area, to change the zoning of the Subject Property from Multiple Use Agricultural (MUA10) to Urbanizable Area (UA), and to expand the Urban Growth Boundary through effectively demonstrating compliance with the applicable criteria of DCC Title 18 (Deschutes County Zoning Ordinance), DCC Title 19A (Bend Urbanizable Area District), the Deschutes County Comprehensive Plan, and applicable sections of OAR and ORS.

VI. DECISION AND RECOMMENDATION

Approval of:

Change of the Subject Property Plan Designation from Rural Residential Exception Area to Bend Urban Growth Area; and to

Change of the Subject Property Zoning from Multiple Use Agriculture (MUA 10) to Urbanizable Area

(UA).

Deschutes County Hearings Officer

Gregory J. Frank

Date: October 23, 2023

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Ordinance No. 2023-023 amending Deschutes County Code relating to the composition of the Historic Landmarks Commission

RECOMMENDED MOTION:
Move to conduct first and second reading by title only and adoption by emergency of Ordinance No. 2023-023.

BACKGROUND AND POLICY IMPLICATIONS:
This ordinance would amend Chapter 28 of Title 2 of Deschutes County Code to remove a reference to the Deschutes County Pioneer Association in language concerning the composition of the County's Historic Landmarks Commission. The Pioneer Association is no longer a standalone not-for-profit Oregon entity, and as such the requirement that it be specifically represented on the Historic Landmarks Commission is no longer applicable.

Originally, the amendments under consideration also included language that would allow the Board to suspend the Historic Landmarks Commission when deemed necessary; however, that portion of the amendments has been removed.

BUDGET IMPACTS:
None

ATTENDANCE:
Tanya Saltzman, Senior Planner

COMMUNITY DEVELOPMENT

MEMORANDUM

DATE: November 20, 2023

TO: Deschutes County Board of Commissioners

FROM: Tanya Saltzman, AICP, Senior Planner

RE: Consideration of First and Second Reading: Historic Landmarks Commission Amendments

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On November 29, 2023, staff will present Ordinance No. 2023-023 to the Board of County Commissioners (Board) for consideration of first and second reading (emergency adoption). The Board of County Commissioners conducted a public hearing on November 1, 2023.[1] 35-day Post-Acknowledgement Plan Amendment (PAPA) notice was provided to the Department of Land Conservation and Development (DLCD) on September 27, 2023. A work session was held with the Planning Commission on October 12, 2023.[2] A work session was held with the Board of County Commissioners on October 25, 2023.[3]

The primary purpose of the amendments is to remove a reference to the Deschutes County Pioneer Association in language concerning the composition of the Historic Landmarks Commission. The Deschutes County Pioneer Association is no longer a stand-alone not-for-profit Oregon entity and as such the requirement to have specific representation is no longer applicable.

Originally, the amendments under consideration also included language that would allow the Board to suspend the Historic Landmarks Commission when deemed necessary; however, that portion of the amendments has been removed.

A. Historic Preservation and County Code

Historic resources are recognized by Statewide Planning Goal 5, Natural Resources, Scenic Views and Historic Areas and Open Spaces, and Oregon Administrative Rule (OAR) 660-023-0200. The

[1] https://www.deschutes.org/bcc/page/board-county-commissioners-meeting-138
[2] https://www.deschutes.org/bc-pc/page/planning-commission-41
[3] https://www.deschutes.org/bcc/page/board-county-commissioners-meeting-133

Statewide Goal and OAR require basic protections for sites listed on the National Register of Historic Places and recommend the County to inventory and protect other historic or cultural sites.

The Board of County Commissioners (Board) adopted Ordinance PL-21 on September 17, 1980 to establish the Deschutes County Historic Landmarks Commission and create a process to evaluate, designate and regulate historic resources throughout the rural county. The resulting local inventory of historical resources and National Register of Historic Places can be found in the County Comprehensive Plan. Deschutes County Code (DCC) Chapter 2.28 – Historic Preservation and Historic Landmarks Commission – provides procedures for protecting designated local and National Register historic resources. Chapter 2.28 also provides the basis for the establishment and duties of the Historic Landmarks Commission.

B. Adoption by Emergency

As noted above, Ordinance No. 2023-023 removes DCC 2.28(A)(5), which refers to the selection of a commissioner representing the Deschutes County Pioneer Association. The Pioneer Association is no longer a separate not-for-profit Oregon entity and as such this provision is no longer applicable.

During the public hearing, draft amendments were presented that provided an option for the Board to suspend the Historic Landmarks Commission in times when participation on the Commission was low. However, given the public input received, the Board directed staff to strike that portion of the amendments and to initiate recruitment for the HLC once again. This recruitment is open until December 1.

Emergency adoption of Ordinance No. 2023-023 allows for the recruitment process to be cleaner by removing the outdated reference to the Pioneer Association prior to the selection of new commissioners. Non-emergency adoption would result in a recruitment process that technically would be obligated to fill a position from an organization that no longer exists in its original form.

C. Next Steps

As noted above, staff recommends that the Board vote on and adopt the ordinance by emergency, with an immediate effective date. This proposed action requires a unanimous vote. Alternatively, if the vote is not unanimous, the Board will hold first and second readings at least 14 days apart, and then the ordinance will be effective 90 days after second reading.

Attachments:

Ordinance No. 2023-023 and Corresponding Exhibits
- Exhibit A – DCC 2.28, Historic Preservation and Historic Landmarks Commission
- Exhibit B – Findings

REVIEWED

_____

LEGAL COUNSEL

For Recording Stamp Only

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

An Ordinance Amending Deschutes County Code Title 2, Chapter 28 to Remove Reference to the Deschutes County Pioneer Association, and Declaring an Emergency.	* * * * *	ORDINANCE NO. 2023-023

WHEREAS, the Board of County Commissioners directed Deschutes County Community Development Department staff to initiate amendments (Planning Division File No. 247-23-000693-TA) to Deschutes County Code Title 2, Chapter 28, Historic Preservation; and

WHEREAS, the Deschutes County Planning Commission reviewed the proposed changes on October 12, 2023; and

WHEREAS, the Board considered this matter after a duly noticed public hearing on November 1, 2023 and concluded that the public will benefit from the proposed changes to the Deschutes County Code Title 2; now, therefore,

THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON, ORDAINS as follows:

Section 1. AMENDMENT. Chapter 2.28, Historic Preservation and Historic Landmarks Commission, is amended to read as described in Exhibit "A", attached hereto and by this reference incorporated herein, with new language underlined and language to be deleted in ~~strikethrough.~~

Section 2. FINDINGS. The Board adopts as its findings, Exhibit "B" attached and incorporated by reference herein.

/ / /

Section 3. EMERGENCY. This Ordinance being necessary for the public peace, health and safety, an emergency is declared to exist and this Ordinance takes effect on its passage.

Dated this _____ of _____, 2023

BOARD OF COUNTY COMMISSIONERS
OF DESCHUTES COUNTY, OREGON

_____
ANTHONY DEBONE, Chair

_____
PATTI ADAIR, Vice Chair

ATTEST:

_____
Recording Secretary

_____
PHILIP CHANG

Date of 1st Reading: _____ day of _____, 2023.

Date of 2nd Reading: _____day of _____, 2023.

Record of Adoption Vote:

Commissioner	Yes	No	Abstained	Excused
Anthony DeBone	___	___	___	___
Patti Adair	___	___	___	___
Philip Chang	___	___	___	___

Effective date: _____ day of _____, 2023.

CHAPTER 2.28 HISTORIC PRESERVATION AND HISTORIC LANDMARKS COMMISSION

* * *

2.28.040 Administration

A. The Landmarks Commission is composed of five voting and an undetermined number of ex-officio members.

1. The voting members must reside within the County.
2. The membership of the Landmarks Commission shall, to the extent possible, be representative of the various geographic areas of the County.
3. The Mayor of Sisters may appoint one Commissioner to represent the City of Sisters or delegate it to Deschutes County.
4. The Board shall appoint at least four Landmarks Commissioners.
5. ~~Upon recommendation of the Deschutes County Pioneer Association, the Board shall appoint one representative from the Deschutes County Pioneer Association as one of the four Landmarks Commissioners.~~
6. ~~5.~~ If the City of Sisters delegates their appointment to Deschutes County, the Board shall appoint a fifth Landmarks Commissioner.
7. ~~6.~~ The ex-officio members shall be appointed by the Board.

B. Landmarks Commissioners: To the extent they are available, at least some of the commission members should meet professional qualifications in the disciplines of history, architecture, architectural history, archaeology, or related fields.

C. Landmarks Commissioners serve four-year terms. Any vacancy occurring in a position for any reason other than expiration of a term shall be filled by appointment for the remainder of the term.

D. Ex-Officio Members.

1. In addition to the five voting members, there shall be an undetermined number of Commissioners called "ex officio members" who will act in a non-voting, advisory capacity to the Landmarks Commission and County staff.
2. These ex officio members shall not be entitled to vote and are not required to reside within Deschutes County.
3. These persons shall be representative of organizations including, but not limited to, the United States Forest Service, United States Bureau of Land Management, the County

building division, the American Institute of Architects, the Confederated Tribes of Warm Springs, Bums Paiute Tribe, and Klamath Tribes.

E. The officers of the Landmarks Commission shall consist of a chairperson and vice-chairperson, each elected by a majority vote of the Commission.

F. The regular time, place and manner of notice of meetings shall be fixed by rules of the Landmarks Commission. However, the Landmarks Commission shall meet at least on a quarterly basis.

G. The Landmarks Commission shall submit an annual report to the Board.

H. Any clerical and staff assistance necessary shall be provided by the County Planning Division staff or as otherwise delegated by the Board.

I. The Landmarks Commission shall serve as a hearings body for matters concerning Significant Historic Resources within the County and the City of Sisters.

J. The Landmarks Commission shall serve as the initial hearings body for matters concerning applications to designate a historic resource as a Locally Significant Historic Resource. The Board of County Commissioners shall consider the decision of the Landmarks Commission and serve as the final hearings body.

K. The Landmarks Commission shall review nominations to the National Register of Historic Places at the direction of the State Historic Preservation Office.

L. The Landmarks Commission may act upon requests by any community member, by owners of structures, objects, districts, or sites, or on its own motion concerning the designation of particular districts, objects, or sites.

M. The Landmarks Commission shall have authority to inspect or investigate any district, structure, object or site in the County which it is requested to designate, or which it has reason to believe is an architectural and/or historical landmark.

N. The Landmarks Commission shall review all information which it has and shall hold hearings as prescribed in DCC 22.24.050 through 22.24.190.

O. The Landmarks Commission shall have authority to coordinate historical preservation programs of the county, state and federal governments, as they relate to property within the County.

P. The Landmarks Commission may recommend to the Board or the State Legislature any changes of law which it finds appropriate.

Q. Current Resource.

1. The Landmarks Commission shall compile and maintain a current Resource List that includes the applicable tax lots and addresses, the date of designation, and a brief description of the resource and reasons for inclusion.

2. Disclosure of the locations and descriptions of designated Archaeological Resources are subject to appropriate state and federal laws.

R. The Landmarks Commission shall notify all owners of a historic resource recommended for designation of such recommendation. The historic resource will not be approved for a historic designation unless the property owners at the time of designation support the local designation of their property as a Locally Significant Historic Resource.

S. The Landmarks Commission shall have authority to take such steps as it finds appropriate or necessary to make available to the public information concerning its activities and various Historic Resources to be designated pursuant to DCC 2.28.

T. The Landmarks Commission shall perform such other duties relating to historical matters as the Board of County Commissioners may request.

U. Landmark Commissioners shall serve without compensation.

V. The Landmark Commission shall support the enforcement of all federal and state laws relating to the protection of National Register Resources, Archaeological Sites, and Archaeological Objects regardless if they are designated to the Resource List.

HISTORY
Adopted by Ord. PL-21 §2,3 on 9/17/1980
Amended by Ord. 88-008 §§3, 4 and 5 on 1/27/1988
Amended by Ord. 95-027 §1 on 5/17/1995
Amended by Ord. 2005-029 §1 on 6/6/2005
Amended by Ord. 2010-019 §1 on 8/23/2010
Amended by Ord. 2012-003 §1 on 3/14/2012
Amended by Ord. 2012-001 §1 on 4/4/2012
Amended by Ord. 2020-006 §5 on 11/10/2020
Amended by Ord. 2023-023 §1 on 11/29/2023

FINDINGS

I. PROPOSAL

This is a legislative text amendment to Deschutes County Code (DCC), Title 2, Administration, Chapter 2.28, Historic Preservation and Historic Landmarks Commission. The primary purpose of the amendments is to remove a reference to the Deschutes County Pioneer Association in language concerning the composition of the Historic Landmarks Commission. The Deschutes County Pioneer Association is no longer a stand-alone not-for-profit Oregon entity and as such the requirement to have specific representation is no longer applicable.

II. BACKGROUND

A. Historic Preservation and County Code

Historic resources are recognized by Statewide Planning Goal 5, Natural Resources, Scenic Views and Historic Areas and Open Spaces, and Oregon Administrative Rule (OAR) 660-023-0200. The Statewide Goal and OAR require basic protections for sites listed on the National Register of Historic Places and recommend the County to inventory and protect other historic or cultural sites.

The Board of County Commissioners (Board) adopted Ordinance PL-21 on September 17, 1980 to establish the Deschutes County Historic Landmarks Commission and create a process to evaluate, designate and regulate historic resources throughout the rural county. The resulting local inventory of historical resources and National Register of Historic Places can be found in the County Comprehensive Plan. Deschutes County Code (DCC) Chapter 2.28 – Historic Preservation and Historic Landmarks Commission – provides procedures for protecting designated local and National Register historic resources. Chapter 2.28 also provides the basis for the establishment and duties of the Historic Landmarks Commission.

B. Amendments

These amendments remove DCC 2.28(A)(5), which refers to the selection of a commissioner representing the Pioneer Association. The Pioneer Association is no longer a separate not-for-profit Oregon entity and as such this provision is no longer applicable.

III. REVIEW CRITERIA

Deschutes County lacks specific criteria in DCC Titles 22 or 23 for reviewing a legislative text amendment. Nonetheless, since Deschutes County is initiating one, the County bears the

responsibility for justifying that the amendments are consistent with Statewide Planning Goals and its existing Comprehensive Plan.

IV. FINDINGS

CHAPTER 22.12, LEGISLATIVE PROCEDURES

Section 22.12.010.

Hearing Required

FINDING: The Planning Commission reviewed the proposed amendments on October 12, 2023. The Board of County Commissioners will hold a public hearing on November 1, 2023. This criterion will be met.

Section 22.12.020, Notice

Notice

A. Published Notice

1. ***Notice of a legislative change shall be published in a newspaper of general circulation in the county at least 10 days prior to each public hearing.***
2. ***The notice shall state the time and place of the hearing and contain a statement describing the general subject matter of the ordinance under consideration.***

FINDING: This criterion will be met as notice was published in the Bend Bulletin newspaper for the Board of County Commissioners' public hearing.

B. Posted Notice. Notice shall be posted at the discretion of the Planning Director and where necessary to comply with ORS 203.045.

FINDING: Posted notice was determined by the Planning Director not to be necessary.

C. Individual notice. Individual notice to property owners, as defined in DCC 22.08.010(A), shall be provided at the discretion of the Planning Director, except as required by ORS 215.503.

FINDING: The Planning Division mailed notice to all property owners with a designated historic or cultural resource on their property. This criterion is met.

D. Media notice. Copies of the notice of hearing shall be transmitted to other newspapers published in Deschutes County.

FINDING: Notice was provided to the County public information official for wider media distribution. This criterion is met.

Section 22.12.030 Initiation of Legislative Changes.

A legislative change may be initiated by application of individuals upon payment of required fees as well as by the Board of County Commissioners.

FINDING: The application was initiated by the Deschutes County Planning Division at the direction of the Board of County Commissioners, and has received a fee waiver. This criterion is met.

Section 22.12.040. Hearings Body

A. The following shall serve as hearings or review body for legislative changes in this order:
1. The Planning Commission.
2. The Board of County Commissioners.

B. Any legislative change initiated by the Board of County Commissioners shall be reviewed by the Planning Commission prior to action being taken by the Board of Commissioners.

FINDING: The Deschutes County Planning Commission reviewed the proposed amendments on October 12, 2023. The Board then held a public hearing on November 1, 2023. These criteria are met.

Section 22.12.050 Final Decision

All legislative changes shall be adopted by ordinance

FINDING: The proposed legislative changes will be implemented by Ordinance No. 2023-023 upon approval and adoption by the Board of County Commissioners. This criterion will be met.

STATEWIDE PLANNING GOALS AND GUIDELINES

Goal 1: Citizen Involvement: The amendments do not propose to change the structure of the County's citizen involvement program. Notice of the proposed amendments was provided to the *Bulletin* for the Board public hearing, and the Planning Commission, which acts as the citizen involvement committee for Deschutes County, reviewed the proposed amendments at a work session. This goal is met.

Goal 2: Land Use Planning: This goal is met because ORS 197.610 allows local governments to initiate post acknowledgment plan amendments (PAPA). An Oregon Land Conservation and Development Department 35-day notice was initiated on September 27, 2023. The Planning Commission reviewed the amendments at a work session on October 12, 2023 and the Board of County Commissioners held a public hearing on November 1, 2023. The Findings document provides the adequate factual basis for the amendments.

Goal 3: Agricultural Lands and Goal 4, Forest Lands: No changes related to agricultural or forest lands are proposed as part of the text amendments. The proposed amendments impact the administration of the Historic Landmarks Commission; they do not modify allowed uses or where uses can be located. This goal does not apply.

Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources: The proposed amendments address the composition of the Historic Landmarks Commission. The protections themselves and the list of resources remain unchanged and remain in compliance with the State Historic Preservation Rule under Goal 5, OAR 660-023-0200. This goal is met.

Goal 6: Air, Water and Land Resources Quality and Goal 7, Natural Hazards: The proposed text amendments do not propose changes to the County's Comprehensive Plan policies or implementing regulations for compliance with Goal 6. The County has proposed amendments that address the composition of the Historic Landmarks Commission; the historic preservation ordinance does not regulate uses or where a structure can be located. No development or land use changes are proposed that impact air, water and land resource qualities or natural hazards. Thus, Goal 6 is not applicable.

Goal 8: Recreational Needs: This Goal is not applicable because the County is proposing amendments to address the composition of the Historic Landmarks Commission. No development or land use changes are being proposed that impact lands designated with recreational resources.

Goal 9: Economic Development: This Goal is not applicable because the proposed amendments do not impact the ability of cities or counties to have enough land available to realize economic growth and development opportunities. The amendments pertain to the composition of the Historic Landmarks Commission.

Goal 10: Housing: This goal is not applicable because unlike municipalities, unincorporated areas are not obligated to fulfill certain housing requirements.

Goal 11: Public Facilities and Services: This goal is not applicable because the County is proposing amendments to address the composition of the Historic Landmarks Commission. No development or land use changes are being proposed that impact public facilities.

Goal 12: Transportation: This Goal is not applicable because the County is proposing amendments to address the composition of the Historic Landmarks Commission. No development or land use changes are being proposed that impact transportation facilities.

Goal 13: Energy Conservation: This Goal is not applicable because the County is proposing amendments to address the composition of the Historic Landmarks Commission. No development or land use changes are being proposed that impact energy conservation.

Goal 14: Urbanization: The purpose of Goal 14 is to direct urban uses to areas inside UGBs. As the proposed amendments do not seek to allow urban uses on rural land, nor do they seek to expand an existing urban growth boundary, this goal does not apply.

Goals 15 through 19: Deschutes County does not contain any of the relevant land types included in Goals 15-19. Therefore these goals do not apply.

OAR 660-023 PROCEDURES AND REQUIREMENTS FOR COMPLYING WITH GOAL 5

OAR 660-023-0200 Historic Preservation Rule

(2) Relationship of Historic Resource Protection to the Standard Goal 5 Process.
(a) Local governments are not required to amend acknowledged plans or land use regulations in order to provide new or amended inventories, resource lists or programs regarding historic resources, except as specified in section (8). Local governments are encouraged to inventory and designate historic resources and must adopt historic preservation regulations to protect significant historic resources.

FINDING: Deschutes County has an adopted historic preservation ordinance.[1] The purpose of the proposed amendments is to address the composition of the Historic Landmarks Commission to accurately reflect that the Deschutes County Pioneer Association is no longer a separate not-for-profit entity and as such, cannot have specific representation on the Commission.

(b) The requirements of the standard Goal 5 process in OAR 660-023-0030 through 660-023-0050, in conjunction with the requirements of this rule, apply when local governments choose to amend acknowledged historic preservation plans and regulations.
(c) Local governments are not required to apply the ESEE process pursuant to OAR 660-023-0040 in order to determine a program to protect historic resources.

FINDING: The County's response to the requirements of the standard Goal 5 process in OAR 660-023-0030 through 660-023-0050 are provided below.

OAR 660-023-0030

This section speaks to the inventory process to locate, evaluate, and potential adoption of significant resources. The proposed amendments are unique in regard to this section because they are intended to address the administration of the County's historic preservation code. There will be no collection or survey of potential resources because the County already has an adopted historic or cultural resource list.[2] Thus, there is no need to evaluate potential resources for their significance. The adopted resource list has already been deemed significant. The proposed amendments seek

[1] See DCC 2.28
[2] Comprehensive Plan Section 5.9

to amend the historic preservation ordinance to amendments to address the composition of the Historic Landmarks Commission, not change the Goal 5 resources themselves.

OAR 660-023-0040

Not applicable as provided above in (c).

OAR 660-023-0050

This section speaks to the various programs to achieve Goal 5 and refers to OAR 660-023-0040. This section is not applicable because the proposed amendments do not modify conflicting uses. The amendments pertain to the administration of historic preservation.

> ***(3) Comprehensive Plan Contents. Local comprehensive plans should foster and encourage the preservation, management, and enhancement of significant historic resources within the jurisdiction in a manner conforming with, but not limited by, the provisions of ORS 358.605. In developing local historic preservation programs, local governments should follow the recommendations in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, produced by the National Park Service. Local governments should develop a local historic context statement and adopt a historic preservation plan and a historic preservation ordinance in conjunction with inventorying historic resources.***

FINDING: The County has maintained policies and provisions to encourage historic preservation since 1980 (i.e., a historic preservation ordinance). The County's historic preservation ordinance is in compliance with ORS 358.605, which speaks to the importance of preventing the destruction of historic or cultural resources and the recommended development of preservation plans. The County's historic preservation ordinance requires coordinated review with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. This requirement does not change in the proposed amendments. While the County does not have a formally adopted local historic context statement, it is not a requirement in this situation.

> ***(4) Inventorying Historic Resources. When a local government chooses to inventory historic resources, it must do so pursuant to OAR 660-023-0030, this section, and sections (5) through (7). Local governments are encouraged to provide opportunities for community-wide participation as part of the inventory process. Local governments are encouraged to complete the inventory in a manner that satisfies the requirements for such studies published by the Oregon State Historic Preservation Office and provide the inventory to that office in a format compatible with the Oregon Historic Sites Database.***
> ***(5) Evaluating and Determining Significance…***

FINDING: The County is not proposing to inventory historic resources and, thus, is not required to evaluate or determine the significance of a resource. The proposed amendments pertain to the composition of the Historic Landmarks Commission.

> ***(6) Designating Locally Significant Historic Resources…***

FINDING: The County is not proposing to designate a Locally Significant Historic Resource. The proposed amendments pertain to the composition of the Historic Landmarks Commission.

> ***(7) Historic Resource Protection Ordinances. Local governments must adopt land use regulations to protect locally significant historic resources designated under section (6). This section replaces OAR 660-023-0050. Historic protection ordinances should be consistent with standards and guidelines recommended in the Standards and Guidelines for Archeology and Historic Preservation published by the U.S. Secretary of the Interior, produced by the National Park Service.***

FINDING: The County has had a historic resource ordinance since 1980. DCC 2.28, formerly PL-21, protects Locally Significant Historic Resources. As stated above, the existing proposal does not include the designation of additional Locally Significant Historic Resources. The proposed amendments pertain to the composition of the Historic Landmarks Commission.

> ***(8) National Register Resources are significant historic resources. For these resources, local governments are not required to follow the process described in OAR 660-023-0030 through 660-023-0050 or sections (4) through (6). Instead, a local government:***
>
> ***(a) Must protect National Register Resources, regardless of whether the resources are designated in the local plan or land use regulations, by review of demolition or relocation that includes, at minimum, a public hearing process that results in approval, approval with conditions, or denial and considers the following factors: condition, historic integrity, age, historic significance, value to the community, economic consequences, design or construction rarity, and consistency with and consideration of other policy objectives in the acknowledged comprehensive plan. Local jurisdictions may exclude accessory structures and non-contributing resources within a National Register nomination;***

FINDING: The proposed amendments do not affect or address National Register Resources, which are already addressed in DCC 2.28. The proposed amendments pertain to the composition of the Historic Landmarks Commission.

> ***(b) May apply additional protection measures. For a National Register Resource listed in the National Register of Historic Places after the effective date of this rule, additional protection measures may be applied only upon considering, at a public hearing, the historic characteristics identified in the National Register nomination; the historic significance of the resource; the relationship to the historic context statement and historic preservation plan contained in the comprehensive plan, if they exist; the goals and policies in the comprehensive plan; and the effects of the additional protection measures on the ability of property owners to maintain and modify features of their property. Protection measures applied by a local government to a National Register resource listed before the effective date of this rule continue to apply until the local government amends or removes them; and***

FINDING: The proposed amendments do not affect or address National Register Resources, which are already addressed in DCC 2.28. The proposed amendments pertain to the composition of the Historic Landmarks Commission.

> ***(c) Must amend its land use regulations to protect National Register Resources in conformity with subsections (a) and (b). Until such regulations are adopted, subsections (a) and (b) shall apply directly to National Register Resources.***

FINDING: The proposed amendments do not affect or address National Register Resources, which are already addressed in DCC 2.28. The proposed amendments pertain to the composition of the Historic Landmarks Commission.

> ***(9) Removal of a historic resource from a resource list by a local government is a land use decision and is subject to this section***
>
> ***…***

FINDING: The proposal does not involve the removal of a historic resource form the resource list. The proposed amendments pertain to the composition of the Historic Landmarks Commission.

> ***(10) A local government shall not issue a permit for demolition or modification of a locally significant historic resource during the 120-day period following:***

FINDING: The proposal does not involve the demolition or modification of a historic resource from the resource list. The proposed amendments pertain to the composition of the Historic Landmarks Commission.

DESCHUTES COUNTY COMPREHENSIVE PLAN

Chapter 2, Resource Management

Section 2.11, Cultural and Historic Resources

Goal 1 Promote the preservation of designated historic and cultural resources through education, incentives and voluntary programs.

Policy 2.11.1 The Historic Landmarks Commission shall take the lead in promoting historic and cultural resource preservation as defined in DCC 2.28.

- ***a. Support incentives for private landowners to protect and restore historic resources.***
- ***b. Support the Historic Landmarks Commission to promote educational programs to inform the public of the values of historic preservation.***
- ***c. Support improved training for the Historic Landmarks Commission.***

FINDING: The proposed amendments do not alter the promotion of historic and cultural resource preservation. The proposed amendments are consistent with Comprehensive Plan Policy 2.11.1.

Policy 2.11.2 Coordinate cultural and historic preservation with the Oregon State Historic Preservation Office.

a. Maintain Deschutes County as a Certified Local Government.

b. Encourage private property owners to coordinate with the State Historic Preservation Office.

FINDING: The proposed amendments do not alter the coordination of cultural and historic preservation with the Oregon State Historic Preservation Office. The proposed text amendments are consistent with Policy 2.11.2.

Policy 2.11.3 Encourage the preservation of lands with significant historic or cultural resources.

a. Develop and maintain a comprehensive list of sites on the National Register of Historic Places.

b. Review County Code and revise as needed to provide incentives and adequate regulations to preserve sites listed on the Statewide Goal 5 historic and cultural inventory.

FINDING: The proposed text amendments are not proposing any changes to County Code regarding incentives or regulations concerning either the list of National Register sites, sites listed on the Statewide Goal 5 historic and cultural inventory, or the procedures governing their protection. The proposed amendments are consistent with Policy 2.11.3.

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Resolution No. 2023-066, adding a new position of Information Security Manager to the IT Department and allocating funds to address immediate cybersecurity needs

RECOMMENDED MOTION:
Move approval of Resolution No. 2023-066 increasing appropriations and FTE within the IT Fund, the IT Reserve Fund and the 2023-24 Deschutes County Budget.

BACKGROUND AND POLICY IMPLICATIONS:
Due to the change of IT leadership at the beginning of this fiscal year's budget planning, no special requests were submitted for FY 2024, but staff did note the possibility of the department submitting a mid-year request. The IT Department now seeks Board approval for a mid-year addition of 1.00 FTE for an Information Security Manager position. It is anticipated this position would be filled around March 1, 2024. Additional information about the proposed scope of responsibilities for the position is included in the attached memo. In addition to the FTE, additional costs have been identified for addressing immediate cybersecurity needs in FY24 to enhance the security posture of the County.

BUDGET IMPACTS:
If approved, the department anticipates that FY 2024 costs for the FTE will be approximately $64,000. The department is requesting a $32,000 transfer from the General Fund (for the initial year only). The Risk fund would transfer the remaining $32,000 for the position and an additional $118,000 for other cybersecurity technology improvements.

ATTENDANCE:
Tania Mahood, IT Director/CTO
Dan Emerson, Budget and Financial Planning Manager

INFORMATION TECHNOLOGY

MEMORANDUM

TO: Deschutes County Board of Commissioners

FROM: Tania Mahood, IT Director/CTO

DATE: November 15, 2023

SUBJECT: Request to add an Information Security Manager position

I. Summary

Due to the change of IT leadership at the beginning of this fiscal year's budget planning, no special requests were submitted for FY 2024, but staff noted that the department might submit a mid-year request. The I.T. Department is now seeking Board approval for a mid-year addition of a Security Manager position. Additional information about the proposed scope of responsibilities for the position is included in the attached memo.

II. Position Scope and Support

The evolving landscape of security threats and the increasing need to safeguard our assets, information, and personnel make this addition imperative for ensuring the resilience and integrity of our operations.

This new position can devote their entire attention to assessing, responding, training, developing, and monitoring security at Deschutes County. The proposed position would provide:

- Alignment with a cybersecurity framework.
- A cybersecurity roadmap that evaluates and assesses current and future state.
- Protocols and policies around cybersecurity.
- Collaboration with departments to understand needs and compliance.
- Support in advocating for the necessary resources.
- Support for our incident and disaster recovery.
- Cybersecurity metrics.

While the addition of this position is an investment, the long-term cost savings due to more efficient risk management, reduced security incidents, and enhanced compliance will significantly outweigh the initial expenditure. This position will lead to a judicious allocation of resources, ensuring a prudent approach to security expenditures.

IV. FINANCIAL IMPACT

If approved, the department anticipates that FY 2024 costs will be $64,000 which includes:

- Salary: $42,200 (March 2024 – June 2024)
- Benefits: $21,800 (March 2024 – June 2024)

The department is requesting a $32,000 transfer from the General Fund and $32,000 from the Risk Fund. (for the initial year only).

V. BOARD DIRECTION

Staff requests consideration of Board support for the addition of one 1.00 Information Security Manager FTE in the IT department.

REVIEWED

_____
LEGAL COUNSEL

For Recording Stamp Only

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

A Resolution Increasing Appropriations	*	
And FTE Within the 2023-24 Deschutes	*	RESOLUTION NO. 2023-066
County Budget	*	

WHEREAS, the Information Technology department presented to the Board of County Commissioners on 11/29/23, with regards to adding 1.00 regular FTE for an Information Security Manager position, and

WHEREAS, ORS 294.471 allows a supplemental budget adjustment when authorized by resolution of the governing body, and

WHEREAS, ORS 294.463 allows the transfer of Contingency within a fund when authorized by resolution of the governing body, and

WHEREAS, it is necessary to reduce Contingency and increase Transfer Out appropriations by $32,000 in the General Fund, and

WHEREAS, it is necessary to reduce Contingency and increase Transfer Out appropriations by $150,000 in the Risk Fund, and

WHEREAS, it is necessary to recognize Transfer In revenue and increase appropriations by $64,000 in the Information Technology Fund, and

WHEREAS, it is necessary to recognize Transfer In revenue and increase appropriations by $118,000 in the IT Reserve Fund, and

WHEREAS, Deschutes County Policy HR-1 requires that the creation of or increase in FTE outside the adopted budget be approved by the Board of County Commissioners; now, therefore,

BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON, as follows:

Section 1. That the following revenue be budgeted in the 2023-24 County Budget:

Information Technology Fund	
Transfers In	$ 64,000
Total Information Technology	**$ 64,000**
IT Reserve Fund	
Transfers In	$ 118,000
Total IT Reserve	**$ 118,000**

Section 2. That the following amounts be appropriated in the 2023-24 County Budget:

General Fund	
Contingency	$ (32,000)
Transfers Out	$ 32,000
Total General Fund	**$ 0**
Risk Fund	
Contingency	$ (150,000)
Transfers Out	$ 150,000
Total Risk	**$ 0**
Information Technology Fund	
Program Expense	$ 64,000
Total Information Technology	**$ 64,000**
IT Reserve Fund	
Program Expense	$ 118,000
Total IT Reserve	**$ 118,000**

Section 3. That the Chief Financial Officer make the appropriate entries in the Deschutes County Financial System to show the above appropriations:

Section 4. That the following FTE be added:

Job Class	Position Number	Type	Effective Date	FTE
Information Security Manager (TBD)	n/a	Regular Duration	11/29/2023	1.00
Total FTE				**1.00**

Section 5. That the Human Resources Director make the appropriate entries in the Deschutes County FTE Authorized Positions Roster to reflect the above FTE changes.

DATED this_____ day of November 2023.

BOARD OF COUNTY COMMISSIONERS OF DESCHUTES COUNTY, OREGON

ANTHONY DEBONE, Chair

ATTEST:

PATTI ADAIR, Vice-Chair

Recording Secretary

PHIL CHANG, Commissioner

Deschutes County
Supplemental Budget

REVENUE

Item	Project Code	Segment 2	Org	Object		Description	Current Budgeted Amount	To (From)	Revised Budget
1			6600950	391670		Transfer In - Risk	$ -	$ 32,000	$ 32,000
2			6610950	391670		Transfer In - Risk	-	118,000	$ 118,000
3			6600950	391001		Transfer In - General Fund	-	32,000	$ 32,000
						TOTAL	**$ -**	**$ 182,000**	**$ 182,000**

APPROPRIATION

Item	Project Code	Segment 2	Org	Object	Category (Pers, M&S, CapEx, Transfers, Contingency)	Description (Object, e.g. Time Mgmt, Temp Help, Computer Hardware)	Current Budgeted Amount	To (From)	Revised Budget
1			6707150	501971	Contingency	Contingency	$ 6,616,397	$ (150,000)	$ 6,466,397
2			6707150	491660	Transfers	Transfer Out - IT	-	32,000	$ 32,000
3			6707150	491661	Transfers	Transfer Out - IT Reserve	-	118,000	$ 118,000
4			0019999	501971	Contingency	Contingency	12,149,095	(32,000)	$ 12,117,095
5			0019991	491660	Transfers	Transfer Out - IT	-	32,000	$ 32,000
6			6600950	410101	Personnel	Regular Employees	1,990,920	42,200	$ 2,033,120
7			6600950	420301	Personnel	Taxes (FICA)	137,297	3,200	$ 140,497
8			6600950	420101	Personnel	Health Insurance	401,392	7,900	$ 409,292
9			6600950	420201	Personnel	PERS (Includes IAP & Debt Service)	429,382	10,000	$ 439,382
10			6600950	420601	Personnel	Life Insurance	5,009	100	$ 5,109
11			6600950	420601	Personnel	Long-Term Disability	5,009	100	$ 5,109
12			6600950	420501	Personnel	Unemployment	5,542	300	$ 5,842
13			6600950	420801	Personnel	Paid Family Leave	6,816	200	$ 7,016
14			6610950	490445	Capital Outlay	Technology Improvements	248,000	118,000	$ 366,000
						TOTAL	**$ 21,994,859**	**$ 182,000**	**$ 22,176,859**

A supplemental budget is required to recognize Transfer In revenue of $182,000 and increase appropriations by the same amount.

Fund:	660
Dept:	IT
Requested by:	Tania Mahood
Date:	11.29.23

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Text Amendment for an Air Traffic Control Tower at the Bend Municipal Airport

RECOMMENDED MOTION:
Move approval of Hearings Officer recommendation for file 247-23-000470-TA, approving a Text Amendment to Deschutes County Code Chapter 18.76, Airport Development Zone, and Chapter 18.80, Airport Safety Combining Zone.

BACKGROUND AND POLICY IMPLICATIONS:
Staff will provide background to the Board for consideration of a request for a Text Amendment (file no. 247-23-000470-TA) to the Airport Development Zone and Airport Safety Combining Zone. The proposed amendments would add an air traffic control tower as a use permitted outright in the Airport Development Zone, and allow an air traffic control tower to be up to 115 feet in height. The Airport Development Zone only applies to the Bend Municipal Airport, which is located to the northeast of Bend.

A public hearing on the Text Amendment application was held before the Deschutes County Hearings Officer on October 2, 2023. A Hearings Officer recommendation was mailed on November 21, 2023, and the Hearings Officer recommended approval of the subject application.

BUDGET IMPACTS:
None

ATTENDANCE:
Audrey Stuart, Associate Planner

COMMUNITY DEVELOPMENT

MEMORANDUM

TO: Board of County Commissioners

FROM: Audrey Stuart, Associate Planner

DATE: November 20, 2023

RE: Consideration of whether to initiate review of a Text Amendment request; Land use file no. 247-23-000470-TA.

On November 29, 2023, the Board of County Commissioners ("Board") will consider whether to initiate review of a Hearings Officer's recommendation to approve a Text Amendment to the Airport Development (AD) Zone and Airport Safety (AS) Combining Zone. The proposed amendments will add an air traffic control tower as an allowed use and allow an air traffic control tower to be up to 115 feet in height.

I. IMPACTED PROPERTIES

The AD Zone applies to one airport in Deschutes County—the Bend Municipal Airport. The AD Zone encompasses 340 acres and consists of three zoning districts. The Bend Municipal Airport includes the following tax lots, though staff notes there may be multiple addresses assigned to each tax lot.

- 1713200000200 – 63155 Gibson Air Rd
- 1713200000201 – 63110 Powell Butte Hwy
- 171317C000100 – 63205 Gibson Air Rd
- 1713170000200 – 63482 Powell Butte Hwy
- 1713200000202 – 22550 Nelson Pl
- 1713200000300 – 63144 Powell Butte Hwy

The City of Bend operates the Bend Municipal Airport and is the only property owner impacted by the proposed amendments.

II. PROPOSAL

The Applicant requests amendments to the AD Zone (DCC 18.76) and the AS Combining Zone (DCC 18.80). The proposed Code changes are included in this packet as an attachment to the Hearings Officer's recommendation. The proposed Text Amendment is summarized as follows:

- The Applicant proposes to add a definition for Airport Traffic Control Tower.
- The Applicant proposes to add an Air Traffic Control Tower as a new use permitted outright in the AD Zone.
- The Applicant proposes to allow Air Traffic Control Towers up to 115 feet in height.

A staff report was mailed on September 25, 2023, and staff found the proposal complied with all applicable provisions of Deschutes County Code, Deschutes County Comprehensive Plan policies, and applicable State laws. A public hearing was held before a Hearings Officer on October 2, 2023, and a Hearing's Officer recommendation approving the application was mailed on November 21, 2023. As described below, the Board may decide to either adopt the Hearings Officer's findings or initiate review of the decision.

The application materials state that an air traffic control tower is needed for safe airport operations. The Federal Aviation Authority (FAA) has accepted the Bend Municipal Airport as a candidate into the Federal Contract Tower Program, and the City of Bend completed a siting study and Environmental Assessment as required by FAA. The City of Bend has until October 14, 2025, to finish constructing the control tower approved by this program.

III. PUBLIC COMMENTS

One member of the public submitted written comments in opposition to the proposal, and this member of the public also provided oral testimony at the October 2, 2023, hearing. The issues raised include health and safety concerns about airport operations, impacts on surrounding property owners, and concerns with the Bend Municipal Airport's current flight pattern.

The public agencies that submitted written comments were Deschutes County Transportation Planning, Deschutes County Building Division, Central Oregon Irrigation District, and the Oregon Department of Aviation. The applicant also submitted materials from FAA demonstrating their coordination on the proposed air traffic control tower.

IV. BOARD OPTIONS

The Hearings Officer finds, and staff concurs, that the proposed Text Amendment meets the definition of a quasi-judicial amendment but also has qualities of a legislative amendment. Pursuant to DCC 22.28.030(A) and DCC 22.12.050, the Board must take final action on amendments to Deschutes County Code. The subject application was processed as a quasi-judicial application and the Hearings Officer issued a recommendation, as only the Board has the authority to take final action on any Text Amendment. The Board may choose to adopt the Hearings Officer's recommendation or the Board may choose to initiate review and conduct a new public hearing.

<u>Reasons not to hear</u>

Members of the public were notified of the subject application through a mailed Notice of Application, posted land use sign, mailed Notice of Public Hearing, project webpage, and posting in the Bend Bulletin. Public testimony was taken at the Hearings Officer hearing, and the Hearings Officer responded in length to issues raised in opposition. One member of the public testified in opposition and that was the only member of the public to provide comments.

The proposed language for DCC 18.76 and DCC 18.80 has been through multiple rounds of edits and is acceptable to Planning Division staff. At the hearing on October 2, 2023, the Hearings Officer also suggested edits and these were incorporated into the final version. Staff also notes that airport uses are regulated by the FAA and the Oregon Department of Aviation. Compared to other zones regulated by DCC, uses in the AD Zone are substantially limited by state and federal regulations. The proposed amendments were reviewed by the Oregon Department of Aviation, who generally support the amendments.

Staff and the Applicant are satisfied with the proposed Code language and the Hearings Officer's recommendation. The Hearings Officer's findings provided a thorough analysis and could be supported, as the record exists today, on appeal to the Land Use Board of Appeals.

Reasons to hear

The Board may want to take testimony and make interpretations relating to the Hearings Officer's recommendation. The Board may also want to reinforce or refute some or all of the recommended findings/interpretations prior to Land Use Board of Appeals review. The member of the public who testified in opposition submitted a number of different arguments, which the Board may choose to review further. The Board may also choose to hold their own public hearing in order to provide more opportunities for public input.

If the Board decides to adopt the Hearings Officer's findings, a draft Ordinance will be prepared that incorporates the Hearings Officer recommendation as findings. Staff would then return to the Board for a first and second reading of that draft Ordinance approving the proposed Text Amendment.

V. STAFF RECOMMENDATION

Staff agrees with the Hearing's Officer decision and therefore recommends the Board decline to initiate review. The proposed edits to the DCC have been reviewed by the Planning Division, the airport sponsor, and applicable agencies and were found to be acceptable. As described by the Hearings Officer, many of the issues raised in opposition were not connected to applicable approval criteria and were outside the scope of this review. Therefore, the Board may be limited in its ability to address these issues if raised again during a public hearing before the Board.

VI. 150-DAY LAND USE CLOCK

Pursuant to DCC 22.20.040(D)(1), the subject application is exempt from the 150-day land use clock.

VII. RECORD

The record for File No. 247-23-000470-TA is as presented at the following Deschutes County Community Development Department website:

https://www.deschutes.org/cd/page/247-23-000470-ta-%E2%80%93-air-traffic-control-tower-text-amendment

Attachments:
1. Hearing's Officer recommendation for file no. 247-23-000470-TA
2. Staff report for file no. 247-23-000470-TA

DECISION, FINDINGS AND RECOMMENDATION OF THE DESCHUTES COUNTY HEARINGS OFFICER

FILE NUMBERS: 247-23-000470-TA

HEARING DATE: October 2, 2023, 6:00 p.m.

HEARING LOCATION: Videoconference and
Barnes & Sawyer Rooms
Deschutes Services Center
1300 NW Wall Street
Bend, OR 97708

APPLICANT: City of Bend

SUBJECT PROPERTIES: The subject properties comprise the Bend Municipal Airport, which includes the following addresses and tax lots:

1. 63155 Gibson Air Rd – 1713200000200
2. 63110 Powell Butte Hwy – 1713200000201
3. 63205 Gibson Air Rd – 171317C000100
4. 63482 Powell Butte Hwy – 1713170000200
5. 22550 Nelson Pl – 1713200000202
6. 63144 Powell Butte Hwy – 1713200000300

REQUEST: Applicant requests text amendments to Deschutes County Code ("DCC" or "Code") Chapter 18.04, Title Purpose and Definitions; DCC Chapter 18.76, Airport Development Zone; DCC Chapter 18.80, Airport Safety Combining Zone; and DCC Chapter 18.120, Exceptions. The proposed text amendments would modify the Code to add a definition of an air traffic control tower, establish air traffic control towers as a use permitted outright in the Airport Development Zone, and modify the height limit to allow air traffic control towers up to 115 feet in height.

HEARINGS OFFICER: Tommy A. Brooks

SUMMARY OF DECISION: The Hearings Officer finds that the Applicant's request satisfies all procedural and substantive criteria necessary to approve the Applicant's request for amendments to the text of the Code as modified during this proceeding. The Hearings Officer recommends the Deschutes County Board of County Commissioners adopt by ordinance the Code langauge set forth in this Recommendation as Exhibit A.

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I. APPLICABLE STANDARDS AND CRITERIA

Deschutes County Code

Title 18, Deschutes County Zoning Ordinance
Chapter 18.04, Title, Purpose and Definitions
Chapter 18.76, Airport Development Zone
Chapter 18.80, Airport Safety Combining Zone (AS)
Chapter 18.120, Exceptions
Chapter 18.136, Amendments

Title 22, Deschutes County Development Procedures Ordinance

State Statutes

ORS 836.610
ORS 836.616

State Administrative Rules

OAR Chapter 660, Division 013
OAR Chapter 660, Division 015

II. BACKGROUND AND PROCEDURE

A. Background

The Applicant in this proceeding is the City of Bend ("City"). The City owns and operates the Bend Municipal Airport ("Airport") on the Subject Properties.[1] The Subject Properties are zoned Airport Development (AD) ("AD Zone") and are the only properties in the County with that zoning designation. The City initially requested various text amendments to Deschutes County Code ("DCC" or "Code") Chapter 18.04, Title Purpose and Definitions; DCC Chapter 18.76, Airport Development Zone; DCC Chapter 18.80, Airport Safety Combining Zone; and DCC Chapter 18.120, Exceptions. The City included its requested text amendments in the Application. After the Hearing, the City submitted a revised version of the specific text amendments it seeks, which modify only DCC Chapter 18.76, Airport Development Zone, and DCC Chapter 18.80, Airport Safety Combining Zone. This Recommendation will refer to the Applicant's final version of the text amendments, attached as Exhibit A, as the "Text Amendments."

[1] The Subject Properties listed above differ slightly from the list of properties included in the Application. Specifically, the Application does not refer to Tax Lot 1719200000300. The Applicant and the Staff Report also refer to a different source for the address of each lot, which makes the addresses appear to be different, although they likely are not. Because the Applicant did not object to the list of properties presented in the Staff Report, and because the Staff Report list of properties appears more inclusive, I have used the list of properties as presented in the Staff Report as the "Subject Properties."

Staff from the County's Community Development Department ("Staff") issued a Staff Report on September 25, 2023, describing the Application and the applicable criteria ("Staff Report"). As described by the City and acknowledged in the Staff Report, the purpose of the Text Amendments is as follows:

> The proposed text amendments will support master planning for the Bend Municipal Airport. The proposed amendments are intended to support the construction of an air traffic control tower, which is now an improvement supported by the FAA. The amendments are proposed to ensure the establishment of a tower will support airport operations and, in a manner, consistent with the master planning for the Bend Municipal Airport. The amendments are further limited to the Bend Airport so that another use could not be established through these amendments.

B. Notice and Hearing

On September 7, 2023, the County issued a Notice of Public Hearing ("Hearing Notice") for this matter. The County mailed the Hearing Notice to all owners of property within 250 feet of the AD Zone and the Airport boundaries. The County also published the Hearing Notice in the Bend Bulletin on September 10, 2023.

Pursuant to the Hearing Notice, I presided over the Hearing as the Hearings Officer on October 2, 2023, at 6:00 p.m. The Hearing took place in a hybrid format, with the Applicant, Staff, and other participants present in the Hearing Room and the Hearings Officer participating remotely.

At the beginning of the Hearing, I noted for the record that this phase of the adoption of the Text Amendments would be quasi-judicial in nature and, therefore, I directed participants to direct comments to the approval criteria and standards, and to raise any issues a participant wanted to preserve for appeal if necessary. At the conclusion of the evidentiary Hearing, and at the request of the Applicant, I announced that the record would remain open for written materials as follows: (1) any participant could submit additional materials until October 9, 2023; (2) any participant could submit rebuttal materials until October 16, 2023 ("Rebuttal Period"); and (3) the Applicant could submit a final legal argument without new evidence until October 23, 2023. Participants were further instructed that all submittals must be received by the County by 4:00 p.m. on the applicable due date.

C. Nature of Decision

The Text Amendments involve changes only to the language of the Code. Due to the unique nature of the AD Zone, the changes, if adopted, impact only one property owner – the City. This matter therefore involves a threshold question of whether the Text Amendments are legislative, or whether they are quasi-judicial in nature. As explained below, this is a unique situation in which the Text Amendments are both. DCC 18.136.010 governs amendments to the Code:

> DCC Title 18 may be amended as set forth in DCC 18.136. The procedures for text or legislative map changes shall be as set forth in DCC 22.12. A request by a property owner for a quasi judicial map amendment shall be

> accomplished by filing an application on forms provided by the Planning Department and shall be subject to applicable procedures of DCC Title 22.

By its express terms, this provision states that the process for a text amendment is as set forth in DCC 22.12. But DCC 22.12 broadly governs "legislative" procedures. DCC 22.04.020 defines legislative changes as follows:

> Legislative changes generally involve broad public policy decisions that apply to other than an individual property owner. These include, without limitation, amendments to the text of the comprehensive plans, zoning ordinances, or the subdivision or partition ordinance and changes in zoning maps not directed at a small number of property owners.

As Staff points out in the Staff Report (attached to this decision as Exhibit B), the Text Amendments do not fit squarely within this definition. Further, the Code does not expressly define "text amendment" in the context of legislative changes or in the context of a quasi-judicial land use application, even though DCC 22.12.030 allows an individual to seek legislative changes through an application process. The Staff Report suggests that the Text Amendments should be processed in the same manner as a quasi-judicial plan amendment, which is governed by DCC 22.28.030.

In support of its conclusion, Staff provides a detailed analysis under *Strawberry Hill 4 Wheelers v. Benton Co. Bd. of Comm.*, 287 Or 591, 601 P2d 769 (1979) ("*Strawberry Hill 4 Wheelers*"). In that case, the Oregon Supreme Court set out a multi-factor test to determine what process applies to a land use application:

> Generally, to characterize a process as adjudication presupposes that the process is bound to result in a decision and that the decision is bound to apply preexisting criteria to concrete facts. The latter test alone [applying preexisting criteria to concrete facts] proves too much; there are many laws that authorize the pursuit of one or more objectives stated in general terms without turning the choice of action into an adjudication. Thus a further consideration has been whether the action, even when the governing criteria leave much room for policy discretion, is directed at a closely circumscribed factual situation or a relatively small number of persons. The coincidence both of this factor and of preexisting criteria of judgment has led the court to conclude that some land use laws and similar laws imply quasijudicial procedures for certain local government decisions. *Strawberry Hill 4 Wheelers* at 602-03.

As Staff correctly notes, the *Strawberry Hill 4 Wheelers* decision sets out three factors which must be considered:

1. Is the inquiry bound to result in a decision?
2. Are there preexisting criteria that are applied to concrete facts?

3. Is the inquiry directed at a closely circumscribed factual situation or a relatively small number of persons?

Although it is a close call, the Hearings Officer agrees with Staff that the three factors listed above, in this case, warrant following a quasi-judicial process for the City's Application, at least initially. First, even if the Text Amendments are legislative changes, the Code provides an opportunity for an individual to make an application to initiate amendments. Whether the County approves or denies that application, a decision will result, so the inquiry is bound to result in a decision. Second, the Code contains preexisting criteria applicable to the City's request. Although those Code provisions are largely procedural, the quasi-judicial process can determine if those requirements are met. Third, as already acknowledged, this matter is directed at a relatively small number of persons because the City is the only property owner within the AD Zone and, therefore, the only property owner directly impacted by the Text Amendments.

At the same time, the Text Amendments carry the qualities of a legislative act. The language in DCC 22.04.020 provides that legislative changes "generally involve broad public policy decisions that apply to other than an individual property owner" (emphasis added), and that definition does not state that decisions applicable to only one individual property owner cannot be legislative. Indeed, that Code provision goes on to list examples of legislative decisions, including amendments to the text of zoning ordinances.

An important component of DCC 22.12 is DCC 22.12.050, addressing final decisions. That Code provision states that "[a]ll legislative changes shall be adopted by ordinance." That language does not distinguish between purely legislative changes and those legislative changes that may be processed using a quasi-judicial process. This makes sense because the DCC is adopted by ordinance, and any changes to the text of the Code would be an amendment to that adopted ordinance. It also makes sense because ORS 215.503(2) requires that "[a]ll legislative acts relating to comprehensive plans, land use planning or zoning adopted by the governing body of a county shall be by ordinance" (emphasis added).

Based on the foregoing, I find that, in this case, the adoption of text amendments proposed by an applicant is a two-step process. In the first step of the process, the Applicant has a right under the Code to submit and to have considered an application to amend the Code's text. This phase of the process is quasi-judicial in nature and it is appropriate to have a hearing and to build a record following the principles of a quasi-judicial process. As part of that process, the Hearings Officer is addressing the application only of the County's exiting laws. The second step of the process is for the Deschutes County Board of Commissioners ("County Board') to adopt an ordinance to incorporate any text amendments to the Code. Amendments to the text of a zoning ordinance are a change in the County's law, and only the County Board can make such a change. In other words, the Hearings Officer is without authority to amend the County's Code. The Hearings Officer, however, can make a recommendation to the County Board based on what develops in the quasi-judicial phase of the process. The County Board is free to accept or to reject the Hearings Officer's recommendation.

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III. FINDINGS AND CONCLUSIONS

A. Adoption and Incorporation of Findings in Staff Report

The Staff Report contains a comprehensive discussion and conclusion of the criteria applicable to the Application. The vast majority of the conclusions in the Staff Report are not challenged in this proceeding. I find that the Staff Report correctly lists the applicable criteria, and I hereby adopt the discussion and conclusions in the Staff Report as my findings. The remainder of the findings in this Recommendation are intended to supplement the Staff Report. To the extent any of the findings in this Recommendation conflict with the discussion and conclusions in the Staff Report, the findings set forth in this Recommendation control anything to the contrary in the Staff Report.

B. Issues Raised in Opposition to the Application

Other than the Applicant and Staff, only one individual participated in this proceeding. That individual, Dorinne Tye, resides near the Airport and opposes the Application. The comments and evidence submitted by participant Tye largely address health and safety concerns associated with aviation activities in general. Very few, if any, of those comments identify a Code criterion they are intended to address, and very few of those comments, if any, specifically address air traffic control towers. In the findings below, I attempt to identify and address criteria that may be invoked by participant Tye's testimony, and these findings explain why the issues raised by participant Tye do not undermine the conclusions set forth in the Staff Report.

As an initial matter, there is some uncertainty as to whether participant Tye submitted all post-Hearing materials in a timely manner. As explained at the conclusion of the Hearing, post-hearing submittals were due at 4:00 p.m. on the applicable due date. For electronic submittals, the timing of a submittal is determined based on the date and time the submittal is received by the County's servers. Multiple submittals from participant Tye appear to have time stamps after 4:00 p.m. on the due date. However, those submittals also appear to be re-submittals of items that were sent before the 4:00 p.m. deadline but that may have been initially delivered to the wrong Staff email address. Because the record is unclear whether the County's servers did not receive the submittals by the appropriate deadline, I am allowing them to be included in the record.

The record also contains an email from participant Tye to Staff, dated October 16, 2023, stating a desire to have "a few extra days to reply." It is not clear if that request was intended to be a request to the Hearings Officer to modify the Rebuttal Period. Because this portion of the proceeding is being conducted as a land use action, the hearing procedures are set forth in DCC Chapter 22.24. Within that Code chapter, DCC 22.24.140 sets forth the specific basis for continuances and record extensions. Because participant Tye does not identify a specific basis under the Code for seeking a record extension, the request, to the extent it is one to the Hearings Officer, is subject to the discretion of the Hearings Officer. In light of the fact that participant Tye was able to submit materials during the Rebuttal Period, and in the absence of any particular information explaining what additional information would be provided that is not already in the record, I find that it is not necessary to extend the record period and, therefore, decline that request.

As noted above, the majority of the comments opposing the Application are general in nature and relate to health and safety issues, and those comments do not identify specific Code criteria on which the Application should be analyzed. Indeed, most of the comments fail to recognize that the specific issue before the County is a proposal to amend the text of the Code rather than an approval of a specific development. Those comments also fail to recognize the purpose of the Text Amendments as allowing an air traffic control tower as a permitted use, rather than amendments to Code language that alter whether and how airplanes use the Airport – an activity that already occurs under the current Code.

One specific argument participant Tye makes is that the County should not approve any changes to the Airport without first conducting a "cumulative impacts analysis" that considers factors like noise and air emissions from airplanes. Like other comments, participant Tye does not identify any Code provision that requires a cumulative impacts analysis before the County can adopt text changes to the Code. On that basis alone, I find that this argument should be rejected. In the alternative, to the extent that the cumulative impacts of flight operations should be considered, the record reveals that the purpose of the Text Amendments is to allow the Applicant to better manage existing and planned air operations. Participant Tye does not explain whether or how the Text Amendments themselves will add air operations that are not already planned and, therefore, lead to the additional impacts as asserted. To the contrary, it is the existing impacts from the Airport as it is currently developed that seem to be the center point of participant Tye's arguments. As presented to the Hearings Officer, there is no basis to review the Airport's current operations through this proceeding.

Another specific argument participant Tye makes relates to the adequacy of notice related to this proceeding. However, that argument appears to assert that the notice of the Application and the Hearing Notice are "unacceptable" rather than assert that they were not legally sufficient or otherwise did not occur as required by the Code. To the contrary, participant Tye's comments acknowledge that the Hearing Notice was given to property owners within 250 feet of the Subject Properties and 26 days prior to the Hearing, both of which satisfy the Code's requirements.

Participant Tye's comments assert a general conflict of interest by an un-named member of the County Board. The source of that conflict of interest appears to be that the Commissioner also serves on the Redmond Airport Advisory Board, although that assertion, too, is not clear. I find that any arguments relating to conflicts of interest are not well formulated and, therefore, impossible for me to address in these findings. To the extent that a different decision maker has a conflict of interest, that issue can be raised if and when this matter comes before that decision maker.

Participant Tye submitted several comments relating to the behavior of pilots using the Airport. Those comments, however, do not explain what relationship individual pilot behavior has to the Text Amendments. Without such an explanation, I find that this argument is not well formulated and, therefore, impossible for me to address in these findings.

Participant Tye makes several comments, the theme of which is that an air traffic control tower is merely a desire of the Applicant and not actually needed for the Airport. Those comments, however, do not identify a Code provision that requires a text amendment to allow only those uses that are needed, or that prohibits a text amendment to allow a use that is desirable even if it is not needed. Further, whether an air traffic control tower is needed appears to be a question for the Airport operator and the entities that

regulate the Airport's operations. As proposed, the Text Amendments and Code still require the Airport operator to comply with all federal and state laws. Thus, to the extent the need for an air traffic control tower is relevant, that decision would be made in a different venue.

Participant Tye makes several generic assertions that the Text Amendments are not consistent with Statewide Planning Goals ("Goal"). One specific argument participant Tye makes is that the Text Amendments violate Goal 1, the language of which aims to "develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process." Participant Tye appears to take issue with how the Airport's master plans have been developed and, as noted above, the type of notice provided for the Hearing. I agree with the finding in the Staff Report, however, that the process for adopting the Text Amendments complies with Goal 1 "because the County is relying on its citizen involvement program and land use procedures ordinance to conduct public review of these amendments." Further, even if the development of the Airport's master plans was relevant, the Applicant provided evidence of the myriad of ways in which the public is involved in that process.

Participant Tye asserts the Text Amendments do not comply with Goal 3 (and its related statutes), the language of which aims to "preserve and maintain agricultural lands." The specific assertion relating to Goal 3 appears to be that the Applicant has not addressed ORS 215.243.[2] That statute, however, is a legislative policy statement, which provides guidance on the intent of other language in ORS Chapter 215. ORS 215.243 does not appear to impose any specific requirements with respect to the County's ability to adopt Text Amendments relating to land that is not zoned for farm use, nor does participant Tye attempt to identify any such requirement. Participant Tye does describe potential impacts on farming resulting from airplane operations. As the Staff Report notes, however, there do not appear to be any operating characteristics of an air traffic control tower (the subject of the Text Amendments) that would impact nearby farm properties.

Participant Tye asserts that the Text Amendments do not comply with Goal 5 and Goal 6, but does not explain why. The insinuation in the testimony is that airplane operations potentially impact historic buildings, natural resources such as wildlife, and environmental quality. However, as noted in the Staff Report, Goal 5 is not directly applicable to the Text Amendments because they do not include any changes to the County's Goal 5 inventories. Further, in the absence of any specific assertion that an air traffic control tower itself would impact an inventoried Goal 5 resource, I find that this argument is not well formulated and cannot otherwise be addressed in these findings. For a similar reason, I find that participant Tye's arguments relating to Goal 6 are unavailing, because they do not assert that an air traffic control tower itself will cause any harm to air or water quality.

Participant Tye asserts that the Text Amendments do not comply with Goal 12, which aims to provide and encourage a safe, convenient and economic transportation plan. In support of the Applicant, the Applicant provided a Traffic Impact Analysis ("TIA"). The Applicant also submitted a revised TIA based on initial comments it received from the County's transportation planning staff. The County's Senior Transportation Planner reviewed the TIA as revised and agreed with its assumptions, methodology, and conclusions, which demonstrate compliance with the applicable provisions of Goal 12 as implemented

[2] Participant Tye cites to ORS 215.241, but that appears to be a typo and the statutory language quoted in the testimony mirrors the language in ORS 215.243.

through state administrative rules. Participant Tye expresses disagreement with the outcome of the TIA, but does not identify any purported errors in the TIA. Participant Tye does question whether the number of employees associated with an air traffic control tower is an accurate assumption in the TIA. However, the record reveals that the number of employees assumed in the TIA – five – is based on a literature review and engineering studies. In the absence of any counter evidence as to the appropriate number of employees that should be used in the TIA, I find that the preponderance of the evidence in this record demonstrates that five employees is an appropriate number to use in the TIA.

Based on the foregoing,[3] I find that the adoption of the Text Amendments will be consistent with the Goals.

V. CONCLUSION AND RECOMMENDATION

Based on the Findings above, the Applicant's proposed amendments to DCC Chapter 18.76 and DCC Chapter 18.80 comply with the County's provisions for amending the Code. The Hearings Officer therefore recommends that the Deschutes County Board of Commissioners adopts the amendments presented in Exhibit A by ordinance unless the Board of Commissioners determines there is a legislative reason not to adopt the amendments.

Dated this 20th day of November 2023

Tommy A. Brooks
Deschutes County Hearings Officer

Attachment:
Exhibit A – Text Amendments
Exhibit B – Staff Report

[3] Participant Tye mentions other Goals, but does so without a well formulated argument for why those Goals are not met. For example, with respect to Goal 10 relating to housing, participant Tye makes statements like "calling our farms 'suburban' in documents is damaging to our housing…." Such a statement does not present an argument supporting a conclusion that the Text Amendments violate Goal 10, and I find that it is not possible to further address those statements in these findings.

Chapter 18.76, Airport Development Zone

18.76.015 Definitions

The following definitions apply only to Chapter 18.76.

"Air Traffic Control Tower" means a terminal facility which, through the use of air/ground communications, visual signaling, and other devices, provides air traffic control services to airborne aircraft operating in the vicinity of an airport and to aircraft operating on the airport movement area.

“Customary and usual aviation-related activities” include, but are not limited to, takeoffs, landings, aircraft hangars, tiedowns, construction and maintenance of airport facilities, fixed-base operator facilities, a residence for an airport caretaker or security officer, and other activities incidental to the normal operation of an airport. Residential, commercial, industrial, manufacturing; and other uses, except as provided in this rule, are not customary and usual aviation-related activities and may only be authorized pursuant to OAR 660-013-0110.

“Fixed-base operator or FBO” means a commercial business granted the right by the airport sponsor to operate on an airport and provide aeronautical services such as fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance, flight instruction, etc.

“Hangar” means an airport structure intended for the following uses:

1. Storage of active aircraft.
2. Shelter for maintenance, repair, or refurbishment of aircraft, but not the indefinite storage of nonoperational aircraft.
3. Construction of amateur-built or kit-built aircraft
4. Storage of aircraft handling equipment, e.g., tow bar, glider tow equipment, workbenches, and tools and materials used to service, maintain, repair or outfit aircraft: items related to ancillary or incidental uses that do not affect the hangars' primary use.
5. Storage of materials related to an aeronautical activity, e.g., balloon and skydiving equipment, office equipment, teaching tools, and materials related to ancillary or incidental uses that do not affect the hangars’ primary use; storage of non-aeronautical items that do not interfere with the primary aeronautical purpose of the hangar (for example, televisions, furniture).
6. A vehicle parked at the hangar while the aircraft usually stored in that hangar is flying, subject to local airport rules and regulations.
7. A hangar may include restrooms, pilot lounge, offices, briefing rooms, and crew quarters.

18.76.030 Uses Permitted Outright

The following uses and their accessory uses are permitted outright in all of the Airport Districts:

A. Class I and II road or street project subject to approval as part of a land partition, subdivision or subject to the standards and criteria established by DCC 18.116.230.

B. Class III road or street project.

C. Operation, maintenance, and piping of existing irrigation systems operated by an Irrigation District except as provided in DCC 18.120.050.

D. Farm use as defined in DCC Title 18.

E. Customary and usual aviation-related activities.

F. Hangars are subject to the standards and criteria established by DCC 18.76.105.

G. A single air traffic control tower in the Airport Development Zone, no higher than 115 feet in height

18.76.050 Use Limitations

The following limitations and standards shall apply to all permitted uses in the Airport Districts:

A. The height of any plant growth or structure or part of a structure such as chimneys, towers, antennas, power lines, etc., shall not exceed 35 feet.

B. A single air traffic control tower up to 115 feet in height shall not require a height exception or variance.

C. In approach zones beyond the clear zone areas, no meeting place designed to accommodate more than 25 persons for public or private purposes shall be permitted.

D. All parking demand created by any use permitted by DCC 18.76 shall be accommodated on the subject premises entirely off-street.

E. No use permitted by DCC 18.76 shall require the backing of traffic onto a public or private street or road right of way.

F. No power lines shall be located in clear zones.

G. No use shall be allowed which is likely to attract a large quantity of birds, particularly birds which normally fly at high altitudes.

Chapter 18.80, Airport Safety Combining Zone

18.80.022 Definitions

A. Air Traffic Control Tower. A terminal facility which, through the use of air/ground communications, visual signaling, and other devices, provides air traffic control services to airborne aircraft operating in the vicinity of an airport and to aircraft operating on the airport movement area.

B. Aircraft. Helicopters and airplanes, but not hot air balloons or ultralights. (Balloons are governed by FAR Part 30, and ultralights by FAR Part 103. Ultralights are basically unregulated by the FAA.)

C. Airport. The strip of land used for taking off and landing aircraft, together with all adjacent land used in connection with the aircraft landing or taking off from the strip of land, including but not limited to land used for existing airport uses.

D. Airport Direct Impact Area. The area located within 5,000 feet of an airport runway, excluding lands within the runway protection zone and approach surface. (Redmond, Bend, and Sunriver)

E. Airport Elevation. The highest point of an airport's usable runway, measured in feet above mean sea level.

F. Airport Imaginary Surfaces (and zones). Imaginary areas in space and on the ground that are established in relation to the airport and its runways.

For the Redmond, Bend, Sunriver and Sisters airports, the imaginary surfaces are defined by the primary surface, runway protection zone, approach surface, horizontal surface, conical surface and transitional surface.

For the Cline Falls and Juniper airports, the imaginary areas are only defined by the primary surface and approach surface.

G. Airport Noise Criterion. The State criterion for airport noise is an Average Day-Night Sound Level (DNL) of 55 decibels (dBA). The Airport Noise Criterion is not designed to be a standard for imposing liability or any other legal obligation except as specifically designated pursuant to OAR 340, Division 35.

H. Airport Noise Impact Boundary. Areas located within 1,500 feet of an airport runway or within established noise contour boundaries exceeding 55 DNL.

I. Airport Safety Combining Zone (AS Zone). A Deschutes County zone intended to place additional land use conditions on land impacted by the airport while retaining the existing underlying zone. The airport imaginary surfaces, impact areas, boundaries and their use limitations comprise the AS Zone. The AS Zone may apply to either public-use or private-use airports.

J. Airport Secondary Impact Area. The area located between 5,000 and 10,000 feet from an airport runway. (Redmond, Bend, and Sunriver)

K. Airport Sponsor. The owner, manager, or other person or entity designated to represent the interests of an airport.

L. Airport Uses. Those uses described in OAR 660-013-0100 and 660-013-0110.

M. Approach Surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface.

For Redmond, Bend, Sunriver, and Sisters airports:

1. The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:
    a. 1,250 feet for a utility runway having a visual approach;
    b. 1,500 feet for other than a utility runway having a visual approach;
    c. 2,000 feet for a utility runway having a non-precision instrument approach;
    d. 3,500 feet for a non-precision instrument runway, other than utility, having visibility minimums greater than three-fourths statute mile;
    e. 4,000 feet for a non-precision instrument runway, other than utility, having visibility minimums at or below three-fourths statute mile; and
    f. 16,000 feet for precision instrument runways.
2. The approach surface extends for a horizontal distance of
    a. 5,000 feet at a slope of 20 feet outward for each foot upward for all utility runways;
    b. 10,000 feet at a slope of 34 feet outward for each foot upward for all non-precision instrument runways, other than utility; and
    c. 10,000 feet at a slope of 50 feet outward for each one foot upward, with an additional 40,000 feet at slope of 40 feet outward for each one foot upward, for precision instrument runways.
3. The outer width of an approach surface will be that width prescribed in DCC 18.80.022~~(L)~~(M)(3) for the most precise approach existing or planned for that runway end.

For the Cline Falls and Juniper airports:

4. The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of 450 feet for that end of a private use airport with only visual approaches. The approach surface extends for a horizontal distance of 2,500 feet at a slope of 20 feet outward for each one foot upward.

N. Average Day-Night Sound Level (DNL). Average day-night sound level is the FAA standard measure for determining the cumulative exposure of individuals to noise. DNL is the equivalent of noise levels produced by aircraft operations during a 24-hour period, with a ten-decibel penalty applied to the level measured during nighttime hours (10:00 p.m. to 7:00 am).

O. Conical Surface. An element of the airport imaginary surfaces that extends outward and upward from the periphery of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet and to a vertical height of 350 feet above the airport elevation.

P. Department of Aviation. The Oregon Department of Aviation, formerly the Aeronautics Division of the Oregon Department of Transportation.

Q. FAA. Federal Aviation Administration.

R. FAA's Technical Representative. As used in DCC 18.80, the federal agency providing the FAA with expertise on wildlife and bird strike hazards as they relate to airports. This may include, but is not limited to, the USDA-APHIS-Wildlife Services.

S. FAR. Regulation issued by the FAA.

T. FAR Part 77. Regulation, Part 77, “Objects Affecting Navigable Airspace,” establishes standards for determining obstructions to navigable airspace.

U. Height. The highest point of a structure or tree, plant or other object of natural growth, measured from mean sea level.

V. Horizontal Surface. A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

1. 5,000 feet for all runways designated as utility.
2. 10,000 feet for all other runways.
3. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

W. Non-precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach has been approved, or planned, and for which no precision approach facilities are planned or indicated on an FAA-approved airport layout plan or other FAA planning document.

X. Non-Towered Airport. An airport without an existing or approved control tower on June 5, 1995.

Y. Obstruction. Any structure or tree, plant or other object of natural growth that penetrates an imaginary surface.

Z. Other than Utility Runway. A runway that is constructed for and intended to be used by turbine-driven aircraft or by propeller-driven aircraft exceeding 12,500 pounds gross weight.

AA. Precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities that provide both horizontal and vertical guidance, such as an Instrument Landing System (ILS) or Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA-approved airport layout plan or other FAA planning document.

BB. Primary Surface. A surface longitudinally centered on a runway.

For the Redmond, Bend, Sunriver, and Sisters airports, when a runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway. When a runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is:

1. 250 feet for utility runways with only visual approaches,
2. 500 feet for utility runways having non-precision instrument approaches,
3. 500 feet for other than utility runways having non-precision instrument approaches with visibility minimums greater than three-fourths statute mile, and
4. 1,000 feet for non-precision instrument runways with visibility minimums at or below three-fourths statute mile, and for precision instrument runways.

For the Cline Falls and Juniper airports, the primary surface ends at each end of a runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is 200 feet.

CC. Public Assembly Facility. A permanent or temporary structure or facility, place or activity where concentrations of people gather in reasonably close quarters for purposes such as deliberation, education, worship, shopping, employment, entertainment, recreation, sporting events, or similar activities. Public assembly facilities include, but are not limited to, schools, religious institutions or assemblies, conference or convention facilities, employment and shopping centers, arenas, athletic fields, stadiums, clubhouses, museums, and similar facilities and places, but do not include parks, golf courses or similar facilities unless used in a manner where people are concentrated in reasonably close quarters. Public assembly facilities also do not include air shows, structures or uses approved by the FAA in an adopted airport master plan, or places where people congregate for short periods of time such as parking lots or bus stops.

DD. Runway. A defined area on an airport prepared for landing and takeoff of aircraft along its length.

EE. Runway Protection Zone (RPZ). An area off the runway end used to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The inner width of the RPZ is the same as the width of the primary

surface. The outer width of the RPZ is a function of the type of aircraft and specified approach visibility minimum associated with the runway end. The RPZ extends from each end of the primary surface for a horizontal distance of:

1. 1,000 feet for utility runways.
2. 1,700 feet for other than utility runways having non-precision instrument approaches.
3. 2,500 feet for precision instrument runways.

[NOTE: the outer width of the RPZ is specified by airport type in OAR 660, Division 13, Exhibit 4]

FF. Significant. As it relates to bird strike hazards, "significant" means a level of increased flight activity by birds across an approach surface or runway that is more than incidental or occasional, considering the existing ambient level of flight activity by birds in the vicinity.

GG. Structure. Any constructed or erected object, which requires a location on the ground or is attached to something located on the ground. Structures include but are not limited to buildings, decks, fences, signs, towers, cranes, flagpoles, antennas, smokestacks, earth formations and overhead transmission lines. Structures do not include paved areas.

HH. Transitional Surface. Those surfaces that extend upward and outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven feet horizontally for each foot vertically from the sides of the primary and approach surfaces to the point of intersection with the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at a 90-degree angle to the extended runway centerline.

II. Utility Runway. A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 maximum gross weight and less.

JJ. Visual Runway. A runway intended solely for the operation of aircraft using visual approach procedures, where no straight-in instrument approach procedures or instrument designations have been approved or planned, or are indicated on an FAA-approved airport layout plan or any other FAA planning document.

KK. Water Impoundment. Includes wastewater treatment settling ponds, surface mining ponds, detention and retention ponds, artificial lakes and ponds, and similar water features. A new water impoundment includes an expansion of an existing water impoundment except where such expansion was previously authorized by land use action approved prior to the effective date of this ordinance.

18.80.028 Height Limitations

All uses permitted by the underlying zone shall comply with the height limitations in DCC 18.80.028. When height limitations of the underlying zone are more restrictive than those of this overlay zone, the underlying zone height limitations shall control. [ORS 836.619; OAR 660-013-0070]

A. Except as provided in DCC 18.80.028(B-D), no structure or tree, plant or other object of natural growth shall penetrate an airport imaginary surface. [ORS 836.619; OAR 660-013-0070(1)]

B. For areas within airport imaginary surfaces but outside the approach and transition surfaces, where the terrain is at higher elevations than the airport runway surfaces such that existing structures and permitted development penetrate or would penetrate the airport imaginary surfaces, a local government may authorize structures up to 35 feet in height.

C. Other height exceptions or variances may be permitted when supported in writing by the airport sponsor, the Department of Aviation and the FAA. Applications for height variances shall follow the procedures for other variances and shall be subject to such conditions and terms as recommended by the Department of Aviation and the FAA (for Redmond, Bend and Sunriver.)

D. A single air traffic control tower may be up to 115 feet in height.

18.80.044 Land Use Compatibility

Applications for land use or building permits for properties within the boundaries of this overlay zone shall comply with the requirements of DCC 18.80 as provided herein. When compatibility issues arise, the Planning Director or Hearings Body is required to take actions that eliminate or minimize the incompatibility by choosing the most compatible location or design for the boundary or use. Where compatibility issues persist, despite actions or conditions intended to eliminate or minimize the incompatibility, the Planning Director or Hearings Body may disallow the use or expansion, except where the action results in loss of current operational levels and/or the ability of the airport to grow to meet future community needs. Reasonable conditions to protect the public safety may be imposed by the Planning Director or Hearings Body. [ORS 836.619; ORS 836.623(1); OAR 660-013-0080] An air traffic control tower, as defined in DCC 18.80.022, is not subject to this section.

…

18.80 Declaration Of Anticipated Noise

As a condition of the grant of development approval pursuant to DCC 18.80, the undersigned, hereinafter referred to as Grantor hereby covenants and agrees that it shall not, by reason of their ownership or occupation of the following described real property, protest or bring suit or action against the _____ [Name of Airport] or Deschutes County, for aviation-related noise, including property damage or personal injury from said noise connected when such activities conform to:

1. Airport activities lawfully conducted in connection with a pre-existing airport, as that term is defined in DCC 18.80.022~~(B)~~(C), at the described airport; or 2. Airport activities that might be lawfully conducted in the future at the described airport under County or State permits or exemptions.

The real property of Grantor subject to this covenant and agreement is situated in Deschutes County, State of Oregon, and described as set forth in that certain [Statutory Warranty Deed] dated [date], as record in [the Official Records of Deschutes County as instrument number 20xx-xxxxx] OR [Volume xx, Page xx of the Deschutes County Board of Records];.

Grantor acknowledge that by virtue of such grant he/they have no remaining rights to complain or protest about the protected activities described above.

This Declaration of Anticipated Noise runs with the land and is binding upon the heirs, successors and assigns of the undersigned's interest in the described real property or any persons acquiring through he undersigned an interest in the described real property.

Deschutes County requires the execution of this covenant and agreement by the Grantor as a pre-requisite to Deschutes County approving a partition, subdivision, or issuing a building permit for Grantor's development on the above described real property, which real property is located within the noise impact boundary of the _____ [Name of Airport]. This Declaration is executed for the protection and benefit of the _____ [Name of Airport] and Deschutes County's interest in said airport and to prevent development in adjacent lands to said airport which will interfere with the continued operation existent and development of said airport.

Dates this ____ day of ____, 20_____
Grantor [Name]

[*insert notarial certificate*]

COMMUNITY DEVELOPMENT

STAFF REPORT
AIRPORT DEVELOPMENT ZONE CONTROL TOWER TEXT AMENDMENT

FILE NUMBER(S): 247-23-000470-TA

SUBJECT PROPERTY: The Airport Development (AD) Zone encompasses the Bend Municipal Airport (Airport), which includes the following addresses and tax lots:

- 63155 Gibson Air Rd – 1713200000200
- 63110 Powell Butte Hwy – 1713200000201
- 63205 Gibson Air Rd – 171317C000100
- 63482 Powell Butte Hwy – 1713170000200
- 22550 Nelson Pl – 1713200000202
- 63144 Powell Butte Hwy – 1713200000300

APPLICANT: City of Bend

REQUEST: Amendments to Deschutes County Code (DCC) Chapters 18.04, Title Purpose and Definitions; Chapter 18.76, Airport Development Zone; Chapter 18.80, Airport Safety Combining Zone; and Chapter 18.120, Exceptions. The proposed amendments will modify the DCC to add a definition of an air traffic control tower, establish air traffic control towers as a use permitted outright in the Airport Development Zone, and modify the height limit to allow air traffic control towers up to 115 feet in height.

STAFF CONTACT: Audrey Stuart, Associate Planner
Phone: 541-388-6679
Email: Audrey.Stuart@deschutes.org

RECORD: Record items can be viewed and downloaded from:
https://www.deschutes.org/cd/page/247-23-000470-ta-%E2%80%93-air-traffic-control-tower-text-amendment

I. APPLICABLE CRITERIA

Deschutes County Code
Title 18, Deschutes County Zoning Ordinance:

Chapter 18.04, Title, Purpose and Definitions
Chapter 18.76, Airport Development Zone
Chapter 18.80, Airport Safety Combining Zone (AS)
Chapter 18.120, Exceptions
Chapter 18.136, Amendments
Title 22, Deschutes County Development Procedures Ordinance
Oregon Revised Statutes
ORS 836.610
ORS 836.616
Oregon Administrative Rules
OAR Chapter 660, Division 013

II. BASIC FINDINGS

LOT OF RECORD: The Bend Municipal Airport consists of multiple legal lots of record through previous land use decision issued by Deschutes County. In addition, DCC 22.04.040(B) does not require lot of record verification for Text Amendment applications.

SITE DESCRIPTION: The AD Zone encompasses the Airport, which has a total area of 340 acres. The AD Zone is comprised of three zoning districts—Airfield Operations District (AOD), Aviation Support District (ASD), and Aviation-Related Industrial District (ARID). The Bend Municipal Airport is developed with a number of aviation-related uses including taxiways, runways, a helipad, internal roads and parking areas, and a number of structures. Powell Butte Highway, a Rural Arterial, runs along the west boundary of the airport property and Gibson Air Road is a private road within the airport property.

PROPOSAL: The submitted Burden of Proof includes the following background on why this Text Amendment is necessary for the Airport:

> The applicant proposes several amendments to the text of the Deschutes County Zoning Ordinance that would allow construction of an air traffic control tower at the Bend Municipal Airport. The City of Bend has established a need for an [Air Traffic Control Tower] ATCT at the Bend Municipal Airport, and the Federal Aviation Administration (FAA) has accepted the airport as a candidate in the Federal Contract Tower Program. The proposed amendments to the Deschutes County Zoning Ordinance would allow the City to establish an air traffic control tower at the Bend Airport, and to a height no greater than 115 feet. This proposed height would provide for a cab level height of 85 feet from which air traffic controllers could direct aircraft operations (takeoffs, landings) at the airport.

The proposed language of the Text Amendment is included as Exhibit 1 and summarized as follows:

- The Applicant proposes to add the Federal Aviation Administration (FAA) definition for Airport Traffic Control Tower.[1]

[1] Reference FAA website: https://aspm.faa.gov/aspmhelp/index/Glossary.html

- The Applicant proposes to add an Air Traffic Control Tower as a new use permitted outright in the AD Zone.
- The Applicant proposes to allow Air Traffic Control Towers up to 115 feet in height.

PUBLIC AGENCY COMMENTS: The Planning Division mailed notice on July 5, 2023, to several public agencies and received the following comments:

Deschutes County Senior Transportation Planner, Tarik Rawlings, August 17, 2023 Comments

> I have reviewed the application materials for a control tower at the Bend Airport (File 247-23-000470-TA) and it appears that the application may not be complete where it pertains to the Transportation Planning Rule (OAR 660-012-060) for the following reasons. The application addresses Goal 12 (Transportation) on pages 10-11. Under the Goal 12 findings, the burden of proof states there will be five (5) staff resulting in 10 new daily trips. It is unclear where that number of employees came from; perhaps there are standard staffing levels recommended or required by the FAA for aircraft control towers based on number of operations, i.e., takeoffs and landings. For the purpose of this comment, staff utilizes the applicant's assumption for five (5) employees.
>
> The submitted analysis does not appear to review potentially affected County intersections. The application materials do not appear to have a site plan and, as a result, it is unclear to staff how the five employees may enter the Bend Airport. Potential intersections that could be utilized by the employees are Powell Butte Hwy/Bend Airport driveway; Nelson Road/Nelson Place; Nelson/Gibson Air Road; McGrath Road/Rotor Way. To answer the TPR questions posed by OAR 660-012-060(1)(c)(B) and (C), the applicant should provide at least minimal traffic analysis related to the proposal. Examples could include, but not be limited to, current operational level of the selected intersection(s); projected operation based on the current TSP; and number of employee trips sent to the selected intersection(s), and resulting operations of those intersections. The applicant has addressed the trip generation portion of analysis in projecting 10 new trips but the applicant should also provide additional analysis related to the existing volumes and operations of the affected roadway segments and/or intersections. Examples of needed information would be Average Daily Traffic (ADT), whether the acknowledged 2020-2040 TSP has identified any failing intersections or road segments or whether these intersections or road segments meet County performance standards; if there are deficiencies, identify if there are already programmed or planned improvement to mitigate the deficiencies, etc. It would also be helpful if the applicant could provide more information about the hours during which the proposed tower will be staff, including any applicable FAA recommendations, if available.
>
> This additional analysis could be included in a brief trip generation memo given the small number of new trips associated with the proposal.

Deschutes County Senior Transportation Planner, Tarik Rawlings, September 18, 2023 Comments

I have reviewed Mr. Bessman's September 6, 2023, Traffic Impact Analysis related to County file no. 247-23-000370-TA and I agree with the assumptions, methodology, and conclusions contained therein. As Mr. Bessman utilizes the 2040 planning horizon year (reflective of the most recent data included in the County's forthcoming Transportation System Plan update) this analysis appears to comply with relevant criteria. Mr. Bessman utilizes the acceptable road segment standard of 13,900 Average Daily Trips (ADT) which is incorporated into the County's most recent 2020-2040 Transportation System Plan. The literature review and engineering studies referenced in relation to staffing numbers and associated peak hour trips (5 employees and 5 total p.m. peak hour trips) are adequate. Staff agrees with Mr. Bessman's summary of Transportation Planning Rule (TPR) Compliance and finds that relevant TPR provisions appear to be satisfied through the submittal of this additional information.

The subject Text Amendment will not absorb any road capacity as that term is commonly accepted and, therefore, no SDC fees are associated with the subject Text Amendment at this time.

Central Oregon Irrigation District, Spencer Stauffer

Please be advised that Central Oregon Irrigation District (COID) has reviewed the application received on July 10, 2023, for the above referenced project located tax lots 1713200000200, 1713200000201, 171317C000100, 1713170000200, 1713200000202, 1713200000300. The applicant is requesting Amendments to Deschutes County Code (DCC) Chapters 18.04, Title Purpose and Definitions, Chapter 18.76, Airport Development Zone, Chapter 18.80, Airport Safety Combining Zone, and Chapter 18.120, Exceptions. The proposed amendments will modify DCC to add a definition of an air traffic control tower, establish air traffic control towers as a use permitted outright in the Airport Development Zone, and modify the height limit so that air traffic control towers can be up to 115 feet in height.

There are 0.84 acres COID mapped water rights appurtenant to tax lot 1713200000202. There are 2.5 acres of mapped pond water rights appurtenant to tax lot 1713200000200. Please note, COID's B-Lateral enters tax lot 1713200000200 in its southwest corner. The B-lateral travels east through tax lot 1713200000202 before continuing east through tax lot 1713200000200. The B-Lateral then turns north before leaving tax lot 1713200000200 to the east. The B-Lateral has a 30-foot right of way easement, 15-feet either side of the center of the pipe. The B-Lateral also has a 20-foot road easement on the east side of the pipe. That road easement is not utilized.

Listed below are COIDs initial comments to the provided application. All development affecting irrigation facilities shall be in accordance with COID's Development Handbook and/or as otherwise approved by the District.

- Tax Map 1713200000202 has 0.84 acres of appurtenant COID irrigation water mapped to a specific place of use. Construction of a structure, driveway, or other impermeable surface on top of a mapped water right is not allowed.

- The application will not impact COID facilities or water rights. Should the plans change, please contact COID to determine if COID water rights or facilities will be impacted.
- Irrigation infrastructure and rights-of-way are required to be identified on all maps and plans.
- No structures or encroachment of any kind, including fence or crossing, are permitted within COID property/easement/right of way without written permission from this office.
- Comply with Requirements of COID Developer Handbook including restriction on drilling / blasting and excavation within and adjacent to the existing canal embankment.
- Policies, standards and requirements set forth in the COID Developer Handbook must be complied with.

Our comments are based on the information provided, which we understand to be preliminary nature at this time. Our comments are subject to change and additional requirements may be made as site planning progresses and additional information becomes available. Please provide updated documents to COID for review as they become available.

Deschutes County Building Division, Randy Scheid

The Deschutes County Building Safety Divisions code mandates that Access, Egress, Setbacks, Fire & Life Safety, Fire Fighting Water Supplies, etc. must be specifically addressed during the appropriate plan review process with regard to any proposed structures and occupancies.

Accordingly, all Building Code required items will be addressed, when a specific structure, occupancy, and type of construction is proposed and submitted for plan review.

Oregon Department of Aviation, Brandon Pike

I took a look through the ATCT Siting Report prepared by the applicant, and I don't envision ODAV having any issues with this. We would be OK with an exemption for the ATCT height, whether through a variance or codified through a text amendment. And, yes, you're correct that OAR 660-013-0070 requires the FAA, ODAV, and the airport sponsor to sign off on exceptions to this rule. We would need them to go through the usual Notice of Construction process through ODAV and FAA; that's how the FAA and ODAV would formally sign off on the development.

The highest point on the tower will be approximately 115' above ground level (AGL), correct? I believe that's what I saw in the Siting Report.

Regarding a definition for an ATCT, I would take a look at this webpage from the FAA: https://aspm.faa.gov/aspmhelp/index/Glossary.html

Their definition is as follows: A terminal facility which, through the use of air/ground communications, visual signaling, and other devices, provides air traffic control services to airborne aircraft operating in the vicinity of an airport and to aircraft operating on the movement area.

I think it will be important to be very clear in your text amendment to identify that it's only ATCTs that are allowed to exceed the height limit.

The following agencies did not respond to the notice: Bend Fire Department, Bend Municipal Airport, Bureau of Land Management, City of Bend Growth Management Department, Deschutes County Assessor, Deschutes County Road Department, District 11 Watermaster, and Office of the State Fire Marshal.

PUBLIC COMMENTS: The Planning Division mailed notice of the application to all property owners within 250 feet of the subject property on July 5, 2023. The Applicant also complied with the posted notice requirements of Section 22.24.030(B) of Title 22. The Applicant submitted a Land Use Action Sign Affidavit indicating the Applicant posted notice of the land use action on August 11, 2023. No public comments were received.

NOTICE REQUIREMENT: On September 7, 2023, the Planning Division mailed a Notice of Public Hearing to all property owners within 250 feet of the subject property and public agencies. A Notice of Public Hearing was published in the Bend Bulletin on Sunday, September 10, 2023. Notice of the first evidentiary hearing was submitted to the Department of Land Conservation and Development on August 26, 2023.

REVIEW PERIOD: According to Deschutes County Code 22.20.040(D), the review of the proposed quasi-judicial Text Amendment application is not subject to the 150-day review period.

III. FINDINGS & CONCLUSIONS

Title 18 of the Deschutes County Code, County Zoning

Chapter 18.136, Amendments

Section 18.136.010, Amendments

DCC Title 18 may be amended as set forth in DCC 18.136. The procedures for text or legislative map changes shall be as set forth in DCC 22.12. A request by a property owner for a quasi-judicial map amendment shall be accomplished by filing an application on forms provided by the Planning Department and shall be subject to applicable procedures of DCC Title 22.

FINDING: The Applicant, as the property owner, has requested a quasi-judicial Text Amendment and filed the corresponding application. The Applicant has filed the required land use application forms for the proposal. The application will be reviewed utilizing the applicable procedures contained in Title 22 of the Deschutes County Code.

DCC 22.04.020 includes the following definition:

> "Quasi-judicial" zone change or plan amendment generally refers to a plan amendment or zone change affecting a single or limited group of property owners and that involves the application of existing policy to a specific factual setting. (The distinction between legislative and quasi-judicial changes must ultimately be made on a case-by-case basis with reference to case law on the subject.)

The subject application is not a request to change the zoning or Comprehensive Plan designation of the subject property. However, as described below, the quasi-judicial process of a Comprehensive Plan Amendment is the most applicable guidance regarding Text Amendments that are not squarely legislative. Therefore, staff includes the definition of a quasi-judicial process above for reference and also addresses the provisions of DCC 22.28.030, regarding final action on Comprehensive Plan amendments. The Airport most recently went through a Text Amendment in Deschutes County file 247-20-000482-TA. The Hearings Officer decision for file 247-20-000482-TA made the following findings regarding whether the application should be processed as a quasi-judicial Text Amendment:

> Based on the foregoing, the Hearings Officer finds that, in this case, the ultimate adoption of the Text Amendments is a two-step process. The role of the Hearings Officer is to apply the law, not to change it. In the first step of the process, the Applicant has a right under the DCC to submit and to have considered an application to amend the Code's text. This phase of the process is quasi-judicial in nature and it is appropriate to have a hearing and to build a record following the principles of a quasi-judicial process. As part of that process, the Hearings Officer is addressing the application of the County's exiting laws. The second step of the process is for the Deschutes County Board of Commissioners ("Board') to adopt an ordinance to incorporate any text amendments to the Code. Amendments to the text of a zoning ordinance are a change in the County's law, and only the Board can make such a change. In other words, the Hearings Officer is without authority to amend the County's Code. The Hearings Officer, however, can make a recommendation to the Board based on what develops in the quasi-judicial phase of the process.

The Oregon Supreme Court case *Strawberry Hill 4 Wheelers* provides guidance on how to distinguish between a legislative and quasi-judicial process, and outlines a three-part test that continues to be applied throughout case law. The Court of Appeals applied and expanded on the *Strawberry Hill 4 Wheelers* decision in *Hood River Valley v. Board of Cty. Commissioners*, 193 Or App 485, 495, 91 P3d 748 (2004):

> Given those concerns, "[t]he fact that a policymaking process is circumscribed by * * * procedural requirements [such as public hearings] does not alone turn it into an

> adjudication." *Id*. at 604. Rather, at least three other considerations generally bear on the determination of whether governmental action represented an "exercise of * * *quasi-judicial functions." ORS 34.040(1). First, does "the process, once begun, [call] for reaching a decision," with that decision being confined by preexisting criteria rather than a wide discretionary choice of action or inaction? *Strawberry Hill 4 Wheelers*, 287 Or at 604. Second, to what extent is the decision-maker "bound to apply preexisting criteria to concrete facts"? *Id*. at 602-03. Third, to what extent is the decision "directed at a closely circumscribed factual situation or a relatively small number of persons"? *Id*. at 603.
>
> Those three general criteria do not, however, describe a bright-line test. As we noted in *Estate of Gold v. City of Portland*, 87 Or App 45, 51, 740 P2d 812, *rev den*, 304 Or 405 (1987), *Strawberry Hill 4 Wheelers* "contemplates a balancing of the various factors which militate for or against a quasi-judicial characterization and does not create [an] 'all or nothing' test[.]" (Citation omitted.) In particular, we noted that the criteria are applied in light of the reasons for their existence-*viz*., "the assurance of correct factual decisions" and "the assurance of 'fair attention to individuals particularly affected.'" *Estate of Gold*, 87 Or App at 51 (quoting *Strawberry Hill 4 Wheelers*, 287 Or at 604).

As noted above, the *Strawberry Hill 4 Wheelers* test requires a case-specific analysis of all three factors in combination. Individuals most affected by the proposed Text Amendment include the Airport Sponsor and neighboring property owners, all of whom were mailed notice pursuant to DCC 22.24.030.

Staff addresses each component of the *Strawberry Hill 4 Wheelers* test below:

Results in a decision

The applicant has submitted an application for a Text Amendment, in order to construct an Air Traffic Control Tower on the subject property. The request will result in either an approval or a denial, and a decision will be issued by the Board of County Commissioners (Board) pursuant to DCC Title 22. As opposed to a policy change initiated by staff or decision-makers, which has a wide discretionary choice between action and inaction, the subject request was submitted as a land use application by the property owner and the County must take final action on it. Staff finds the subject amendment clearly meets this component of the *Strawberry Hill 4 Wheelers* test and may be considered a quasi-judicial process.

Apply existing criteria

The subject request is being reviewed based on criteria in DCC Chapter 18.136, Amendments, and applicable state statutes. Oregon Revised Statutes (ORS) 836.616, Rules for airport uses and activities, provides a list of the uses that may be permitted within an airport under a local jurisdiction's land use code. The application is being reviewed to confirm compliance with the DCC along with applicable OARs and ORSs, and staff therefore finds existing criteria are being applied to the subject application. Consequently, the application meets this component of the *Strawberry Hill 4 Wheelers* test for a quasi-judicial process.

Small number of persons

The Airport Development Zone encompasses the Airport, and no other properties. The subject property is owned and operated by the City of Bend, who manages leases and oversees uses within the Bend Municipal Airport. While staff notes the Bend Municipal Airport is utilized by members of the public and various businesses, a new use can only be established on the property if the City of Bend initiates or authorizes an application. The subject request will impact the development potential of the Airport property and no other properties. Therefore, staff finds the subject request complies with this component of the *Strawberry Hill 4 Wheelers* test and may be categorized as quasi-judicial.

When the factors above are considered in combination, staff finds they indicate the subject Text Amendment is a quasi-judicial process. As noted in *Hood River Valley v. Board of Cty. Commissioners*, the differentiation between a legislative and quasi-judicial process is important in order to ensure all affected parties are given a fair process. In this case the proposal will impact one property owner, the applicant, and processing the request through a quasi-judicial process will provide for a public hearing before a Hearings Officer and final action by the Board. For these reasons, staff finds the request meets the three-part test outlined in *Strawberry Hill 4 Wheelers* as well as the intent of a quasi-judicial process.

Title 22 of the Deschutes County Code, Development Procedures Ordinance

Chapter 22.12, Legislative Procedures

Section 22.12.010, Hearing Required

No legislative change shall be adopted without review by the Planning Commission and a public hearing before the Board of County Commissioners. Public hearings before the Planning Commission shall be set at the discretion of the Planning Director, unless otherwise required by state law.

FINDING: As described above, staff finds the subject request is a quasi-judicial Text Amendment. However, the procedural steps will be similar to those outlined in the Hearing's Officer decision for file 247-20-000482-TA, which finds amendments to allowed airport uses carry the qualities of a legislative act. The subject amendments will be adopted through an ordinance, consistent with the process for a legislative amendment. The Planning Director has exercised their discretion not to set a hearing before the Planning Commission.

Section 22.12.020, Notice

A. Published Notice.

1. Notice of a legislative change shall be published in a newspaper of general circulation in the county at least 10 days prior to each public hearing.

2. The notice shall state the time and place of the hearing and contain a

statement describing the general subject matter of the ordinance under consideration.

B. Posted Notice. Notice shall be posted at the discretion of the Planning Director and where necessary to comply with ORS 203.045.

C. Individual Notice. Individual notice to property owners, as defined in DCC 22.08.010(A), shall be provided at the discretion of the Planning Director, except as required by ORS 215.503.

D. Media Notice. Copies of the notice of hearing shall be transmitted to other newspapers published in Deschutes County.

FINDING: Notice of the proposed Text Amendment was published in the Bend Bulletin. As noted above, the applicant complied with the posted notice requirement and staff mailed notice to property owners within 250 feet of the Airport boundary. Notice was provided to the County public information official for wider media distribution.

Section 22.12.030, Initiation Of Legislative Changes

A legislative change may be initiated by application of individuals upon payment of required fees as well as by the Board of Commissioners or the Planning Commission.

FINDING: The applicant has submitted the required fees and requested a Text Amendment. Staff finds the applicant is granted permission under this criterion to initiate a legislative change and has submitted the necessary fee and materials.

Section 22.12.040, Hearings Body

A. The following shall serve as hearings or review body for legislative changes in this order:

1. The Planning Commission.

2. The Board of County Commissioners.

FINDING: As described above, the subject application meets the definition of a quasi-judicial application. For this reason, this application was referred to a Hearings Officer rather than the Planning Commission for a recommendation. The adoption of the proposed text amendments will follow a legislative process because it must be approved by the Board. For the purpose of this criterion, staff notes the application has properties of both a quasi-judicial and legislative amendment.

B. Any legislative change initiated by the Board of County Commissioners shall be reviewed by the Planning Commission prior to action being taken by the Board of Commissioners.

FINDING: The subject application was not initiated by the Board. Staff finds this criterion does not apply.

Section 22.12.050, Final Decision

All legislative changes shall be adopted by ordinance.

FINDING: Staff finds this criterion requires action by the Board to effect any legislative changes to Deschutes County Code. If the proposed Text Amendment is approved, it will become effective through the Board adoption of an ordinance.

Chapter 22.28, Land Use Action Decisions

Section 22.28.030, Decision On Plan Amendments And Zone Changes

A. Except as set forth herein, the Hearings Officer or the Planning Commission when acting as the Hearings Body shall have authority to make decisions on all quasi-judicial zone changes and plan amendments. Prior to becoming effective, all quasi-judicial plan amendments and zone changes shall be adopted by the Board of County Commissioners.

B. In considering all quasi-judicial zone changes and those quasi-judicial plan amendments on which the Hearings Officer has authority to make a decision, the Board of County Commissioners shall, in the absence of an appeal or review initiated by the Board, adopt the Hearings Officer's decision. No argument or further testimony will be taken by the Board.

FINDING: As detailed above, staff finds the proposal should be viewed as a quasi-judicial plan amendment. For this reason, staff finds these criteria apply. This application is being referred to a Hearings Officer for a recommendation. If an appeal is not filed and the Board does not initiate review, the Board shall adopt the Hearings Officer's recommendation as the decision of the county.

C. Plan amendments and zone changes requiring an exception to the goals or concerning lands designated for forest or agricultural use shall be heard de novo before the Board of County Commissioners without the necessity of filing an appeal, regardless of the determination of the Hearings Officer or Planning Commission. Such hearing before the Board shall otherwise be subject to the same procedures as an appeal to the Board under DCC Title 22.

FINDING: The subject Text Amendment does not require a goal exception and does not concern lands designated for forest or agricultural use. For this reason, a de novo hearing before the Board is not required.

D. Notwithstanding DCC 22.28.030(C), when a plan amendment subject to a DCC 22.28.030(C) hearing before the Board of County Commissioners has been consolidated for hearing before the hearings Officer with a zone change or other permit application not requiring a hearing before the board under DCC 22.28.030(C), any party wishing to obtain review of the Hearings Officer's decision on any of those

other applications shall file an appeal. The plan amendment shall be heard by the Board consolidated with the appeal of those other applications.

FINDING: No other application is being consolidated with the subject Text Amendment. Staff finds this criterion does not apply.

Deschutes County Comprehensive Plan

Transportation System Plan

Section 3.4, Rural Economy

Goal 1. Maintain a stable and sustainable rural economy, compatible with rural lifestyles and a healthy environment.

…

Policy 3.4.6 Support and participate in master planning for airports in Deschutes County

FINDING: The County's Comprehensive Plan includes a number of guiding policies such as the rural economy goal cited above. In addition, Appendix C - Transportation System Plan includes goals specific to airport planning. Staff finds the relevant Comprehensive Plan policies are implemented through Deschutes County Code, and the Comprehensive Plan goals themselves are not specific approval criteria. However, to the extent the Hearings Officer finds this policy is an applicable approval criterion, staff includes the applicant's response below as alternate findings:

The proposed text amendments will support master planning for the Bend Municipal Airport. The proposed amendments are intended to support the construction of an air traffic control tower, which is now an improvement supported by the FAA. The amendments are proposed to ensure the establishment of a tower will support airport operations and, in a manner, consistent with the master planning for the Bend Municipal Airport. The amendments are further limited to the Bend Airport so that another use could not be established through these amendments.

OREGON REVISED STATUTES

Chapter 836 – Airports and Landing Fields

836.610, Local government land use plans and regulations to accommodate airport zones and uses; funding; rules.

1) Local governments shall amend their comprehensive plan and land use regulations consistent with the rules for airports adopted by the Land Conservation and

Development Commission under ORS 836.616 and 836.619. Airports subject to the rules shall include:

- ***(a) Publicly owned airports registered, licensed or otherwise recognized by the Department of Transportation on or before December 31, 1994, that in 1994 were the base for three or more aircraft; and***
- ***(b) Privately owned public-use airports specifically identified in administrative rules of the Oregon Department of Aviation thot:***
  - ***(A) Provide important links in air traffic in this state;***
  - ***(B) Provide essential safety or emergency services; or***
  - ***(C) Are of economic importance to the county where the airport is located.***

(2)(a) Local governments shall amend their comprehensive plan and land use regulations as required under subsection (1) of this section not later thon the first periodic review, as described in ORS 197.628 to 197.651, conducted after the date of the adoption of a list of airports by the Oregon Department of Aviation under subsection (3) of this section.

(b) A state agency or other person may provide funding to a local government to accomplish the planning requirements of this section earlier than otherwise required under this subsection.

(3) The Oregon Department of Aviation by rule shall adopt a list of airports described in subsection (1) of this section. The rules shall be reviewed and updated periodically to add or remove airports from the list. An airport may be removed from the list only upon request of the airport owner or upon closure of the airport for a period of more than three years. [1995 c.285 §4; 1997 c.859 52]

FINDING: The AD Zone encompasses the, which is a publically-owned airport. In addition, the Airport was registered prior to December 31, 1994, and staff therefore finds it is subject to this section. The applicant proposes to amend the land use regulations for this airport consistent with ORS 836.616 and ORS 836.619.

836.616, Rules for airport uses and activities.

(1) Following consultation with the Oregon Department of Aviation, the Land Conservation and Development Commission shall adopt rules for uses and activities allowed within the boundaries of airports identified in ORS 836.610 (Local government land use plans and regulations to accommodate airport zones and uses) (1) and airports described in ORS 836.608 (Airport operation as matter of state concern) (2).

(2) Within airport boundaries established pursuant to commission rules, local government land use regulations shall authorize the following uses and activities:

- ***(a) Customary and usual aviation-related activities including but not limited to takeoffs, landings, aircraft hangars, tie-downs, construction and maintenance of airport facilities, fixed-base operator facilities and other activities incidental to the normal operation of an airport;***

FINDING: DCC 18.76.030(E) currently permits customary and usual aviation-related activities in the AD Zone. The applicant proposes to add a new use category for air traffic control towers, which staff finds are a type of customary and usual aviation-related activity.

(3) All land uses and activities permitted within airport boundaries, other than the uses and activities established under subsection (2) of this section, shall comply with applicable land use laws and regulations. A local government may authorize commercial, industrial and other uses in addition to those listed in subsection (2) of this section within an airport boundary where such uses are consistent with applicable provisions of the acknowledged comprehensive plan, statewide land use planning goals and commission rules and where the uses do not create a safety hazard or limit approved airport uses.

(4) The provisions of this section do not apply to airports with an existing or approved control tower on June 5, 1995. [1997 c.859 §5 (enacted in lieu of 836.615)]

FINDING: The applicant proposes a new use category consisting of an air traffic control tower. As described above, staff finds this is a type of customary and usual aviation-related activity and is therefore a use listed in subsection (2). No additional uses are proposed within the AD Zone and staff finds subsection (3) does not apply. Furthermore, the Airport did not contain an existing or approved control tower on June 5, 1995. Therefore, staff finds subsection (4) does not apply.

836.619, State compatibility and safety standards for land uses near airports; rules.

Following consultation with the Oregon Department of Aviation, the Land Conservation and Development Commission shall adopt rules establishing compatibility and safety standards for uses of land near airports identified in ORS 836.610 (Local government land use plans and regulations to accommodate airport zones and uses) (1). [1997 c.859 §8 (enacted in lieu of 836.620)]

FINDING: Applicable Oregon Administrative Rules are addressed below.

OREGON ADMINISTRATIVE RULES CHAPTER 660, LAND CONSERVATION AND DEVELOPMENT DEPARTMENT

Division 13 – Airport Planning

OAR 660-013-0020, Definitions

For purposes of this division, the definitions in ORS Chapter 197 apply unless the context requires otherwise. In addition, the following definitions apply:

...

(4) "Non Towered Airport" means an airport without an existing or approved control tower on June 5, 1995.

FINDING: Staff includes this definition for reference, to demonstrate the Airport meets the definition of a non towered airport. The applicant proposes the subject Text Amendment for the purpose of establishing a control tower in the AD Zone in the future. The Airport did not contain an existing or approved control tower on June 5, 1995, and therefore will continue to meet the definition of a non towered airport even if a control tower is established in the future.

OAR 660-013-0303, Preparation and Coordination of Aviation Plans

(2) A city or county with planning authority for one or more airports, or areas within safety zones or compatibility zones described in this division, shall adopt comprehensive plan and land use regulations for airports consistent with the requirements of this division and ORS 836.600 through 836.630. Local comprehensive plan and land use regulation requirements shall be coordinated with acknowledged transportation system plans for the city, county, and Metropolitan Planning Organization (MPO) required by OAR 660, division 12. Local comprehensive plan and land use regulation requirements shall be consistent with adopted elements of the state ASP and shall be coordinated with affected state and federal agencies, local governments, airport sponsors, and special districts. If a state ASP has not yet been adopted, the city or county shall coordinate the preparation of the local comprehensive plan and land use regulation requirements with ODA. Local comprehensive plan and land use regulation requirements shall encourage and support the continued operation and vitality of airports consistent with the requirements of ORS 836.600 through 836.630.

FINDING: The submitted Burden of Proof provides the following statement.

> The proposal is consistent with this rule because it proposes amendments to the text of the County's land use regulations that apply to the Bend Airport. The proposed text amendments would have the effect of allowing the development of one (1) air traffic control tower at the Bend Municipal Airport. The siting of a tower consistent with these amendments would support the continued operation and vitality of the Bend Municipal Airport by ensuring air traffic to and from the Airport was safely controlled and directed.

Staff concurs with this description and finds the proposed amendment to the DCC will encourage and support the continued operation of the Airport.

OAR 660-013-0050, Implementation of Local Airport Planning

A local government with planning responsibility for one or more airports or areas within safety zones or compatibility zones described in this division or subject to requirements identified in ORS 836.608 shall adopt land use regulations to carry out the requirements of this division, or applicable requirements of ORS 836.608, consistent with the applicable elements of the adopted state ASP and applicable statewide planning requirements.

FINDING: This administrative rule imposes a mandatory requirement on the County to adopt land use regulations consistent with the applicable elements of the adopted state Aviation System Plan ("ASP") and applicable statewide planning requirements. The applicant proposes to amend the Airport Safety Combining Zone, which implements this administrative rule. Other applicable statewide planning requirements are addressed below, and staff finds this criterion will be met.

OAR 660-013-0070, Local Government Safety Zones for Imaginary Surfaces

(1) A local government shall adopt an Airport Safety Overlay Zone to promote aviation safety by prohibiting structures, trees, and other objects of natural growth from penetrating airport imaginary surfaces.

(a) The overlay zone for public use airports shall be based on Exhibit 1 incorporated herein by reference.

(b) The overlay zone for airports described in ORS 836.608(2) shall be based on Exhibit 2 incorporated herein by reference.

(c) The overlay zone for heliports shall be based on Exhibit 3 incorporated herein by reference.

(2) For areas in the safety overlay zone, but outside the approach and transition surface, where the terrain is at higher elevations than the airport runway surface such that existing structures and planned development exceed the height requirements of this rule, a local government may authorize structures up to 35 feet in height. A local government may adopt other height exceptions or approve a height variance when supported by the airport sponsor, the Oregon Department of Aviation, and the FAA.

FINDING: The County has adopted an Airport Safety Combining Zone, and staff therefore finds subsection(1), is met. Subsection (2), above, allows a jurisdiction to adopt height exceptions to the imaginary surfaces of the Airport Safety Overlay Zone when supported by the airport sponsor, the Oregon Department of Aviation, and the FAA. The applicant in this case is the airport sponsor, and their request for a Text Amendment therefore indicates support for the height exception. Comments submitted August 14, 2023 from Oregon Department of Aviation indicate general support for the proposal, and the application materials document ongoing coordination between the airport sponsor and the FAA regarding the proposed tower.

OAR 660-013-0100, Airport Uses at Non-Towered Airports

Local government shall adopt land use regulations for areas within the airport boundary of non-towered airports identified in ORS 836.610(1) that authorize the following uses and activities:

(1) Customary and usual aviation-related activities including but not limited to takeoffs, landings, aircraft hangars, tiedowns, construction and maintenance of airport facilities, fixed-base operator facilities, a residence for an airport caretaker or security officer, and other activities incidental to the normal operation of an airport. Residential, commercial, industrial, manufacturing, and other uses, except

as provided in this rule, are not customary and usual aviation-related activities and may only be authorized pursuant to OAR 660-013-0110.

FINDING: The applicant proposes to add an air traffic control tower as a use permitted outright in the AD Zone. Staff finds an air traffic control tower is an airport facility and is, therefore, a customary and aviation-related activity.

DIVISION 12, TRANSPORTATION PLANNING

OAR 660-012-0060 Plan and Land use Regulation Amendments

(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

(b) Change standards implementing a functional classification system; or

(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.

(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or

(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

FINDING: This above language is applicable to the proposal because it involves an amendment to a land use regulation, specifically the provisions of the AD Zone. The proposed amendment would allow an air traffic control tower as a use permitted outright in the zone, with a height of up to 115 feet. While the Applicant is not proposing any land use development of the subject property at this time, the application materials indicate the intent is future construction of one air traffic control

tower at the Airport. Therefore, for the purpose of this criterion staff evaluates whether the applicant has demonstrated this future construction of an air traffic control tower will comply with the Transportation Planning Rule.

In the application materials submitted on June 9, 2023, the applicant estimates the air traffic control tower will generate no more than 10 additional vehicle trips per day, and therefore did not require additional analysis for transportation impacts. The County Transportation Planner then requested additional information, particularly regarding impacts to County intersections near the subject property. The Applicant then submitted a Traffic Impact Analysis (TIA) dated September 6, 2023, prepared by Joe Bessman of Transight Consulting LLC, which provided the following analysis of impacts to surrounding roadways and intersections:

> The proposed comparative assessment of scenarios with and without the text amendment allowing an ATCT shows that there is very little change in the trip generation potential of the site. For purposes of a "reasonably likely" scenario, the assessment considered both volume scenarios with western and eastern access.
> …
> Based on the review presented herein, the proposed amendment to allow an Air Traffic Control Center within the adjacent Airport Development Zone would comply with the intent of the zoning, as it would allow implementation of the adopted Bend Municipal Airport Master Plan. This would only create minor impacts in area traffic volumes, as with this limited trip generation potential (5 additional weekday p.m. peak hour trips) this amendment would not:
> - Change the functional classification of existing or planned transportation facilities;
> - Change standards implementing a functional classification system, or
> - Result in types of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility.

The revised TIA was reviewed by the County Senior Transportation Planner, who agreed with the report's conclusions. Staff finds that the proposed Text Amendment will be consistent with the identified function, capacity, and performance standards of the County's transportation facilities in the area. The proposed air traffic control tower will not change the functional classification of any existing or planned transportation facility or change the standards implementing a functional classification system. Regarding the memo dated September 6, 2023, the County Transportation Planner provided the following comments in an email dated September 18, 2023:

> I have reviewed Mr. Bessman's September 6, 2023, Traffic Impact Analysis related to County file no. 247-23-000370-TA and I agree with the assumptions, methodology, and conclusions contained therein. As Mr. Bessman utilizes the 2040 planning horizon year (reflective of the most recent data included in the County's forthcoming Transportation System Plan update) this analysis appears to comply with relevant criteria. Mr. Bessman utilizes the acceptable road segment standard of 13,900 Average Daily Trips (ADT) which is incorporated into the County's most recent 2020-2040 Transportation System Plan. The literature review and engineering studies referenced in relation to staffing numbers and associated peak hour trips (5 employees and 5 total p.m. peak hour trips) are adequate. Staff agrees with Mr.

Bessman's summary of Transportation Planning Rule (TPR) Compliance and finds that relevant TPR provisions appear to be satisfied through the submittal of this additional information.

Based on the County Senior Transportation Planner's comments and the traffic memo prepared by Transight Consulting LLC, staff finds compliance with the Transportation Planning Rule has been effectively demonstrated.

DIVISION 15, STATEWIDE PLANNING GOALS AND GUIDELINES

OAR 660-015, Division 15, Statewide Planning Goals and Guidelines

FINDING: The Statewide Planning Goals and the Applicant's findings are quoted below:

Goal 1: Citizen Involvement. To develop a citizen involvement program thot ensures the opportunity for citizens to be involved in all phases of the planning process.

FINDING: The proposed amendments will be consistent with Goal 1 because the County is relying on its citizen involvement program and land use procedures ordinance to conduct public review of these amendments. The procedures require a public hearing before a County hearings officer and subsequent review by the Board of County Commissioners before adoption. The applicant has proposed these findings for the County to rely and/or build upon to explain their final decisions on these amendments to the public.

Goal 2: Land Use Planning. PART 1 - PLANNING: To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure on adequate factual base for such decisions and actions.

FINDING: The proposed amendments will meet this goal because the applicant has developed an adequate factual base upon which the County may base its decision. The applicant has provided documentation with these findings that demonstrate the necessity for the air traffic control tower, including a decision by the FAA to include the Bend Municipal Airport in the Federal Contract Tower Program. The applicant has provided the potential locations for the air traffic control tower that were included in the 2021 Bend Airport Master Plan, also approved by the FAA and in the 2020 Tower Siting Report.

Goal 3: Agricultural Lands. To preserve and maintain agricultural lands.

FINDING: This goal is applicable because the areas surrounding the Bend Municipal Airport includes areas designated for Agriculture on the County's Comprehensive Plan and zoned EFUTRB, Exclusive Farm Use-Tumalo/Redmond/Bend subzone. The proposed text amendments would allow the City to establish an air traffic control tower at the Bend Municipal Airport. The tower itself does not have any operating characteristics that will either force a significant change or significantly increase the cost of accepted farming practices

occurring on EFU lands around the airport. The operation of the tower will not generate levels of noise or vibrations that would results in changes to farm practices and will not generate levels of traffic to and from the airport that would interfere with movement of farm equipment. The operation of the tower will involve a beacon that will rotate white and green to inform pilots of its location. Finally, the operation of the air traffic control tower will not require the use of irrigation water and in amounts that would impact irrigating pasture grasses on properties zoned EFU.

Goal 4: Forest Lands. To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

FINDING: Goal 4 is not applicable to review of the proposed text amendments because none of the surrounding properties are designated Forest Lands under the County's Comprehensive Plan.

Goal 5: To protect natural resources and conserve scenic and historic areas and open spaces.

FINDING: Goal 5 is not applicable to review of the proposed text amendments because they do not include any changes to the County's Goal 5 inventories in its Comprehensive Plan, and do not also propose a use that would impact a Goal 5 resource.

STAFF NOTE: The County's Goal 5 protections are partially implemented through DCC Chapter 18.84, the Landscape Management Combining Zone. This overlay zone protects scenic resources through design limitations and additional protections for designated roadways, rivers, and streams. The subject property is not located within the Landscape Management Combining Zone and is not subject to these provisions.

Goal 6: Air, Water and Land Resources. To maintain and improve the quality of the air, water and land resources of the state.

FINDING: The proposal is consistent with Goal 6 because the operation of the air traffic control tower will help improve air quality around the airport. The establishment of the air traffic control tower and staff for its operation will help manage aircraft operations, aircraft landing and taking off, so that fewer aircraft are circling around the airport waiting to land.

Goal 7: Natural Hazards. To protect people and property from natural hazards.

FINDING: Goal 7 is not applicable to review of the proposed text amendments because there are no natural hazards mapped adjacent to the Bend Airport.

Goal 8: To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

FINDING: The applicant finds that elements of Goal 8 are applicable to review of the proposed text amendments and other elements of Goal 8 are not. This finding begins by addressing the applicability of Goal 8 to the potential increase in recreational aviation activity that may result from having an ATCT at the Bend Municipal Airport. The purpose of the ATCT is to support a crew of air traffic controllers who would direct takeoffs and landings at the Bend Airport. The improved management of air traffic at the airport may provide for more reliable and safer aircraft operations, including those for tourists and visitors recreating in Central Oregon. The applicant finds that this element of the proposal would satisfy Goal 8 by providing for safter air traffic for citizens of the state recreating in Deschutes County.

The applicant finds that the elements of Goal 8 regarding destination resort siting and siting of necessary recreational facilities are not applicable to review of the proposed text amendments because they do not impact any Goal 8 destination resorts have been established in Deschutes County and do not propose any changes to the land use regulations under DCC Chapter 18.113. ln addition, Goal 8 is not applicable because the proposed text amendment does not propose and will not impact recreational facilities in Deschutes County. The proposed text amendments will not influence existing or planned public parks or trails.

Goal 9: Economic Development. To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

FINDING: The applicant finds that this goal is applicable because one of the outcomes of establishing an air traffic control tower at the Bend Municipal Airport will be safer aircraft operations, including those related to business traffic and related to airport-based businesses at the airport. The establishment of the air traffic control tower will support aviation-related economic development by improving safety and operations (takeoffs, landings) efficiency at the airport.

Goal 10: Housing. To provide for the housing needs of citizens of the state.

FINDING: Goal 10 is not applicable to review of the proposed text amendments because the amendments do not propose changes to the Deschutes County Zoning Ordinance that would provide needed housing.

Goal 11: Public Facilities and Services

FINDING: Goal 11 is not applicable to review of the proposed text amendments because they do not propose any changes to the County Toning Ordinance that would affect the provision of water, wastewater collection, or transportation facilities in Deschutes County. The amendments focus on changes that would allow the siting of one (1) air traffic control

tower at the Bend Municipal Airport. There are no amendments proposed that would involve any public facilities being extended to serve rural development. These proposed text amendments would also not have the effect of changing the existing water, wastewater, and transportation facilities that serve the Bend Municipal Airport.

Goal 12: Transportation. To provide and encourage a safe, convenient and economic transportation system.

FINDING: The proposed amendments are consistent with Goal i.2 because they will allow development of an air traffic control tower at the Bend Municipal Airport. The establishment of an air traffic control tower through these amendments will be consistent with Goal 12 by ensuring safer airport flight operations that are directed through the airport staff stationed at the air traffic control tower.

Goal 13: Energy Conservation. To conserve energy.

FINDING: Goal 13 is not applicable to these proposed text amendments because they do not include any changes that would affect energy conservation. These amendments do not propose any renewable energy facilities at the Bend Airport.

Goal 14: Urbanization. To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

FINDING: Goal 14 is not applicable to review of the proposed text amendments because they do not affect an adopted urban growth boundary. Goal 14 is also not applicable because the proposed text amendments would not have the effect of allowing urban land uses on rural land.

Goal 15: Willamette River Greenway; Goal 16: Estuarine Resources; Goal 17: Coastal Shorelands; Goal 18: Beaches and Dunes, and Goal 19: Ocean Resources.

FINDING: These goals are not applicable to review of the proposed text amendments because the Bend Airport is not adjacent to the Willamette River and not adjacent to the coast or the Pacific Ocean.

Staff generally accepts the Applicant's responses and finds compliance with the applicable Statewide Planning Goals has been effectively demonstrated.

IV. CONCLUSION & RECOMMENDATION

Staff requests the Hearings Officer determine if the Applicant has met the burden of proof necessary to justify the proposed Text Amendment through effectively demonstrating

compliance with the applicable criteria of DCC Title 18 (the Deschutes County Zoning Ordinance), the Deschutes County Comprehensive Plan, and applicable sections of OAR and ORS.

DESCHUTES COUNTY PLANNING DIVISION

Written by: Audrey Stuart, Associate Planner

Reviewed by: Will Groves, Planning Manager

Attachments: 1) Proposed Text Amendments

Chapter 18.76, Airport Development Zone

18.76.015 Definitions

The following definitions apply only to Chapter 18.76.

“Customary and usual aviation-related activities” include, but are not limited to, takeoffs, landings, aircraft hangars, tiedowns, construction and maintenance of airport facilities, fixed-base operator facilities, a residence for an airport caretaker or security officer, and other activities incidental to the normal operation of an airport. Residential, commercial, industrial, manufacturing; and other uses, except as provided in this rule, are not customary and usual aviation-related activities and may only be authorized pursuant to OAR 660-013-0110.

“Fixed-base operator or FBO” means a commercial business granted the right by the airport sponsor to operate on an airport and provide aeronautical services such as fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance, flight instruction, etc.

“Hangar” means an airport structure intended for the following uses:

1. Storage of active aircraft.
2. Shelter for maintenance, repair, or refurbishment of aircraft, but not the indefinite storage of nonoperational aircraft.
3. Construction of amateur-built or kit-built aircraft
4. Storage of aircraft handling equipment, e.g., tow bar, glider tow equipment, workbenches, and tools and materials used to service, maintain, repair or outfit aircraft: items related to ancillary or incidental uses that do not affect the hangars' primary use.
5. Storage of materials related to an aeronautical activity, e.g., balloon and skydiving equipment, office equipment, teaching tools, and materials related to ancillary or incidental uses that do not affect the hangars’ primary use; storage of non-aeronautical items that do not interfere with the primary aeronautical purpose of the hangar (for example, televisions, furniture).
6. A vehicle parked at the hangar while the aircraft usually stored in that hangar is flying, subject to local airport rules and regulations.
7. A hangar may include restrooms, pilot lounge, offices, briefing rooms, and crew quarters.

"Air Traffic Control Tower" means a terminal facility which, through the use of air/ground communications, visual signaling, and other devices, provides air traffic control services to airborne aircraft operating in the vicinity of an airport and to aircraft operating on the airport movement area.

18.76.030 Uses Permitted Outright

The following uses and their accessory uses are permitted outright in all of the Airport Districts:

A. Class I and II road or street project subject to approval as part of a land partition, subdivision or subject to the standards and criteria established by DCC 18.116.230.

B. Class III road or street project.

C. Operation, maintenance, and piping of existing irrigation systems operated by an Irrigation District except as provided in DCC 18.120.050.

D. Farm use as defined in DCC Title 18.

E. Customary and usual aviation-related activities.

F. Hangars are subject to the standards and criteria established by DCC 18.76.105.

G. An air traffic control tower, no higher than 115 feet in height.

18.76.050 Use Limitations

The following limitations and standards shall apply to all permitted uses in the Airport Districts:

A. The height of any plant growth or structure or part of a structure such as chimneys, towers, antennas, power lines, etc., shall not exceed 35 feet.

1. DCC 18.76.050(A) does not apply to the siting of an air traffic control tower. An air traffic control tower up to 115 feet shall not require a height exception or variance.

B. In approach zones beyond the clear zone areas, no meeting place designed to accommodate more than 25 persons for public or private purposes shall be permitted.

C. All parking demand created by any use permitted by DCC 18.76 shall be accommodated on the subject premises entirely off-street.

D. No use permitted by DCC 18.76 shall require the backing of traffic onto a public or private street or road right of way.

E. No power lines shall be located in clear zones.

F. No use shall be allowed which is likely to attract a large quantity of birds, particularly birds which normally fly at high altitudes.

Chapter 18.80, Airport Safety Combining Zone

18.80.022 Definitions

A. Air Traffic Control Tower. A terminal facility which, through the use of air/ground communications, visual signaling, and other devices, provides air traffic control services to airborne aircraft operating in the vicinity of an airport and to aircraft operating on the airport movement area.

B. Aircraft. Helicopters and airplanes, but not hot air balloons or ultralights. (Balloons are governed by FAR Part 30, and ultralights by FAR Part 103. Ultralights are basically unregulated by the FAA.)

C. Airport. The strip of land used for taking off and landing aircraft, together with all adjacent land used in connection with the aircraft landing or taking off from the strip of land, including but not limited to land used for existing airport uses.

D. Airport Direct Impact Area. The area located within 5,000 feet of an airport runway, excluding lands within the runway protection zone and approach surface. (Redmond, Bend, and Sunriver)

E. Airport Elevation. The highest point of an airport's usable runway, measured in feet above mean sea level.

F. Airport Imaginary Surfaces (and zones). Imaginary areas in space and on the ground that are established in relation to the airport and its runways.

For the Redmond, Bend, Sunriver and Sisters airports, the imaginary surfaces are defined by the primary surface, runway protection zone, approach surface, horizontal surface, conical surface and transitional surface.

For the Cline Falls and Juniper airports, the imaginary areas are only defined by the primary surface and approach surface.

G. Airport Noise Criterion. The State criterion for airport noise is an Average Day-Night Sound Level (DNL) of 55 decibels (dBA). The Airport Noise Criterion is not designed to be a standard for imposing liability or any other legal obligation except as specifically designated pursuant to OAR 340, Division 35.

H. Airport Noise Impact Boundary. Areas located within 1,500 feet of an airport runway or within established noise contour boundaries exceeding 55 DNL.

I. Airport Safety Combining Zone (AS Zone). A Deschutes County zone intended to place additional land use conditions on land impacted by the airport while retaining the existing underlying zone. The airport imaginary surfaces, impact areas, boundaries and their use limitations comprise the AS Zone. The AS Zone may apply to either public-use or private-use airports.

J. Airport Secondary Impact Area. The area located between 5,000 and 10,000 feet from an airport runway. (Redmond, Bend, and Sunriver)

K. Airport Sponsor. The owner, manager, or other person or entity designated to represent the interests of an airport.

L. Airport Uses. Those uses described in OAR 660-013-0100 and 660-013-0110.

M. Approach Surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface.

For Redmond, Bend, Sunriver, and Sisters airports:

1. The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:
    a. 1,250 feet for a utility runway having a visual approach;
    b. 1,500 feet for other than a utility runway having a visual approach;
    c. 2,000 feet for a utility runway having a non-precision instrument approach;
    d. 3,500 feet for a non-precision instrument runway, other than utility, having visibility minimums greater than three-fourths statute mile;
    e. 4,000 feet for a non-precision instrument runway, other than utility, having visibility minimums at or below three-fourths statute mile; and
    f. 16,000 feet for precision instrument runways.
2. The approach surface extends for a horizontal distance of
    a. 5,000 feet at a slope of 20 feet outward for each foot upward for all utility runways;
    b. 10,000 feet at a slope of 34 feet outward for each foot upward for all non-precision instrument runways, other than utility; and
    c. 10,000 feet at a slope of 50 feet outward for each one foot upward, with an additional 40,000 feet at slope of 40 feet outward for each one foot upward, for precision instrument runways.
3. The outer width of an approach surface will be that width prescribed in DCC 18.80.022~~(L)~~(M)(3) for the most precise approach existing or planned for that runway end.

For the Cline Falls and Juniper airports:

4. The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of 450 feet for that end of a private use airport with only visual approaches. The approach surface extends for a horizontal distance of 2,500 feet at a slope of 20 feet outward for each one foot upward.

N. Average Day-Night Sound Level (DNL). Average day-night sound level is the FAA standard measure for determining the cumulative exposure of individuals to noise. DNL is the equivalent of noise levels produced by aircraft operations during a 24-hour period, with a ten-decibel penalty applied to the level measured during nighttime hours (10:00 p.m. to 7:00 am).

O. Conical Surface. An element of the airport imaginary surfaces that extends outward and upward from the periphery of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet and to a vertical height of 350 feet above the airport elevation.

P. Department of Aviation. The Oregon Department of Aviation, formerly the Aeronautics Division of the Oregon Department of Transportation.

Q. FAA. Federal Aviation Administration.

R. FAA's Technical Representative. As used in DCC 18.80, the federal agency providing the FAA with expertise on wildlife and bird strike hazards as they relate to airports. This may include, but is not limited to, the USDA-APHIS-Wildlife Services.

S. FAR. Regulation issued by the FAA.

T. FAR Part 77. Regulation, Part 77, “Objects Affecting Navigable Airspace,” establishes standards for determining obstructions to navigable airspace.

U. Height. The highest point of a structure or tree, plant or other object of natural growth, measured from mean sea level.

V. Horizontal Surface. A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

    1. 5,000 feet for all runways designated as utility.

    2. 10,000 feet for all other runways.

    3. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

W. Non-precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach has been approved, or planned, and for which no precision approach facilities are planned or indicated on an FAA-approved airport layout plan or other FAA planning document.

X. Non-Towered Airport. An airport without an existing or approved control tower on June 5, 1995.

Y. Obstruction. Any structure or tree, plant or other object of natural growth that penetrates an imaginary surface.

Z. Other than Utility Runway. A runway that is constructed for and intended to be used by turbine-driven aircraft or by propeller-driven aircraft exceeding 12,500 pounds gross weight.

AA. Precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities that provide both horizontal and vertical guidance, such as an Instrument Landing System (ILS) or Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA-approved airport layout plan or other FAA planning document.

BB. Primary Surface. A surface longitudinally centered on a runway.

For the Redmond, Bend, Sunriver, and Sisters airports, when a runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway. When a runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is:

1. 250 feet for utility runways with only visual approaches,
2. 500 feet for utility runways having non-precision instrument approaches,
3. 500 feet for other than utility runways having non-precision instrument approaches with visibility minimums greater than three-fourths statute mile, and
4. 1,000 feet for non-precision instrument runways with visibility minimums at or below three-fourths statute mile, and for precision instrument runways.

For the Cline Falls and Juniper airports, the primary surface ends at each end of a runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is 200 feet.

CC. Public Assembly Facility. A permanent or temporary structure or facility, place or activity where concentrations of people gather in reasonably close quarters for purposes such as deliberation, education, worship, shopping, employment, entertainment, recreation, sporting events, or similar activities. Public assembly facilities include, but are not limited to, schools, religious institutions or assemblies, conference or convention facilities, employment and shopping centers, arenas, athletic fields, stadiums, clubhouses, museums, and similar facilities and places, but do not include parks, golf courses or similar facilities unless used in a manner where people are concentrated in reasonably close quarters. Public assembly facilities also do not include air shows, structures or uses approved by the FAA in an adopted airport master plan, or places where people congregate for short periods of time such as parking lots or bus stops.

DD. Runway. A defined area on an airport prepared for landing and takeoff of aircraft along its length.

EE. Runway Protection Zone (RPZ). An area off the runway end used to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The inner width of the RPZ is the same as the width of the primary

surface. The outer width of the RPZ is a function of the type of aircraft and specified approach visibility minimum associated with the runway end. The RPZ extends from each end of the primary surface for a horizontal distance of:

1. 1,000 feet for utility runways.
2. 1,700 feet for other than utility runways having non-precision instrument approaches.
3. 2,500 feet for precision instrument runways.

[NOTE: the outer width of the RPZ is specified by airport type in OAR 660, Division 13, Exhibit 4]

FF. Significant. As it relates to bird strike hazards, "significant" means a level of increased flight activity by birds across an approach surface or runway that is more than incidental or occasional, considering the existing ambient level of flight activity by birds in the vicinity.

GG. Structure. Any constructed or erected object, which requires a location on the ground or is attached to something located on the ground. Structures include but are not limited to buildings, decks, fences, signs, towers, cranes, flagpoles, antennas, smokestacks, earth formations and overhead transmission lines. Structures do not include paved areas.

HH. Transitional Surface. Those surfaces that extend upward and outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven feet horizontally for each foot vertically from the sides of the primary and approach surfaces to the point of intersection with the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at a 90-degree angle to the extended runway centerline.

II. Utility Runway. A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 maximum gross weight and less.

JJ. Visual Runway. A runway intended solely for the operation of aircraft using visual approach procedures, where no straight-in instrument approach procedures or instrument designations have been approved or planned, or are indicated on an FAA-approved airport layout plan or any other FAA planning document.

KK. Water Impoundment. Includes wastewater treatment settling ponds, surface mining ponds, detention and retention ponds, artificial lakes and ponds, and similar water features. A new water impoundment includes an expansion of an existing water impoundment except where such expansion was previously authorized by land use action approved prior to the effective date of this ordinance.

18.80.028 Height Limitations

All uses permitted by the underlying zone shall comply with the height limitations in DCC 18.80.028. When height limitations of the underlying zone are more restrictive than those of this overlay zone, the underlying zone height limitations shall control. [ORS 836.619; OAR 660-013-0070]

A. Except as provided in DCC 18.80.028(B-D), no structure or tree, plant or other object of natural growth shall penetrate an airport imaginary surface. [ORS 836.619; OAR 660-013-0070(1)]

B. For areas within airport imaginary surfaces but outside the approach and transition surfaces, where the terrain is at higher elevations than the airport runway surfaces such that existing structures and permitted development penetrate or would penetrate the airport imaginary surfaces, a local government may authorize structures up to 35 feet in height.

C. Other height exceptions or variances may be permitted when supported in writing by the airport sponsor, the Department of Aviation and the FAA. Applications for height variances shall follow the procedures for other variances and shall be subject to such conditions and terms as recommended by the Department of Aviation and the FAA (for Redmond, Bend and Sunriver.)

D. An air traffic control tower may be up to 115 feet in height.

18.80.044 Land Use Compatibility

Applications for land use or building permits for properties within the boundaries of this overlay zone shall comply with the requirements of DCC 18.80 as provided herein. When compatibility issues arise, the Planning Director or Hearings Body is required to take actions that eliminate or minimize the incompatibility by choosing the most compatible location or design for the boundary or use. Where compatibility issues persist, despite actions or conditions intended to eliminate or minimize the incompatibility, the Planning Director or Hearings Body may disallow the use or expansion, except where the action results in loss of current operational levels and/or the ability of the airport to grow to meet future community needs. Reasonable conditions to protect the public safety may be imposed by the Planning Director or Hearings Body. [ORS 836.619; ORS 836.623(1); OAR 660-013-0080] An air traffic control tower, as defined in DCC 18.80.022, is not subject to this section.

…

18.80 Declaration Of Anticipated Noise

As a condition of the grant of development approval pursuant to DCC 18.80, the undersigned, hereinafter referred to as Grantor hereby covenants and agrees that it shall not, by reason of their ownership or occupation of the following described real property, protest or bring suit or action against the _____ [Name of Airport] or Deschutes County, for aviation-related noise, including property damage or personal injury from said noise connected when such activities conform to:

1. Airport activities lawfully conducted in connection with a pre-existing airport, as that term is defined in DCC 18.80.022~~(B)~~(C), at the described airport; or 2. Airport activities that might be lawfully conducted in the future at the described airport under County or State permits or exemptions.

The real property of Grantor subject to this covenant and agreement is situated in Deschutes County, State of Oregon, and described as set forth in that certain [Statutory Warranty Deed] dated [date], as record in [the Official Records of Deschutes County as instrument number 20xx-xxxxx] OR [Volume xx, Page xx of the Deschutes County Board of Records];.

Grantor acknowledge that by virtue of such grant he/they have no remaining rights to complain or protest about the protected activities described above.

This Declaration of Anticipated Noise runs with the land and is binding upon the heirs, successors and assigns of the undersigned's interest in the described real property or any persons acquiring through he undersigned an interest in the described real property.

Deschutes County requires the execution of this covenant and agreement by the Grantor as a pre-requisite to Deschutes County approving a partition, subdivision, or issuing a building permit for Grantor's development on the above described real property, which real property is located within the noise impact boundary of the _____ [Name of Airport]. This Declaration is executed for the protection and benefit of the _____ [Name of Airport] and Deschutes County's interest in said airport and to prevent development in adjacent lands to said airport which will interfere with the continued operation existent and development of said airport.

Dates this ____ day of ____, 20_____
Grantor [Name]

[*insert notarial certificate*]

BOARD OF COMMISSIONERS

AGENDA REQUEST & STAFF REPORT

MEETING DATE: November 29, 2023

SUBJECT: Public Hearing: Draft 2020-2040 Transportation System Plan Update

RECOMMENDED MOTION:
Open the public hearing for the Draft 2020-2040 Transportation System Plan (TSP) Update.

Upon conclusion of the staff presentation and public comments, the Board may:

- Hold the oral and written record open and continue the hearing to a date certain
- Close the oral record and hold the written record open to a date certain
- Close both the oral and written record and set a date certain for deliberations
- Close both the oral and written record and begin deliberations

BACKGROUND AND POLICY IMPLICATIONS:
On November 29, 2023, the Board owill hold a public hearing to consider the Draft 2020-2040 Transportation System Plan (TSP) Update (Files 247-23-000507-PA, 508-TA). The full record is located on the project webpage: https://www.deschutes.org/cd/page/transportation-system-plan-update-2020-2040-247-23-000507-pa-508-ta

BUDGET IMPACTS:
The draft TSP document outlines cost estimates associated with various transportation improvement projects for the 2020-2040 planning period.

ATTENDANCE:
Tarik Rawlings, Senior Transportation Planner
Chris Doty, Road Department Director
Cody Smith, County Engineer/Assistant Road Department Director
Matt Kittelson, Kittelson and Associates (KAI)

COMMUNITY DEVELOPMENT

MEMORANDUM

TO: Deschutes County Board of County Commissioners

FROM: Tarik Rawlings, Senior Transportation Planner

DATE: November 20, 2023

RE: Public Hearing: Draft 2020-2040 Transportation System Plan (TSP) - November 29, 2023

The Road Department, with the assistance of the Community Development Department (CDD), has prepared an update of the 2010-2030 Deschutes County Transportation System Plan (TSP). The new TSP will cover the years 2020-2040. The TSP focuses on County arterials and collectors as well as bicycles, pedestrians, transit, and other modes. Following a work session on November 27, 2023 in preparation for a public hearing, the Board of County Commissioners (Board) will hold a public hearing on November 29, 2023, on the draft 2020-2040 TSP.

I. BACKGROUND

The County selected Kittelson & Associates Inc. (KAI) as the consultant for the 2020-2040 TSP. The County and KAI prepared the draft of the 2020-2040 TSP based on technical analysis, public comments, and internal staff review. During the plan development process, KAI and County staff from the Road Department and Planning Division have coordinated with Oregon Department of Transportation (ODOT) and staff from other local jurisdictions. KAI and County staff reviewed a proposal from the County Bicycle and Pedestrian Advisory Committee (BPAC) on future road improvements and connectors. Additionally, KAI and the County held an on-line presentation from April 27 to May 14, including an online public meeting on May 4, to solicit public comment. The on-line presentation included technical memos on plans and policy reviews, goals and objectives, and needs analyses of existing and future conditions.

The background materials were posted at the following link:
Deschutes County TSP Update (kaiproject.com)

The full record including public and agency comments is included at the following project-specific website: https://www.deschutescounty.gov/cd/page/transportation-system-plan-update-2020-2040-247-23-000507-pa-508-ta

II. KEY ASPECTS OF THE 2020-2040 TSP

The TSP's major component is a list of future projects categorized into high, medium, or low priority. These appear in Chapter 5 with a brief description of the project. The relevant project tables are for improving roadway intersections; roadway changes; changes to functional classifications; ODOT intersections and roadways; pedestrian facilities on County roadways; bicycle facilities, bridges, Federal Lands Access Program (FLAP) roadways, transit, and Transportation Safety Action Plan (TSAP) projects. Many of the roadway projects also benefit bicyclists by widening shoulders, for instance. The financial portion benefitting bicyclists is provided in the cost estimates.

The TSP also presents goals and policies to achieve the vision of the County's transportation system over the next 20 years. The seven goals are:

1. Coordination and Collaboration
2. Safety
3. Mobility and Connectivity
4. Economic Development
5. Equity and Accessibility
6. Sustainability and Environment
7. Strategic Investments

III. INTENDED OUTCOMES

The 2020-2040 TSP will result in a list of prioritized projects, updated goals and policies, changes to functional classifications of selected County roads, a better network of bicycle and pedestrian facilities, transit stops in the unincorporated communities, and an improved transportation system for all modes.

The TSP will assist the Board in determining projects to fund in the Road Department's annual Capital Improvement Program (CIP) as well as providing a reference when pursuing state and federal grants to fund transportation projects. Additionally, planners cite the TSP when reviewing land use applications for developments that involve a plan amendment or zone change.

IV. PLANNING COMMISSION REVIEW

Staff held a June 22, 2023, work session[1] with the Planning Commission (PC) to provide an overview of the updated TSP and the process to create it. The PC held a public hearing[2] on August 10, 2023, on the draft 2020-2040 TSP. The PC closed the oral record and left the written record open until 4 p.m., August 24, 2023. Staff provided an update on record submittals during the August 24, 2023 Planning Commission meeting[3]. The PC held deliberations[4] on October 12, 2023, ultimately making

[1] https://www.deschutes.org/bc-pc/page/planning-commission-30
[2] https://www.deschutes.org/bc-pc/page/planning-commission-38
[3] https://www.deschutes.org/bc-pc/page/planning-commission-39
[4] https://www.deschutes.org/bc-pc/page/planning-commission-41

a recommendation to the Board of County Commissioners (Board) to adopt the TSP document including the following amendments:

- Removal of the Conceptual Multi-use Pathway Connection between City of Sisters and Black Butte Ranch. *(6 Commissioners in favor, 1 Commissioner in opposition)*
- Changing the Multi-use Pathway Connection between Baker Road and Lava Butte to be located on the west side of Highway 97 rather than the east side. *(7 Commissioners unanimously in favor)*
- Changing the priority status for the 2nd Street/Cook Ave sidewalks in Tumalo project (Table 5.5 ID BP-3) from Medium to High. *(6 Commissioners in favor, 1 Commissioner absent)*
- Changing the priority status for the US 20/Powell Butte Highway Roundabout project (Table 5.4 ID S-9) from Low to High. *(6 Commissioners in favor, 1 Commissioner absent)*
- Changing the priority status for the US 20/Locust St Roundabout project (Table 5.4 ID S-11) from Low to High and noting that the project, with contributions from Deschutes County, City of Sisters, and ODOT, is funded for construction in 2024. *(6 Commissioners in favor, 1 Commissioner absent)*

Throughout deliberations, the Planning Commission entertained other motions including the allowance of multi-use pathways generally within the County jurisdiction and dark skies standards. On both motions, the Planning Commission's vote resulted in a tie, leading to the failure of those motions. Staff includes this information to illustrate how the Planning Commission was generally closely aligned on certain deliberative aspects of these topics, but ultimately diverged on some of the more detailed points.

In anticipation of the Board's public hearing on November 29, 2023, notice was provided to the Department of Land Conservation and Development (DLCD) on July 6, 2023 with a Notice of Application sent to agency partners on July 21, 2023. Additionally, an initial Notice of Public Hearing was published in the Bulletin newspaper on October 10, 2023 listing the public hearing date as November 8, 2023. Due to scheduling conflicts, the public hearing date was moved to November 29, 2023 and an amended Notice of Public Hearing was subsequently published in the Bulletin newspaper outlining the new public hearing date and process.

V. PUBLIC TESTIMONY

Overall, approximately 150 public comments were received from both individuals and public agencies as of the date of this memo. The main topics within the public testimony include:

- Allowance/disallowance of multi-use pathways in the rural county related to wildlife values and resource-zoned lands;
- Multi-use pathway connection between the City of Sisters and Black Butte Ranch (BBR);
- Potential development of a footbridge across the Deschutes River near the Brookswood neighborhood of Deschutes River Woods;
- Classification change and improvement of Sunrise Boulevard;
- Deschutes River Woods South Interchange Project;
- City of Redmond US97 South Interchange (Quarry or McVeigh);

- A desire to see the Three Rivers community as the subject of a comprehensive planning process similar to Tumalo or Terrebonne with goals and policies reflecting the needs and priorities of that local population;
- Requests for several specific infrastructure improvement projects in the Three Rivers area including pedestrian improvements, intersection safety improvements, roundabouts along Highway 97, and speeding mitigation;
- Concerns with operational aspects of the Bend Municipal Airport;
- Requests to change priority statuses for several transportation-related projects;
- Designation of bicycle routes;
- Adequacy of County-based public transit;
- Vegetation management practices for County transportation facilities.

As a reminder, the written comments in public record appear at the following project-specific website under the tabs labeled "Comments & Submittals – Agencies", "Comments & Submittals – Public", and "BOCC Hearing – Public Comments":
https://www.deschutescounty.gov/cd/page/transportation-system-plan-update-2020-2040-247-23-000507-pa-508-ta

The Sisters-BBR multi-use pathway connection has generated numerous e-mails and phone calls, some prior to the initiation of the TSP public process and some during the Comprehensive Plan process. Regarding the subject land use before the PC, the bulk of the submitted written comments have been in opposition with a small amount being in favor. Recurring themes from those opposed include concerns about the public using private paths in BBR; adverse effects to the forest; potential trespassing; criminal activity; attracting transients; disruption to wildlife; and safety. (Staff notes the multiuse path would lie on Deschutes National Forest (DNF), which has its own regulations and environmental review process.)

Concerning multi-use pathways generally, the TSP (at Table 5.6 - Bicycle Route Community Connections) describes and prioritizes connections between various cities, unincorporated communities, and destination resorts. Table 5.7 (Bicycle Route Recreation Connections) provides similar information about these corridors. Neither table lists design specific aspects such as precise routes, widths, surface type, etc., as those variables would be determined prior to actual construction. No specific alignments are identified or mapped, except for the Bend-Lava Butte Trail, which appears as S-3 on Figure 5-4 (ODOT Facility Changes). The TSP tables were prepared based on input from the Deschutes County Bicycle and Pedestrian Advisory Committee (BPAC). There has been a mix of public input regarding the overall allowance of multi-use pathways in Deschutes County with the bulk of testimony opposed to a full prohibition of multi-use pathways and additional comments in support of the prohibition based on wildlife habitat and resource-zoned property sensitivities.

Regarding the specific improvements requested for the Island Loop Way canal crossing/culvert and the larger Three Rivers community in general, the Road Department Director Chris Doty has provided individual responses to multiple comments received from the Three Rivers community related to project feasibility, funding, and legal constraints and will be available for questions during the public hearing on November 29, 2023.

V. NEXT STEPS

The Board will hold a public hearing on November 29, 2023. The Board has several options at the conclusion of the staff presentation and public comments. The Board may:

- Hold the oral and written record open and continue the hearing to a date certain
- Close the oral record and hold the written record open to a date certain
- Close both the oral and written record and set a date certain for deliberations
- Close both the oral and written record and begin deliberations

Eventually, the Board will hold deliberations on the proposed TSP. Ultimately, the Board will vote on the proposal either adopting the plan as drafted, with amendments, or denying the plan.

VI. CONCLUSION

Staff is prepared to answer any questions.

Attachments:

1. *Draft 2020-2040 Transportation System Plan*
2. *Draft 2020-2040 Transportation System Plan Appendices*
3. *2020-2040 Transportation System Plan Findings*

CDD Planning Division

Transportation System Plan 2020-2040

File 247-23-000507-PA, 508-TA

Hearing Procedure

The hearing will be conducted in the following order:

1. Staff will explain the hearing format and how to testify
2. Staff report
3. Testimony
    1. The Applicant
    2. Agencies
    3. Persons in support
    4. Persons in opposition
4. Applicant rebuttal
5. Staff closing comments

Notices & Record Materials

Project Website and Full Record

https://www.deschutes.org/cd/page/transportation-system-plan-update-2020-2040-247-23-000507-pa-508-ta

Testifying at Today's Hearing

- In-person and remote participation meeting format
- Before starting your testimony please provide:
  1. First and Last Name
  2. Mailing Address
- Time Limitations
  - Applicant = 30 minutes
  - Agencies/Government Bodies = 10 minutes
  - Other Participants = 3 minutes
  - Applicant Rebuttal = 10 minutes

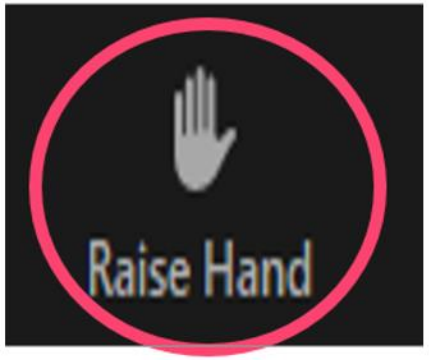
In-Person Participants

- Please fill out a blue sign-up sheet and submit it to the Board's secretary
- Chair DeBone will call up each person to provide their testimony
- Please come up to the table at the front of the room to provide your testimony

Remote Participants

- To testify remotely you must attend using Zoom
- Chair DeBone will request that all Zoom participants use the "raise hand" feature to notify the Board that you would like to testify

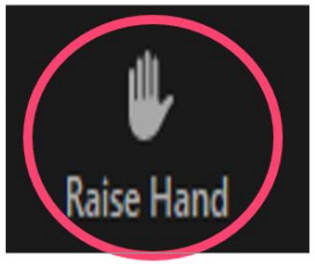
- ***Computer / Smart Device***
  - ***Press the Raise Hand button***



- ***Raise Hand (Dial-in)***
  - ***Enter *9 on your keypad***

Hearing Procedures

- Written testimony can be submitted to staff
  - In-person - Hand to staff
  - Remote - Email to staff: Tarik.Rawlings@Deschutes.org
- Orderly & respectful hearing
- Commissioner disclosures
- Objections to hearing format



Staff Report

Deschutes County Transportation System Plan Update

Source: ODOT

What is a TSP?

- Transportation element of the Deschutes County Comprehensive Plan
- Provides a prioritization of projects that the County can reasonably fund and implement over the next 20 years
- Reflects County's top priority to preserve and maintain existing roadways
- Includes a long-term vision of a transportation system that allows people to travel within the County via driving, riding bikes, walking and transit

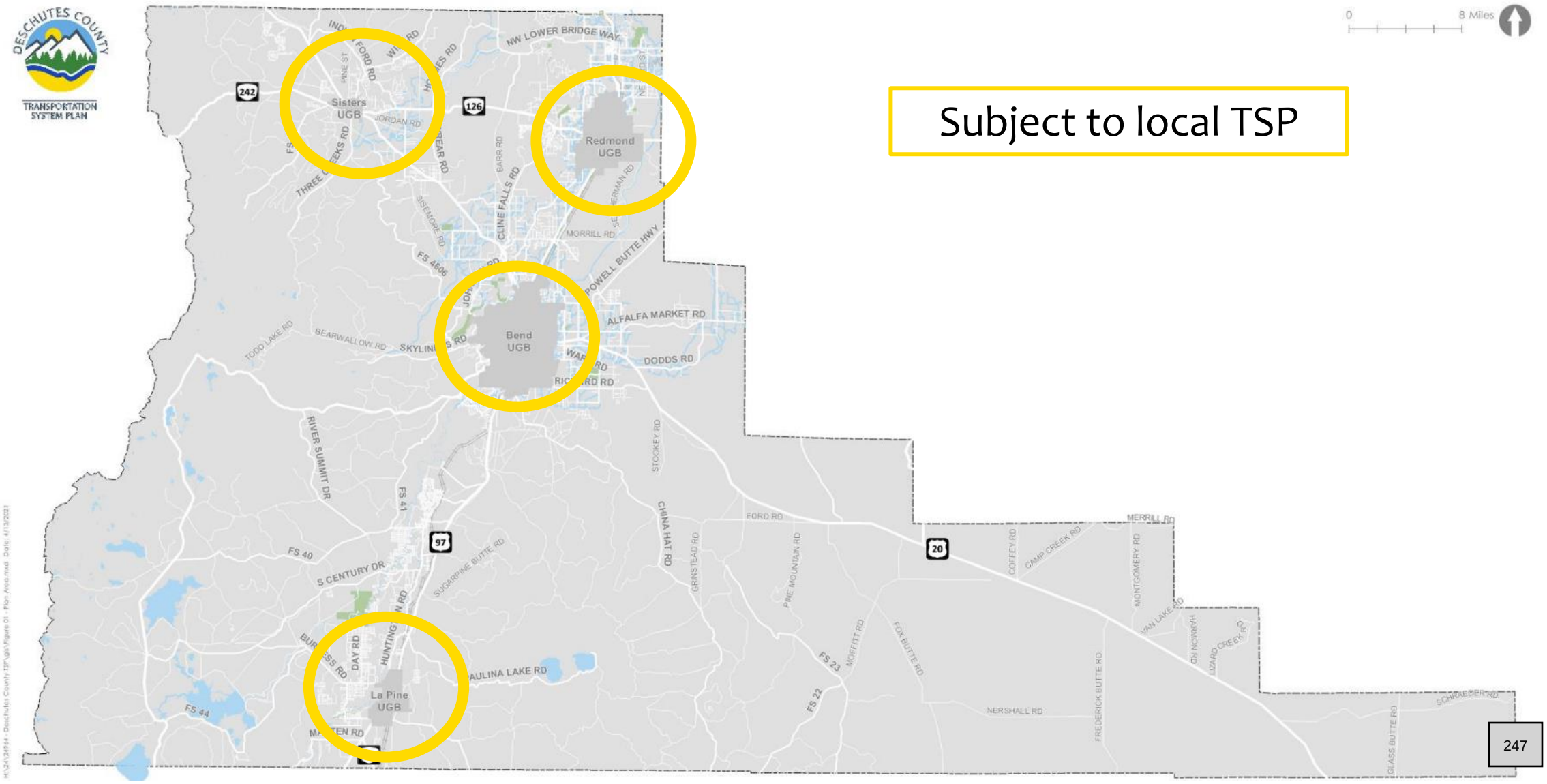
DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

Why Update the TSP?

- Reflects the significant growth that has occurred during last 10 years and helps plan for the needs of the unincorporated and rural areas over the next 20 years
- Recognizes the continuing decrease in revenue for "new investments" and provides a prioritization of how the County can make investments in the future
- Reflects County transportation system's crucial role in the event of a Cascadia Subduction Event, aka earthquake
- Incorporates the findings of recently completed plans by the cities, ODOT, CET, and other agencies that address transportation needs within the County boundaries
- Evaluated and confirmed need to keep the Roadway Moratorium

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

County versus City TSPs



Who Helped Shaped the TSP?

- Technical Working Group of County Staff and Consulting team
- 2 Public Open Houses
- Multiple Agency Partner Coordination Committee Meetings
- Broad engagement with partner agencies, including ODOT and other state agencies
- Outreach to County's Bicycle and Pedestrian Advisory Committee (BPAC) on bicycle facility planning

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

Public Involvement Process

- First Virtual Open House held in May 2021; minimal public participation
- Second Virtual Open House held in December 2022; 159 people provided input
- Broad support for project list with recommendations for key projects to be prioritized.
- Most open house comments were in response to the following:
  - **Sunrise Boulevard** – Support for project
  - **Deschutes River Woods South Interchange Project** – Both support and concern.
    - Note: Will require further evaluation and coordination with ODOT prior to implementation
  - **Sisters to Black Butte Ranch Bike Path –** Mixed feedback
  - **SW Bend Ped/Bike Bridge** – BPRD project, included in TSP by reference to BPRD Master Plan

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

Draft TSP Overview

- Chapter 1 – Introduction
- Chapter 2 – Goals & Policies
- Chapter 3 – Needs Assessment and Evaluation
- Chapter 4 – Providing Multimodal Systems
- Chapter 5 – Transportation Investment Priorities
- Chapter 6 - Funding

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

Summary of Prioritized Investments

Table 1-1: Total Cost of Prioritized TSP Investments

Project Category	Estimated Cost by Priority			Total Cost
	High	Medium	Low	
Intersection Changes	$11,530,000	$14,900,000	$2,100,000	$28,530,000
Roadway Changes	$6,100,000	$25,000,000	$57,500,000	$88,600,000
County Share of ODOT Intersections	$19,100,000	$3,000,000	$19,000,000	$41,100,000
Pedestrian Facilities	$600,000	$3,600,000	$2,100,000	$6,300,000
Bridges	$5,700,000	$2,400,000	$7,900,000	$16,000,000
County Share of FLAP Projects	$600,000	$3,700,000	$4,500,000	$8,800,000
Total	$43,630,000	$52,600,000	93,100,000	$189,330,000

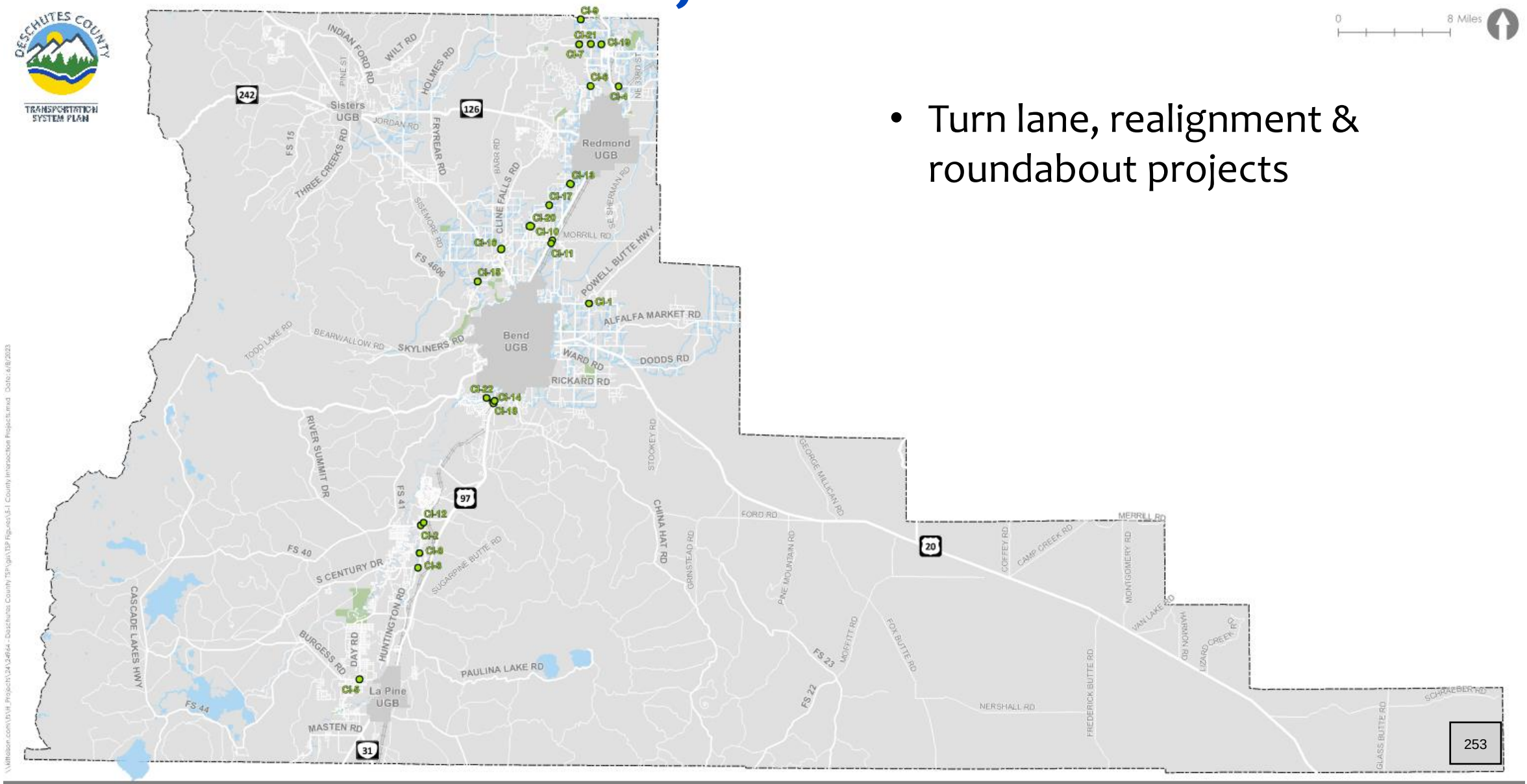
DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

Prioritized Transportation Investments

- All projects include project cost estimates for County planning and budgeting purposes; final costs and designs will be confirmed upon implementation
- Helps County to review and develop Capital Improvement Program (CIP) project lists
- Includes County Transportation Safety Action Plan
- Provides flexibility for future intersection and roadway investments, depending on need and funding

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

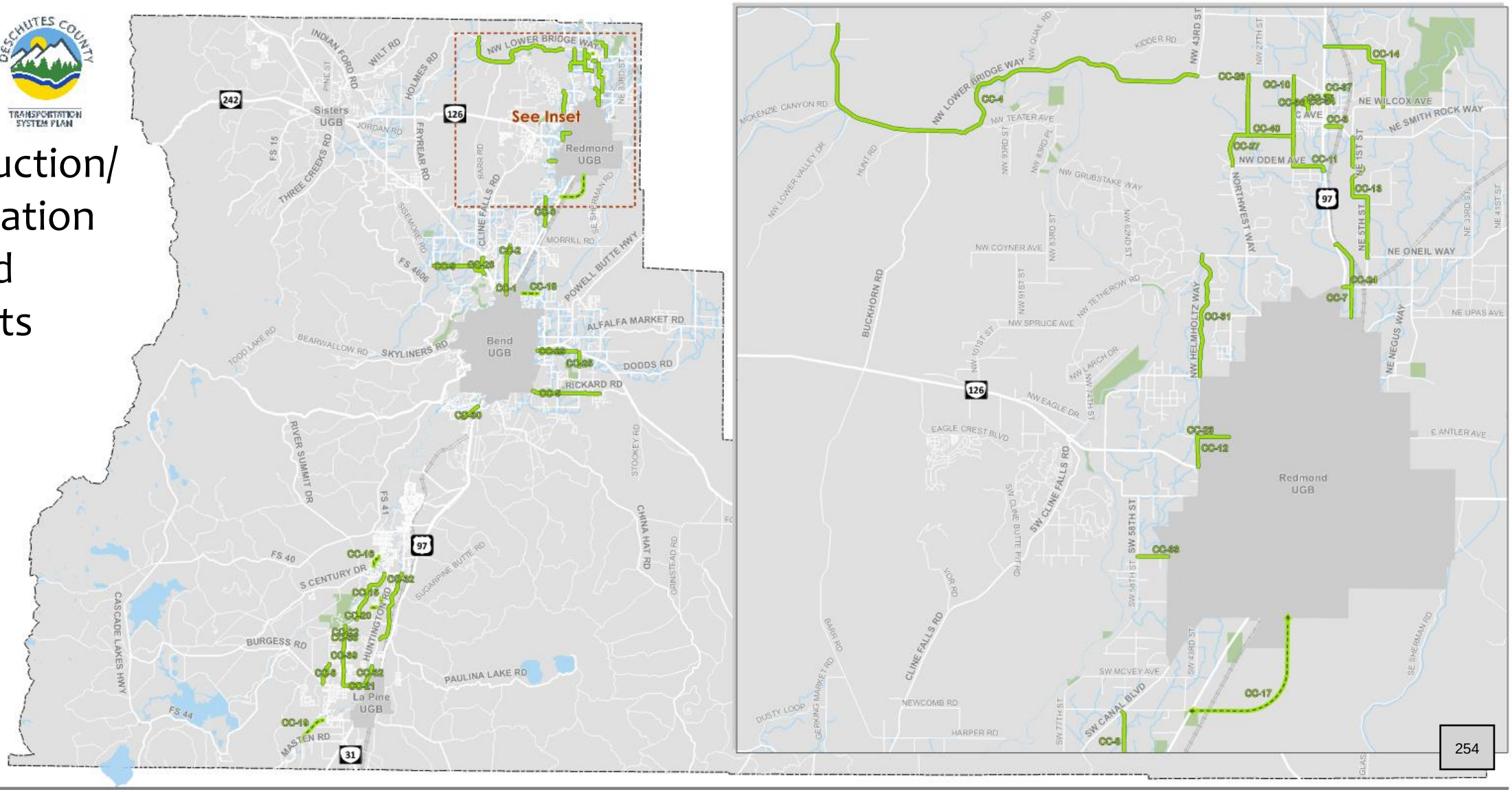
Intersection Projects



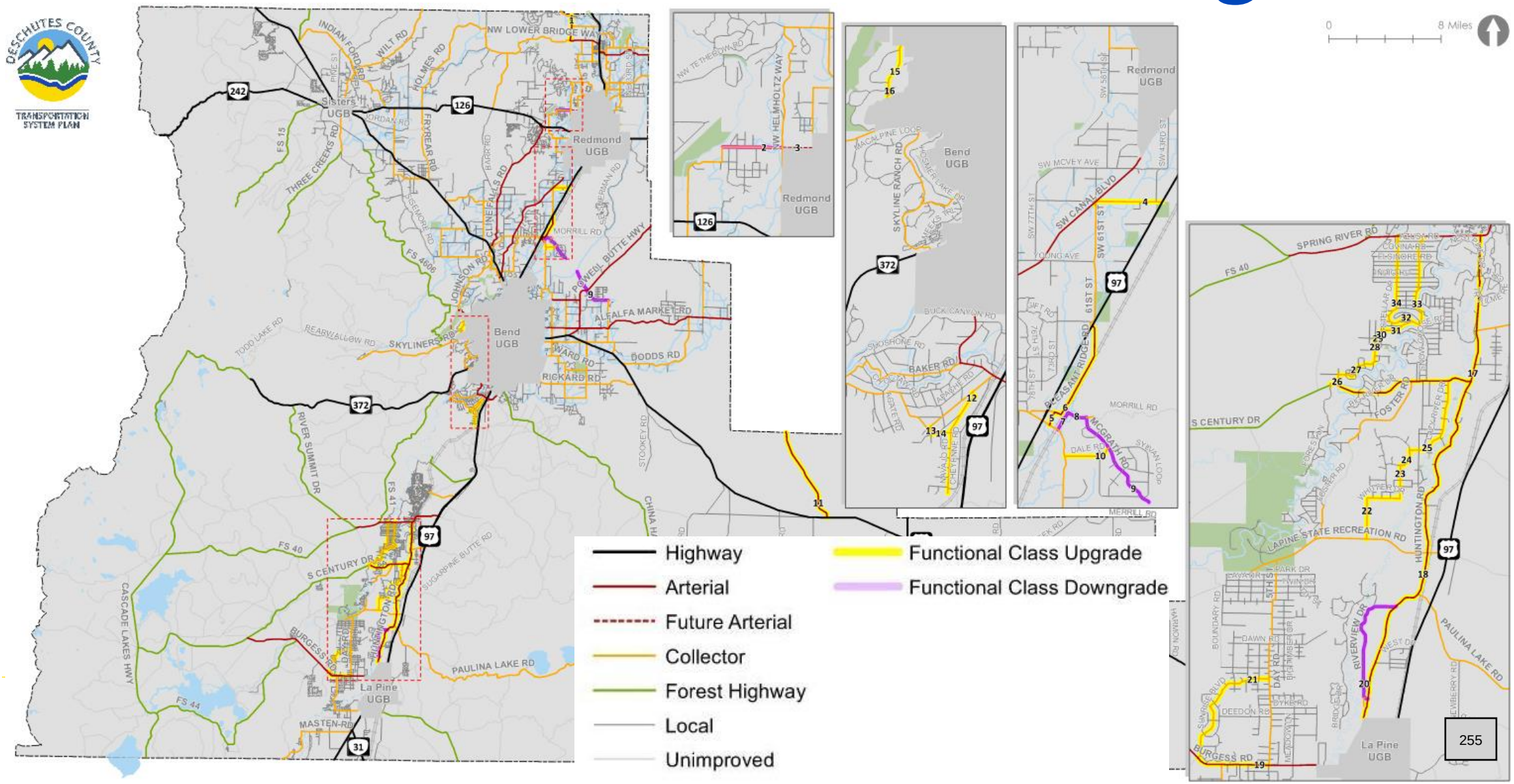
- Turn lane, realignment & roundabout projects

Roadway Projects

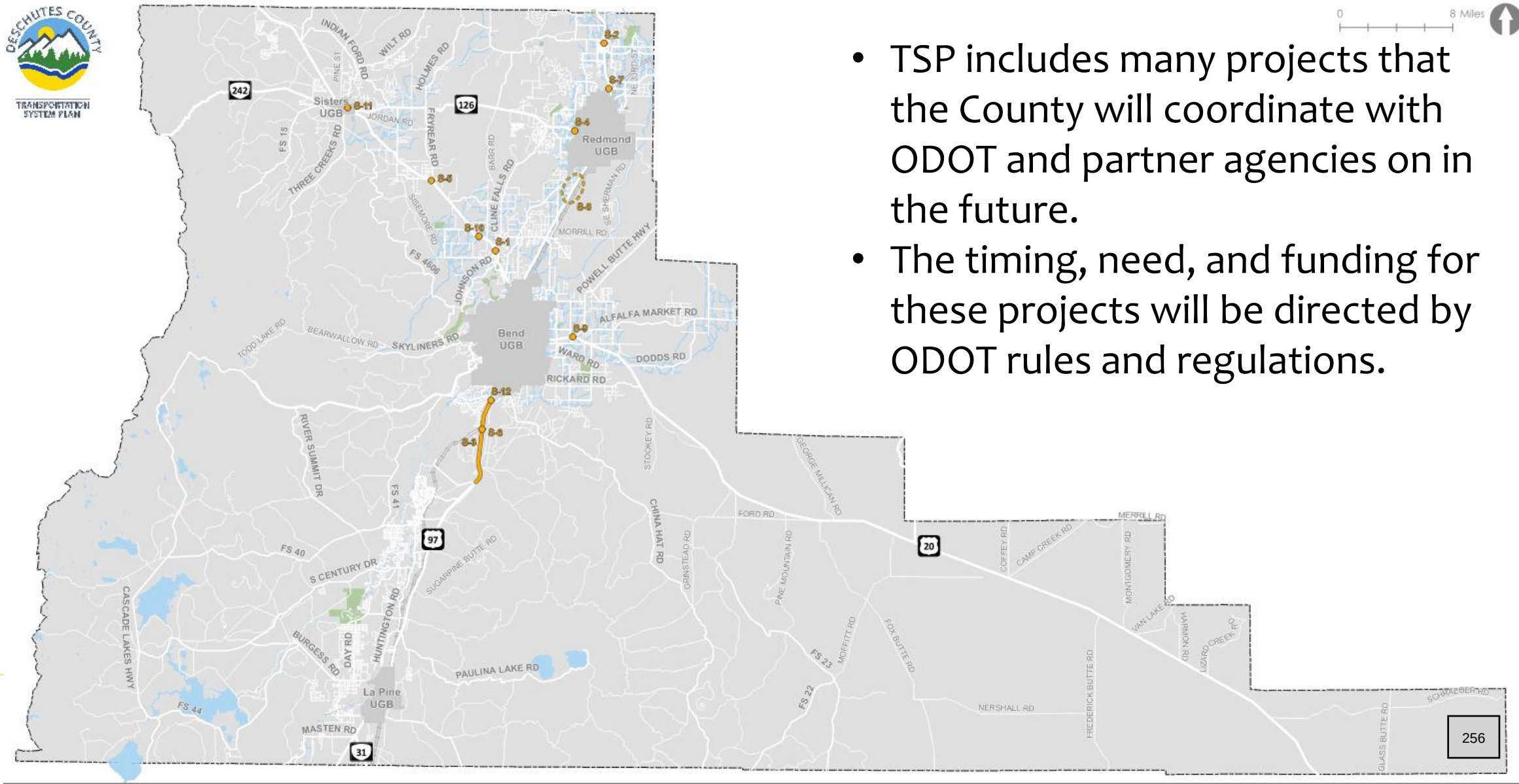
- Reconstruction/ Modernization
- New Road Alignments



Functional Classification Changes

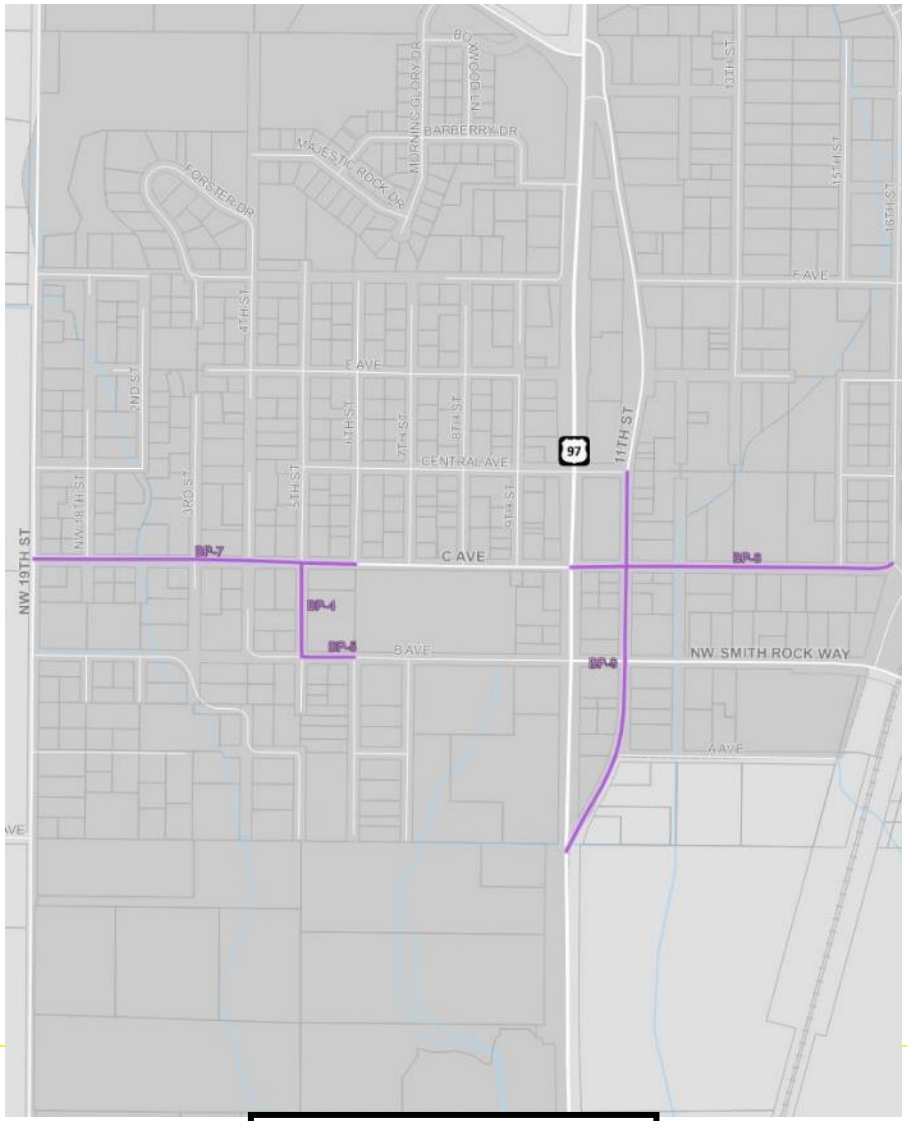


ODOT Facility Projects

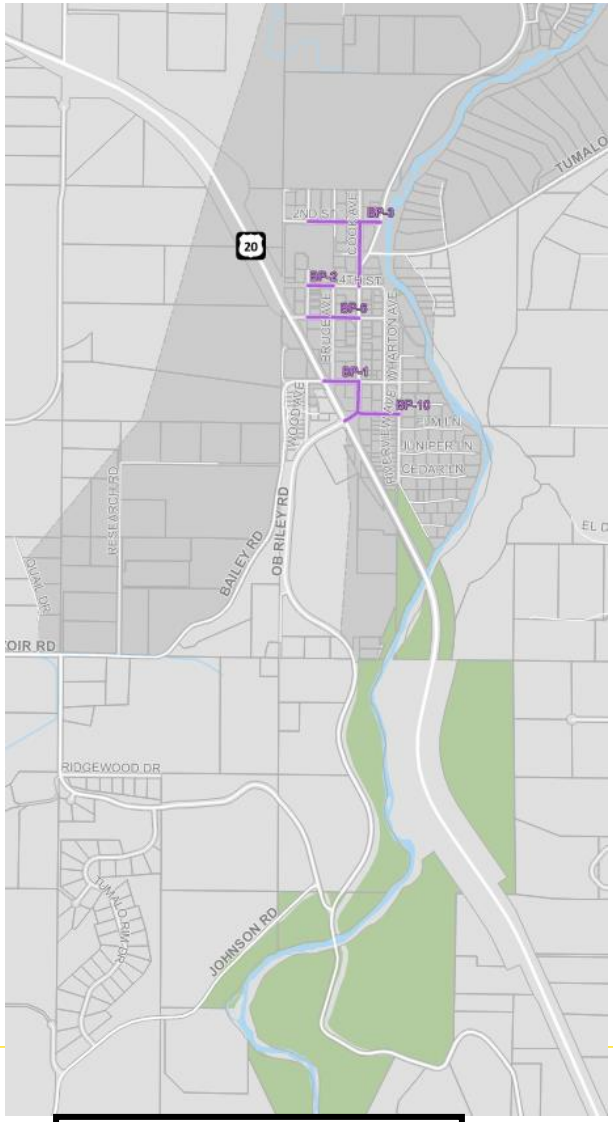


- TSP includes many projects that the County will coordinate with ODOT and partner agencies on in the future.
- The timing, need, and funding for these projects will be directed by ODOT rules and regulations.

Planned Pedestrian Facilities



Terrebonne Area



Tumalo Area

- Filling sidewalk gaps in rural unincorporated communities

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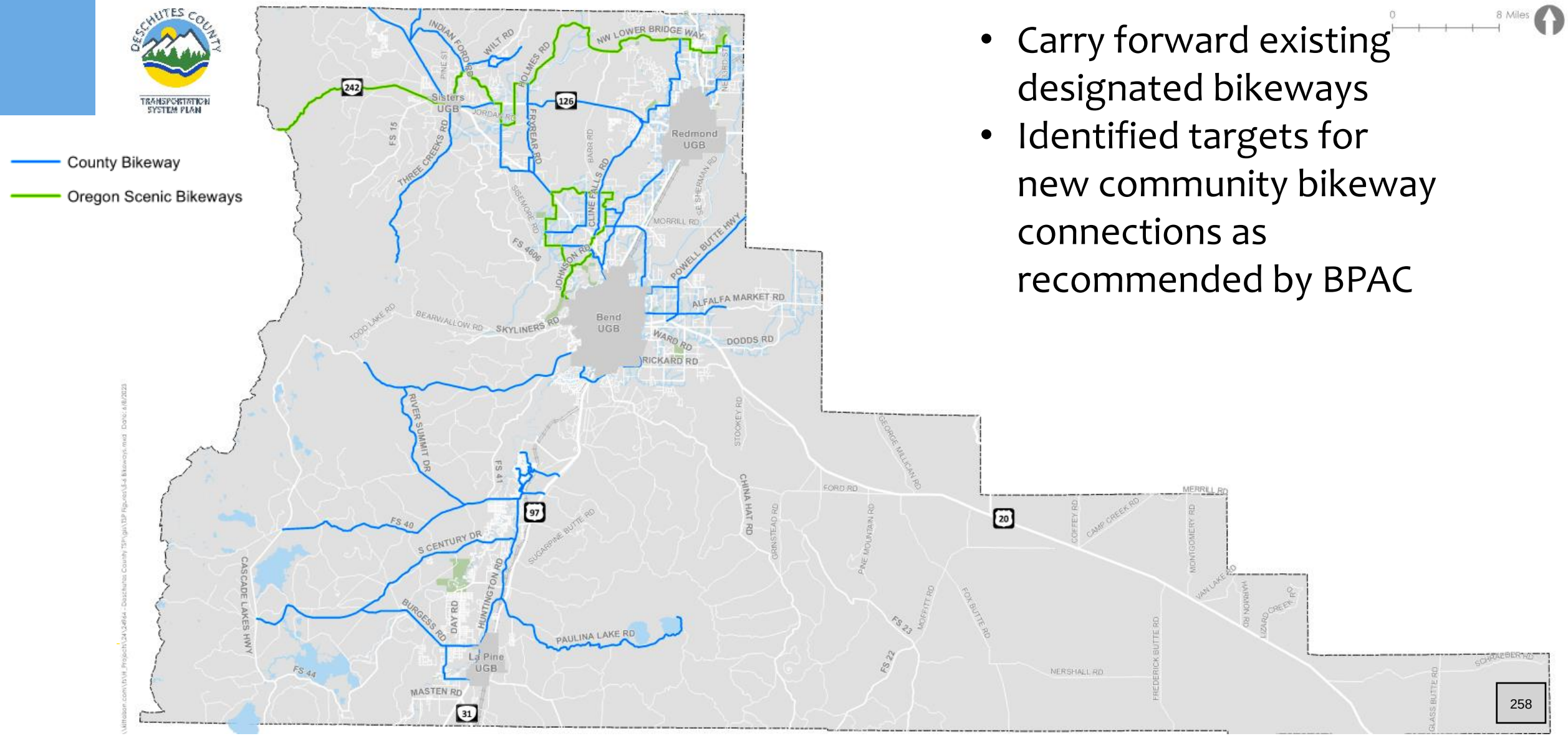
TRANSPORTATION SYSTEM PLAN

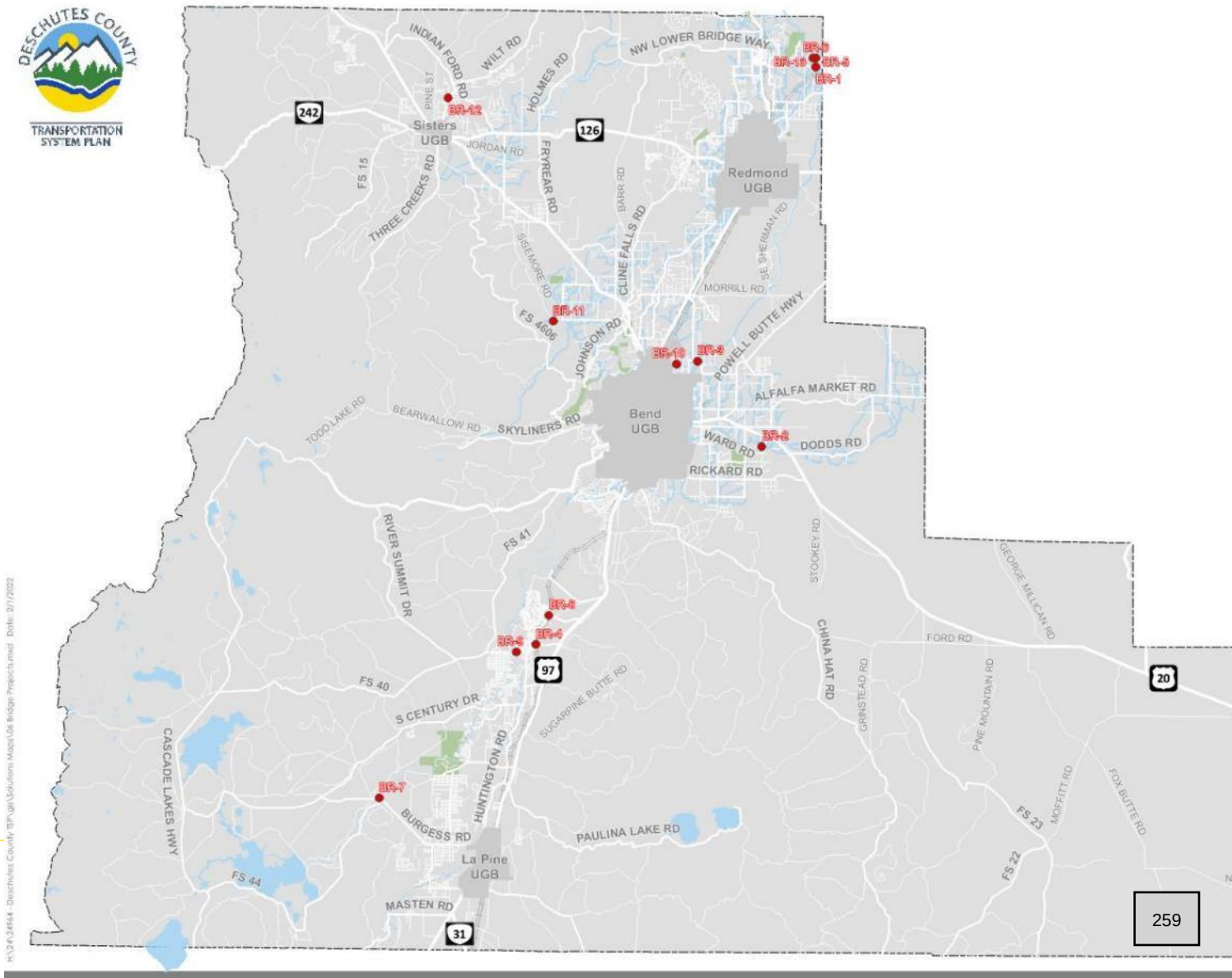
Bicycle Facilities



- Carry forward existing designated bikeways
- Identified targets for new community bikeway connections as recommended by BPAC

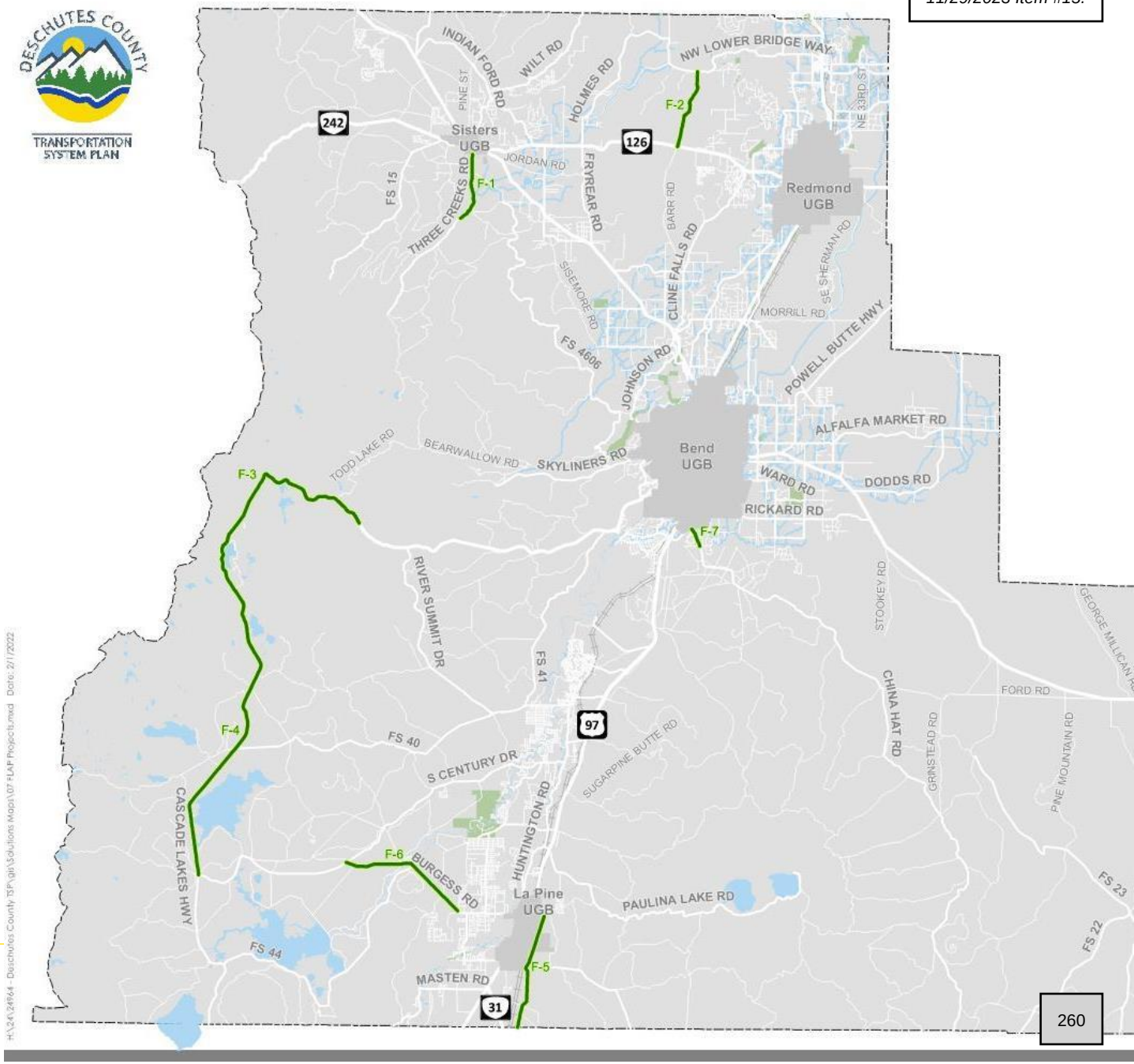
Bridge Projects

- Replacement or rehabilitation of existing County road bridges
- Selections/prioritization based on current bridge conditions



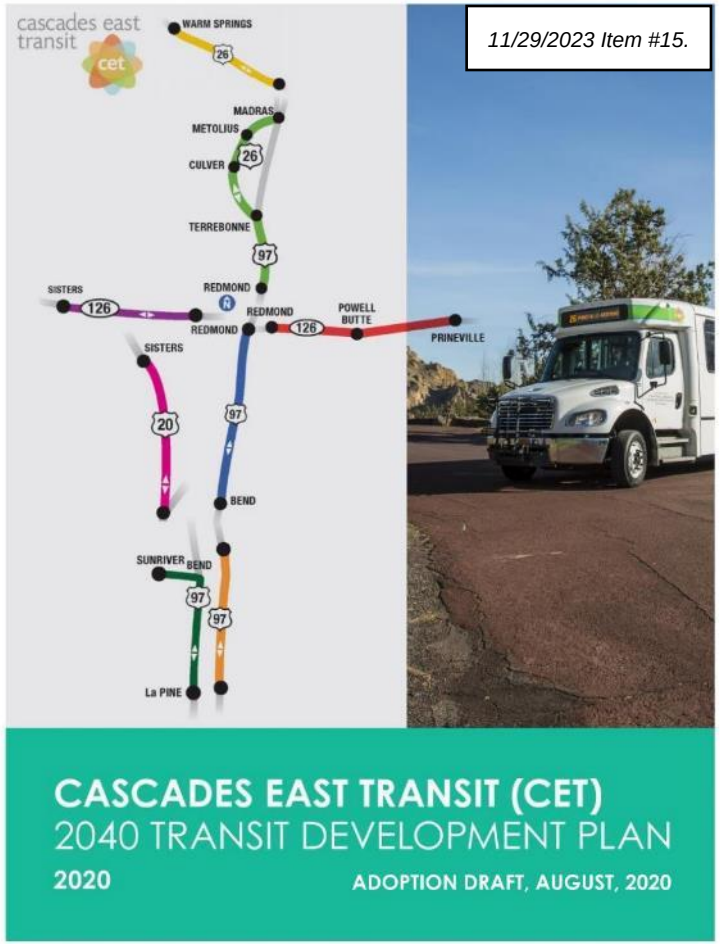
FLAP Projects

- Federal program intended to improve access to Federal lands.
- Projects focus on upgrades to County standards and reconstruction



Transit Facilities

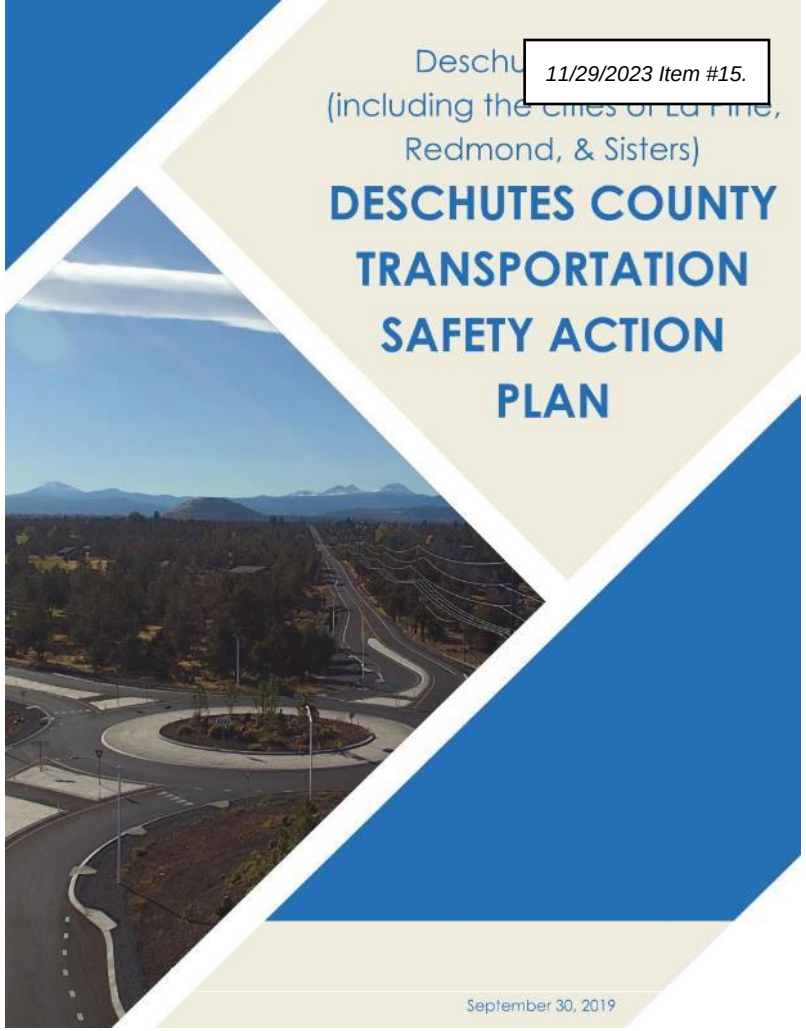
- Close coordination with CET 2040 Transit Master Plan
  - TSP will adopt Plan by reference
  - Projects can help increase service to unincorporated areas of the County
- Several transit providers today:
  - Cascades East Transit
    - Mostly Dial-A-Ride service within the County
    - Community Connector between communities
  - Various regional services including:
    - Central Oregon Breeze, POINT, Shuttle from Chemult



DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

Safety

- Deschutes County TSAP
  - Key Countywide document to help identify crash trends and identify solutions to address those trends
  - Focused on fatal and severe crashes
  - **TSP project list incorporates Priority Improvement locations**



DESCHUTES COUNTY
TRANSPORTATION
SYSTEM PLAN

Funding Priorities

- Current maintenance and operational standards remain in place
- County's existing Road Moratorium remains in place.
- Existing funding levels will remain relatively consistent and no major programs (County, State, Federal, etc.) are implemented to significantly change predicted revenues

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

How Will County Use TSP Once Adopted?

- Work with Local, State and Federal Agencies to identify funding for project priorities
- Continued work with partner agencies on prioritizing projects
- Identifying projects for CIP list
- Future public outreach on specific project details when funding is available
- County staff, Planning Commission and Board of County Commissioners can use policies goals and priorities to guide land use and transportation decision-making

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

Staff Report

Background

- Planning Commission public hearing held on August 10, 2023
- Open record period extended until August 24 2023
- Planning Commission deliberations held on October 12, 2023

Current Status

- **Planning Commission recommends adoption of the TSP including the following amendments:**

1. Removal of the Conceptual Multi-use Pathway Connection between City of Sisters and Black Butte Ranch. *(6 Commissioners in favor, 1 Commissioner in opposition)*
2. Changing the Multi-use Pathway Connection between Baker Road and Lava Butte to be located on the west side of Highway 97 rather than the east side. *(7 Commissioners unanimously in favor)*

Current Status

3. Changing the priority status for the 2nd Street/Cook Ave sidewalks in Tumalo project (Table 5.5 ID BP-3) from Medium to High. *(6 Commissioners in favor, 1 Commissioner absent)*
4. Changing the priority status for the US 20/Powell Butte Highway Roundabout project (Table 5.4 ID S-9) from Low to High. *(6 Commissioners in favor, 1 Commissioner absent)*
5. Changing the priority status for the US 20/Locust St Roundabout project (Table 5.4 ID S-11) from Low to High and noting that the project, with contributions from Deschutes County, City of Sisters, and ODOT, is funded for construction in 2024. *(6 Commissioners in favor, 1 Commissioner absent)*

Summary of ~160 written comments

- Allowance/disallowance of multi-use pathways in the rural county related to wildlife values and resource-zoned lands;
- Multi-use pathway connection between the City of Sisters and Black Butte Ranch (BBR);
- Potential development of a footbridge across the Deschutes River near the Brookswood neighborhood of Deschutes River Woods;
- Classification change and improvement of Sunrise Boulevard
- Deschutes River Woods South Interchange Project
- City of Redmond US97 South Interchange (Quarry or McVeigh)

Summary of ~160 written comments

- Concerns regarding local access roads in Special Road District #1, including replacement of the canal crossing (culvert) on Island Loop Way; Three Rivers comprehensive community planning; requests for traffic and infrastructure improvements in Three Rivers
- Concerns with operational aspects of the Bend Municipal Airport;
- Requests to change priority statuses for several transportation-related projects;
- Designation of bicycle routes;
- Adequacy of County-based public transit;
- Vegetation management practices for County transportation facilities.

Notices & Record Materials

Project Website and Full Record

https://www.deschutes.org/cd/page/transportation-system-plan-update-2020-2040-247-23-000507-pa-508-ta

Next Steps

At the conclusion of the Board's public hearing on November 29, 2023, the Board may:

- **Hold the oral and written record open and continue the hearing to a date certain**
- **Close the oral record and hold the written record open to a date certain**
- **Close both the oral and written record and set a date certain for deliberations**
- **Close both the oral and written record and begin deliberations**

Questions?

Thank you

Tarik Rawlings, Senior Transportation Planner
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(541)-317-3148

DESCHUTES COUNTY TRANSPORTATION SYSTEM PLAN

August 2023

DRAFT

Deschutes County Transportation System Plan

Deschutes County, Oregon

Prepared for

Deschutes County

Prepared by:

Kittelson & Associates, Inc.

August 2023

Contents

01 | INTRODUCTION

Deschutes County is located in the heart of Central Oregon with the Cascade Mountain Range to the west and the High Desert plateau to the east. The County covers 3,055 square miles of natural beauty, outdoor recreation, and is home to a growing economy. For the last two decades, Deschutes County has experienced rapid population growth and has become a national destination for new residents, visitors and a center for economic prosperity and progress. In the past 10 years, the population of the County has increased by more than 40 percent to more than 200,000 people today; only 33 percent of the County's residents live in the unincorporated and rural areas.

With this unprecedented growth, Deschutes County faces the challenges of maintaining, funding, and planning for a transportation system that both enhances the health and well-being of residents and supports long-term economic resilience for businesses, tourism and recreation. The County's transportation system must accommodate traffic passing through enroute to destinations elsewhere in the region, the day-to-day travel needs of its residents and those employed here in addition to the influx of visitors during the winter and summer months.

The County also is home to US 97 and the Redmond Municipal Airport, which are two of the crucial components of Oregon's Resilience Plan in the event of a Cascadia Subduction Zone Event (an earthquake and/or tsunami striking the Oregon coast). With limited funding for new transportation infrastructure, as well as built and natural environmental considerations, the County must balance the need to preserve its existing transportation system with strategic changes to the system that enables these needs to be met during the next 20 years.

The County's Transportation System Plan (TSP) was last updated in 2012. This updated TSP provides a coordinated guide for changes to the County's transportation infrastructure and operations over the next 20 years. Planning for the County's future transportation reflects regional and community goals and values, supports local and regional economic development activities, and enhances the quality of life that residents and visitors enjoy and expect.

PRIORITIZED INVESTMENTS FOR THE FUTURE

The identified list of priorities for future transportation investments reflects the County's commitment to prioritizing changes to the transportation system that reflect its focus on preserving and maintaining its existing investments. This list of capital investments identified in the TSP will be reviewed and prioritized as part of the County's regular budgeting efforts. For reference purposes, **Figure 1-1** shows how the County prepares its annual prioritization and budget for maintenance, operation, and capital expenditures.

Figure 1-1: Hierarchy of Expenditures and Investment

The list of prioritized investments in the TSP is based on this hierarchy and was developed assuming:

1. Current maintenance and operational standards remain in place.
2. The County's existing Road Moratorium (Resolution 2009-118), which limits acceptance of new road miles into the County maintenance system, remains in place.
3. Existing funding levels remain in place and are occasionally adjusted legislatively to a level that will roughly match inflation.
4. No significant additional local funding mechanisms are developed or implemented.
5. State and Federal grant programs are available at approximately the same historical intervals and funding levels.

With this backdrop, the County refined the list of possible TSP projects by working with its residents, policy-makers, and partner agency staff and performing technical analyses of roadways, intersections, bike facilities, transit, walking routes, and transportation safety. Many of the identified projects help to support plans adopted by the local cities, the Oregon Department of Transportation (ODOT), other County planning efforts, the County's Transportation Safety Action Plan (TSAP) and/or local refinement and facility plans. Some of the other considerations that shaped the final list of recommended investments include:

- Balancing impacts to existing and developable parcels with County-wide and community needs;
- Minimizing impacts to Goal 5 resources (natural resources, scenic and historic areas, and open spaces);
- Supporting and enhancing key state and regional economic plans and priorities;
- Identifying key intersections that could be changed in the future to address known safety and/or anticipated capacity needs;
- Prioritizing roadway corridors where strategic investments may be needed to help support future growth and economic development in the region, enhance the safety of all users and/or strengthen connections between areas of the County and to other areas in Central Oregon;
- Providing regional bicycle connections that could serve broad transportation functions, such as commuting, recreation, or daily services;
- Modifying key bridges as funding and/or other opportunities arise;
- Leveraging opportunities for future system changes that could be provided using funds from the Federal Lands Access Program (FLAP), particularly for transportation facilities providing connections to key recreational areas and economic development priorities adjacent to/and or located within Federal lands;
- Coordinating with Cascades East Transit (CET) on projects that can help increase service to the unincorporated areas of the County as well as to the High Desert Museum and Lava Lands Visitor Center;
- Enhancing access to the Redmond Municipal Airport and Bend Municipal Airport; and,
- Leveraging funding opportunities with key partner agencies and private investments.

The list of transportation investments are organized into the following categories for implementation based on complexity, likely availability of funding, and assessment of need:

- Intersection changes;
- Roadway segments, including changes to functional classification;
- ODOT intersections and roadways;
- Pedestrian facilities;
- Bicycle facilities;
- Bridges;
- FLAP projects;
- Transit; and,
- Safety.

Table 1-1 shows the list of identified projects by category and by prioritization. In reviewing this table, it is important to note that some projects may be accelerated and others postponed due to changing conditions, funding availability, public input, or more detailed study performed during programming and budgeting processes. Further, project design details may change before construction commences as public input, available funding, and unique site conditions are taken into consideration. Projects identified herein may be funded through a variety of sources including federal, state, county or local transportation funds, system development charges (SDCs), through partnerships with private developers, or a combination of these sources. In addition, as part of TSP implementation, the County will continue to coordinate with ODOT and the local communities regarding project prioritization, funding, and construction.

Table 1-1: Total Cost of Prioritized TSP Investments

Project Category	Estimated Cost by Priority			Total Cost
	High	Medium	Low	
Intersection Changes	$11,530,000	$14,900,000	$2,100,000	$28,530,000
Roadway Changes	$6,100,000	$25,000,000	$57,500,000	$88,600,000
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County Share of FLAP Projects	$600,000	$3,700,000	$4,500,000	$8,800,000
Total	$43,630,000	$52,600,000	93,100,000	$189,330,000

The remainder of this chapter outlines the organization of the TSP as well as a summary of public engagement activities and compliance of the TSP with some of the regulatory requirements.

TSP ORGANIZATION

The TSP is comprised of two volumes. Volume 1 is the main document and includes the items that will be of interest to the broadest audience. Volume 2 contains the technical memoranda, data, and related transportation plans that enhance and support Volume 1.

Volume 1 includes the following:

- Chapter 1 – a brief overview of the planning context for the TSP;
- Chapter 2 – goals and policies that express the County's long-range vision for the transportation system;
- Chapter 3 – the transportation system deficiencies and needs as well as the process to develop the TSP's list of planned capital improvements and transportation programs;
- Chapter 4 – an overview of the recommended projects for the multimodal system (this chapter also serves as the Transportation Element of the Comprehensive Plan);
- Chapter 5 – a list of the multimodal projects and the costs estimated for their construction; and,
- Chapter 6 – a summary of transportation funding and implementation, including estimated revenue, cost of 20-year needs, and potential funding sources.

Volume 2 includes the following technical documents:

- Appendix A: Plans and Policy Review Memo;
- Appendix B: Public Involvement Plan;
- Appendix C: Methodology Memo;
- Appendix D: Transportation System Conditions, Deficiencies, and Needs Memo;
- Appendix E: Solutions Analysis Memo;
- Appendix F: Preferred Alternatives and Funding Plan Memo;
- Appendix G: Redmond Municipal Airport Master Plan; and,
- Appendix H: Tumalo Community Plan (TCP) Active Transportation Update/Sisters Country Vision Action Plan Trails Outreach Update.

While not all of Volume 2 is adopted as part of the TSP, all of the documents provide useful information regarding the basis for the decisions represented in Volume 1.

PURPOSE

The TSP addresses transportation needs in Deschutes County except within the Urban Growth Boundaries (UGB) for Redmond, Sisters, La Pine and Bend.

The TSP goals, policies, projects, and implementation tasks are based on technical analyses and thoughtful input received from the community, Deschutes County staff, partner agency staff, and County policymakers. The TSP identifies transportation facilities and services that can support the County's adopted Comprehensive Plan and continued regional economic development. This TSP provides for a long-term vision to support growth in jobs and population in the County as well as improving the safety for all transportation-users over the next 20 years. The TSP serves as a resource for the County to make decisions about transportation and land use by providing:

- A blueprint for future County transportation investments that improve safety for all travelers;
- A tool for coordination with state, regional and local agencies;
- Information to ensure prudent land use and transportation choices;
- Order of magnitude cost estimates for transportation infrastructure investments needed to support system needs, and possible sources of funding for these improvements; and,
- Function, capacity and location of future roadways, sidewalks, bikeways, transit, and other transportation facilities.

The TSP satisfies the state's requirements as prescribed by Oregon Statewide Planning Goal 12: Transportation.

GUIDING PRINCIPLES AND CONTEXT

The TSP provides a flexible, adaptable framework for making transportation decisions in an increasingly unpredictable and financially constrained future. Decisions about the County's transportation system will be guided by the goals contained in Chapter 2, but ultimately the decisions will be made within the overall context of the County's land use plans and support for local and regional economic development. These guiding plans and principles provide a foundation for the TSP's goals, policies, and potential actions.

The Oregon Revised Statutes (ORS) require that the TSP be based on the Comprehensive Plan land uses and provide for a transportation system that accommodates the expected growth in population and employment. Development of this TSP was guided by ORS 197.712 and the Department of Land Conservation and Development (DLCD) administrative rule known as the Transportation Planning Rule (TPR, OAR 660-012-0060).

Per the TPR, this TSP identifies multimodal transportation needs to serve users of all ages, abilities, and incomes. As such, solutions to address existing and future transportation needs for bicycling, walking, transit, motor vehicles, freight, and rail, and improved safety for all travelers are included. Further, one of the implementation steps of the TSP will include proposed amendments to the Deschutes County Code. As required by the TPR, this TSP was developed in coordination with local, regional and state transportation plans.

REGIONAL COORDINATION & COMMUNITY ENGAGEMENT

The TSP reflects the County's continued commitment to coordinating transportation and land use planning within Central Oregon. This update was collaboratively developed by community members, businesses, the freight community, ODOT, Sisters, Redmond, La Pine, Bend, Terrebonne, Sunriver, Tumalo Cascades East Transit (CET), and the County's Bicycle and Pedestrian Advisory Committee (BPAC). Opportunities for engagement included:

- Project website that included all technical reports, draft goals and objectives, and links to other relevant documents;
- Project Management Team Meetings attended by County staff;
- Two Advisory Committee Meetings;
- Four Agency Partner Advisory Committee Meetings;
- Two Public Open Houses;
- Targeted outreach with community and social service organizations; and,
- Updates with the Board of County Commissioners.

Through these activities, the County provided community members with a variety of forums to identify their priorities for future transportation projects, programs, and policies.

02 | GOALS AND POLICIES

The TSP provides a coordinated guide for changes to the County's transportation infrastructure and operations over the next 20 years. The development of the TSP is based on the assumption that the transportation system meets daily travel needs and also contributes to the physical, social, and economic health of the County and of Central Oregon. The TSP strives to provide users with a safe and efficient transportation network. As such, planning for the County's future transportation needs must be conducted within regional and community goals and values, support local and regional economic development activities, and enhance the quality of life that residents and visitors enjoy and expect.

The TSP goals provide the County's visions for the future transportation system. The goals are aspirational in nature and may not be fully attained within the 20-year planning horizon. The policies support the goals to help the County implement the TSP projects and programs after the TSP has been adopted. The policies, organized by goals, provide high-level direction for the County's policy and decision-makers and for County staff. The policies will be implemented over the life of the TSP. The County's 2012 TSP goals and policies were used as a foundation for providing the updated TSP goals and policies outlined below.

GOAL 1: COORDINATION AND COLLABORATION

Promote a multimodal transportation system that supports the County's Comprehensive Plan and is consistent and coordinated with the adopted plans for the State, the region, adjacent counties, and the cities and incorporated communities within the County.

Policies

1.1 Coordinate the design and operations of the County's transportation system with State, regional, and local planning rules, regulations and standards.

1.2 Coordinate future land use and transportation decisions with state, regional and local agencies to efficiently use public investments in the County's transportation system, for people driving, bicycling, walking, or using transit as well as the movement of freight, emergency responses, and evacuation needs.

1.3 Coordinate regional project development and implementation with the cities of Bend, Redmond, Sisters, and La Pine.

1.4 Provide notification to the affected local and state agency partners regarding land use development proposals, plan amendments and zone changes that have the potential to significantly impact non-County transportation facilities.

1.5 Coordinate system management and operations with ODOT on major roadways.

1.6 Maintain an intergovernmental agreement with each of the cities to provide specific timelines and milestones for the transfer of County roadways within the urban growth boundaries at the time of annexation, including the full width of right of way.

1.7 Provide regular outreach to residents and employers, schools, law enforcement and public health professionals to encourage participation with the County in identifying and solving transportation issues.

1.8 Coordinate with CET to implement the Transit Master Plan recommendations within the County to support people taking transit.

GOAL 2: SAFETY

Provide a transportation system that promotes the safety of current and future travel by all users.

Policies

2.1 Design and maintain County roadways consistent with their expected use, vehicular travel speeds, and traffic volumes.

2.2 Incorporate the Transportation Safety Action Plan (TSAP) goals and action items into County planning projects and update the TSAP at appropriate intervals.

2.3 Coordinate with the Sheriff's Office to discuss enforcement activity on specific facilities in the County and jointly communicate safety issues when observed and encountered.

2.4 Continue the partnership with the County's BPAC to promote education and outreach activities and to inform future County investment decisions in facilities for people riding bikes and walking.

2.5 Coordinate with the emergency service providers in the County to prioritize the maintenance and investment in key lifeline and evacuation routes.

2.6 Coordinate with ODOT, railroads, and local communities to prioritize safety investments at rail crossings.

2.7 Prioritize investments in key crossing locations for people walking and riding bikes across major County roadways and/or ODOT highways, especially at locations that serve vulnerable populations.

2.8 Coordinate with ODOT for planning for grade-separate wildlife crossings of State highways using relevant wildlife migration information, crash data, and best management practices.

GOAL 3: MOBILITY AND CONNECTIVITY

Promote a multimodal transportation system that moves people and goods between rural communities and Sisters, Redmond, Bend, La Pine, and other key destinations within the County as well as to the adjacent counties, Central Oregon, and the state.

Policies

3.1 Maintain the County's roadway system in a state of "good repair."

3.2 Invest in new roadways only when a need has been demonstrated that benefits the economic growth of the County and/or locations that address key gaps in the roadway system and there is sufficient long-term funding to operate and maintain the new roadways.

3.3 Monitor the safety, traffic volumes, and usage by people walking and riding bikes on County arterials and collectors to help determine when changes to specific roadways are needed and/or educational outreach to the traveling public.

3.4 Maintain a County-wide bicycle route map.

3.5 Partner with ODOT, Bend, La Pine, Redmond, Sisters, and neighboring counties to coordinate investment in transportation facilities that cross jurisdictional boundaries.

3.6 Pursue funding to provide secondary access roadways to isolated rural subdivisions.

3.7 Periodically review transportation performance standards used to review land use applications and modernization projects and revise if needed.

3.8 Periodically review and update the County design and construction standards related to roadways and facilities for people walking and riding bikes in unincorporated areas.

3.9 Periodically review policies and standards that address street connectivity, spacing, and access management.

3.10 Support transit service to improve mobility within the County and connectivity to transit stations in Bend, Redmond, La Pine, and other regional and state destinations.

3.11 Monitor the condition of County bridges on a regular basis and perform routine maintenance, repair and replacement when necessary.

3.12 Partner with local agencies, ODOT, and the public airports to periodically review airport master plans for Redmond, Bend, Sisters, and Sunriver to ensure they and County development code are consistent.

3.13 Partner with the US Forest Service and Bureau of Land Management to maintain the County's system of forest highways to continue to provide key access to recreational areas such as campsites, lakes, hiking, and biking trails in the County.

3.14 Coordinate with ODOT to identify County routes to be used as detours when a crash or other incident closes a State highway.

3.15 At a minimum, seek dedication of public rights of way for extensions of existing roads or future roads on lands not zoned Exclusive Farm Use or Forest in order to develop a rural-scale grid system.

GOAL 4: ECONOMIC DEVELOPMENT

Plan a transportation system that supports existing industry and encourages economic development in the County.

Policies

4.1 Prioritize transportation investments that support access to allowed land uses, activities, airports, and recreational areas.

4.2 Maintain arterials and collector roadways for the movement of people and goods to employment centers in the County.

4.3 Update and continue to implement the County's Transportation System Development Charge (SDC) program.

4.4 Incorporate facilities for people walking and riding bikes to key recreational areas as part of changes to the roadway system.

4.5 Support bicycle tourism by prioritizing and improving designated County bike routes.

4.5 Incorporate improvements to the County arterial system that support freight service and provide access to US97, US 20, and OR 126.

4.6 Support economic development by encouraging ODOT to prioritize modernization, preservation, and safety projects on highways designated as Freight Routes.

4.7 Periodically assess the probability of providing passenger rail service to and through Deschutes County.

GOAL 5: EQUITY AND ACCESSIBILITY

Provide a multimodal transportation system that supports a safe, efficient, and low-stress environment for walkers, cyclists and transit users as well as benefits the overall health and environment within the County.

Policies

5.1 Prioritize investments in the County's transportation system that support users of all abilities, ages, race/ethnicity, income levels, and those with disabilities.

5.2 Design all new transportation facilities consistent with the requirements of the American's with Disabilities Act (ADA).

5.3 Maintain a partnership with CET, the cities, ODOT, and transportation options providers to promote walking and cycling, public transportation, micro mobility options, and rideshare/carpool programs through community awareness and education.

5.4 Accommodate bicycle, pedestrian, and transit facilities, when prescribed by design standards and various master plan documents, when new roads are constructed and/or existing roads are reconstructed.

5.5 Maintain road design standards that promote pedestrian, bicycle and transit facilities to and from schools, community gathering places, grocery stores, and other services as prescribed within community plans.

5.6 Establish priorities for construction and maintenance of roadway shoulders or shared use pathways to provide for walking and bicycle travel.

5.7 Partner with ODOT, the cities, CET and other providers to secure funding for transit service to underserved areas of the County.

5.8 Support efforts of local agencies to develop and maintain a trail system along the Deschutes River, within Tumalo, and along major irrigation canals.

5.9 Support Commute Options' efforts to work with major employers, local business groups, non-profit agencies, school districts to support implementation of Transportation Demand Management (TDM) strategies that provide options employees, residents, and customers to use transit, walk, ride bikes, carpool, and telecommute.

GOAL 6: SUSTAINABILITY AND ENVIRONMENT

Provide a transportation system that balances transportation services with the need to protect the environment.

Policies

6.1 Partner with BPAC, local agencies, CET, and non-profit groups to promote the use of walking, cycling and transit as viable options, minimize energy consumption, and lessen air quality impacts.

6.2 Ensure changes to the County transportation system are consistent with the Transportation Planning Rule (TPR).

6.3 Comply with applicable state and federal noise, air, water, and land quality regulations as part of transportation investments in the County.

6.4 Preserve listed Goal 5 resources within the County.

6.5 Implement, where cost-effective, environmentally friendly materials and design approaches as part of County transportation projects (e.g., storm water retention/ treatment to protect waterways, solar infrastructure, impervious surfaces, etc.).

6.6 Prioritize transportation investments that support system resilience to seismic events, extreme weather events, and other natural hazards.

GOAL 7: STRATEGIC INVESTMENTS

Maintain the safety, physical integrity, and function of the County's multi-modal transportation network, consistent with Goal 6 of the OTP.

Policies

7.1 Continue to pursue and implement Federal Lands Access Program (FLAP) funding to prioritize County investments to support tourism and access to key recreational areas.

7.2 Maintain long-term funding stability for maintenance of the transportation system.

7.3 Prioritize investment in the existing transportation network through maintenance and preservation activities.

7.4 Coordinate with ODOT and local agency partners to implement intelligent transportation solutions that increase the life of transportation facilities and/or delay the need for capacity improvements.

7.5 Periodically review and, if needed, make updates to the County Code requirements to ensure that future land use decisions are consistent with the planned transportation system.

7.6 Coordinate with ODOT in the implementation of the Statewide Transportation Improvement Program (STIP) and Statewide Transportation Improvement Funding (STIF).

7.7 Coordinate with and provide guidance to CET in programming public transportation funds received by the County.

7.8 Pursue additional funding sources to support major reconstruction or replacement of County bridges.

7.9 Partner with federal and state agencies to seek funding that prioritize investments that support recommendations from the Bend, Redmond, Sisters, or Sunriver airport master plans.

03 | NEEDS ASSESSMENT AND EVALUATION

The TSP projects and implementation tasks were informed by technical analyses of existing transportation conditions, forecast year 2040 deficiencies, and an evaluation of possible system changes that can meet the transportation needs for all users (including the transportation disadvantaged) and address the need for movement of goods and services to support local and regional economic development priorities. The needs assessment, in combination with thoughtful input received from the community, Deschutes County staff, partner agency staff, and County policy makers, formed the list of recommended projects, the TSP goals and policies and the funding plan. This chapter summarizes the key elements of the existing and future needs analyses; further details of the needs analyses are provided in Volume 2.

EXISTING TRANSPORTATION SYSTEM CONDITIONS

Existing transportation needs, opportunities, and constraints reflect an inventory of the County transportation system conducted in 2019 and 2020. This inventory included all major transportation-related facilities and services at that time. Key roadway features (including number and type of roadway lanes, speeds, pavement type/condition, traffic volumes and roadway classifications), traffic conditions, safety performance, bicycle and pedestrian facilities, and transit service, among other topics, were analyzed.

Key findings related to the existing County system are highlighted below.

- The areas within the County with the highest percentages of youth are primarily located in Tumalo and Terrebonne as well as adjacent to the Bend and Redmond Urban Growth Boundaries (UGBs). Connections for school students between their homes, the local community schools, and school bus stops were considered in identification of potential roadway, walking, cycling and transit projects.
- The highest percentage of elderly populations is located in the Sunriver area and adjacent to the Sisters, Redmond, and La Pine UGBs. The areas adjacent to these three UGBs are also where the highest concentration of the population with disabilities and the minority populations reside. Coordination with Cascades East Transit (CET) to serve the existing and future needs of these residents is included in the recommended implementation task list for the TSP.
- Continued coordination between the County and ODOT and the incorporated communities will help address and provide consistency of individual roadway functional classification designations.
- Roadway repairs are and will continue to be monitored and accomplished as part of the County's ongoing maintenance program.
- The County does not have any designated freight routes that provide connections to local industrial and employment lands. The TSP alternatives evaluation explored the need to designate County freight routes to serve key economic priority areas to supplement the ODOT freight system.
- No roadway capacity deficiencies were identified under existing conditions.
- The County's Transportation Safety Action Plan (TSAP) identified key locations for monitoring and potential changes to the transportation system to address documented safety deficiencies. The TSAP is incorporated by reference as part of the TSP.
- Many of the County bikeways and highways do not have paved shoulders that are at least six feet wide which is the standard for

ODOT highway while the County standard for paved shoulders is 3-5'.

- The small, unincorporated communities in the County do not have dedicated bicycle facilities and several of the roadways adjacent to schools or other pedestrian trip generators (parks, trail connections, rural commercial areas, etc.) located in Terrebonne and Tumalo are missing sidewalks. Safe Routes to School funding may be an option to assist with implementation of TSP recommendations in small communities.

BASIS OF NEED ASSESSMENT

The TSP addresses the projects, programs, and policies needed to support growth in population and jobs within the County as well as the travel associated with regional and state economic growth between now and the year 2040. The identified set of recommendations reflects County policy makers' and community members' priorities to maintain existing facilities and reduce congestion, save money, improve safety, and provide community health benefits without costly increases to automobile-oriented infrastructure. Over time, the County will periodically update the TSP to respond to changing conditions and funding opportunities.

The existing land use patterns, economic development opportunities, and population and job forecasts helped inform the analysis of year 2040 needs. This information helped identify future changes to the transportation system (and the supporting policies and programs) to address deficiencies and support economic development in a manner consistent with the County's Comprehensive Plan and Zoning Map.

Growth in County Population

By Oregon Revised Statute 195.034, incorporated cities and counties formulate and adopt coordinated population projections. Based on the June 2022 Coordinated Population Report prepared by the Portland State University (PSU) Center for Population Research, in 2020 the total County population was 198,253 and is forecast to grow to a total population of 275,905 by the year 2040. Much of the County growth is expected to occur within the Redmond, Bend, and Sisters UGBs. Within the unincorporated/rural areas, the 2020 population was 59,471 and is anticipated to grow to approximately 64,000 people by 2040. The anticipated growth in both urban and rural population within the County helped inform the estimation of year 2040 traffic volumes using the County transportation facilities.

Traffic Volume Development

The expected increase in traffic volumes on key roadways within the County was based on a review of past changes in traffic volumes as well as expected increases in population and area jobs. Further details on the anticipated growth in traffic volumes on roadways within the County is provided in Volume 2.

The deficiencies evaluation included a review of County arterials and collector roadways. The roadway capacity needs associated with the State facilities within the County are addressed through other planning efforts by ODOT. The County will continue to partner with ODOT to monitor and identify additional needs through future planning and evaluation efforts.

The deficiencies analysis compares the anticipated traffic volumes on the roadways to capacity levels associated with a Level-of-Service (LOS) "D" condition, which is considered by the County to reflect "acceptable" conditions. From a planning standpoint, two-lane rural roadways carrying a total daily volume of less than 24,000 vehicles per day is generally considered to operate with a LOS "D" or better.

Baseline Roadway Analyses

The baseline (future) analysis forms the basis of the project list reflected in Chapter 5. This baseline analysis was guided by the transportation needs identified in previously adopted plans and policies for the County, ODOT, and other agency partners, the 2040 population forecasts and the County's land use map, the anticipated growth in traffic volumes, and the fact that there are no major construction projects that are funded at this time that could materially change traveler behaviors or traffic volumes on the County's roadway network in the future.

Baseline (Year 2040) Transportation Needs

In addition to the summary of existing deficiencies identified in the previous section, the future deficiencies analysis revealed:

- Two County roadways that would exceed LOS "D" conditions, including Deschutes Market Road at Greystone Lane and S Century Drive at Venture Lane.
- Following adoption of the TSP, the County will continue to monitor the need for changes to the transportation system to address roadway and intersection safety, especially at the locations included in the TSAP.
- Although most County roadways do not have adequate width for comfortable and convenient connections for people walking and riding bicycles, providing shoulders on all County collectors and arterials in the next 20 years is not feasible due to constraints such as available right-of-way, environmental and/or property impacts and the high costs to construct. The County will continue to seek opportunities to provide shoulders, particularly in areas with significant roadway curvature, hills, bridges and other locations that could be beneficial for sharing the road among people driving, walking and riding bikes. Additionally, many County roads have low volumes of traffic, which offsets the substandard shoulders.
- Additional public transportation services are needed to provide options for people who cannot or may choose not to drive vehicles. In the future, transit service will continue to be coordinated and operated by CET. The County will continue to collaborate with CET and ODOT on the prioritization of funding and operating public transportation services within and to the County.
- The Redmond Municipal Airport Master Plan was updated in 2018 to identify needs through the year 2040. This updated Master Plan identified the provision of additional airside facilities, general aviation facilities, parking supply, passenger facilities, and non-aeronautical property development in the vicinity of the airport to support the Airport through the year 2040.
- No changes to the existing rail or pipeline facilities were identified to serve the future needs of the County.

EVALUATION OF TRANSPORTATION SYSTEM ALTERNATIVES TO ADDRESS IDENTIFIED NEEDS

The Advisory Committee (AC), Agency Partner Coordination Committee (APCC), Project Management Team (PMT), the Bicycle and Pedestrian Advisory Committee (BPAC) and participants at open houses and other community forums identified transportation system alternatives that had the potential to address existing and future transportation needs. Many of the potential alternatives help to support plans that have been identified by the cities and unincorporated areas within the County, ODOT, other County planning efforts, the TSAP and/or local refinement and facility plans.

The identified alternatives address all modes of travel and include programs that could reduce vehicular travel demand. Further, these potential system alternatives avoid principal reliance on any one mode of transportation and increase transportation choices for all users. The PMT developed these ideas into a potential project list that they screened considering the TSP's goals and objectives and key County priorities. The potential solutions were reviewed and refined through community members and policymakers to form the 20-year list of projects reflected in Chapter 5. Through this process, evaluation of solutions that could address the identified needs as well as serve to accomplish key County objectives were identified. Some of the considerations that shaped the final list of recommended projects include:

- Balancing impacts to existing and developable parcels with County-wide and community needs;
- Minimizing impacts to Goal 5 resources (natural resources, scenic and historic areas, and open spaces);
- Supporting and enhancing key state and regional economic plans and priorities;

- Leveraging future transportation investments to reduce access, economic, safety and health disparities within the County, particularly those areas identified as serving populations of low income, minority, youth and/or the elderly;
- Providing additional connections within Terrebonne and Tumalo for people walking;
- Identifying key intersections where the roadway geometry and/or traffic control could be changed in the future to address known safety and/or anticipated capacity needs;
- Prioritizing strategic roadway corridors where vehicular capacity and/or changes to the roadway characteristics may be needed to help support future growth and economic development in the region, enhance the safety of all users and/or strengthen connections between areas of the County and to other areas in Central Oregon;
- Providing regional bicycle connections that could serve broad transportation functions, such as commuting, recreation, or daily services;
- Modifying key bridges as funding and/or other opportunities arise;
- Leveraging opportunities for future system changes that could be provided using funds from the Federal Lands Access Program (FLAP), particularly for transportation facilities providing connections to key recreational areas and economic development priorities adjacent to/and or located within Federal lands;
- Coordinating projects included in the CET Master Plan that can help increase service to the unincorporated areas of the County as well as to the High Desert Museum and Lava Lands Visitor Center;
- Enhancing access to the Redmond Municipal Airport and Bend Municipal Airport;
- Improving freight mobility; and,
- Leveraging funding opportunities with key partner agencies and private investments.

The resultant 20-year project list is intended to address the identified transportation needs, meet the TSP goals, and reflect the criteria included in ORS 660-012-0035. The TSP projects are categorized as high, medium, and low priorities for future inclusion into the County's Capital Improvement Program (CIP) based on the complexity, likely availability of funding, and assessment of need. The intent of identifying likely priorities allows the County with the flexibility to adapt to changing economic development and community needs over the next 20 years. The project lists and maps of the potential locations were posted to the County's website prior to adoption. Details of the recommended project lists are provided in Chapter 5.

04 | PROVIDING MULTIMODAL SYSTEMS

The TSP is a coordinated set of multimodal policies, programs, and projects that addresses the transportation needs within the rural and unincorporated areas of the County over the next 20 years. This chapter provides an overview of these programs and projects; the detailed project list and associated cost estimates are shown in Chapter 5.

Although driving will continue to be the primary mode of travel in the County and the preservation and improvement of the existing roadway system will remain important, the TSP projects, policies, and programs are intended to increase transportation choices, reduce reliance on the automobile by better accommodating and encouraging travel by foot and bike for short trips, improve safety for all transportation users, and provide for improved transit service. The TSP and the County's adopted land use plans and regulations are intended to make walking, cycling, and use of transit convenient.

THE ROADWAY SYSTEM

People driving, walking, biking, and taking transit all rely on the roadway network to access destinations locally within the County as well as regionally within Central Oregon. The identified roadway solutions in the TSP address mobility, access, freight, and safety needs.

Functional Classification

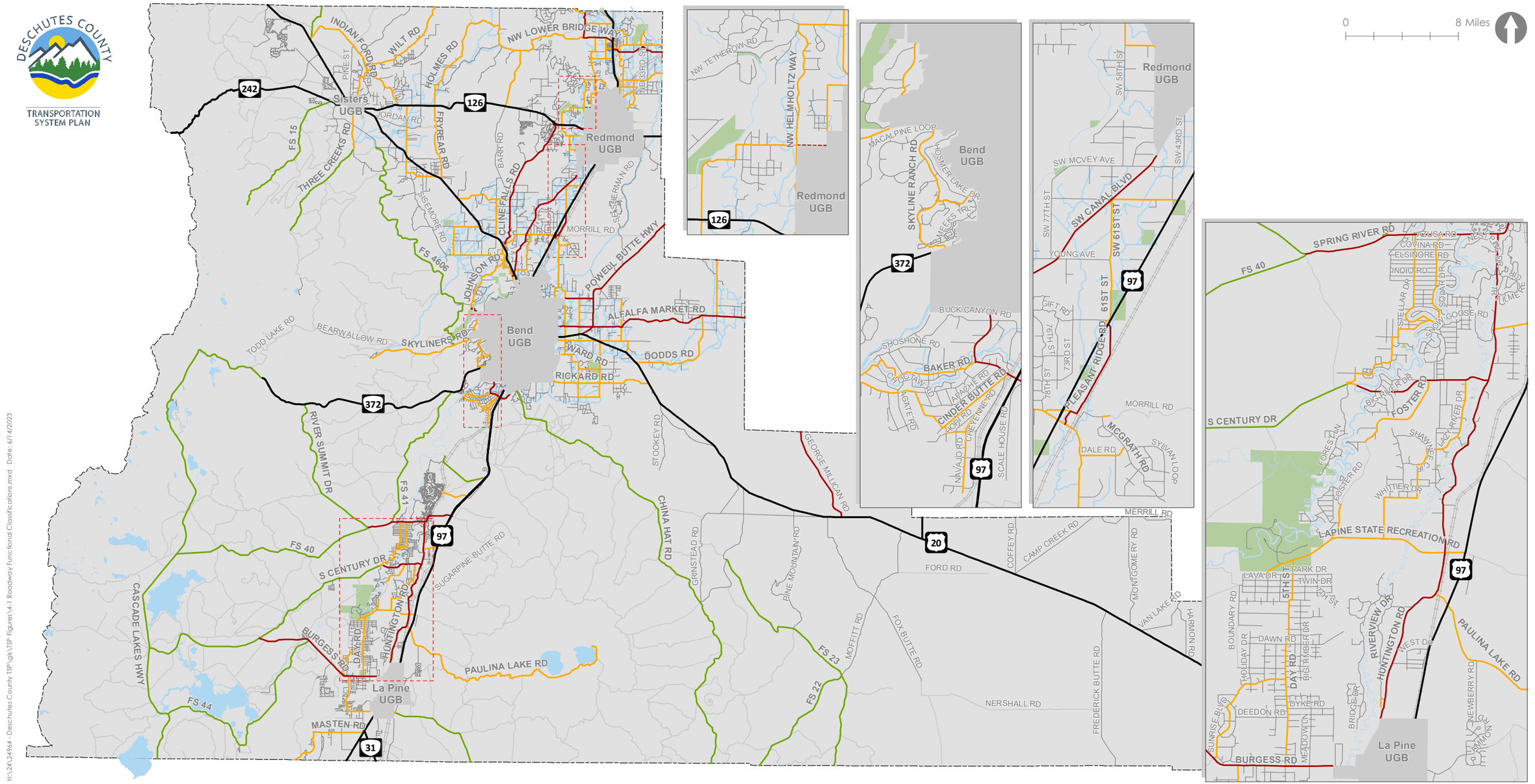
The County's functional classification system provides a system hierarchy based on the intended function of each type of roadway (e.g., moving people across Central Oregon or providing access to local destinations). ODOT identifies the appropriate classifications for state facilities whereas the County identifies the appropriate classifications for roads under its authority. The classification levels also describe how the roadway "looks and feels" and provides recommendations for travel lane widths, roadside treatments, accommodating bicycles, and the need for sidewalk or trails adjacent to the road.

The County's functional classification is based on the following hierarchy:

- Arterials are intended to serve more regional needs and provide connections to key activity centers within the County. They are also intended to represent the key movement of goods and services throughout and to/from the County. These roadways also provide connections to the incorporated UGBs within the County.
- Collectors primarily connect the rural areas of the county with the state facilities and the County arterials. These roadways provide important connections to much of the unincorporated areas of the County.
- Forest Highways provide access to recreational areas such as campsites, lakes, hiking, and biking trails in the County. Maintenance of these facilities is provided by the County and by the Forest Service, depending on location.
- Local roads serve specific areas within the County and can be paved or unpaved.

Figure 4-1 presents the County's functional classification map.

Figure 4-1: Functional Classification



COUNTY ROADWAY CROSS-SECTION STANDARDS

The County's cross-section standards are used to guide the construction of new roadways and/or changes to existing roadways. These standards are updated over time to support the needs of all users as well as continued economic development opportunities. Many existing roadways within the County area are not built to the standards shown in **Table 4-1**. The adoption of these standards is not intended to imply that all existing roadways be rebuilt to match these standards, rather the standards will help inform identified changes to specific roadways in the future. Further, because the design of a roadway or corridor can vary based on the needs of the area, these standards provide flexibility based on adjacent land use and specific topographic considerations. The unincorporated communities of Terrebonne and Tumalo have their own standards; these are shown in **Table 4-2** and T**able 4-3**, respectively.

The County standards do not require a sidewalk except for certain segments in Terrebonne and Tumalo; people walking or biking are assumed to use the shoulder or share the road on lower volume streets. Standards are presented within the TSP for reference only. DCC Chapter 17.48 (in particular Table A) contains the adopted County's roadway standards.

Table 4-1: Minimum Road Design Standards, Rural County (outside of La Pine, Tumalo, and Terrebonne)

Type/Class	ROW	Paved Width	Travel Lane Width	Paved Shoulder Width	Gravel Shoulder Width	Turn Lane Width	Sidewalk Required
State Hwy	80'-100'	36'-70'	12'	6'	---	14'	No
Minor Arterial	80'	28'-46'	11'	3'-5'	2'	14'	No
Collector	60'	28'-46'	11'	3'-5'	2'	14'	No
Local Road	60'	20', 24''	---	---	2'	---	No
Industrial	60'	32'	---	---	---	---	No
Private	---	20', 28'	---	---	---	---	No
Frontage Road	40'-60'	28'	---	---	---	---	No

Table 4-2: Minimum Road Design Standards, Terrebonne Unincorporated Community

Type/Class		ROW	Paved Width	Travel Lane Width	Paved Shoulder Width	Gravel Shoulder Width	Turn Lane Width	Sidewalk Required
US97		80'-100'	60'	12'	6'	6'	14'	No*
Minor Arterial								
Smith Rock Way	TeC	60'	34'	12'	5'	2'	14'	Yes
	TeR	60	34'	12'	5'	2'	14'	No
Lower Bridge Way		60'	34'	12''	5'	2'	14'	No
Collector								
Commercial	TeC	60'	24'	12'	---	2'	---	Yes
	TeR	60'	24'	12'	---	2'	---	No
Residential	TeR	60'	24'	12'	---	2'	---	No**
Local								
Commercial	TeC	60'	24'	12'	---	2'	---	Yes
	TeR	60'	24''	12'	---	2'	---	No
Residential	TeR	60'	20'	12'	---	2'	---	No***
Other								
Alley (Commercial)	20'	20'	10'	---	---	---		No
Path/Trail		15'	6'-8'	---	---	2.5****	---	---

Source: Deschutes County Code 17.48.050, Table A

6-foot sidewalks are required on both sides of US97 between South 11th Avenue and Central Avenue with improved pedestrian crossings at B Avenue/97 and C Avenue/97

** 5-foot sidewalks with drainage swales are required from West 19th to 15th Street on the south side of C Avenue

*** 5-foot curb sidewalks with drainage swales required along Terrebonne Community School frontage on B Avenue and 5th Street

**** If path/trail is paved

Table 4-3: Minimum Road Design Standards, Tumalo Unincorporated Community

Type/Class	ROW	Paved Width	Travel Lane Width	Paved Shoulder Width	Gravel Shoulder Width	Turn Lane Width	Sidewalk Required
US 20	80'-100'	60'	12'	4'	6'	14'	No
Collector							
Commercial	60'	30'	11'	4'	2'	14'	Yes
Residential	60'	36'	12'	6'	2'	14'	No
Local							
Commercial	60'	20'	10'	---	2'	---	No*
Residential	60'	20'	10'	---	2'	---	No
Other							
Alley (Commercial)	20'	20'	---	---	---	---	No
Path/Trail	15'	6' unpaved 8' paved	---	---	2.5'**	---	No

Source: Deschutes County Code 17.48.050, Table A

*5-foot curbless sidewalks on both sides for roads designated for sidewalks in Tumalo Comprehensive Plan Map D2.

** If path/trail is paved

FEDERAL LANDS ACCESS PROGRAM ROADWAYS

The Federal Lands Access Program (FLAP) was established to "improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands." This program is intended to supplement State and County funds for public roads, transit, and other transportation facilities accessing federal lands with a prioritized emphasis for "high-use recreation sites and economic generators." FLAP is funded through the Federal Highway Trust Fund and its allocation is based on road mileage, bridges, land area, and number of visits to the lands.

FLAP provides funding opportunities to help the County deliver capital projects that increase access to Federal Lands. In addition, FLAP is a funding tool to help the County fund maintenance of existing roads that are designated as Forest Highways and other roads that provide similar access.

As part of TSP implementation, the County will continue to coordinate with all of the federal agencies, BPRD, CET, and ODOT on the request for future FLAP-funded projects.

STATE HIGHWAY DESIGN STANDARDS

Any future changes to the state highways within the County will be informed by the OHP, the state's Highway Design Manual (HDM), and the Blueprint for Urban Design, which provides more flexible standards for urban areas.

Access Management and Spacing Guidance

Providing appropriate levels of access to adjacent lands is a key part of operating and planning for a transportation system that serves the needs of all users. ODOT and the County maintain standards to help balance the needs for both "through travelers" (including freight and public transportation) as well as serving the localized needs of residents, employees, and visitors.

For state highways, access spacing guidelines are specified in the 1999 Oregon Highway Plan, Appendix C – Access Management Standards. Access to State Highways is controlled under Oregon Administrative Rule, Division 51 (OAR 734-051-4020(8)).

The adopted County access spacing standards are included in DCC Chapter 17.48.

Movement of Freight

The movement of goods and services within the County and the overall region will continue to rely upon the state highways, especially those designated as freight routes. The TSP does not include a designated freight system of County roadways.

Traveler Information/ITS

Intelligent Transportation System (ITS) infrastructure enhances traffic flow, maintenance activities, and safety through the application of technology. The provision of reliable ITS infrastructure to inform motorists about incidents, weather conditions, and congestion has proven to be a useful and cost-effective tool for the County to manage its roadway system.

ODOT and the County collaborated to update the Deschutes County ITS Plan in 2020. This update reflected identified needs, advanced and emerging technologies, and supports an integrated Transportation Systems Management and Operations (TSMO) strategy. The plan includes recommended TSMO strategies, a communications plan, and a deployment plan. This plan is incorporated by reference into the TSP.

Safety

The County's 2019 Transportation Safety Action Plan (TSAP) provides specific projects, policies, and programs to address identified safety needs within the unincorporated areas of the County. The TSAP is adopted by reference into the TSP.

As part of TSP implementation, the County will continue to identify future project refinements, as needed, monitor the timing of intersection changes at these locations, and seek funding opportunities and/or the potential to combine safety-related projects with other project development within the County.

Several of the safety-based needs for the County reflect conditions best addressed through education, enforcement, or outreach programs. Others may be addressed through systemic intersection and roadway treatments at specific locations. The type of treatments that could be considered by the County are further detailed in the TSAP and include:

- Roadway Treatments to Reduce Roadway Departure Crashes – With new road construction and roadway maintenance projects, the County may consider the construction of shoulders (as required by roadway standards), centerline and shoulder rumble strips, edge-line striping, recessed or raised pavement markers, and/or curve signing upgrades.
- Roadway Treatments to Reduce Speed – With new road construction and roadway maintenance projects, the County may consider lane narrowing at targeted locations, transverse speed reduction markings, and speed feedback signs in conjunction with posted speed limit signs. At rural communities, changes in roadside elements can be used to indicate a change in context to reduce speeds. In addition, enhanced enforcement at key corridors could focus on driving at appropriate speeds.
- Safety Data Monitoring – County staff, in collaboration with ODOT, will continue to periodically analyze crash data and identify the need for engineering, enforcement and educational treatments at specific locations. Tools such as ODOT's Safety Priority Index System (SPIS) and All Roads Transportation Safety (ARTS) programs may be used to assist with prioritizing locations.
- Safe Routes to School – The County, Tumalo, and Terrebonne should seek projects that improve safety near schools and school routes, particularly for those walking and biking to school. These efforts should be coordinated with infrastructure projects such as ADA projects.

- Enhanced Intersection Signing and Striping Options – At collector and arterial intersections, the County may consider enhancements such as advanced warning signs, double advance signs, reflective striping and signage, oversized stop signs, double stop signs, stop ahead pavement markers, transverse rumble strips, and edge-line treatments to help increase visibility and awareness of an intersection. The County should prioritize the use of treatments that have documented effectiveness through the Highway Safety Manual (HSM) or documented Crash Modification Factors (CMFs).

The top sites for safety improvements in unincorporated Deschutes County are identified in the TSAP and will help inform future funding and prioritization in the County's Capital Improvement Plan (CIP).

THE PEDESTRIAN SYSTEM

Outside of the urban areas, sidewalks are needed in portions of Tumalo and Terrebonne to provide walking facilities between the residential areas and schools and the neighborhood commercial areas. In addition, dedicated sidewalks are appropriate within one-quarter mile of transit stops. The County will work with the local communities, CET and the private sector to identify funding opportunities to add sidewalks in these areas over the next 20 years.

Additional changes not specifically identified in the TSP to the sidewalks, pathways, and pedestrian crossings treatments at key intersections may be provided in the future based on project development and design as well as funding opportunities. Where applicable, the County will require sidewalk and/or multiuse pathway construction as part of future land use actions per the DCC Chapter 17.48 requirements.

THE BICYCLE SYSTEM

Deschutes County provides and maintains useable shoulders along roadways for use by people riding bikes though not all roadways are currently improved to include such facilities. The County has an aspirational designated bicycle route system ("County Bikeways") where useable shoulders will be provided, as practical, as part of ongoing maintenance and roadway improvements projects.

Crossing improvements for people riding bikes, though not specifically identified in the TSP, may be provided when bicycle facilities are constructed that intersect major roads. The need for and type of crossing treatments as well as other facility changes will be evaluated at the time of project development and design. The County may provide such facilities as standalone projects or in conjunction with scheduled maintenance activities. As part of TSP implementation, the County will evaluate the need to modify existing DCC Chapter 17.48 requirements related to bicycle facility requirements as part of future land use actions.

In addition, as part of implementation of the TSP, changes to the bicycle network will continue to be informed by the County's Bicycle and Pedestrian Committee (BPAC) activities. BPAC's mission is "to promote and encourage safe bicycling and walking as a significant means of transportation in Deschutes County" and focuses on both changes to the system as well as public education and awareness and a review of safety and funding needs as part of implementation of potential projects.

The County will also continue to partner with ODOT to identify priority locations along the state highways for increased shoulder widths and/or shared use paths.

The County, by reference, will adopt the Map 11 of the Bend Parks and Recreation District's (BPRD's) Comprehensive Plan (2018) identifying future trail connections to parks within the County but outside the Bend (UGB) as well as those within the Deschutes National Forest. As noted in the BPRD plan, the trails have been prioritized for implementation but the actual alignments in the map are approximate and subject to future easement/user agreements to enable trail construction, availability of funding, and securing agreements from affected property owners for trailheads and parking areas.

The Redmond Area Parks and Recreation District (RAPRD) also provides access to trails and facilities outside of the Redmond City Limits, including those in Terrebonne and Tumalo and the Borden Beck Wildlife Preserve. As part of TSP implementation, the County will coordinate with RAPRD on the need for and timing of new trails outside of the Redmond City Limits.

The La Pine Parks and Recreation District also provides facilities outside of the City Limits, such as the Leona Park and Rosland Campground. They are also planning for a working with BLM on a property transfer of 141 acres to the Park District that will house a future "South County Events Area" to include facilities for "campers, bikers, walkers, hikers, horse owners and others". The County will coordinate with Park District on the planning for this new facility as well as overall access to existing facilities outside the City Limits.

As part of TSP implementation, the County will coordinate with BPRD, RAPRD, the La Pine Parks and Recreation District, and the Sisters Park and Recreation District on the planning for and timing of new trails outside of city limits. It is important to note that not all County roadways are currently or will be designed to provide roadside parking for trailhead users within the County. The County will work with each of these parks and recreation districts to identify appropriate locations in the future to provide safe access for trail users as well as to roadway users not accessing the parks/trails.

Other Programmatic Considerations for the Pedestrian and Bicycle System

Other policy/programmatic considerations that the County may incorporate as part of TSP implementation are dependent on funding opportunities and potential agency partnerships. These types of considerations could include:

- Monitoring System – pending availability of resources, the County could establish a data monitoring or counting program that helps to identify and prioritize locations with higher levels of walking and cycling activity. In combination with safety reviews through TSAP and other ongoing regional efforts, this data monitoring program can help the prioritization of resources in the future.
- Continued Education and Outreach – implementation activities might include topics related to providing the Sheriff's Department and other emergency services personnel with training regarding bicycle/pedestrian safety and enforcement issues; encouraging and supporting efforts by County schools or other organizations to develop and add a bicycle/pedestrian safety curriculum for students of all ages; identifying opportunities to install signage along roadways where bicycle touring or other significant bicycling activity is expected advising travelers of the "rules of the road" pertaining to motorists and non-motorized travelers, etc.
- Ongoing Maintenance Activities – further reviewing the budgets associated with maintenance activities along key cycling routes, including the periodic removal of debris including small branches and other roadside debris that could create safety hazards for a bicyclist or pedestrian.
- Additional Funding Partnerships - exploring opportunities for coordination and cooperation with state and federal agencies in examining innovative means of providing or funding pathways, trails, and equestrian facilities.

TRANSIT SERVICES

In 2020, CET adopted its Master Plan to reflect the transit needs of the region through the year 2040. The CET Master Plan is adopted by reference into the Deschutes County TSP.

Per the adopted Master Plan, CET will continue to provide high-quality, available, and reliable transit service that fundamentally supports the environment, economic development, and equity for all travelers. Within the unincorporated and rural areas of the County, the CET Master Plan identifies the following:

- Increasing local circulation via local Dial-A-Ride and/or Community Connector vehicles;
- Providing service to Crooked River Ranch via shopper/medical shuttles;
- Potential service to Eagle Crest and/or providing a stop in Tumalo along Route 29;
- Changes to the bus stop for Deschutes River Woods (e.g., Riverwoods Country Store) or an alternative way to serve Deschutes River Woods via Route 30;
- Re-routing existing service lines to Sunriver;
- Adding service to the High Desert Museum and Lava Lands Visitor Center (potentially seasonally based); and,
- A new Route 31 and/or modification of Route 30 to connect La Pine and Sunriver.

Finally, the transit capital investments identified in the CET Plan include fleet replacement and expansion and transit stops enhancement and additions. The County and CET will continue to partner on transit projects that serve the community.

RAIL SERVICE

Freight rail service will continue to be an important, energy efficient mode of transportation. The TSP supports the continued use of freight rail tracks and service provided in the County by the Burlington Northern Santa Fe (BNSF) Railway and Union Pacific (UP) Railroad. The TSP also supports the continued use of the City of Prineville's short line freight railway that runs from Redmond to Prineville along OR 370.

The nearest passenger rail service is and will continue to be provided in Portland and in Chemult. No passenger rail service is anticipated within the County within the next 20 years.

PIPELINES AND WATERWAYS

Today, there is one natural gas pipeline in the County that parallels US97. The TSP recommends continued coordination with the gas pipeline operator to provide continued services within the County. No additional pipeline facilities are anticipated within the next 20 years.

There are no navigable waterways located in Deschutes County but there are several waterways and lakes that are used recreationally. As local and regional destinations, access to these bodies of water facilitate tourism, economic development, and environmental conservation efforts. Major bodies of water include Paulina Lake, East Lake, Wickiup Reservoir, Crane Prairie Reservoir, Sparks Lake, the Crooked River, and the Deschutes River. The TSP recommends enhancements to the roadways accessing these recreational areas to improve safety for all users.

AIR SERVICE

Within the County, the largest public use airport is the Roberts Field-Redmond Municipal Airport (RDM) located in southeast Redmond. The Bend Municipal Airport, Sunriver Airport, and Sisters Eagle Airport are also available for public use. The TSP supports the continued use of these airports for service within the County in the future.

The TSP adopts by reference the City of Redmond's Airport Master Plan (as Updated in 2018) to reflect the needs of the Redmond Municipal Airport through the year 2040. This updated Master Plan includes a prioritized list of additional airside facilities, general aviation facilities, parking supply, passenger facilities, and non-aeronautical property development in the vicinity of the airport to support the anticipated 20-year growth at the Airport. The TSP supports continued coordination with the City of Redmond and ODOT to maintain safe and efficient connections to the airport for Deschutes County residents and visitors.

BRIDGES

The County regularly reviews the structural ratings of its bridges and addresses changes to the bridges as funding and other opportunities arise. The need for changes to existing bridge locations within the County will be addressed throughout the 20-year period of the TSP and incorporated as part of County budgeting and partner agency funding discussions, as appropriate.

VEHICULAR PERFORMANCE STANDARDS

The County uses motor vehicle Level of Service (LOS) standards to evaluate acceptable vehicular performance on its road system. LOS standards are presented as grades A (free flow traffic conditions) to F (congested traffic conditions). ODOT uses mobility targets based on volume to capacity (V/C) ratios as defined in the OHP for planning evaluations of existing facilities and in the Highway Design Manual (HDM) for design of future facilities to evaluate acceptable vehicular performance on state facilities. As V/C ratios approach 1.0, traffic congestion increases.

In some cases, it may not be possible or desirable to meet the designated mobility target or LOS standards. In those cases, an alternative mix of strategies such as land use, transportation demand management, safety improvements or increased use of active modes may be applied.

The County roadways and intersections are subject to LOS "D" whereas ODOT highways and intersections are evaluated using the applicable mobility targets in the Oregon Highway Plan (OHP). Within the urban areas of the County, each city's standards apply to their streets and intersections.

05 | TRANSPORTATION INVESTMENT PRIORITIES

This Chapter presents a list of prioritized transportation investments intended to serve the County in the future. These investments were identified and prioritized based on feedback obtained from County residents, partner agency staff and by technical analyses of roadways, intersections, bike facilities, transit, walking routes, and transportation safety. Many of the identified projects help to support plans adopted by the local cities, the Oregon Department of Transportation (ODOT), other County planning efforts, the Transportation Safety Action Plan (TSAP) and/or local refinement and facility plans. For planning purposes and the County's future considerations related to the Capital Improvement Program (CIP), the prioritized investments have been categorized as high, medium or low. Each of the identified investments have associated cost estimates.

The transportation investments are organized into the following categories for implementation based on complexity, likely availability of funding, and assessment of need:

- Intersection changes;
- Roadway segments, including changes to functional classification;
- ODOT intersections and roadways;
- Pedestrian facilities;
- Bicycle facilities;
- Bridges;
- Federal Land Access Program (FLAP) roads;
- Transit; and,
- Safety.

Some projects may be accelerated and others postponed due to changing conditions, funding availability, public input, or more detailed study performed during programming and budgeting processes. Further, project design details may change before construction commences as public input, available funding, and unique site conditions are taken into consideration. Projects identified herein may be funded through a variety of sources including federal, state, county or local transportation funds, system development charges (SDCs), through partnerships with private developers, or a combination of these sources.

In addition, as part of TSP implementation, the County will continue to coordinate with ODOT and the local communities regarding project prioritization, funding and construction.

PROJECT COSTS

The estimated construction costs are provided in the subsequent tables. These costs are order-of-magnitude (e.g., planning-level) estimates that account for right-of-way, design engineering, and construction and generally include a 30 percent contingency factor . The costs were calculated for each project using the methodology and procedures recommended by the American Association of Cost Engineers (Class 5 estimates). All costs are rounded to the nearest $100,000 and provided in 2021 dollars. The detailed costs include all estimation assumptions as well as any deviations related to unique topographic, right-of-way, or other constraints.

Where applicable, cost estimates include anticipated project funding that would provide bicycle or pedestrian facilities, including usable shoulder space.

Costs for individual transit corridors are not provided. The County and Cascades East Transit (CET) will continue to collaborate on capital improvements and strategic policies that can help implement more robust transit service throughout the County.

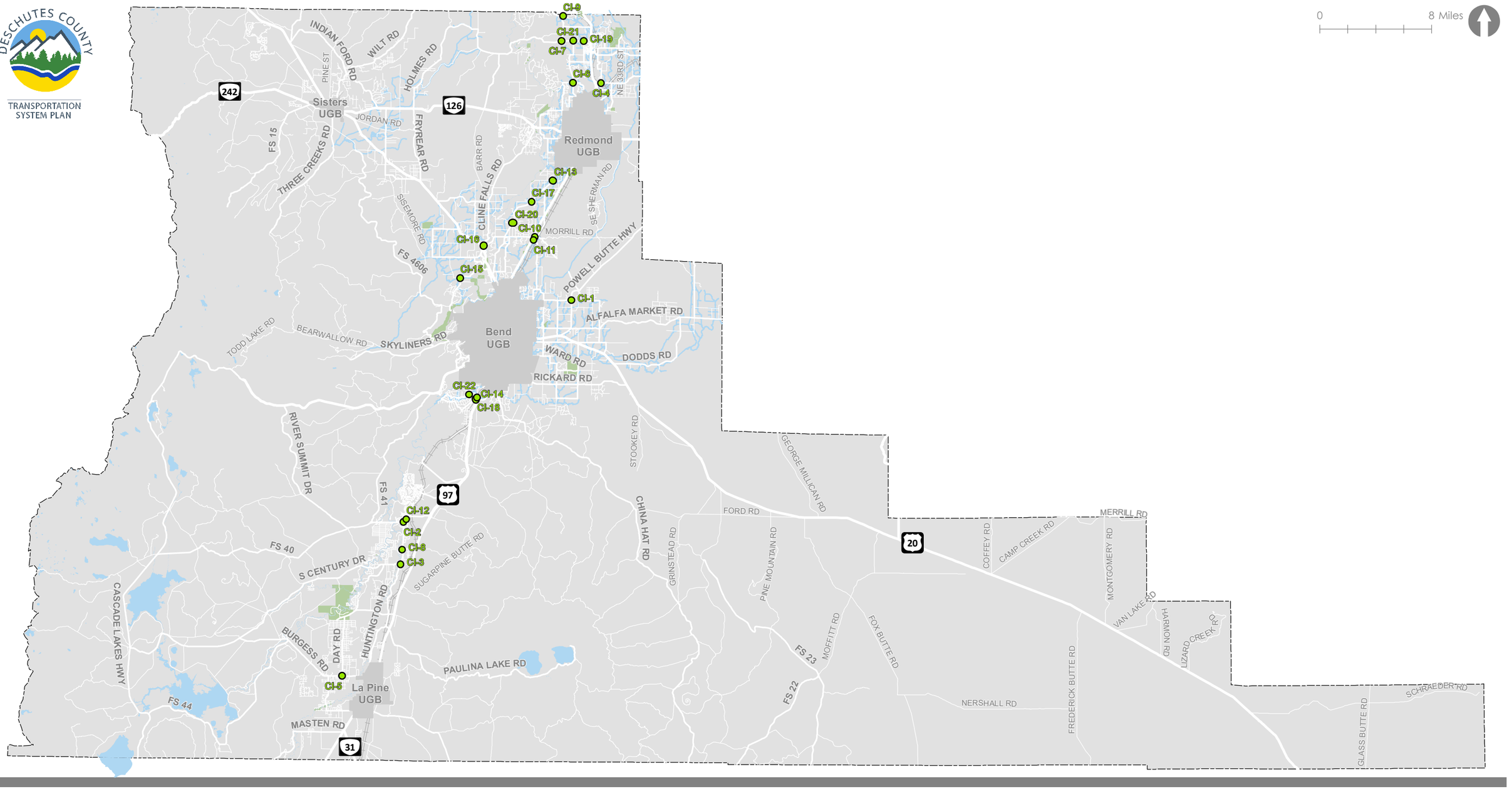
INTERSECTION CHANGES

As discussed in Chapter 4, the needs assessment at intersections focused on both vehicular capacity as well as potential geometry changes identified by the Project Advisory Committee, public input, and those identified through the TSAP.

The TSP is not inclusive of all of the intersection projects that the County will pursue over the next 20 years. Rather, these have been identified as projects that the County can pursue to strategically improve the operational efficiency of specific intersections and important roadways. These projects can enhance system operations and can be completed as opportunities arise. In all cases, the County will review the appropriate intersection control options at the time of project development and delivery. The projects are illustrated in **Figure 5-1** and in **Table 5-1**.

Figure 5-1 – Intersection Changes

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN



\\kittelson.com\tsh_Projects\24\24964 - Deschutes County TSP\gis\TSP Figures\5-1 County Intersection Projects.mxd Date: 6/8/2023

Data Source: ODOT, Oregon State Parks, Deschutes County

County Intersection Project
Parks
Water
UGBs

Table 5-1. Intersection Changes and Associated Cost Estimates

ID	Road 1	Road 2	Project Description	Priority	Cost Estimate	Bike/Ped Component of Cost
CI-1	Powell Butte Hwy	Butler Market Rd	Roundabout	High	$2,500,000	-
CI-2	S Century Dr	Spring River Rd	Roundabout	High	$2,200,000	$200,000
CI-3	Huntington Rd	South Century Dr	Roundabout	High	$2,000,000	-
CI-4	NE 5th St	O'Neil Hwy	Realignment	High	$130,000	-
CI-5	Burgess Rd	Day Rd	Signal	High	$800,000	$100,000
CI-6	Coyner Rd	Northwest Way	Left Turn Lanes (Northwest Way Only)	High	$400,000	-
CI-7	NW Lower Bridge Way	NW 43rd St	Realignment/ Left Turn Lane or Roundabout	High	$3,500,000	$200,000
CI-8	S Century Dr	Vandervert Rd	Roundabout	Medium	$2,100,000	-
CI-9	NW 43rd St	NW Chinook Dr/	Realignment, Left Turn Lane	Medium	$700,000	-
CI-10	Graystone Ln	Pleasant Ridge Rd	Realignment, Left Turn Lane	Medium	$2,700,000	-
CI-11	Deschutes Market Rd	Graystone Ln	Signal With Turn Lanes	Medium	$2,300,000	-
CI-12	Venture Ln	S Century Dr	Roundabout Or Realignment	Medium	$2,100,000	-
CI-13	S Canal Blvd	McVey Ave	Realignment	Medium	$400,000	-
CI-14	Cinder Butte Rd	Cheyenne Rd	Realignment	Medium	$200,000	-
CI-15	Johnson Rd	Tyler Rd	Realignment	Medium	$600,000	-
CI-16	Cline Falls Hwy	Cook Ave/Tumalo Rd	Roundabout Or Realignment	Medium	$1,800,000	$200,000
CI-17	S Canal Blvd	SW Young Ave	Realignment	Medium	$300,000	-
CI-18	Baker Rd	Cinder Butte Rd	Intersection Improvements	Medium	$1,200,000	-
CI-19	NW Lower Bridge Way	NW 19th St	Turn Lanes/ Realignment	Medium	$500,000	-
CI-20	Old Bend Redmond Hwy	Swalley Rd/Kiowa Dr	Realignment	Low	$200,000	-
CI-21	NW Lower Bridge Way	NW 31st St	Turn Lanes	Low	$500,000	-
CI-22	Baker Rd	Brookswood Blvd	Signal/Turn Lanes	Low	$1,400,000	$100,000

ROADWAY CHANGES

As discussed in Chapter 4, the needs assessment identified strategic roadway corridors where vehicular capacity and/or changes to the roadway characteristics may be needed to help support future growth and economic development in the region as well as to enhance the safety of all users. The identified projects also can help to strength connections between areas of the County and to other areas in Central Oregon. These projects are illustrated in **Figure 5-2** and **Table 5-2**. The projects identified will be implemented over time to reflect changing needs for the various users of the transportation system and economic development opportunities.

In reviewing the prioritized list, it is helpful to note that many existing roadways within the County area are not built to current County standards and that not all roadways within the County will be rebuilt to match these standards over the next 20 years. It is also important to note that changes to existing roadways (beyond those identified in the TSP) may be required as part of future land use approvals consistent with the roadway functional classification requirements.

Figure 5-2 – Roadway Changes

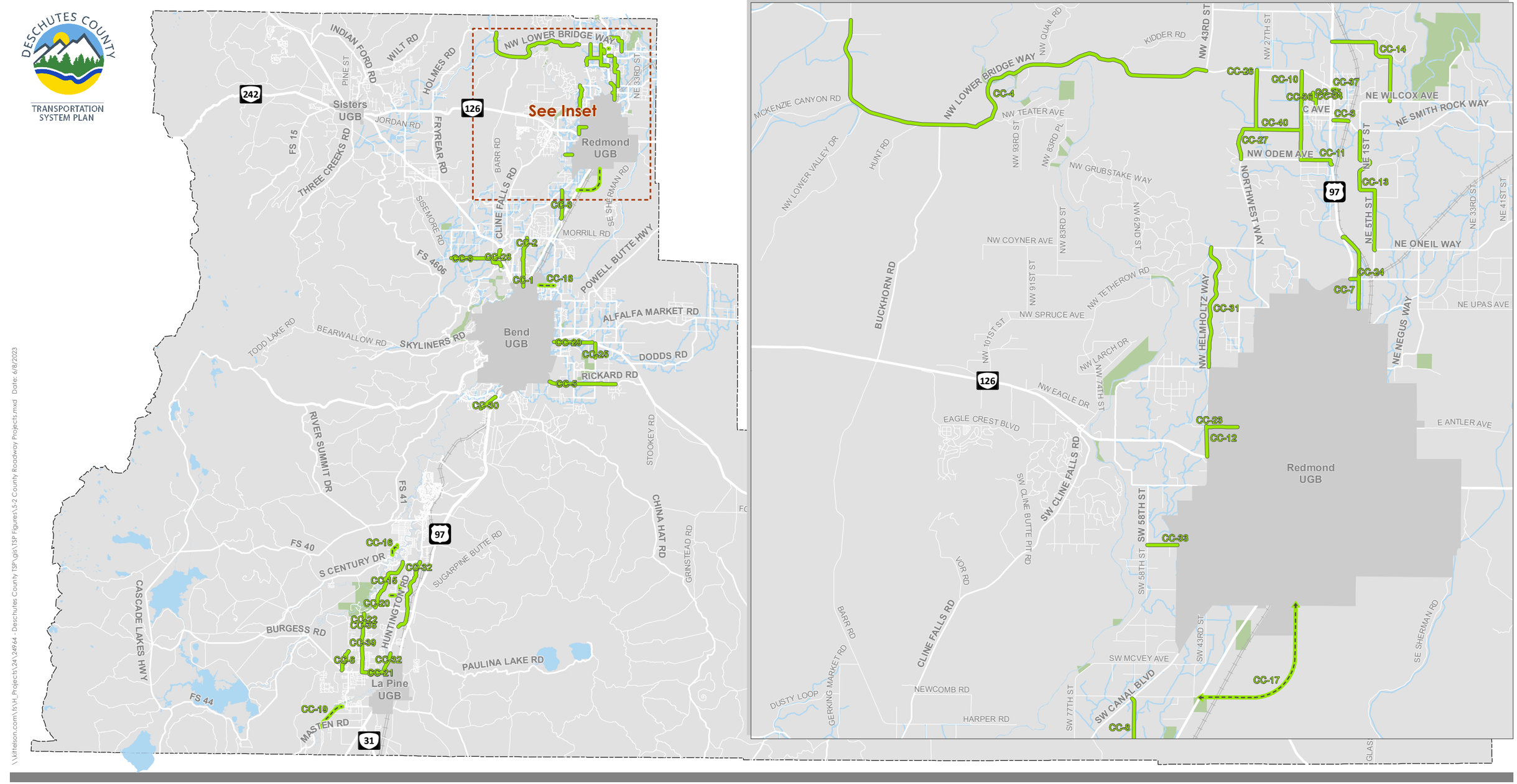


Table 5-2. Roadway Changes and Associated Cost Estimates

ID	Road	Begin	End	Project Description	Priority	Cost Estimate	Bike/Ped Component of Cost
CC-1	Hunnell Rd	Loco Rd	Rodgers Rd	New Road	High	$1,600,000	$500,000
CC-2	Hunnell Rd	Rodgers Rd	Tumalo Rd	Reconstruction/ Pave	High	$3,900,000	$1,200,000
CC-3	Smith Rock Way	Highway 97	Railroad Crossing/UGB Terrebonne	Widen & Overlay	High	$600,000	$200,000
CC-4	NW Lower Bridge Way	43rd St	Holmes Rd	Widen & Overlay	Medium	$8,900,000	$3,500,000
CC-5	Rickard Rd	Knott Rd/27th St	Bozeman Trail	Widening	Medium	$2,300,000	$700,000
CC-6	Sunrise Ln	300' North Of Shady Ln	Burgess Rd	County Standard Improvement	Medium	$1,300,000	$400,000
CC-7	N. Canal Blvd	Redmond City Limits	O'Neil Hwy	Widen & Overlay	Medium	$700,000	$200,000
CC-8	61st St	S. Canal Blvd	Hwy 97	Widen & Overlay	Medium	$1,800,000	$600,000
CC-9	Tumalo Reservoir Rd	OB Riley Rd	Collins Rd	Widen & Overlay	Medium	$5,300,000	$1,600,000
CC-10	NW 19th St	NW Lower Bridge Way	NW Odem Ave	County Standard Improvement	Medium	$2,700,000	$800,000
CC-11	NW Odem Ave	NW 19th St	Hwy 97	County Standard Improvement	Medium	$1,100,000	$300,000
CC-12	SW Helmholtz Way	OR 126	Antler Ave	Widen & Overlay	Medium	$900,000	$300,000
CC-13	NE 1st St, Ne Knickerbocker Ave, And Ne 5th St	O'Neil Hwy	Smith Rock Way	Widen & Overlay	Low	$3,400,000	$1,000,000
CC-14	NW Eby Ave, Ne 5th St, Ne Cayuse Ave, And Ne 9th St	US97	Ne Wilcox Rd	Widen & Overlay	Low	$1,700,000	$500,000
CC-15	Whittier Dr, Wolf St, And Shawnee Circle	Whittier Dr - End of County Maintenance	Lazy River Dr	County Standard Improvement	Low	$2,600,000	$800,000

ID	Road	Begin	End	Project Description	Priority	Cost Estimate	Bike/Ped Component of Cost
CC-16	Stellar Dr, Upland Rd, Savage Dr, Winchester Dr, Browning Dr	Stellar Dr End of County Maintenance (@Milky Way)	Stage Stop Dr (@Browning Dr/Pitch Ct)	County Standard Improvement	Low	$1,300,000	$400,000
CC-17	SW 19th St	End Of Pavement – SW 19th St	US97 (In the Vicinity of SW Quarry Ave)	Illustrative Roadway Extension. May require statewide planning goals exceptions prior to implementation	To be determined	$8,600,000	$2,600,000
CC-18	Cooley Rd	Urban Growth Boundary	Deschutes Market Rd	Roadway Extension	Low	$2,900,000	$900,000
CC-19	6th St	Masten Rd	6th St - End Of County Maintenance	Roadway Extension	Low	$3,800,000	$1,100,000
CC-20	Foster Rd	South Century Dr	La Pine State Rec. Rd	County Standard Improvement/ Widen & Overlay	Low	$4,100,000	$1,200,000
CC-21	Burgess Rd	Day Rd	Huntington Rd	Widen & Overlay	Low	$1,900,000	$600,000
CC-22	5th St (La Pine)	Amber Ln	La Pine State Rec. Rd	Widen & Overlay	Low	$800,000	$200,000
CC-23	W Antler Ave	NW 35th St	NW Helmholtz Way	Widen & Overlay	Low	$400,000	$100,000
CC-24	O'Neil Hwy	N Canal Blvd	Highway 97	Widen & Overlay	Low	$1,100,000	$300,000
CC-25	Gosney Rd	US 20	Canal, 1 Mile South of Us20	Widen & Overlay	Low	$2,800,000	$800,000
CC-26	31st St	NW Sedgewick	NW Lower Bridge Way	Widen & Overlay	Low	$1,000,000	$300,000
CC-27	NW Almeter Way	Northwest Way	NW Sedgewick Ave	Widen & Overlay	Low	$500,000	$200,000

ID	Road	Begin	End	Project Description	Priority	Cost Estimate	Bike/Ped Component of Cost
CC-28	Bailey Rd	US 20	Tumalo Reservoir Rd	Widen & Overlay	Low	$1,300,000	$400,000
CC-29	Bear Creek Rd	City Limits	US 20	Widen & Overlay	Low	$3,200,000	$1,000,000
CC-30	Cinder Butte Rd	Baker Rd	Minnetonka Ln	Widen & Overlay	Low	$1,300,000	$400,000
CC-31	NW Helmholtz Way	Maple Ave	NW Coyner Ave	Widen & Overlay	Low	$2,500,000	$700,000
CC-32	Huntington Rd	South Century Dr	Burgess Rd	Widen & Overlay, Excluding Portion from Riverview Dr to Riverview Dr	Low	$6,600,000	$2,000,000
CC-33	SW Wickiup Ave	SW Helmholtz Way	SW 58th St	Widen & Overlay	Low	$600,000	$200,000
CC-34	4th St (Terrebonne)	Majestic Rock Dr	F Ave	County Standard Improvement	Low	$200,000	$100,000
CC-35	F Ave (Terrebonne)	4th St	5th St	County Standard Improvement	Low	$100,000	-
CC-36	5th St (Terrebonne)	F Ave	Central Ave	County Standard Improvement	Low	$300,000	$100,000
CC-37	H Ave (Terrebonne)	11th St	12th St	County Standard Improvement	Low	$200,000	$100,000
CC-38	Amber Ln	5th St	Day Rd	Realignment	Low	$300,000	$100,000
CC-39	Day Rd	Amber Ln	Burgess Rd	Widen & Overlay	Low	$3,000,000	$900,000
CC-40	NW Sedgewick Ave	NW 19th Ave	NW Almeter Way	Widen & Overlay	Low	$1,000,000	$300,000

In addition to the roadway changes, the County is proposing changes to the existing functional classification system based on review by County staff, input from stakeholders, and coordination with partner agencies. These changes will occur as part of TSP implementation. These recommended changes are shown in **Figure 5-3** and **Table 5-3**.

Figure 5-3 - Functional Classification Changes

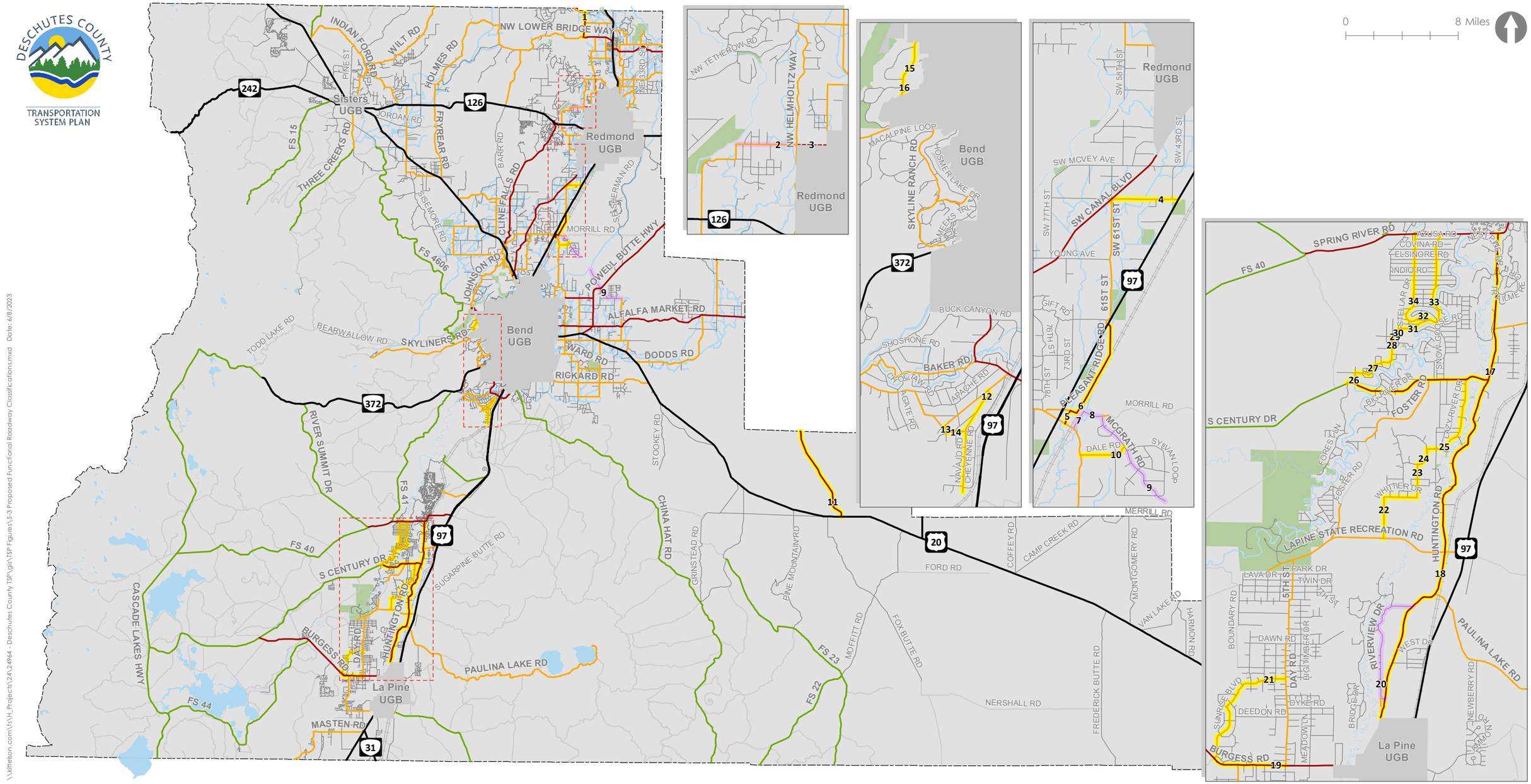


Table 5-3. Changes to the Functional Classification Designations

ID	Road	Begin	End	Functional Classification		Comments
				Current	Proposed	
1	43rd St	NW Lower Bridge Way	NW Chinook Ave	Collector	Arterial	One of the main roads NW of Terrebonne, main access to Crooked River Ranch, 1/2 access roads to CRR
2	NW Maple Ave	NW Helmholtz Way	NW 59th St	Arterial	Collector	Possible database error, updating to match county mapping
3	NW Maple Ave	NW 35th St	NW Helmholtz Way	N/A	Arterial	Future connection; called out in the city of Redmond tsp; from tsp- "proposed 3 lane arterial to improve connectivity between and within existing neighborhoods, employment, and commercial areas, to provide connections to newly developed or developing areas, and to provide alternative travel routes for all models to existing streets"
4	SW Quarry Ave	US97	S Canal Blvd	Local	Collector	Improve connection to canal which is an arterial road that runs parallel to US97, key road segment in connection to north Tumalo area from US97, 2 lane road with narrow gravel shoulders
5	Graystone Ln	Deschutes Market Rd	Pleasant Ridge Rd	Collector	Arterial	1275' segment that is key in the eastern parallel roads to US97, Connection for US97 Access from Tumalo Rd/ Deschutes market road
6	Pleasant Ridge Rd	Graystone Ln	US97	Collector	Arterial	600' segment that is key in connection for US97 Access from Tumalo Rd/Deschutes market road
7	19th St	Deschutes Market Rd	Morrill Rd	Collector	Local	1750' segment that connects to rural farmland area NE of Bend, no major traffic generators
8	Morrill Rd	19th St	McGrath Rd	Collector	Local	1675' segment that connects to rural farmland and hiking area NE of Bend, no major traffic generators, the rest of Morrill Rd is local

ID	Road	Begin	End	Functional Classification		Comments
				Current	Proposed	
9	McGrath Rd	Morrill Rd	End	Collector	Local	Road that connects to rural farmland area NE of Bend, no major traffic generators
10	Dale Rd	Deschutes Market Rd	McGrath Rd	Local	Collector	4,180' segment that connects rural land to Deschutes Market Rd
11	George Millican Rd	US 20	County Line	Local	Arterial	Possible database error, updating to match county mapping
12	Navajo Rd	Cinder Butte Rd	End	Local	Collector	Traffic from homes, driveways every 50-100', 1' paved shoulder, connects to cinder butte road which is a collector
13	Minnetonka Ln	Cinder Butte Rd	Cherokee Dr	Local	Collector	Traffic from homes, driveways every 50-100', no paved shoulder, connects to cinder butte road which is a collector
14	Cherokee Dr	Minnetonka Ln	Navajo Rd	Local	Collector	Traffic from homes, driveways every 50-100', 1' paved shoulder, connects to Minnetonka Lane and Navajo road that are being upgraded as well
15	McClain Dr	City Limits	Sage Steppe Dr	Local	Collector	Possible database error, updating to match county mapping
16	Sage Steppe Dr	McClain Dr	City Limits	Local	Collector	1580' segment in new developed area, continues McClain drive proposed upgrade of collector
17	S Century Dr	Spring River Rd	Deschutes River Xing	Collector	Arterial	Connection to the communities of Three Rivers, Caldera Springs, and Crosswater
18	Huntington Rd	S Century Dr	City Limits	Collector	Arterial	Connection between La Pine, Three Rivers, and Sunrise; gravel shoulder and paved shoulder 0'-2'
19	Burgess Rd	Day Rd	Sunrise Blvd	Collector	Arterial	Possible database error, updating to match county mapping
20	Riverview Dr	Huntington Rd	Huntington Rd	Collector	Local	Parallel to Huntington Road, rural connections to river and homes, curvy road

ID	Road	Begin	End	Functional Classification		Comments
				Current	Proposed	
21	Sunrise Blvd	Burgess Rd	Day Rd	Local	Collector	Connection to many homes, driveways every 50-300', gravel shoulders, paved shoulders 0-2'
22	Whittier Dr	La Pine State Rec. Rd	Wolf St	Local	Collector	Enhance connection route to La Pine state park from Three Rivers and other communities to the north; 1/2 is a gravel road, other half is paved with no striping
23	Wolf St	Whittier Dr	Shawnee Circle	Local	Collector	Enhance connection route to La Pine state park from Three Rivers and other communities to the north; gravel road
24	Shawnee Circle	Wolf St	Lazy River Dr	Local	Collector	Enhance connection route to La Pine state park from Three Rivers and other communities to the north; gravel road
25	Lazy River Dr	Shawnee Circle	S Century Dr	Local	Collector	Enhance connection route to La Pine state park from Three Rivers and other communities to the north
26	Bonanza Ln	S Century Dr	Stage Stop Dr	Local	Collector	Enhance connection route to west Three Rivers homes and big river group campground
27	Stage Stop Dr	Bonanza Ln	Browning Dr	Local	Collector	Enhance connection route to west Three Rivers homes
28	Browning Dr	Stage Stop Dr	Winchester Dr	Local	Collector	Enhance connection route to west Three Rivers homes
29	Winchester Dr	Browning Dr	Savage Dr	Local	Collector	Enhance connection route to west Three Rivers homes
30	Savage Dr	Winchester Dr	Upland Rd	Local	Collector	Enhance connection route to west Three Rivers homes
31	Upland Rd	Savage Dr	Milky Way	Local	Collector	Enhance connection route to west Three Rivers homes
32	Milky Way	Stellar Dr	Solar Dr	Local	Collector	Enhance connection route to west Three Rivers homes
33	Solar Dr	Milky Way	Spring River Rd	Local	Collector	Enhance connection route to west Three Rivers homes
34	Stellar Dr	Milky Way	Spring River Rd	Local	Collector	Enhance connection route to west Three Rivers homes

ODOT Intersections and Roadways

Future changes to ODOT intersections and roadways within the County have been identified in previously adopted and/or acknowledged transportation plans. ODOT and County staff prioritized the list of changes for inclusion in the TSP. These are shown in **Figure 5-4** and **Table 5-4.** In addition to this list, the County will continue to partner with ODOT to monitor and identify future projects that help to address the needs of local, regional and statewide travel.

As the road authority for projects on the state highway system, the timing, need, and funding for projects will be directed by ODOT rules and regulations. In some cases, the County may partner with ODOT on implementation whereas in others, the projects will be planned, designed and constructed by ODOT.

Figure 5-4 – ODOT Facility Changes

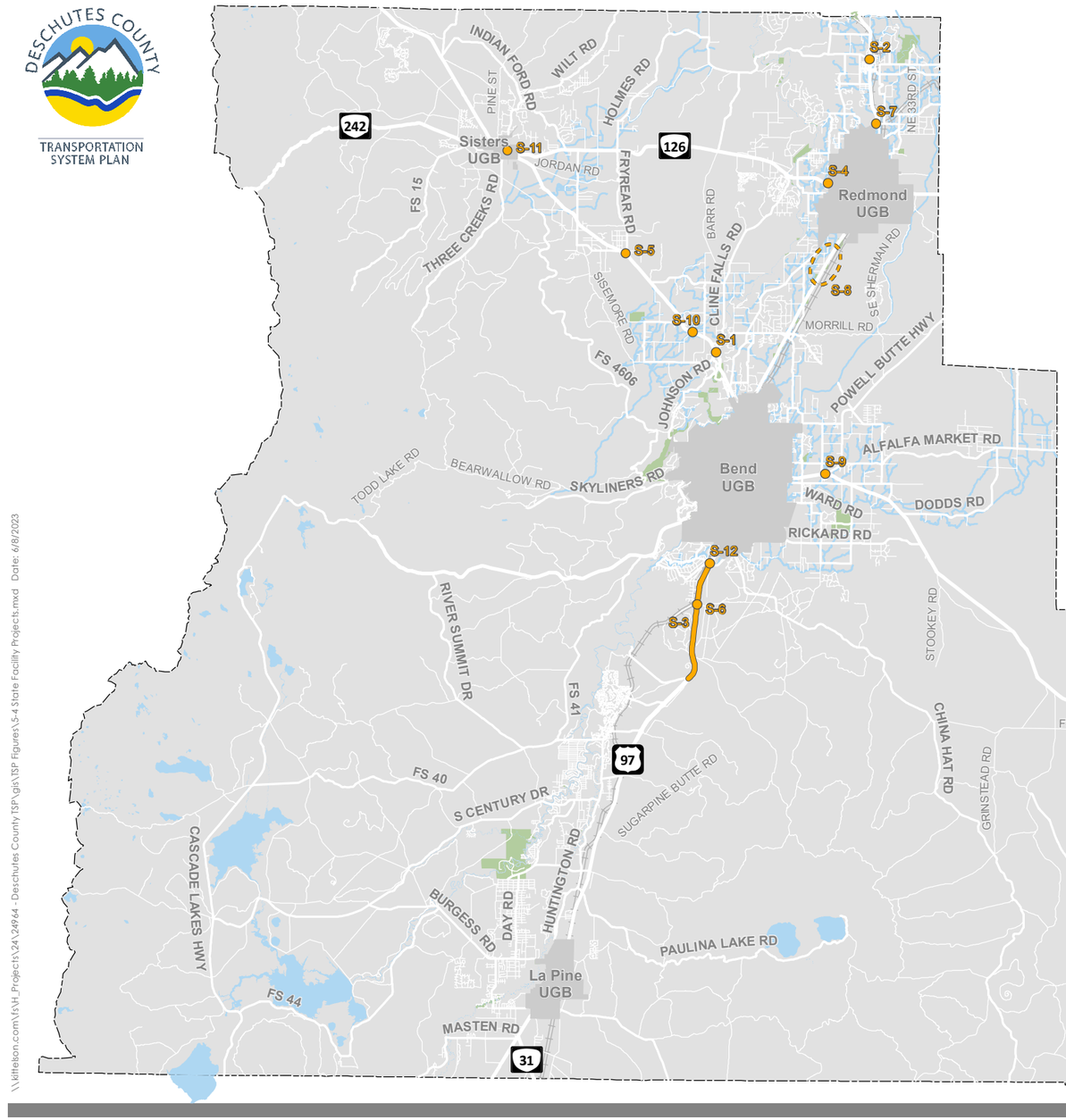


Table 5-4. ODOT Intersections Changes and Associated Cost Estimates

ID	Road 1	Road 2	Desc.	Notes	Priority	Cost	County Contribution	Bike/Ped Component of County Contribution
S-1	US 20	Cook Ave/O.B. Riley Rd	Two-Lane Roundabout	ODOT project programmed for 2023	High	$11,000,000	$9,100,000	$1,800,000
S-2	US97	Lower Bridge Way	Grade Separated Interchange From US97	Interchange project identified via US97: Terrebonne/ Lower Bridge Way improvement project. ODOT project programmed for 2023.	High	$30,200,000	$10,000,000	$700,000
S-3	US97	Baker Road To Lava Butte	Implementation Of Multiuse Path	ODOT project currently in design phase	High	$3,000,000	-	-
S-4	OR 126	SW Helmholtz Way	Traffic Signal or Intersection Improvement	Coordinate with city of Redmond & ODOT on specific project. Also identified within Redmond tsp.	Medium	$1,000,000	$500,000	$100,000
S-5	US 20	Fryrear Rd	Turn Lane on Highway, Realign	Intersection identified within Deschutes County TSAP	Medium	$3,000,000	$2,500,000	-
S-6	US97	Deschutes River Woods South Interchange Project	Interchange	This project will provide a grade separated interchange on US97 that will connect the Deschutes River Woods subdivision (west) and the High Desert Museum area (east). A future refinement process (interchange area management plan, or other) will determine the connection point to the DRW. A grade separation of the BNSF Railroad will also be required.	Low	$42,900,000	$10,000,000	-

ID	Road 1	Road 2	Desc.	Notes	Priority	Cost	County Contribution	Bike/Ped Component of County Contribution
S-7	US97	Pershall-O'Neil Hwy	Implement Components of the Interchange Area Management Plan (IAMP) Adopted for This Area.	The county will coordinate with ODOT and the city of Redmond on the appropriate county involvement to implement IAMP projects.	Low	Multiple Projects	-	-
S-8	US97	Quarry Rd	Grade Separated Interchange From US97	Illustrative Project. Timing and need to be further refined. May require statewide planning goals exceptions prior to implementation. Need for project likely driven by economic development within Redmond industrial lands	To be deter-mined	$50,000,000	$5,000,000	-
S-9	US 20	Powell Butte Hwy	Roundabout	Project timing and need to be further refined.	Low	$5,000,000	$500,000	-
S-10	US 20	Pinehurst Rd	Turn Lane on Highway, Realign	Project timing and need to be further refined.	Low	$3,000,000	$2,500,000	-
S-11	US 20	Locust St	Roundabout	County contribution to ODOT/ city of Sisters project	Low	$6,000,000	$1,000,000	-
S-12	US97	Baker Road	Implement Components of The Interchange Area Management Plan (IAMP) For This Area.	The county will coordinate with ODOT and the city of Bend on the appropriate county involvement to implement IAMP projects.	Low	Multiple Projects	-	-

PEDESTRIAN FACILITIES

Figure 5-5 and **Table 5-5** reflect priorities for changes to the pedestrian system within Terrebonne and Tumalo. In general, the sidewalks identified in the TSP reflect providing sidewalks between the residential areas and schools as well as to provide connections to neighborhood commercial areas in the two communities.

Other changes to the pedestrian system as well as pedestrian crossing improvements may be provided in the future based on project development and design as well as funding opportunities. The County may require sidewalk construction as part of future land use actions as well, consistent with the Development Code requirements.

Figure 5-5A – Pedestrian Facilities Improvements

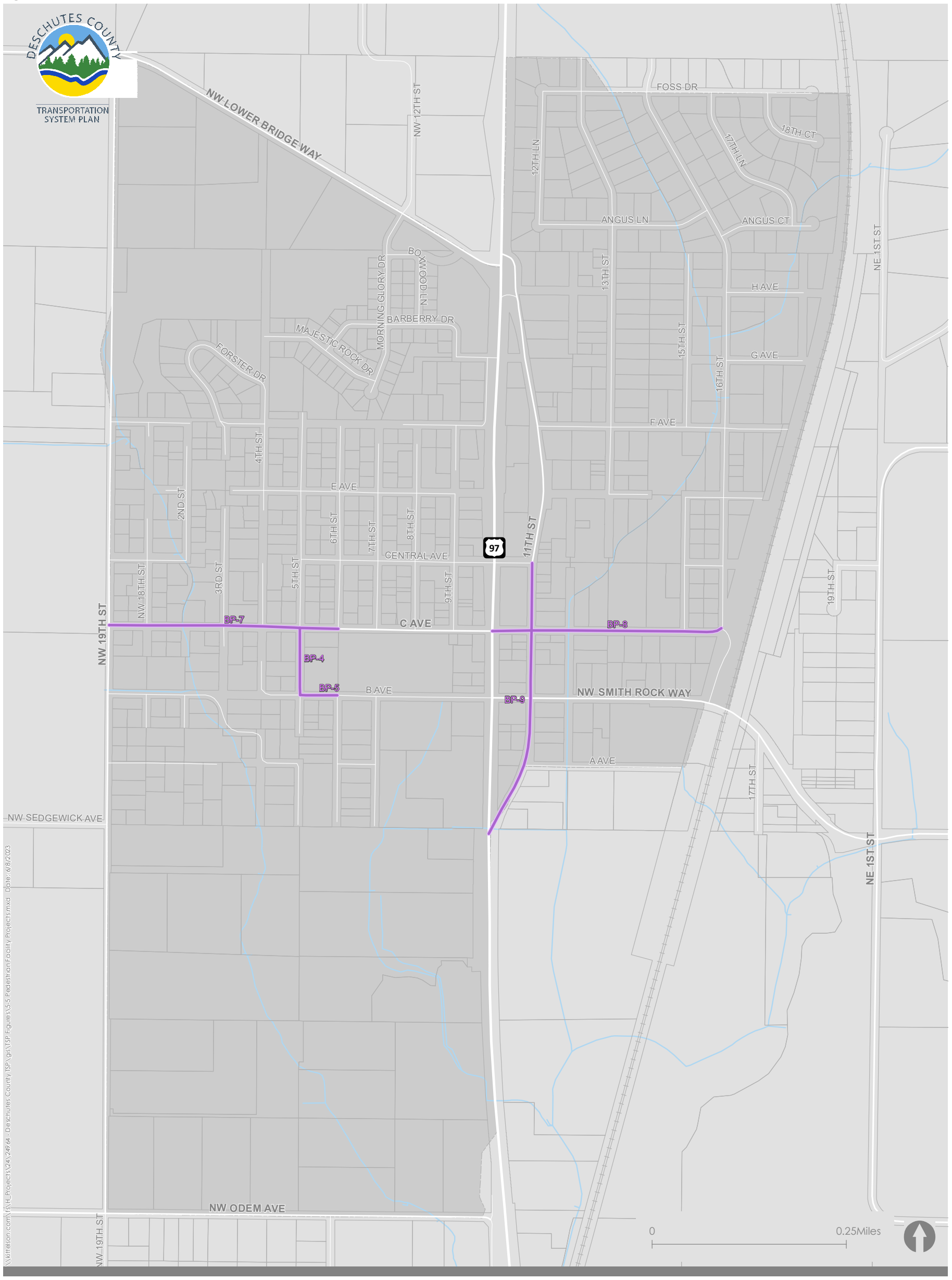


Figure 5-5B

Pedestrian Facility Projects
Terrebonne , Oregon

Data Source: Deschutess County

Figure 5-5B – Pedestrian Facilities Improvements

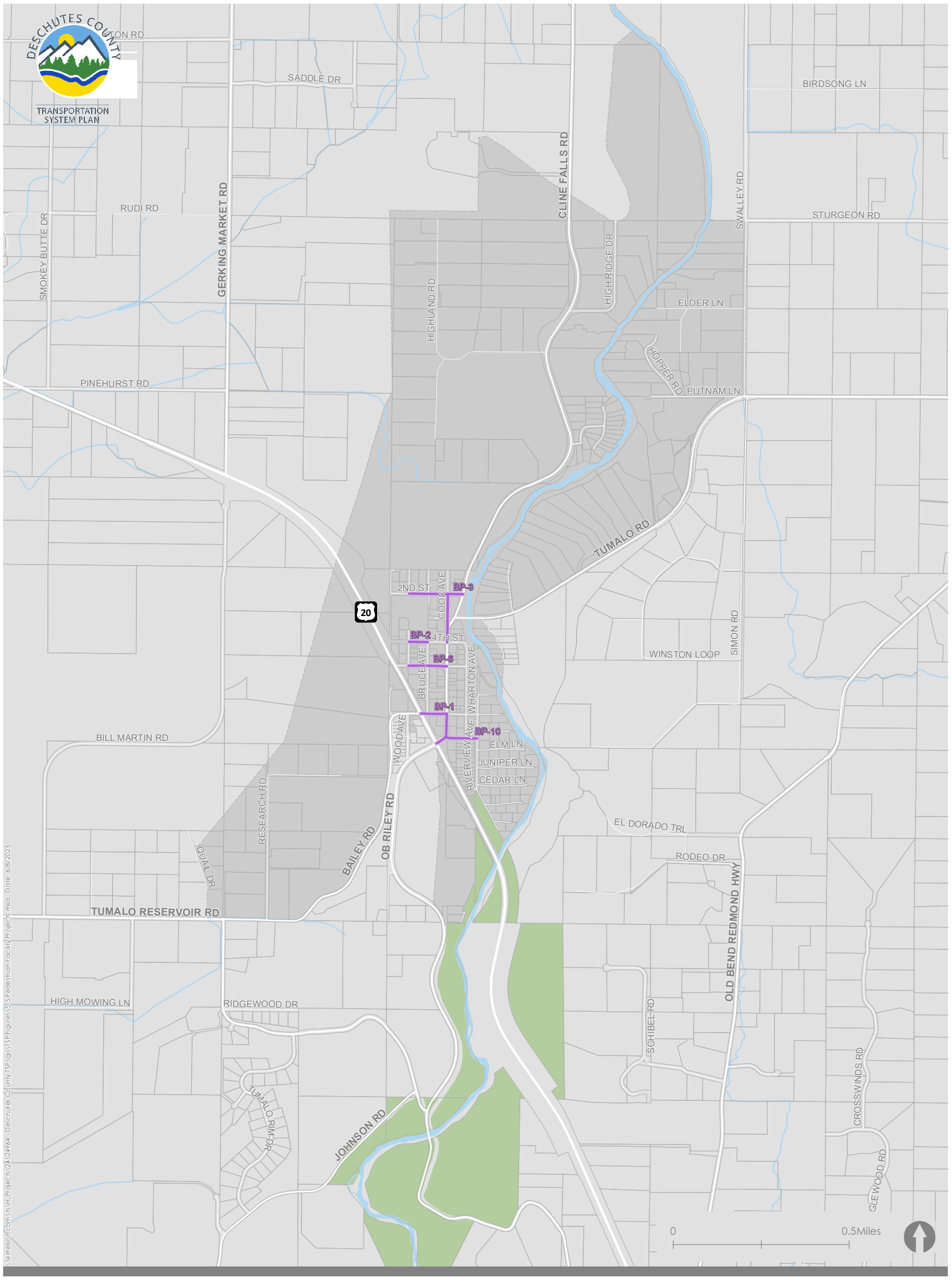


Figure 5-5A

Table 5-5. Pedestrian Facilities and Associated Cost Estimates

ID	Road	Begin	End	Description	Priority	Cost
BP-1	7th St (Tumalo)	US 20	Cook Ave	5' Sidewalk On Both Sides	High	$300,000
BP-2	4th St (Tumalo)	Wood Ave	Bruce Ave	5' Sidewalks On Both Sides	High	$300,000
BP-3	2nd St/Cook Ave Sidewalks (SRTS-Tumalo)	Tumalo School	Cline Falls/4th Street	5' Sidewalks In Areas Without	Medium	$1,700,000
BP-4	5th St (Terrebonne)	B Ave	C Ave	5' Sidewalk On East Side Only	Medium	$200,000
BP-5	B Ave (Terrebonne)	5th St	6th St	5' Sidewalk, North Side Only	Medium	$200,000
BP-6	5th St (Tumalo)	Wood Ave	Cook Ave	5' Sidewalks On Both Sides	Medium	$500,000
BP-7	C Ave (Terrebonne)	6th St	NW 19th St	5' Sidewalks On Both Sides	Medium	$1,000,000
BP-8	C Ave (Terrebonne)	US97	16th St	5' Sidewalk On South Side Only	Low	$600,000
BP-9	11th St (Terrebonne)	Central Ave	US97	5' Sidewalks On Both Sides	Low	$1,100,000
BP-10	8th St (Tumalo)	Cook Ave	Riverview Ave	5' Sidewalks On Both Sides	Low	$400,000

BICYCLE FACILITIES

Deschutes County provides and maintains useable shoulders along roadways for use by people riding bikes though not all roadways are currently improved to include such facilities. The County has an aspirational bicycle route system, referred to as County Bikeways, where useable shoulders will be provided, as practical, as part of ongoing maintenance and roadway improvements projects. Facilities designated as County Bikeways are shown in **Figure 5-6**.

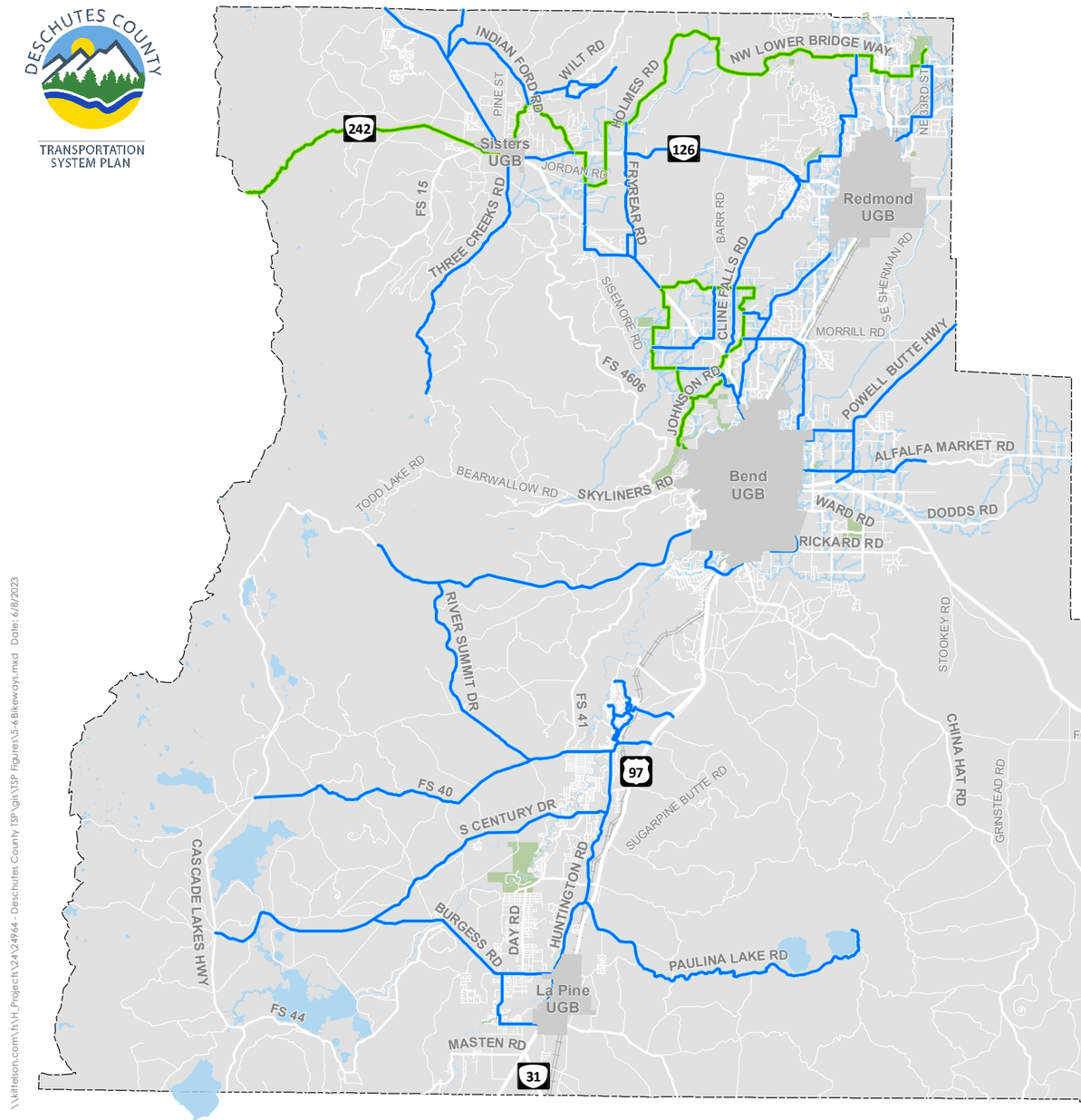
Crossing improvements, though not specifically identified in the TSP, may be provided when bicycle facilities are constructed that cross major roads. The need for and type of crossing treatments as well as other facility changes will be evaluated at the time of project development and design. The County may provide such facilities as standalone projects or in conjunction with scheduled maintenance activities. At the time the TSP was written, the County was evaluating potential changes to the Development Code requirements (as included in the County Code Title 22 requirements) related to bicycle facility requirements as part of land use actions. Future changes to Title 22 will be considered as part of TSP implementation.

In addition, as part of implementation of the TSP, changes to the bicycle network will continue to be informed as part of the County's Bicycle and Pedestrian Committee (BPAC) activities. BPAC's mission is "to promote and encourage safe bicycling and walking as a significant means of transportation in Deschutes County" and focuses on both changes to the system as well as public education and awareness and a review of safety and funding needs as part of implementation of potential projects.

As part of that coordination, **Table 5-6** and **Table 5-7** identify regional bicycle connections that have been developed and prioritized with input from BPAC. Table 5-6 identifies routes that would connect communities and serve broad transportation functions, such as commuting, recreation, or daily services. Table 5-7 identifies routes that primarily provide connections to recreational opportunities, which could also serve to improve transportation mode choices available to County residents and visitors.

Over time, strengthening the identified connections will help to expand the overall bicycle infrastructure within the County. Specific routes, including roadways and projects needed to support or develop these routes, have not yet been identified nor has the funding to construct and maintain these facilities. In the future, these costs may be funded by the County and/or a variety of agency partners, pending the actual alignment and project elements identified. The County will work with BPAC and agency partners, including ODOT and local jurisdictions, to advance development and implementation of preferred routes as resources allow.

Figure 5-6 – County Bikeways



Finally, the County, by reference, will adopt the Map 11 of the Bend Parks and Recreation District's (BPRD's) Comprehensive Plan (2018) identifying future trail connections to parks within the County but outside the Bend (UGB) as well as those within the Deschutes National Forest. As noted in the BPRD plan, the trails have been prioritized for implementation but the actual alignments in the map are approximate and subject to future easement/user agreements to enable trail construction, availability of funding, and securing agreements from affected property owners for trailheads and parking areas.

As part of TSP implementation, the County will coordinate with BPRD on the planning for and timing of new trails. It is important to note that not all County roadways are currently or will be designed to provide roadside parking for trailhead users. The County will work with BPRD to identify appropriate locations in the future to provide safe access for trail users as well as to roadway users not accessing the parks/trails.

Table 5-6. Bicycle Route Community Connections

Community Connection	Description	Priority
Bend To Redmond	Various routes possible. Preferred route alignment has not been identified.	High
Bend To Sunriver	Route currently in design as a multi-use path along US97 (project s-3). Would connect bend, lava lands, and Sunriver.	High
Bend To Sisters	Could include Bend to Tumalo and/or Bend to Tumalo state park connection, which is also a priority route, and would likely include county and ODOT facilities. Future coordination will be required. Additional Sisters to Tumalo connection may be necessary if Bend to Sisters route does not include the Tumalo community.	High
Redmond To Sisters	Route could occur adjacent to or within ODOT right-of-way (or 126)	High
Redmond To Terrebonne	Route would likely occur adjacent to or within ODOT right-of-way (US97)	High
Redmond To Tumalo	Route may overlap with other route development, such as Bend to Sisters or possible Redmond to Sisters.	High
Sisters To Terrebonne & Smith Rock State Park	Route is currently part of a scenic bikeway. Improvements to the existing route, including improved crossings, are needed.	High

Community Connection	Description	Priority
Sisters To Black Butte Ranch	Significant prior planning which assumed a multi-use path parallel to US 20.	High
Deschutes River Woods to East Side of Bend	Route would connect area south of Bend to new development areas and recreational opportunities within or near southeast bend. Route could benefit from trail construction within future SE Bend developments.	Medium
Sunriver To La Pine	ODOT is currently in the planning stages to identify preferred route location.	Medium
Bend To Prineville	Route could utilize state highways and/or county roads. Coordination with ODOT and crook county will be required.	Low
Redmond To Powell Butte & Prineville	Route could utilize state highways and/or county roads. Coordination with ODOT and crook county will be required.	Low
Black Butte Ranch to Camp Sherman	Route would require coordination with Forest Service.	Low

Table 5-7. Bicycle Route Recreation Connections

Community Connection	Description	Priority
Bend To Redmond	Various routes possible. Preferred route alignment has not been identified.	High
Bend To Sunriver	Route currently in design as a multi-use path along US97 (project s-3). Would connect Bend, Lava Lands, and Sunriver.	High
Bend To Sisters	Could include Bend to Tumalo and/or Bend to Tumalo state park connection, which is also a priority route, and would likely include county and ODOT facilities. Future coordination will be required. Additional Sisters to Tumalo connection may be necessary if Bend to Sisters route does not include the Tumalo community.	High
Redmond To Sisters	Route could occur adjacent to or within ODOT right-of-way (or 126)	High
Redmond To Terrebonne	Route would likely occur adjacent to or within ODOT right-of-way (US97)	High
Redmond To Tumalo	Route may overlap with other route development, such as Bend to Sisters or possible Redmond to Sisters.	High
Sisters To Terrebonne & Smith Rock State Park	Route is currently part of a scenic bikeway. Improvements to the existing route, including improved crossings, are needed.	High

Community Connection	Description	Priority
Sisters To Black Butte Ranch	Significant prior planning which assumed a multi-use path parallel to US 20.	High
Deschutes River Woods to East Side of Bend	Route would connect area south of Bend to new development areas and recreational opportunities within or near southeast bend. Route could benefit from trail construction within future SE Bend developments.	Medium
Sunriver To La Pine	ODOT is currently in the planning stages to identify preferred route location.	Medium
Bend To Prineville	Route could utilize state highways and/or county roads. Coordination with ODOT and crook county will be required.	Low
Redmond To Powell Butte & Prineville	Route could utilize state highways and/or county roads. Coordination with ODOT and crook county will be required.	Low
Black Butte Ranch to Camp Sherman	Route would require coordination with Forest Service.	Low

BRIDGES

In 2020, the majority of the County's bridges were rated as being structurally sufficient. The County regularly reviews the structural ratings of its bridges and makes changes as funding and other opportunities arise. Projects to address county bridge priorities are shown in **Figure 5-7** and **Table 5-8**. These projects represent the County's current priorities but do not encapsulate all the bridges that may be modified over time.

Figure 5-7 Bridge Projects

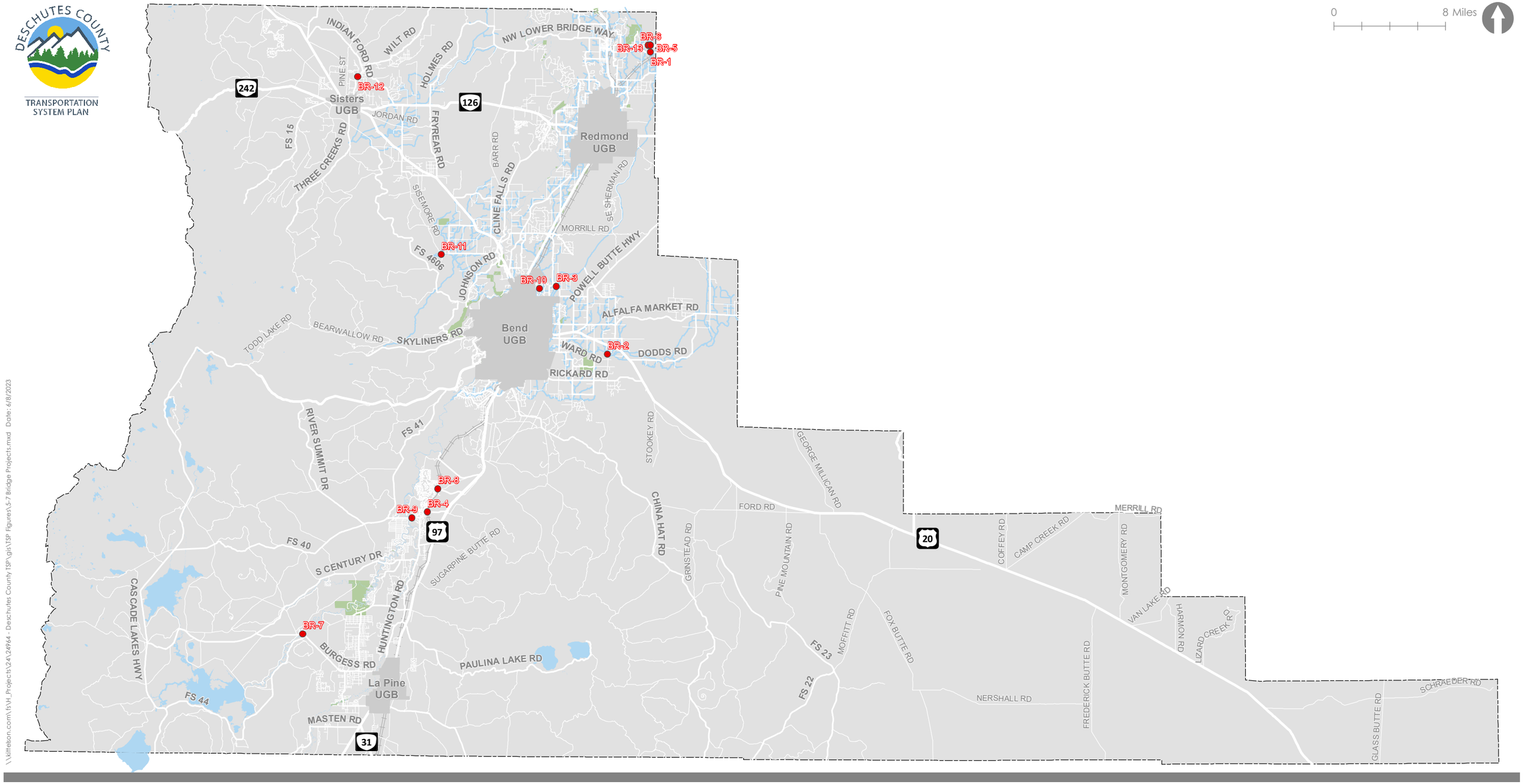


Table 5-8. Bridge Projects and Associated Cost Estimates

ID	Road	Location	Description	Priority	Cost
BR-1	Smith Rock Way	North Unit Canal	Replacement	High	$1,000,000
BR-2	Gribbling Rd	Central Oregon Canal	Replacement	High	$900,000
BR-3	Hamehook Rd	-	Replacement	High	$1,100,000
BR-4	S Century Dr	BNSF RR	Rehabilitation	High	$2,700,000
BR-5	Wilcox Ave	-	Removal	Medium	$200,000
BR-6	Wilcox Ave	-	Removal	Medium	$100,000
BR-7	Burgess Rd	-	Replacement	Medium	$2,100,000
BR-8	Cottonwood Dr	BNSF RR	Replacement	Low	$3,800,000
BR-9	Spring River Rd	Deschutes River	Rehabilitation	Low	$400,000
BR-10	Old Deschutes Rd	Pilot Butte Canal	Replacement	Low	$400,000
BR-11	Sisemore Rd	-	Replacement	Low	$600,000
BR-12	Camp Polk Rd	-	Replacement	Low	$1,400,000
BR-13	Wilcox Ave	-	New Bridge	Low	$1,300,000

FEDERAL LANDS ACCESS PROGRAM ROADWAYS

The Federal Lands Access Program (FLAP) was established to "improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands." This program is intended to provide supplemental funding to be used in combination with State and County funds for public roads, transit, and other transportation facilities. In particular, FLAP helps prioritize funding for "high-use recreation sites and economic generators." FLAP is funded through the Federal Highway Trust Fund and its allocation is based on road mileage, bridges, land area and number of visits to the lands.

FLAP provides funding opportunities to help the County deliver capital projects to increase access to Federal Lands. In addition, FLAP is a funding tool to help the County fund maintenance of existing roads that provide access to Federal Lands, such as those designated as Forest Highways and other roads that provide similar access.

Figure 5-8 and T**able 5-9** identify the County's current priorities for future FLAP-funded projects. As part of TSP implementation, the County will continue to coordinate with all of the federal agencies, BPRD, Cascades East Transit, and ODOT on the request for future FLAP-funded projects.

Figure 5-8 – FLAP Projects

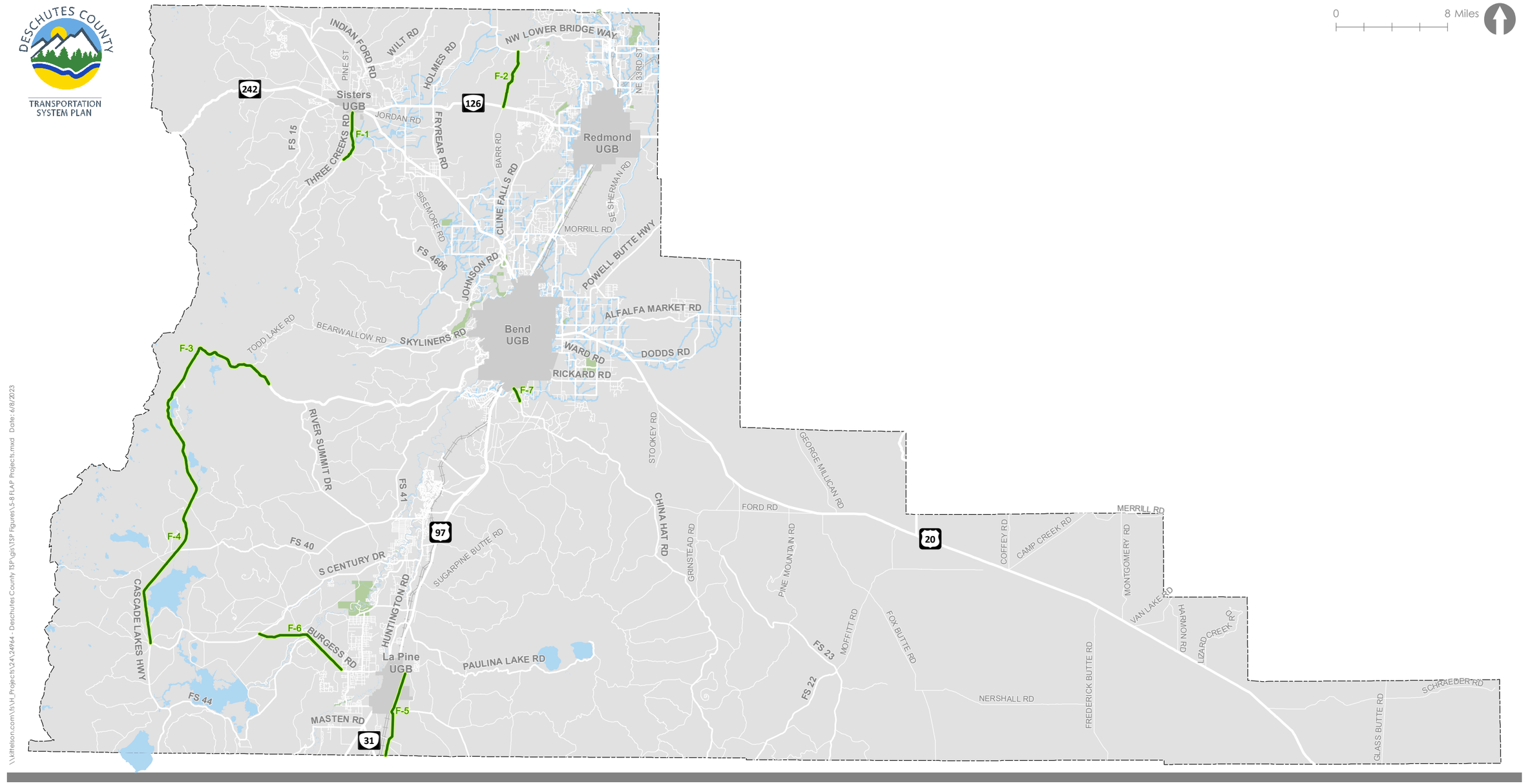


Table 5-9. FLAP Roadways and Associated Cost Estimates

Id	Road	Begin	End	Description	Priority	Cost	County Contribution	Bike/Ped Component of County Contribution
F-1	Three Creeks Rd	Sisters City Limits	Forest Service Boundary	3.7-mile-long segment scoped for widening, pavement rehabilitation, safety improvements, and removal of BR #16060	High	$2,900,000	$600,000	$200,000
F-2	Buckhorn Rd	Lower Bridge Way	OR126	Reconstruction/ pave	Medium	$6,500,000	$1,300,000	$400,000
F-3	Cascade Lakes Hwy	Milepost 21.98	Elk Lake	Widen & overlay; improve side slopes; increase horizontal sight distance; install guardrail; install centerline rumble strips, post-mounted delineators and high-type pavement markings; install shoulder rumble strips or edge line rumble strips; possible structure adjustments and culvert extensions or replacements; install left-turn and right-turn lanes at major destinations	Medium	$12,200,000	$2,400,000	$700,000
F-4	Cascade Lakes Hwy	Elk Lake	S Century Dr	Widen & overlay; improve side slopes; increase horizontal sight distance; install guardrail; install centerline rumble strips, post-mounted delineators and high-type pavement markings; install shoulder rumble strips or edge line rumble strips; possible structure adjustments and culvert extensions or replacements; install left-turn and right-turn lanes at major destinations	Low	$9,000,000	$1,800,000	$500,000
F-5	Darlene Way	Rosland Rd	County Line	County standard improvement of full-length Darlene Way; assumed no row acquisition on existing alignment across BLM land	Low	$6,800,000	$1,400,000	$400,000
F-6	Burgess Rd	Sunrise Ct	South Century Dr	Widen & overlay	Low	$5,300,000	$1,100,000	$300,000
F-7	China Hat Rd	Knott Rd	One Mile South of Knott Rd at The Deschutes National Forest Boundary	Widen & overlay	Low	$900,000	$200,000	$100,000

TRANSIT

By reference, the County will adopt the Cascade East Transit (CET) Master Plan. This Master Plan has a number of projects that can help increase service to the unincorporated areas of the County as well as to the High Desert Museum and Lava Lands Visitor Center. As part of TSP implementation, the County will continue to partner with CET to identify collaborative funding sources and future service enhancements.

TRANSPORTATION SAFETY ACTION PLAN PROJECTS

The County's 2019 Transportation Safety Action Plan (TSAP) provides a range of projects, policies, and programs to address identified safety needs within the unincorporated areas of the County. The County will adopt the TSAP, by reference, as part of the updated TSP.

The top sites for safety improvements in unincorporated Deschutes County identified through the TSAP are shown in **Table 5-10.** This table also includes projects that have been identified to address these needs and relevant status. As part of TSP implementation, the County will continue to identify future project refinements, as needed, monitor the timing of intersection changes at these locations, and seek funding opportunities and/or the potential to combine safety-related projects with other project development within the County.

Table 5-10. TSAP Priority Locations & Status

Intersection	Project Identified?	Status
US 20/Ward Rd/Hamby Rd	Roundabout	Project Complete
US97/Vandevert Rd	Intersection Improvement	Project Complete
US 20/Fryrear Rd	Turn Lane on Highway, Realign Fryrear Road (Project SI-5)	County to Coordinate with ODOT on Future Project Refinement.
Burgess Rd/Day Rd/Pine Forest Dr	Turn-Lanes	Project Complete
Bear Creek Rd/Ward Rd	None	County to Conduct Future Project Refinement.
Alfalfa Market Rd/Dodds Rd	None	County to Conduct Future Project Refinement.
US 20/Old Bend Redmond Hwy	Roundabout	ODOT Project Programmed for 2023
US 20/OB Riley Rd/Cook Ave	Roundabout	ODOT Project Programmed for 2023
US97/61st St	Improved as Part of ODOT US97 Bend to Redmond Project	Project Complete
US97/11th St/Lower Bridge Way	Part Of US97: Terrebonne/Lower Bridge Way Improvements	ODOT Project Programmed for 2023
61st St/Quarry Ave/Canal Blvd	Improved as Part of ODOT US97 Bend to Redmond Project	Project Complete
Northwest Way/Coyner Ave	Add Turn Lanes	Project Identified in Deschutes County TSP.
Alfalfa Market Rd/Walker Rd	None	County to Conduct Future Project Refinement.

Intersection	Project Identified?	Status
US97/Smith Rock Way/B Ave	Part Of US97: Terrebonne/Lower Bridge Way Improvements	ODOT Project Programmed for 2024
Deschutes Market Rd/Hamehook Rd	Roundabout	County Project Programed for 2023
US97/Burgess Rd	Traffic Signal	Project Identified in Wickiup Junction Refinement Plan. County to Coordinate with City of La Pine and ODOT on Future Project Refinement and Implementation.
US 20/Hawks Beard (Black Butte Ranch)	None	County to Coordinate with ODOT on Future Project Refinement.
El Camino Lane/Helmholtz Way	None	County to Conduct Future Project Refinement.
S Canal Blvd/Helmholtz Way	Add Turn Lanes	Project Complete
Dickey Rd/Nelson Rd	None	County to Conduct Future Project Refinement.
US97/Galloway Ave	None	County to Coordinate with ODOT on Future Project Refinement.
Butler Market Rd/Powell Butte Hwy	Roundabout	Programmed For 2023 Construction
Butler Market Rd/Hamby Rd	None	County to Conduct Future Project Refinement.
Butler Market Rd/Hamehook Rd	None	Intersection Now Under City of Bend Jurisdiction
Baker Rd/Cinder Butte Rd	Intersection Improvement	Project Identified in Deschutes County TSP.
S Century Dr/Huntington Rd	Roundabout	Project Identified in Deschutes County TSP.
Cline Falls Rd/Coopers Hawk Dr/ Falcon Crest Dr	None	County to Conduct Future Project Refinement.
Lower Bridge Way/19th St	Turn Lanes/Realignment (Project C-18)	Project Identified in Deschutes County TSP.
Lower Bridge Way/31st St	Turn Lanes (Project C-20)	Project Identified in Deschutes County TSP.
Lower Bridge Way/43rd St	Included in Future Roadway Improvement Project (Project CC-4)	Project Identified in Deschutes County TSP.

06 | FUNDING

Deschutes County receives transportation funding via a variety of state, federal, and local sources. Resources are initially budgeted to meet maintenance and operation standards; resources exceeding these needs are directed to the Road Department's Capital Fund to fund Capital Improvement Plan (CIP) projects.

This Chapter provides a description of funding sources and a projection of capital resources available to fund CIP projects.

FUNDING SOURCES

State Highway Fund

The State Highway Fund (SHF) is managed by the State (ODOT) and contains revenue generated from taxes on motor fuels (gas and diesel), taxes on heavy trucks (including weight-mile tax and truck registrations), and driver/vehicle fees (license, title and registration).

Counties receive approximately 30% of SHF net revenue (whereas ODOT receives 50% and cities, 20%). Revenue increases to the SHF occur at irregular intervals at the discretion of the Oregon Legislature.

Within the 20-year horizon of the TSP/CIP, the State Highway Fund model will most likely transition to a user-based fee structure to replace the traditional fuel tax.

Federal Secure Rural Schools (SRS) and Payment in Lieu of Taxes (PILT) Program Funding

The federal Secure Rural Schools and Community Self Preservation Act (SRS) provides a federal payment to counties and school districts to offset the loss in timber revenue from federal land that is no longer received by counties due to environmental restrictions. Per federal code, a specific portion of SRS is dedicated to county road funding. In March 2023, the Deschutes County Road Agency (DCRA) was formed as an Intergovernmental Entity (per ORS 190) to receive SRS funding from the State via the federal government. Funds received by the DCRA will be internally transferred to the Road Department for expenditure.

Payment in Lieu of Taxes (PILT) is a federal payment to counties with significant federal land holdings to partially offset the loss in tax revenue. PILT funding is to be used for government purposes and its allocation occurs at the discretion of the Board of County Commissioners. Historically, the Board has provided the Road Department with a portion of PILT in recognition of the significant reduction in SRS funding (prior timber revenue) received by the Road Department.

Federal Surface Transportation Block Grant (STBG) Funding

The Surface Transportation Block Grant program is a federal program which provides formulaic allocations to states to invest in federal-aid highways. The federal-aid system includes roads classified as collector and above, which includes county roads. A memorandum of understanding between the Oregon Department of Transportation, the League of Oregon Cities and the Association of Oregon Counties establishes a methodology for allocation of Oregon's portion of the federal funding. Historically, ODOT has operated a fund exchange program for local government in which federal funding is exchanged (90%) for state dollars to enable local governments to deliver projects outside of the federal process.

Federal Lands Access Program (FLAP)

The Federal Lands Access Program is a federal program administered by the Federal Highway Administration for the purpose of improving transportation facilities that provide access to, are adjacent to, or are located within federal lands. Given the significant amount of federal land within Deschutes County, the Road Department has historically fared well in this competitive program for projects ranging from chip seal, bridge replacement, overlay and reconstruction efforts.

System Development Charges (SDC)

System Development Charges are fees assessed to new development (or redevelopment) to fund capacity adding improvements necessary to accommodate new growth within the County's transportation system.

Routine State Grant Programs

The State of Oregon, via ODOT, provides grant programs to fund various aspects of local transportation systems. Primary State programs include:

- Safe Routes to Schools
- Local Bridge Program
- All Roads Transportation Safety (ARTS)

Federal Grant Programs

The Federal government funds various grant programs through occasional federal transportation bills, most recently the Bipartisan Infrastructure Law (BIL). Primary federal programs include:

- Safe Streets and Roads for All (SS4A);
- Highway Safety Improvement Program (HSIP);
- Rebuilding American Infrastructure Sustainably and Equitably (RAISE);
- Infrastructure for Rebuilding American (INFRA); and,
- Other programs.

Local Funding

- Due to statutory limitations and other restrictions, it is difficult for counties to generate transportation funding via local sources. Noted restrictions include:
- Prohibition in franchise fees from utility companies located in the public right-of-way; and,
- Restriction in use of general fund tax dollars for road purposes.

Notable funding sources, which require voter approval, include:

- Local Fuel Tax;
- Local Registration Fee; and,
- Sales Tax.

Deschutes County does not have a local funding source for transportation.

FUNDING PROJECTIONS – 20 YEAR ESTIMATE

With transportation funding almost exclusively derived from state and federal funding sources, the nature of transportation funding can be very cyclical in Oregon. The legislature has approved fuel tax increases only four times since 1993. The federal fuel tax has not increased since 1993.

The current state of transportation funding in Deschutes County is stable due to the passage of a phased-in 10-cent per gallon fuel tax approved via HB 2017 in 2017. The last remaining phase of the fuel tax will occur January 1, 2024 (2-cents per gallon).

Counties in Oregon receive approximately 30% of the SHF; individual county distribution is determined based upon the proportion of registered vehicles in each county. In 2023, Deschutes County received approximately 5.5% of the portion of the SHF allocated to counties in the state.

Prioritization of Expenditures

Based on the Road Department's hierarchy of investment, funding for capital construction is a function of the total resources available, less the annual amount required to maintain and operate the system based on existing maintenance standards and operational levels-of-service. Maintenance standards and operation levels-of-service are derived from a combination of studies (example, annual pavement maintenance and budget options report), and operational policy (example, snow and ice plan).

Figure 6-1 represents the prioritization of expenditures for maintenance, operation and capital expenditures as annually presented to the County's Budget Committee.

Figure 6-1: Hierarchy of Expenditures and Investment

Capital Funding Estimate Assumptions

A projection of transportation funding resources available for capital investment has been prepared for the 20-year investment period of the TSP and Capital Improvement Plan based on the following assumptions:

1. Current maintenance and operational standards remain in place.
2. The County's existing Road Moratorium (Resolution 2009-118), which limits acceptance of new road miles into the County maintenance system, remains in place.
3. Existing funding levels remain in place and are occasionally adjusted legislatively to a level that will roughly match inflation.
4. No significant additional local funding mechanisms are developed or implemented.
5. State and Federal grant programs are available at approximately the same historical intervals and funding levels.

CAPITAL FUNDING ESTIMATE

A projection of transportation system revenues and expenditures for a 20-year horizon has been prepared with consideration to the noted assumptions and prioritization (hierarchy of expenditures and investment). For comparative and project placement purposes, the estimated available Capital Improvement Project revenue has been calculated in 2023 value and estimated across the High (0 to 5 years), Medium (6 to 10 years) and Low (11-20 years) priority timeframe.

Table 6-1: Capital Project Revenue Estimate (Present Value)

High Priority	Medium Priority	Low Priority	Total
0 to 5 Years	6 to 10 Years	11 to 20 Years	20-year CIP Funding
$44,000,000	$53,000,000	$60,200,000	$157,200,000

The proposed Capital Improvement Program will need to account for project funding availability within the approximate amounts as noted in **Table 6-1**. The estimated total capital project revenue of $157M is approximately $32M less than the $189M project list per **Table 1-1** (Total Cost of Prioritized TSP Investments). The estimated funding gap can be addressed via additional and aggressive pursuit of state and federal grant funding opportunities for select projects throughout the 20-year horizon period.

ROAD MORATORIUM EVALUATION

In 2006, facing an unknown future regarding transportation funding, the Board of County Commissioners passed a Road Moratorium (Resolution 2006-049) which suspended the establishment of new County roads. The resolution was modified and replaced in 2009 (via Resolution 2009-118) to allow for the addition of collector and arterial road miles to the County's system. A County road is a road that has been dedicated for public use, improved to County road standards, and accepted by the County for maintenance via Board action (ORS 368.001(1)). A road that has been dedicated for public use but has not been accepted for County maintenance is defined as a Local Access Road (per ORS 368.001(3)).

While the transportation funding environment has improved since 2006, many of the concerns which gave rise to the creation of the moratorium remain, such as:

1. High reliance on infrequent legislative adjustment to the state fuel tax, weight-mile tax, and DMV fees.
2. Funding mechanisms, such as the fuel tax, which have no inflation hedge and are therefore eroded or outpaced by inflation.
3. High reliance on fuel tax revenue which is negatively impacted by increasing fuel efficiency in vehicles, as well as an increasing number of hybrid and electric vehicles.
4. Reliance on federal programs, such as SRS and PILT, which require frequent reauthorization and are subject to reduction.
5. Legislative restrictions on the ability for counties to generate local revenue, such as a prohibition on establishment of franchise fees, and other mechanisms.

The Road Moratorium has allowed the County to invest new revenue in a Capital Improvement Plan program and has also focused long-term maintenance investment in the preservation of the County's collector and arterial road network.

IMPACTS OF LIFTING THE ROAD MORATORIUM

Upon establishment of the Road Moratorium in 2006, the County ceased to accept new road infrastructure. Prior to 2006 road miles were added to the County system via new development as well as improvement of existing road miles via the Local Improvement District (LID) process.

New development which has occurred since 2006 has been required to establish private road maintenance funding arrangements which have typically occurred via a homeowners association or other road maintenance agreements. Approximately 30 miles of new local road infrastructure have been constructed in the post-moratorium era; these road miles could be immediately eligible for County acceptance and maintenance if the Road Moratorium were to be lifted. Additionally, approximately 380 miles of Local Access Road exist in Deschutes County, of

which over 120 miles exist within the 19 Special Road Districts within the County.

The Road Moratorium limited the ability to form LIDs – which are districts formed under rules within County Code and State Statute in which the County contracts for the design and improvement of County roads within the district and is reimbursed for the expense via assessments applied to properties within the district. Lifting of the Road Moratorium would allow Local Access Roads to become eligible for the LID process.

Lifting the Road Moratorium would result in increased costs associated with road maintenance for new local road miles added to the County system and the addition of staff to administer the LID program. An estimate of costs associated with the addition of new local road infrastructure has been prepared based on the following assumptions:

1. Estimated annual cost of local road maintenance (paved) and operation: $15,000/mi/year.
2. 30 miles of local road (previously constructed to County standard, post moratorium) will be added to the system in Year 1.
3. Twenty-five percent of Local Access Road mileage will be improved via the LID process in the 20-year horizon period (approximately 5 miles added per year).
4. Administration of the LID program will require 2.0 FTE (1-engineer and 1-administrative support personnel).

Table 6-2: Estimated Costs of Lifting the Road Moratorium (Present Value)

Item	Year 1 Cost	Year 2-20 Cumulative Cost	Total Cost for 20-year TSP/CIP Horizon Period
Acceptance of 30 miles of improved	$450,000	$8,550,000	$9,000,000
Acceptance of 5 miles per year of new local road infrastructure (starting year 3)	$0	$12,825,000	$12,825,000
Personnel costs associated with administration of the LID program	$250,000	$4,750,000	$5,000,000
TOTAL	$700,000	$26,125,000	$26,825,000

Lifting the moratorium would reduce funding available for capital projects by approximately $27,000,000 across the 20-year horizon period.

Recommendation

Given the financial impact of lifting the Road Moratorium and concerns related to long-term transportation system funding in Oregon, it is recommended that the Road Moratorium remain in place to extend Deschutes County's ability to maintain its existing infrastructure and sustain a viable Capital Improvement Program into the future.

LOCAL ACCESS ROAD TOOLS AND FAQS

To assist with explanation and provide information to customers seeking to improve or establish maintenance on non-county maintained Local Access Roads (LARs), the Road Department provides the following information and explanation to customers:

How are Local Access Roads maintained?

LARs are typically maintained by adjacent property owners and road users. This usually occurs in one of three ways:

1. Informally: In which neighbors work together to hire a contractor or self-perform maintenance and "pass-the-hat" to share in the cost.
2. Formally: Through homeowners associations (HOAs) or other formal agreements to share in the cost of maintenance.
3. Special Road Districts: In which area residents vote to establish a district which levies a property tax to fund maintenance. Deschutes County has 19 Special Road Districts – which is the highest number of road districts within any county in the state.

By observation, all three methods work well in some areas and not very well in other areas depending upon a variety of factors.

Frequently Asked Questions and Explanations:

1. I pay taxes and receive no service from Deschutes County.

Deschutes County does not utilize property tax to fund transportation maintenance improvements as that practice is restricted by State law. Regarding gas tax, the State currently charges 38-cents per gallon (and various DMV fees) to fund the transportation system. The State distributes the gas tax revenue in a 50-30-20 proportion in which the State keeps 50% to fund the state system, the counties receive 30% to fund the county systems, and cities receive 20% to fund the city systems.

When customers pay the gas tax, they don't individually fund the transportation jurisdiction in which they live, they fund the entire system of state highways, county roads and city streets. Everyone pays the same rate, whether or not they live in a city or the unincorporated areas. If you are paying a gas tax, chances are you are driving on the system that is being maintained with gas tax funds.

2. Why can't the County maintain my gravel road (LAR)?

Due to the fiscal burden that would be placed on county road departments to maintain significant mileage of sub-standard road construction, state law restricts the ability of counties to spend road funds (fuel tax and DMV fee revenue) on LARs. If we add gravel, grade, or plow one mile we would be obligated to provide that same service to all of the other LARs in the County.

3. How come the County maintains some gravel roads but not others?

The County maintains approximately 125 miles of gravel road that have been lawfully established as County roads and accepted for maintenance. Most of these miles were gravel when Deschutes County was established in 1916 and had previously been accepted for maintenance, with gravel surfacing, when Deschutes County was a part of Crook County. Current LARs have never been accepted by Deschutes County for maintenance.

4. Not everyone contributes to help maintain my Local Access Road.

This is the biggest downside of living on a LAR. Some neighbors have different opinions on levels of road maintenance and some choose not to pay for other reasons. This is where good neighborhood relations and communication pay dividends. There are many examples of where this is taking place in Deschutes County.

5. We have public traffic on our LAR that accesses public land.

Living next to public land has positive and negative impacts to quality of life. The attraction of the public to public land is one of the negative consequences. Use of public roads, like LARs, to access public land is a logical and predictable occurrence and therefore something that property owners should factor into their decision to purchase property when conducting due diligence. Similarly, road maintenance costs associated with unmaintained LARs should also factor into the decision to purchase property. Most LARs have been in existence for many decades as have the public lands they may serve.

COMMUNITY DEVELOPMENT

STAFF FINDINGS

FILE NUMBER(S): 247-23-000507-PA/508-TA

SUBJECT PROPERTY/ OWNER: N/A

APPLICANT:
Deschutes County Planning Division
c/o Tarik Rawlings, Senior Transportation Planner
P.O Box 6005
Bend, OR 97708

REQUEST: Replace the 2010-2030 Deschutes County Transportation System Plan with 2020-2040 Transportation System Plan and accompanying map, including updated traffic volumes, Goals and Policies, project list, and functional reclassifications.

STAFF CONTACT:
Tarik Rawlings, Senior Transportation Planner
Phone: 541-317-3148
Email: Tarik.Rawlings@deschutes.org

RECORD:
Record items can be viewed and downloaded from:
www.buildingpermits.oregon.gov

Record items can be viewed and downloaded from:
https://www.deschutes.org/cd/page/transportation-system-plan-update-2020-2040-247-23-000507-pa-508-ta

I. APPLICABLE CRITERIA

Deschutes County Code (DCC)
Title 22, Deschutes County Development Procedures Ordinance
Chapter 22.012, Legislative Procedures

Oregon Administrative Rule (OAR)
OAR 660-015, Statewide Planning Goals and Guidelines
OAR 660-012, Transportation Planning

Deschutes County Comprehensive Plan – Title 23
Chapter 1, Comprehensive Planning
Chapter 3, Rural Growth Management

II. BASIC FINDINGS

PROPOSAL

This is a legislative plan and text amendment to the Deschutes County Comprehensive Plan to remove the 2010-2030 Transportation System Plan (TSP) and replace it with the 2020-2040 TSP. The TSP is Section 3.7 within the Deschutes County Comprehensive Plan. The TSP contains goals and objectives to ensure the safe, efficient, and economical operation of the County's transportation system. The 2020-2040 TSP includes several new goals and policies; updates information for population and traffic volumes; assesses system deficiencies and prioritizes future road projects and/or policies to mitigate those deficiencies; and makes several functional reclassifications of County roads.

BACKGROUND

In 2010, County staff prepared a 2010-2030 TSP, which removed and replaced the 1996-2016 TSP. The 2010 plan is now halfway through its lifespan and the County has seen a large increase both in population and traffic volumes on County roads and State highways. The process began in 2020 to update the TSP. The previous TSPs were done in-house, but this version was done by a consultant based on Planning Division staffing levels and workloads. The Road Department funded the project. The update was done concurrently with a State Transportation and Growth Management (TGM) grant to update of the bike, pedestrian, and transit components of the Tumalo Community Plan (TCP) and look at rural trails in the area known as Sisters Country, i.e. the attendance boundary of the Sisters School District.

REVIEW CRITERIA

Deschutes County lacks specific criteria in DCC Titles 18, 22, or 23 for reviewing a legislative plan and text amendment. Nonetheless, since Deschutes County is initiating one, the County bears the responsibility for justifying that the amendments are consistent with Statewide Planning Goals and the County's Comprehensive Plan.

III. FINDINGS & CONCLUSIONS

CHAPTER 22.12, LEGISLATIVE PROCEDURES

Section 22.12.010.

Hearing Required

FINDING: This criterion will be met because a public hearing will be held before the Deschutes County Planning Commission on August 10, 2023, and a future public hearing will be held before the Board of County Commissioners.

Section 22.12.020, Notice

Notice

A. Published Notice

1. ***Notice of a legislative change shall be published in a newspaper of general circulation in the county at least 10 days prior to each public hearing.***
2. ***The notice shall state the time and place of the hearing and contain a statement describing the general subject matter of the ordinance under consideration.***

FINDING: This criterion is met as notice was published in the Bend Bulletin newspaper on July 20th, 2023 for the Planning Commission public hearing and additional published notice will be sent for the Board of County Commissioners' public hearing.

B. Posted Notice. Notice shall be posted at the discretion of the Planning Director and where necessary to comply with ORS 203.045.

FINDING: Posted notice was determined by the Planning Director not to be necessary.

C. Individual notice. Individual notice to property owners, as defined in DCC 22.08.010(A), shall be provided at the discretion of the Planning Director, except as required by ORS 215.503.

FINDING: Given the proposed legislative amendments do not apply to any specific property, no individual notices were sent.

D. Media notice. Copies of the notice of hearing shall be transmitted to other newspapers published in Deschutes County.

FINDING: Notice was provided to the County public information official for wider media distribution. This criterion is met.

Section 22.12.030 Initiation of Legislative Changes.

A legislative change may be initiated by application of individuals upon payment of required fees as well as by the Board of County Commissioners.

FINDING: The application was initiated by the Deschutes County Planning Division at the direction of the Board of County Commissioners and has received a fee waiver. This criterion is met.

Section 22.12.040. Hearings Body

A. The following shall serve as hearings or review body for legislative changes in this order:
1. The Planning Commission.
2. The Board of County Commissioners.

B. Any legislative change initiated by the Board of County Commissioners shall be reviewed by the Planning Commission prior to action being taken by the Board of Commissioners.

FINDING: The Deschutes County Planning Commission held the initial public hearing on August 10, 2023. The Board will hold a public hearing on a future date to be determined. These criteria are or will be met.

Section 22.12.050 Final Decision

All legislative changes shall be adopted by ordinance

FINDING: The proposed legislative changes will be implemented by ordinance, number to be determined, upon approval and adoption by the Board of County Commissioners. This criterion will be met.

OAR 660-015, Statewide Planning Goals and Guidelines

Goal 1: Citizen Involvement:
FINDING: Deschutes County involved the public via a web site and online meetings, held two advisory committee meetings, targeted outreach to with community and social service organizations, and held work sessions with both the Planning Commission (PC) and the Board of County Commissioners (BOCC). The latter were open to the public both in person as well as broadcast online. The TSP Project Committee also worked closely with the citizen volunteers of the County's Bicycle and Pedestrian Advisory Committee (BPAC). The 2020-2040 TSP is therefore consistent with Goal 1.

Goal 2: Land Use Planning:
FINDING: The TSP 2020-2040 does not change any Comprehensive Plan designations or zoning designations for lands the County administers under DCC Titles 18 (County Zoning), 19 (Bend Urban Growth Boundary Zoning), 20 (Redmond Urban Area), and 21 (Sisters Urban Area). The update is the subject of land use file, 247-23-000507-PA/508-TA, and will be processed under the County's procedures for a legislative amendment. The County on July 6, 2023, provided the required 35-day prior notice to the Department of Land Conservation and Development (DLCD) before the first evidentiary hearing. The 2020-2040 TSP is therefore consistent with Goal 2.

Goal 3: Agricultural Lands:

FINDING: 2020-2040 TSP does not change any Comprehensive Plan Agriculture designations nor change any lands zoned Exclusive Farm Use (EFU). Future roadway projects are listed and prioritized in Tables 5-1 (Intersection Changes and Associated Cost Estimates), 5-2 (Roadway Changes and Associated Cost Estimates), and 5-4 (ODOT Intersections Changes and Associated Costs). The projects are shown on Figures 5-1 (County Intersection Projects), 5-2 (County Roadway Projects), and 5-4 (State Facility Projects). The only project shown on EFU lands is CC-17 to extend SW 19th Street to U.S. 97 in the vicinity of Quarry Road. The table notes this an illustrative project and staff notes an Exception to Statewide Planning Goal 3 (Agriculture) would likely be required prior to implementation. The priority of the project remains undetermined. The 2020-2040 TSP is consistent with Goal 3.

Goal 4: Forest Lands:

FINDING: The 2020-2040 TSP does not change any Comprehensive Plan Forest designations nor change any lands zoned F1 (Forest) or F2 (Forest). Future roadway projects are listed and prioritized in Table 5-1 (Intersection Changes and Associated Cost Estimates), 5-2 (Roadway Changes and Associated Cost Estimates) and shown on Figures 5-1 (County Intersection Projects), 5-2 (County Roadway Projects). County projects in F1 and F2 lands appear to be within existing rights of way. The Oregon Department of Transportation (ODOT) projects are listed in Table 5-4 (ODOT Intersections Changes and Associated Cost Estimates) and shown on Figure 5-4 (State Facility Projects.) The only project that may be on Forest lands is S-6 (Deschutes River Woods South Interchange Project). At this scale it is hard to discern if this low-priority project is located on Deschutes National Forest (DNF) land or not. If on DNF land, then no Exception to Statewide Planning Goal 4 (Forest) is required. If not on federal land, then a Goal 4 Exception would be required prior to implementation. The 2020-2040 TSP is consistent with Goal 4.

Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources:

FINDING: No roadway projects are proposed that would adversely affect Goal 5 resources. Additionally, Goal 6: Sustainability and the Environment calls for balancing transportation needs with protecting the natural environment. Policy 6.4 states specifically to "Preserve listed Goal 5 resources within the County." Therefore the 2020-2040 TSP is consistent with Goal 5.

Goal 6: Air, Water and Land Resources Quality:

FINDING: Goal 6 and its policies all pertain to protecting the quality of air, water, and land resources. Specifically, Policy 6.3 calls for compliance with applicable state and federal noise, air, water, and land quality regulations. Through the inclusion of policies to provide for alternate modes, the TSP will also ensure the quality of air, water, and land resources. Therefore the 2020-2040 TSP is consistent with Goal 6.

Goal 7: Areas Subject to Natural Disasters and Hazards:

FINDING: The Comprehensive Plan in Section 3.5 lists the following natural hazards endemic to Deschutes County: wildfire, snowstorms, flooding, and volcanic eruptions and earthquakes. The Road Department maintains a signed system of evacuation routes from isolated rural subdivisions in case of a natural disaster. Sustainability and Environment Policy 6.6 specifies prioritizing "…transportation investments that support system resilience to seismic events, extreme weather events, and other natural hazards." ODOT plows State highways and has Variable Message Signs

(VMS) posted on selected roads to provide information about road conditions. The TSP does not change any existing building codes regarding fire, snow loads or structural resistance to earthquakes. Therefore, the 2020-2040 TSP is consistent with Goal 7.

Goal 8: Recreational Needs:

FINDING: The 2020-2040 TSP has numerous policies to benefit recreation. Besides having a well-functioning road system that leads to/from recreational areas, the TSP also includes policies for those who recreate by bicycle along those roadways. Specific examples include Safety Policy 2.4 to continue the partnership with BPAC to inform investment decisions for those biking and walking and Safety Policy 2.7 to prioritize investment in key locations where bicyclists or pedestrians cross major County roads or State highways. Mobility and Connectivity Policy 3.13 calls for continued coordination with U.S. Forest Service (USFS) and Bureau of Land Management (BLM) "...to maintain the County's system of forest highways to continue to provide key access to recreational areas such as campsites, lakes, hiking, and biking trails in the County." Economic Development Policy 4.4 calls for "incorporating facilities for people walking or riding bikes to key recreational area as part of changes to the roadway system." Economic Development Policy 4.5 states "Support bicycle tourism by prioritizing and improved designated County bike routes." Equity and Accessibility Policy 5.8 states "Support efforts of local agencies to develop and maintain a trail system along the Deschutes River within Tumalo and along major irrigation canals." Finally, Strategic Investments Policy 7.1 states "Continue to pursue and implement Federal Lands Access Program (FLAP) funding to prioritize County investments to support tourism and access to key recreational sites." Table 5-7 (Bicycle Recreation Connections) also meets this goal. Therefore, the 2020-2040 TSP is consistent with Goal 8.

Goal 9: Economic Development:

FINDING: A functioning well-managed transportation network with sufficient capacity to move goods and services is a foundation of economic development. The 2020-2040 TSP has identified deficiencies in the County network and mitigations to address those deficiencies via its list of prioritized projects for County roads and State Highways, both segments and intersections. Goal 4 Economic Development states "Plan a transportation system that supports the existing industry and encourages economic development in the County." Economic Development Policies 4.1 and 4.2 support a well-maintained system of arterials and collectors for land use development and employment. Economic Development Policies 4.5 and 4.6 stress improvements to support the freight system and access to U.S. 97, U.S. 20, and OR 126, which ODOT designates as Freight Routes. Therefore, the 2020-2040 TSP is consistent with Goal 9.

Goal 10: Housing:

FINDING: The 2020-2040 TSP does not change any of the County's Comprehensive Plan designations or zoning codes related to residential uses. Therefore the 2020-2040 TSP is consistent with Goal 10. If Goal 10 is interpreted to require a mix of housing types, then it is inapplicable as a TSP only relates to various transportation modes as defined by OAR 660-012-0020 that serve existing land use designations.

Goal 11: Public Facilities and Services:

FINDING: The development of the TSP itself and the resulting list of prioritized road projects at Tables 5-1 (Intersection Changes and Associated Cost Estimates), 5-2 (Roadway Changes and Associated Costs), 5-4 (ODOT Intersections Changes and Associated Cost Estimates) 5-5 (Pedestrian Facilities and Associated Cost Estimates), 5-6 (Bicycle Route Community Connections) ensure adequate public facilities and services. These listed prioritized improvements will result in a timely, orderly, and efficient development of public roads and highways. The 2020-2040 TSP is consistent with Goal 11.

Goal 12: Transportation:

FINDING: The development of the TSP itself meets the goal. The TSP as cited in Goal 11 results in the timely, orderly, and efficient development of public roads and highways as well as accommodations for all modes. The TSP is based on a combination of planning requirements (Chapter 1). Goals and policies then set the 20-year vision for the transportation system, which includes all modes, not just motorized vehicles (Chapter 2). The TSP analyzes deficiencies and needs while developing a list of plan improvements and programs (Chapter 3). The recommended projects for a multimodal system are summarized and explained (Chapter 4). The proposed prioritized projects are listed along with cost estimates and mapped (Chapter 5). The financial assumptions and forecasts for funding the improvement are then detailed (Chapter 6.) The tables and figures for the various road projects are summarized above in the findings for Goals 3, 4, and 11. Amendments to the functional classifications for selected roads are provided in Table 5-3 (Changes to the Functional Classification Designations). The 2020-2040 TSP is consistent with Goal 12.

Goal 13: Energy Conservation:

FINDING: The 2020-2040 TSP proposes physical improvements to accommodate bicyclists and pedestrians as well as policies to promote the development and use of alternate modes such as bicycling, walking, and transit. The various roadway projects will ensure roads and highways are not congested as vehicles in stop and go traffic consume more fuel and emit more emissions than vehicles in free-flow conditions. The 2020-2040 TSP is consistent with Goal 13.

Goal 14: Urbanization:

FINDING: The TSP update was prepared with input from cities within the County to ensure consistency with the respective TSPs regarding functional classification, future improvements, and transportation policies. The meshing of the County and urban TSPs ensures an orderly and efficient transition from rural to urban. The County TSP, by definition applies only to lands outside of UGBs, however, the TSP contains policies to provide continuing consistency between the County's and the cities' transportation facilities. Specifically, Goal 1, Coordination and Collaboration states the TSP promotes a plan that is consistent and coordinated with "...the cities and incorporated communities within the County." Coordination and Collaboration Policies 1.1-1.18 also stress consistency with city and County transportation plans and projects. Specifically, Policy 1.3 states "Coordinate regional project development and implementation with the cities of Bend, Redmond, Sisters, and La Pine." Policy 1.6 states "Maintain an intergovernmental agreement with each of the cities to provide specific timelines and milestones for the transfer of County roadways with the urban growth boundaries at the time of annexation, including full width of right of way." The 2020-2040 TSP is consistent with Goal 14.

Goals 15 through 19

FINDINGS: Goals 15 through 19 are not applicable to the proposed plan and text amendments because the County does not contain these types of lands.

OAR 660-012, Transportation Planning

FINDING: The document was prepared in accordance with the requirements of OAR 660-012, including but not limited to the modal elements of a TSP, land use assumptions, needs analysis, traffic projections, selection of alternatives, financing aspects, and public outreach. The 2020-2040 TSP is consistent with OAR 660-012.

Deschutes County Comprehensive Plan

FINDING: The relevant portions of the Comprehensive Plan are Chapter 1 (Comprehensive Planning), which sets the goals and policies of how the County will involve the community and conduct land use planning. These are specified in Section 1.2 (Community Involvement) and Section 1.3 (Land Use Planning). The Comprehensive Plan at Chapter 3 (Rural Growth Management) and the applicable element is Section 3.7 (Transportation).

Section 1.2 sets a goal for an open and active community involvement program that engages the public during development of land use policies and codes. Policy 1.2.2 designates the Planning Commission as the Committee for Community Involvement. Policies 1.2.3 and 1.2.4 detail procedures for public outreach and avenues of outreach. As described above, the County complied with DCC 22.12 for a legislative amendment, including notice to the public, DLCD, and relevant agencies. Both the Planning Commission and Board will conduct separate public hearings and objectively evaluate the facts. Additionally, staff conducted extensive public outreach via email, online open houses, website, and work sessions with the PC and the Board, which were open to the public and broadcast online.

Section 1.3 sets a goal of an open and public land use process to reach fact-based decisions. For the development of the TSP, the County has done public outreach using traditional methods (face-to-face meetings, work sessions with the PC and the Board) and newer methods (website, online public meetings, electronic records, video meetings, etc.)

Section 3.7 is the Transportation System Plan itself and is incorporated into the Comprehensive Plan as Appendix C.

Based on the above, the 2020-2040 TCP is consistent with the Deschutes County Comprehensive Plan.

V. CONCLUSION

The proposed 2020-2040 TSP complies with all relevant Deschutes County and OAR requirements.

DESCHUTES COUNTY TRANSPORTATION SYSTEM PLAN

Volume 2: Appendix

Appendix A:

Plans & Policy Review Memo

MEMORANDUM

Technical Memorandum 1: Plans & Policy Review
Deschutes County Transportation System Plan Update

DATE	April 13, 2021
TO	Deschutes County TSP Update Project Management Team
FROM	Darci Rudzinski, Clinton "CJ" Doxsee, & Emma Porricolo, APG
CC	Matt Kittelson & Julia Kuhn, KAI

I. OVERVIEW

This memorandum reviews existing plans, regulations, and policies that affect transportation planning in Deschutes County. The review explains the relationship between the documents and planning within the County, identifying key issues that will guide the Transportation System Plan (TSP) update process. This memorandum is intended to guide later decisions regarding the development and selection of preferred transportation solutions and necessary amendments to related plan documents and regulations.

Some documents included in this review establish transportation-related standards, targets, and guidelines with which the TSP update must coordinate and be consistent with; others contain transportation improvements that will need to be factored into the future demand forecasting and otherwise reflected in the updated TSP. Regional policy and regulatory requirements described in this review, such as the Deschutes County Code, may be subject to amendments in order to implement the recommendations of the updated TSP; this memorandum helps set the stage for those potential amendments.

Key findings include the following:

- Significant updates to the Oregon Bicycle and Pedestrian Plan were adopted in 2016 and the Deschutes TSP update can benefit from incorporating new state policy.
- Several regional coordination plans, focused on Deschutes County or Central Oregon, have been adopted to promote a safer and more connected system that leverages technology. Those plans include the Central Oregon Coordinated Human Services Transportation Plan (2018), Deschutes County Intelligent Transportation System Action Plan (2019), and Deschutes County Transportation Safety Action Plan (2019).

- For other local plans, to the extent that policies, standards, and recommendations therein have an impact on the transportation system, these will be considered for consistency as part of this TSP update.

The following plans were reviewed and are summarized in this memorandum.

II. STATEWIDE PLANS

Oregon Transportation Plan (2006)

The Oregon Transportation Plan (OTP) is the state's long-range multi-modal transportation plan that addresses the future transportation needs of the State of Oregon through the year 2030. The primary function of the OTP is to establish goals, policies, strategies, and initiatives that are translated into a series of modal plans, such as the Oregon Highway Plan and Oregon Bike and Pedestrian Plan. The OTP considers all modes of Oregon's transportation system, including Oregon's airports, bicycle and pedestrian facilities, highways and roadways, pipelines, ports and waterway facilities, public transportation, and railroads. It assesses state, regional, and local public and private transportation facilities. In addition, the OTP provides the framework for prioritizing transportation improvements based on varied future revenue conditions, but it does not identify specific projects for development.

The OTP provides broad policy guidance and sets seven overarching goals for the state.[1] Through these goals and associated policies and strategies, the OTP emphasizes:

- Maintaining and maximizing the assets in place.
- Optimizing the performance of the existing system through technology.
- Integrating transportation, land use, economic development, and the environment.
- Integrating the transportation system across jurisdictions, ownerships, and modes.
- Creating sustainable funding.
- Investing in strategic capacity enhancements.

The Implementation Framework section of the OTP describes the implementation process and how state multimodal, modal/topic plans, regional and local TSPs and master plans will further refine the OTP's broad policies and investment levels. Local TSPs can further OTP implementation by defining standards, instituting performance measures, and requiring that operational strategies be developed.

The last chapter of the OTP provides implementation and investment frameworks and key initiatives to be consulted in developing TSP projects and implementation measures.

> **Project Relevance**: The OTP's policies and strategies will guide the TSP update planning process, specifically in the areas of system management, maximizing performance of the existing transportation system using technology and creative

[1] The seven goals are Goal 1 – Mobility and Accessibility; Goal 2 – Management of the System; Goal 3 – Economic Vitality; Goal 4 – Sustainability; Goal 5 – Safety and Security; Goal 6 – Funding the Transportation System; and Goal 7 – Coordination, Communication, and Cooperation.

design solutions, integrating multimodal options, pursuing sustainable funding sources, and investing strategically in capacity projects. Consistent with a central OTP policy, the TSP update will seek to maximize the performance of the existing local transportation system using technology and system management before considering larger and costlier additions to the system.

Oregon Highway Plan (1999, last amended 2018)

The Oregon Highway Plan (OHP) is a modal plan of the OTP that guides Oregon Department of Transportation's (ODOT's) Highway Division in planning, operations, and financing. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems.

The following OHP policies are relevant to the TSP update process.

Policy 1A: State Highway Classification System

The OHP classifies the state highway system into four levels of importance: Interstate, Statewide, Regional, and District. ODOT uses this classification system to guide management and investment decisions regarding state highway facilities. The system guides the development of facility plans, as well as ODOT's review of local plan and zoning amendments, highway project selection, design and development, and facility management decisions including road approach permits.

- **Statewide Highways** (US 97, US 20, and OR 126) typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation.
- **Regional highways** (OR 31) typically provide connections and links to regional centers, Statewide or Interstate highways, or economic or activity centers of regional significance. The management objective for these facilities is to provide safe and efficient, high-speed, continuous-flow operation in rural areas and moderate to high-speed operations in urban and urbanizing areas. A secondary function is to serve land uses in the vicinity of these highways.
- **District highways** (OR 370) are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers, and urban hubs, and serve local access and traffic. The management objective is to provide for safe and efficient,

moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements.

Policy 1C: State Highway Freight System

The primary purpose of the State Highway Freight System is to facilitate efficient and reliable interstate, intrastate, and regional truck movement through a designated freight system. This freight system, made up of the Interstate Highways and select Statewide, Regional, and District Highways, includes routes that carry significant tonnage of freight by truck and serve as the primary interstate and intrastate highway freight connection to ports, intermodal terminals, and urban areas. Highways included in this designation have higher highway mobility standards than other statewide highways.

US 97, US 20, and OR 126 are designated as state freight routes.

Policy 1D: Scenic Byways

Several highways throughout the state have been designated Scenic Byways which have exceptional scenic value. To protect the scenic assets of its Scenic Byways, ODOT has developed guidelines for aesthetic and design elements within the public right-of-way that are appropriate for Scenic Byways. The Cascade Lakes National Scenic Byway, US 20 north of Sisters, OR 242 west of U.S. 20, and OR 31 south of US 97 are all designated National Scenic Byways.

Policy 1F: Highway Mobility Policy

Policy 1F sets mobility targets for ensuring a reliable and acceptable level of mobility on the state highway system. The standards are used to assess system needs as part of long range, comprehensive planning, and transportation planning projects (such as a TSP), during development review, and to demonstrate compliance with the TPR.

Significant amendments to Policy 1F were adopted at the end of 2011. These most recent revisions were made to address concerns that state transportation policy and requirements have led to unintended consequences and inhibited economic development. Policy 1F now provides a clearer policy framework for considering measures other than volume-to-capacity (v/c) ratios for evaluating mobility performance. Also, as part of these amendments v/c ratios established in Policy 1F were changed from being standards to “targets.” These targets are to be used to determine significant effect pursuant to TPR Section -0060.

Table 1 includes the mobility targets for the state facilities in the County. Pursuant to the OHP, US 97 and US 20 are classified as a Statewide Highway and a Freight Route. Highway 126 is classified as a Statewide Highway, and portions are a designated Freight Route. OR 31 has a Regional Highway designation.

Table 1: Volume to Capacity Ratio Targets Outside Metro[2]

Highway Category	Inside UGB					Outside UGB	
	STA	MPO	Non-MPO/ STA, MPH <35	Non-MPO/ STA, MPH 35-45	Non-MPO/ STA, MPH >45	Uninc. Comm.	Rural Land
Interstate Hwy	N/A	0.85	N/A	N/A	0.80	0.70	0.70
Statewide Expressway	N/A	0.85	0.85	0.80	0.80	0.70	0.70
Statewide (Non-freight Rte)	0.90	0.85	0.85	0.80	0.80	0.70	0.70
Statewide (Freight Rte)	0.95	0.90	0.90	0.85	0.80	0.75	0.70
Regional/District (Freight Rte)	0.95	0.90	0.90	0.85	0.85	0.75	0.70
Regional/District Expressway	N/A	0.90	N/A	0.85	0.85	0.75	0.70
Regional	1.0	0.95	0.90	0.85	0.85	0.75	0.70
District/Local	1.0	0.95	0.95	0.90	0.90	0.80	0.75

Policy 1G: Major Improvements.

This policy requires maintaining performance and improving safety on the highway system by improving efficiency and management on the existing roadway network before adding capacity. The state's highest priority is to preserve the functionality of the existing highway system. Tools that could be employed to improve the function of the existing transportation network include access management, transportation demand management, traffic operations modifications, and changes to local land use designations or development regulations.

After existing system preservation, the second priority is to make minor improvements to existing highway facilities, such as adding ramp signals, or making improvements to the local street network to minimize local trips on the state facility.

The third priority is to make major roadway improvements such as adding lanes to increase capacity on existing roadways. As part of this TSP process, Deschutes County will work with ODOT and other stakeholders to determine appropriate strategies and tools that can be implemented at the local level that are consistent with this policy.

Policy 2B: Off-system Improvements

This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving operations of the state highway system. As part of this TSP update process, Deschutes County will work with ODOT and project stakeholders to

[2] Portions of US 97, US 20, and OR 126 extend into the Bend, La Pine, Redmond, and Sisters Urban Growth Boundaries.

identify improvements to the local road system that support the planned land use designations in the study area and that will help preserve capacity and ensure the long-term efficient and effective operation of high functional class facilities.

Policy 3A: Classification and Spacing Standards

State policy seeks to manage the location, spacing, and type of road intersections on state highways in a manner that ensures the safe and efficient operation of state highways consistent with their highway classification.

Action 3A.2 calls for spacing standards to be established for state highways based on highway classification, the type of area, and posted speed limit. Tables in OHP Appendix C present access spacing standards which consider urban and rural highway classification, traffic volumes, speed, safety, and operational needs. The access management spacing standards established in the OHP are implemented by access management rules in OAR 734, Division 51, addressed later in this report. The TSP update process will include discussion of how existing ODOT facilities in the study area compare to these standards.

Policy 4A: Efficiency of Freight Movement

This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. US 97, US 20, and OR 126 are designated as state freight routes. A principal function of these routes is to accommodate safe and efficient freight movements by providing free-flow movements for through-traffic in the Interstate system and for traffic accessing existing (and future planned) industrial areas.

Policy 4B: Alternative Passenger Modes

Policy 4B encourages the development of alternative passenger services and systems as part of broader corridor strategies. The policy promotes the development of alternative passenger transportation services in commute highway corridors, as well as those located off the highway system to help preserve the performance and function of the state highway system. Cascades East Transit (CET) provides public transportation service in the County. Improving safety, access, and mobility for pedestrians and bicyclists to local transit service and to community destinations throughout the County is an objective of this TSP update process.

Project Relevance: The TSP planning process will be guided by policies in the OHP for any improvements, modifications, or local policies that would affect state facilities within the County. OHP policies provide guidance in developing recommended improvements that would impact accessibility, mobility, or function of each highway. The TSP is being developed in coordination with ODOT so that projects, policies, and County regulations proposed as part of the TSP will comply with or move in the direction of meeting the standards and targets established in the OHP related to safety, access, and mobility.

Oregon Freight Plan (2014)

The Oregon Freight Plan (OFP) is a modal plan of the OTP that implements the state's goals and policies related to the movement of goods and commodities. Its purpose statement identifies the intent to "improve freight connections to local, Native American, state, regional, national and global markets in order to increase trade-related jobs and income for workers and businesses." The objectives of the plan include prioritizing and facilitating investments in freight facilities (including rail, marine, air, and pipeline infrastructure) and adopting strategies to maintain and improve the freight transportation system.

The plan defines a statewide strategic freight network. US 97 and US 20 and parallel railroads are designated as a strategic corridor in the OFP.

The following policy and strategic direction provided in the OFP prioritizes preservation of strategic corridors as well as improvements to the supply chain achieved through coordination of freight and system management planning.

> *Strategy 1.2: Support freight access to the Strategic Freight System. This includes proactively protecting and preserving corridors designated as strategic.*
>
> > *Action 1.2.1. Preserve freight facilities included as part of the Strategic Freight System from changes that would significantly reduce the ability of these facilities to operate as efficient components of the freight system unless alternate facilities are identified or a safety-related need arises.*
>
> *Strategy 2.4: Coordinate freight improvements and system management plans on corridors comprising the Strategic Freight System with the intent to improve supply chain performance.*
>
> **Project Relevance:** Maintaining and enhancing efficiency of the truck and rail freight system in the study area will be an objective of the updated TSP. The County will work closely with ODOT, including ODOT freight representatives, to ensure mobility along identified freight corridors is preserved.

Oregon State Rail Plan (2014)

The Oregon State Rail Plan is a state modal plan under the OTP that addresses long-term freight and passenger rail planning in Oregon. The Plan provides a comprehensive assessment of the state's rail planning, freight rail, and passenger rail systems. It identifies specific policies concerning rail in the state, establishes a system of integration between freight and passenger elements into the land use and transportation planning process, and calls for cooperation between state, regional, and local jurisdictions in planning for rail.

Its goals, policies, and strategies are based on the vision that "Oregon will have a safe, efficient, and commercially viable rail system that serves its businesses, travelers and communities through private resources leveraged as needed, by strategic public investments." It establishes the following goal areas: partnership, collaboration, and communication; a connected system; system

investments and preservation; funding, finance, and investment principles; system safety; preserving and enhancing quality of life; and economic development.

The plan categorizes rail as Class I or Non-Class I and accordingly identifies needs related to rail elements including track, signals, weight, clearance, speed, and bridges and tunnels. There is a Class I rail line (BNSF Railway) that extends north-south through the County, with connections to The Dalles to the north and Klamath Falls to the south.

> **Project Relevance:** The TSP will consider the needs of the rail freight system in developing recommended policies and projects related to improving safety and mobility in the County. In addition, the agency advisory committee will include ODOT representatives who will advise on rail and freight interests.

Oregon Bicycle and Pedestrian Plan (2016)

The intent of the Oregon Bicycle and Pedestrian Plan (OBPP) is to create a policy foundation that supports decision-making for walking and biking investments, strategies, and programs that help to develop an interconnected, robust, efficient, and safe transportation system. The OBPP established the role of walking and biking as essential modes of travel within the context of the entire transportation system and recognizes the benefit to the people and places in Oregon.

The OBPP also provides background information related to state and federal law, funding opportunities, and implementation strategies proposed by ODOT to improve bicycle and pedestrian transportation. It outlines the role that local jurisdictions play in the implementation of the OBPP, including the development of local pedestrian and bicycle plans as stand-alone documents within TSPs.

The Oregon Bicycle and Pedestrian Design Guide is the technical element of the plan that guides the design and management of bicycle and pedestrian facilities on state-owned facilities. It is an appendix to the HDM and provides best practices and design guidelines for bicycle and pedestrian facilities.

> **Project Relevance:** The TSP update process will consider OBPP policies and strategies for their applicability to the County, including relevance to existing Deschutes County Code 17.48 which addresses bicycle and pedestrian development standards, and, where appropriate, the updated TSP will reflect the OBPP through policies and project selection. The state standards and strategies for pedestrian and bicycle improvements can serve as “best practices” and inform recommended bicycle and pedestrian improvements in the updated TSP. Within unincorporated communities, the TSP planning process will identify and address areas where enhancements are needed to improve sidewalk accessibility and connectivity. The TSP planning process will consider appropriate standards and designs where pedestrian and bicycle projects are recommended on, or parallel to, state facilities.

Oregon Public Transportation Plan (2018)

The Oregon Public Transportation Plan (OPTP) is the modal plan of the OTP that provides guidance for ODOT and public transportation agencies regarding the development of public transportation systems. The guiding vision is to create:

- A public transportation system that is an integral, interconnected component of Oregon's transportation system that makes Oregon's diverse cities, town, and communities work.
- Public transportation that is convenient, affordable, and efficient helps further the state's quality of life and economic vitality and contributes to the health and safety of all residents, while reducing greenhouse gas emissions.

The OPTP is designed to respond to trends, opportunities, and challenges that exist today, while providing an adaptable foundation for the future. The policies and strategies advance public transportation as an important piece of the overall transportation system, linking people to destinations, services, opportunities, as well as to communities in neighboring states. Key initiatives of the plan include plan integration, regional and intercity service, and transit technologies.

> **Project Relevance:** In developing the transit element of the updated TSP, the planning process will coordinate with Cascades East Transit long-range and strategic planning in the TSP study area. A representative from CET will be invited to participate in the agency advisory committee to ensure coordination between the recommendations of the TSP and transit plans.

Oregon Transportation Safety Action Plan (2016)

An element of the OTP, the Oregon Transportation Safety Action Plan (TSAP) provides long-term goals, policies and strategies and near-term actions to eliminate deaths and life-changing injuries. The TSAP addresses all modes on all public roads in Oregon. Over the long term, the goals of the TSAP are:

- Infrastructure – Develop and improve infrastructure to eliminate fatalities and serious injuries for users of all modes.
- Healthy, Livable Communities – Plan, design, and implement safe systems. Support enforcement and emergency medical services to improve the safety and livability of communities, including improved health outcomes.
- Technology – Plan, prepare for, and implement technologies (existing and new) that can affect transportation safety for all users.

The Plan identifies actions that jurisdictions can take to increase transportation safety. They include adopting a Safe Communities Program and Safe Routes to School, which is a collaborative partnership with the National Highway Traffic Safety Administration and the ODOT to promote safety. The Safe Routes to School program is a local initiative supported by grant funding that targets safety improvements to encourage walking and biking to school.

In addition, the TSAP also identifies activities and roles for counties that can improve safety. They include:

- Evaluate local spot-specific systemic safety needs; develop plans and programs to address needs.
- Collaborate with the state and stakeholder partners to educate the public about transportation safety-related behavioral issues.
- Integrate safety programming, planning, and policy into local planning.

Project Relevance: The TSAP will be used as a resource while updating the TSP to develop local goals, policies, and strategies to increase safety in the County. Additionally, Deschutes County has adopted its own Transportation Safety Action Plan with local goals, policies, and strategies. The Deschutes TSAP is reviewed under the Section III of this memorandum.

Oregon Aviation Plan V6.0

The Oregon Aviation Plan (OAP) is a modal plan of the OTP that defines policies and investment strategies for Oregon's public use aviation system for the next 20 years. The plan addresses the existing conditions, economic benefits, and jurisdictional responsibilities for the existing aviation infrastructure. The plan contains policies and recommended actions to be implemented by Oregon Department of Aviation in coordination with other state and local agencies and the Federal Aviation Administration.

The OAP categorizes airports based on functional role and service criteria. Airports in Deschutes County and their classification are summarized below.

- Category I, Commercial Service Airport (Redmond Municipal Airport – Roberts Field): These airports support some level of schedule commercial airline service in addition to supporting a full range of general aviation aircraft activities. Commercial service includes both domestic and international destinations.
- Category II, Urban General Aviation Airport (Bend Municipal Airport): These airports support all general aviation aircraft and accommodate corporate aviation activity, including piston and turbine engine aircraft, business jets, helicopters, gliders, and other general aviation activity. The most demanding user requirements are business-related. These airports service a large/multi-state geographic region or experience high levels of general aviation activity.
- Category IV, Local General Aviation Airport (Sisters Eagle Air Airport and Sunriver Airport): These airports support primarily single-engine general aviation aircraft but are capable of accommodating smaller twin-engine general aviation aircraft. These airports support local air transportation needs and special-use aviation activities.

Project Relevance: The TSP update will include address aviation as a transportation mode and will plan for how Deschutes County's residents and businesses access these facilities in developing TSP policies and projects.

ODOT Operations Program Plan (2018)

The ODOT Operations Program Plan (OPP) analyzed the problems and gaps in ODOT programming through stakeholder input. Of the gaps identified, those pertinent to the Deschutes County regional transportation system are included below.

- *Planning and Projects*: Greater benefits of proven operations activities and services – both their magnitude and extent— can be achieved if operations solutions are more consistently considered in planning efforts and project scoping.
- *Communication and Outreach*: Communication and outreach on the Operations Program will increase awareness of program activities, help to move away from reliance on champions, and ultimately achieve better consistency and coordination in program services.
- *Technology*: Staying on top of developments in rapidly advancing technology and sharing innovative operational practices would strengthen and expand the Operations Program's benefits.

The gaps identified informed the ODOT Operations Program. The program is a coordinated, multidisciplinary approach to ensure safe and efficient multimodal travel by (1) optimizing the performance of existing infrastructure, (2) mitigating the causes and impacts of congestion and delay; and (3) reducing and eliminating exposure to safety risks. The mission is further broken down into six goals listed below.

- *Integrate Operations into appropriate agency projects, policies, plans and procedures.*
- *Optimize the efficiency and safety of the existing multimodal transportation system.*
- *Be agile and innovative in identifying, adopting, and accommodating effective operations technology and strategies.*
- *Promote safe and efficient travel through communication of accurate and timely transportation system status information and collaboration with public and private partners.*
- *Utilize performance base strategies to drive operations planning and decision making.*
- *Achieve a sustainable Operations Program supported by good asset management practices.*

The program acknowledged both policy and operations strategies including active transit management, arterial operations, and more. The projects and services described in the OPP are expected to be sourced from several funding sources, including those already identified in the State Transportation Improvement Program (STIP), funding from operations programs, special programs, and maintenance.

The OPP concludes with an action plan, identifying near term action items through 2020 and long-term items through 2023. The action items pertinent to Deschutes County are included below.

- *Business Process/Planning and Programming:*
    1. *Develop a funding program to handle Operations projects that are too big for local region/district budgets but are not "big enough" to go through to STIP process.*
    2. *Create an "Operations Guide" that clearly identifies and defines the Operations Program leadership structure, decision making authority, role and responsibilities, and key processes.*

3. *Coordinate with ODOT Transportation Development Division (TDD) and planning staff leadership to develop a course of action that will raise the awareness and understanding of Operations concepts among Planning staff.*
4. *Integrate Intelligent Transportation System (ITS) plans into Regional Transportation Plan.*

- *Performance Measures*
  5. *Continue implementation of actions identified in the Operations Performance Measures Plan.*
  6. *Develop a Traffic Signal Management Plan to set clear targets for goals related to signal operations.*

Project Relevance: ODOT's role and funding impacts on the operations and programming of the Deschutes County transportation system should be acknowledged in the updated TSP. The TSP update will consult with ODOT's Operations Program for guidance on improvements that involve ITS, signal, or lighting management.

ODOT Traffic Signal Management Plan (2020)

The purpose of the Traffic Signal Management Plan (TSMP) is to provide a framework for the management of the traffic signal system by ODOT. The TSMP outlines ODOT's objectives related to the design, operation, and maintenance of traffic signals and strategies to accomplish those objectives and achieve good basic service. The Plan also establishes performance metrics to ensure objectives are being met. The TSMP is divided into several chapters that are organized around different elements of the traffic signal system, including Design, Operations, Maintenance, Management/Administration, and Interagency Coordination.

Acting as the statewide guiding document for traffic signal system management activities that support the mission and goals of ODOT, the plan provides recommendations for operating in a regional and local context. Local agencies may also use the TSMP as a guide for operating their signal systems.

The plan has five goals, with several objectives for each, classified into the following three categories - design, operations, and maintenance. The goals are: 1. optimize mobility and accessibility, 2. maximize operational efficiency, 3. provide safe right-of-way assignment for all modes at traffic signal, 4. support economic vitality, and 5. preserve traffic signal infrastructure. The Design, Operations and Maintenance chapters (Chapter 4 through 6) provide an overview of the various types of signals and intersections design and recommendations for compliance with ODOT standards. Additionally, there are individual action plans for each category – design, maintenance, and operations.

Project Relevance: The TSMP serves as the statewide guiding document for traffic signal system management activities that support the mission and goals of ODOT. Local agencies, such as Deschutes County, may also use this TSMP as a guide for operating their signal systems. In updating the TSP, Deschutes County should consider the design, operations, and maintenance strategies found in the TSMP in

meeting transportation operations needs identified through the current planning process.

Oregon Statewide Transportation Improvement Fund

The Statewide Transportation Improvement Fund (STIF) is a dedicated funding source for improving or expanding public transportation service in the state. The funding is distributed according to developed programs and policies by the Public Transportation Division with oversight from the Oregon Transportation Commission.

STIF funding is distributed through two funds: the Formula Fund Resource and the Discretionary Fund and Intercommunity Discretionary Fund. The Formula Fund distributes 90 percent of STIF funds to mass transit district, transportation districts, or counties with a mass transit or transportation district based on allocation formulas. Deschutes County is forecasted to receive over $3 million per fiscal year from FY 2020 to FY 2023.

The Discretionary Fund and Intercommunity Discretionary Fund allocate five percent and four percent of STIF funds, respectively, based on a competitive grant process. Deschutes County does not have projects awarded grant funding through this fund currently. However, Central Oregon Intergovernmental Council currently has three grants through the discretionary fund for improving transit service. They include the CET Community Connector Service, Hawthorne Station Renovation, and a planning and feasibility study from Klamath Fall to Redmond.

> **Project Relevance**: Transit service and facilities are anticipated to grow in the County due to increased funding from the Formula Fund Resource. Most STIF funds received by the County are allocated to local transit agencies, such as CET. This TSP update will factor growth in transit as part of the transit element of the plan and consider, in coordination with CET, facility improvements or policy or code amendments to accommodate and facilitate transit growth. Further, transportation improvement projects identified in the TSP update may be eligible for discretionary STIF funding in future funding cycles.

ODOT Funding Projections (2020)

This report summarizes revenue forecasts for ODOT. It is published twice a year to assist in financial planning, the formulation of transportation budgets, and to support other department decision-making activities. The report also includes information about future revenues from sources like registration fees, weight-mile and flat fees, and gas taxes.

The most recent update was released in July of 2020,[3] which updated the April 2020 forecast with actuals from March to May 2020. The recent and ongoing COVID-19 pandemic has imbued a degree

[3] Typically, the ODOT Forecast Reports are released every six months. The July 2020 forecast update was developed to check the assumptions and fully capture the impact of COIVD-19. A full report will be published in October 2020.

of uncertainty in the forecasts. Revenues are anticipated to rebound in 2021, as the expected duration of the virus impact is felt most acutely in 2020, and grow through 2025 as HB 2017 is fully implemented. Beyond 2025, revenue growth stagnates overall as economic and demographic growth slows and fuel demand declines.

In total, the state now estimates the loss in revenue due to the recession to be about $170 million over the 2019-21 biennium. As the recovery is likely to extend into the mid 2020's, the impact is expected to extend as well. However, the forecast is highly uncertain given the unknown future of the virus and its impact on Oregon communities.

The July 2020 report also included a section that documented the funding forecasts through 2025 for three new taxes adopted through House Bill 2017 – the Transit Payroll Tax, Vehicle Privilege Tax, and Bike Excise Tax. Additionally, local City and County forecast estimates were published in July 2020 and account for COVID-19 related losses in revenue. Table 2 below shows the forecasted revenues for Deschutes County from the 2020 to 2025 Fiscal Years (FY). The Base is revenue, not including HB2017 revenue, and the total is the combination of both.

Table 2. Deschutes County Forecasted Apportionment FY 2020-2025

	2020	2021	2022	2023	2024	2025
Base	$ 12,557,398	$ 12,423,689	$ 12,843,860	$ 12,723,443	$ 12,780,000	$12,784,700
HB2017	$ 3,911,686	$ 5,041,607	$5,307,508	$5,626,777	$ 5,782,801	$ 6,142,806
Total	**$ 16,469,085**	**$ 17,465,296**	**$ 18,151,368**	**$ 18,350,220**	**$ 18,562,801**	**$ 18,927,506**

Project Relevance: State funding sources for projects identified in the TSP will be impacted by available revenue. If revenue is expected to increase, new funding may be made available through the state for local projects.

Statewide Transportation Improvement Program (2021 – 2024)

The State Transportation Improvement Program (STIP) is the four-year programming and funding document for transportation projects and programs for state and regional transportation systems, including federal land and Indian reservation road systems, interstate, state, and regional highways, bridges, and public transit. It includes state- and federally-funded system improvements that have approved funding and are expected to be undertaken during the upcoming four-year period. The projects and programs undergo a selection process managed by ODOT Regions or ODOT central offices, a process that is held every two years to update the STIP. The current STIP identifies planned improvements for 2021 - 2024. The following projects located within Deschutes County are listed in the STIP.

- OR126: Redmond – Powell Butte – Project number: 20167. Pavement preservation, bike/pedestrian improvements, ADA upgrades, and signing to make travel more accessible for pedestrians and multi-modal travelers.

- US97: Multi-Use Trail (Baker Rd. - Lava Butte) – Project number 20714. Identify and evaluate planning corridors, design, and construction for a bicycle and pedestrian multi-use trail connecting Baker/Knott Road and the Lava Lands visitor center at Lava Butte, to create a safe path for multi modal travelers.
- US 97: Lower Bridge Way – NW 10th St (Terrebonne) – Project number: 21162. Evaluate, design, and construct safety improvements on US97 through Terrebonne; Potential measures include an interchange at US97 and Lower Bridge Way intersection, speed lowering interventions, and pedestrian safety improvements to reduce crashes and increase driver awareness.
- US97 at Wickiup Jct. (La Pine) Phase 2 – Project number: 21295. Develop a refinement plan that addresses the US97 highway corridor through the Wickiup Junction area focusing on safety for all modes of transportation, design and construct intersection safety and frontage road improvements developed from refinement plan, and perform geotechnical analysis of Wickiup Junction area to determine feasibility of a long term railroad/US97 overpass.
- US97 Road Weather Management – Project number: 21501. Installation of road and weather information system (RWIS), speed sensors, travel time readers and changeable message signs to provide ODOT's TripCheck system additional traveler information, improve maintenance resource allocation efficiency and performance measurements.
- US20: Ward / Hamby Rd. Intersection – Project number: 21667. Intersection safety improvements to reduce accidents and increase safety in the intersection reducing intersection-related high severity crashes and better operations of the system for travelling public.
- Gribbling Rd: Central Oregon Irrigation Canal bridge – Project number: 22039. Replace the existing bridge with one that meets current standards.
- OR242: McKenzie Pass Pavement Preservation – Project number: 22225. Improve conditions for drivers and cyclists by resurfacing roadway and rebuilding shoulders.

Project Relevance: The 2021-2024 STIP includes several projects in the County. The TSP analysis will take into account projects that are programmed in the STIP. An expected outcome of this planning process is proposed recommendations for a future STIP amendment to include projects from the updated TSP. The STIP projects will most likely involve improvements that are eligible for funding through a competitive application process.

ODOT Highway Design Manual (2012)

The 2012 Highway Design Manual (HDM) provides ODOT with uniform standards and processes for project development for the state's roadways. The HDM is to be used for all projects that are located on state highways. It is intended to provide guidance for the design of new construction; major reconstruction (4R); resurfacing, restoration, and rehabilitation (3R); or resurfacing (1R) projects.

National Highway System or Federal-aid projects on roadways that are under local jurisdiction will typically use AASHTO design standards (Policy on Geometric Design of Highways and Streets

manual, the "Green Book) or ODOT 3R design standards. The flexibility contained in the HDM supports the use of Practical Design concepts and Context Sensitive Design practices. The Blueprint for Urban Design (BUD), published in 2020, furthers these concepts by recognizing how transportation needs and solutions are different in urban areas. The BUD is a "bridging document" that establishes revised criteria to be used when designing urban projects on the state system. The document provides guidance for urban design on Oregon state highways until such time that all ODOT manuals related to urban areas are updated to include the revised design criteria.

Table 3 shows which design standards are applicable for certain projects based on project type, and whether the project involves a state route. State and local planners will also use the manual in determining design requirements as they relate to the state highways in TSPs, Corridor Plans, and Refinement Plans. Some projects under ODOT roadway jurisdiction traverse across local agency boundaries. Some local agencies have adopted design standards and guidelines that may differ from the various ODOT design standards. Although the appropriate ODOT design standards are to be applied on ODOT roadway jurisdiction facilities, local agency publications, and design practices can also provide additional guidance, concepts, and strategies related to roadway design.

Table 3: Design Standards Selections Matrix, ODOT Highway Design Manual

Project Type	**Roadway Jurisdiction**				
	State Highways			Local Agency Roads	
	Interstate	Urban State Highways	Rural State Highways	Urban	Rural
Modernization/ Bridge New/Replacement	ODOT 4R/New Freeway	ODOT 4R/New Urban	ODOT 4R/New Rural	AASHTO	
Preservation/ Bridge Rehabilitation	ODOT 3R Freeway	ODOT 3R Urban	ODOT 3R Rural	AASHTO	ODOT 3R Rural
Preventive Maintenance	1R	1R	1R	NA	NA
Safety- Operations- Miscellaneous/ Special Programs	ODOT Freeway	ODOT Urban	ODOT Rural	AASHTO	ODOT 3R Rural

The HDM includes mobility standards related to project development and design that are applicable to all modernization projects, except for development review projects (see Table 4, "Outside UGB"). The v/c ratios in the HDM are different than those shown in the OHP. The v/c ratio values in the OHP are used to assist in the planning phase to identify future system deficiencies; the HDM v/c ratio values provide a mobility solution that corrects those previously identified deficiencies and provides the best investment for the state over a 20-year design life.

Table 4: 20-Year Design Mobility Standards (Volume/Capacity [V/C]) Ratio

Highway Category	Inside UGB				Outside UGB	
	STA	MPO	Non-MPO/ STA, MPH <45	Non-MPO/ STA, MPH 45+	Uninc. Comm.	Rural Land
Interstate Hwy & Statewide (NHS) Expressways	N/A	0.75	0.70	0.65	0.60	0.60
Statewide (NHS, Freight Rte)	0.85	0.75	0.70	0.70	0.60	0.60
Statewide (NHS, Non-Freight Rte)	0.90	0.80	0.75	0.70	0.60	0.60
Regional/District Expressways	0.90	0.80	0.75	0.70	0.60	0.60
Regional Highway	0.95	0.85	0.75	0.75	0.70	0.65
District/Local Interest Roads	0.95	0.85	0.80	0.75	0.75	0.70

Blueprint for Urban Design (2020)

The Blueprint for Urban Design (BUD) is a "bridging document" that establishes revised criteria to be used when designing urban projects on the state system. The document provides guidance for urban design on Oregon state highways until such time that all ODOT manuals related to urban areas are updated to include the revised design criteria. The key takeaways from the BUD are:

- Supplements and overrides existing HDM and other design manuals on any conflicting guidance,
- Describes Planning and design by urban context in addition to existing roadway classification and designation,
- Highlights flexibility in design,
- Provides a Performance based design approach,
- Focuses on the highest level of protection for vulnerable users, and
- Includes a new design documentation process.

The key guidance from each chapter of the BUD are as follows.

- *Chapter 1, Introduction and Background* provides an overview of the BUD's purpose and describes the connection to ODOT programs and current practices.
- *Chapter 2, Refining Urban Contexts and Roadway Classifications* provides new guidance to interpret existing land use areas and functional classification categories to more appropriately align with various urban contexts. The chapter describes six ODOT Urban Contexts and provides examples of each. The six urban contexts are Traditional Downtown/Central Business District, Urban Mix, Commercial Corridor, Residential Corridor, Suburban Fringe, and Rural Community. Practitioners will use Chapter 2 to identify the appropriate urban context for certain areas.
- *Chapter 3, Design Flexibility at ODOT in Urban Contexts*, provides information to help identify and evaluate trade-offs while considering the operations, safety, and design for

urban projects. It includes an overview of the various street realms for the urban contexts and their design elements. Practitioners will use the chapter to evaluate and identify the appropriate design elements based on the context described in Chapter 3.

- *Chapter 4, A Multimodal Decision-Making Framework*, describes a performance-based approach and a delivery process that supports decision-making from planning through design. Practitioners will use ODOT urban design concurrence to document design decisions through an overarching multimodal decision-making framework that embraces performance-based design as provided in Chapter 4.

The BUD provides new design principals for ODOT owned and operated facilities, however local governments that are leading their own projects make their own design decisions for local facilities. Deschutes County will coordinate with ODOT on the application of the BUD along applicable state facilities, if necessary, through the TSP update process.

ODOT Traffic Manual (2020)

The Traffic Manual provides guidance on state traffic engineering policies, establishes uniform methods and procedures, and includes information about traffic engineering and operations on state highways. The Traffic Manual complements the HDM - it does not contain roadway design policies but rather contains standards and guidelines, as well as lists needed approvals and processes.

> **Project Relevance:** The HDM and Blueprint for Urban Design (BUD) provide design standards for state roadways; the Traffic Manual governs engineering methods and procedures for highway improvements. The analysis for the TSP update and final project recommendations will need to be consistent with requirements for state facilities in Deschutes County. The HDM and BUD can be referenced for additional guidance, concepts, and strategies for design during this planning process.

Transportation Planning Rule (OAR 660-012) (2011)

The Transportation Planning Rule (TPR), OAR 660-012, implements Goal 12 (Transportation) of the statewide planning goals. The TPR contains numerous requirements governing transportation planning and project development, including the required elements of a TSP. In addition to plan development, the TPR requires each local government to amend its land use regulations to implement its TSP (OAR 660-012-0045). It also requires local government to adopt land use or subdivision ordinance regulations consistent with applicable federal and state requirements: “to protect transportation facilities, corridors and sites for their identified functions.”

Local compliance with -0045 provisions is achieved through a variety of measures, including access control requirements, standards to protect future operations of roads, and notice and coordinated review procedures for land use applications. Local development codes should also include a process to apply conditions of approval to development proposals, and regulations ensuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP.

The TPR does not regulate access management. ODOT adopted OAR 734-051 to address access management and it is expected that ODOT, as part of this project, will coordinate with the County in planning for access management on state roadways consistent with its Access Management Rule. See the review of OAR 734-051 in the next section for a review of these access management rules.

Amendments to the TPR adopted in 2012 include new language in Section -0060 that allows a local government to exempt a zone change from the "significant effect" determination if the proposed zoning is consistent with the comprehensive plan map designation and the TSP. The amendments also allow a local government to amend a functional plan, comprehensive plan, or land use regulation without applying mobility standards (V/C, for example) if the subject area is within a designated multi-modal mixed-use area (MMA).

> **Project Relevance:** The TPR directs local TSP development and requires specific transportation elements be implemented in the local development ordinance. Local requirements such as access management, coordinated land use review procedures, and transportation facility standards and requirements are meant to protect road operations and safety and provide for multi-modal access and mobility. They will be reviewed and amendments to them will be updated, as needed, to ensure consistency with the TPR.

Access Management Rule (OAR 734-051) (2014)

Oregon Administrative Rule (OAR) 734-051 defines the State of Oregon's role in managing access to highway facilities to maintain functional use and safety and to preserve public investment. OHP Policy 3A and OAR 734-051 set access spacing standards for driveways and approaches to the state highway system. The most recent amendments presume that existing driveways with access to state highways have written permission from ODOT as required by OAR 734. The standards are based on state highway classification and differ depending on posted speed and average daily traffic volume.

The TPR does not regulate access management. ODOT adopted OAR 734-051 to address access management and it is expected that ODOT, as part of this TSP update, will coordinate with the County in planning for access management on state roadways consistent with its Access Management Rule.

> **Project Relevance:** Transportation analysis and final project recommendations will need to reflect state requirements for state facilities; the updated TSP will comply or move in the direction of meeting access management standards for state facilities. Implementation measures that will be developed for the TSP update may entail amendments to the County's Zoning Ordinance to ensure that it is consistent with these access management requirements as well as TSP recommendations related to access management.

III. LOCAL PLANS,DOCUMENTS, AGREEMENTS, AND POLICIES

2040 Bend Metropolitan Transportation Plan (2019)

Consistent with federal regulations (23 Code of Federal Regulations (CFR) part 450), the Bend Metropolitan Planning Organization (BMPO) is responsible for regional transportation planning within the Bend UGB and portions of unincorporated Deschutes County outside of the Bend UGB. The primary function of the BMPO is to "conduct a continuing, cooperative and comprehensive transportation planning process that will result in plans and programs that consider all transportation modes and will support metropolitan community development and social goals."[4]

The Bend Metropolitan Transportation Plan (MTP), adopted in 2019, is the regional TSP and serves as a multi-modal transportation plan designed to meet the anticipated 20-year transportation needs within the BMPO planning area boundary. The Metropolitan Transportation Improvement Program (MTIP), adopted in 2020, identifies transportation projects in the MPO that are programmed to receive funding between 2021-2024. The MTIP lists federally funded and locally funded projects anticipated by local agencies and ODOT that will occur in the BMPO planning area boundary.

> **Project Relevance:** Proposed improvements on the regional transportation system that are included in the updated County TSP will need to be amended into MTP and adopted by the Bend MPO Policy Board.

Deschutes County Comprehensive Plan (2009)

The Deschutes County Comprehensive Plan is a long-range policy guide for land use in the unincorporated areas within the County, outside of city urban growth boundaries (UGBs). The Comprehensive Plan includes background information and policies that address each of the 14 applicable Statewide Land Use Planning Goals. The County intends to update the Comprehensive Plan in 2021.

Transportation policies are included in the Deschutes County TSP, amended to the Comprehensive Plan in Appendix C. Existing policies will be refined as part of the TSP update process. A partial review of policies currently in the Deschutes County TSP is included in the *Review of 2012 Deschutes County Transportation System Plan* Memorandum.

Several policies related to transportation improvements are also found in Chapter 4 of the Comprehensive Plan, Growth Management. Chapter 4 addresses unincorporated communities and rural service centers. Only local policies for the Sunriver community include transportation-related elements; Section 4.5 describes transportation facilities in Sunriver. Most internal roads in Sunriver

[4] 2007-2030 Bend Metropolitan Transportation Plan, Chapter 1: Introduction, Page 1-1.

are private roads, open to the public, and maintained by the Sunriver Owners association. Section 4.5 also identifies future transportation needs for Sunriver. Because they were not functioning at full capacity at the time of Comprehensive Plan adoption, there are no changes recommended to the community's public roads, South Century Dr. and Cottonwood Road. The pertinent Transportation System Maintenance Policies for the Sunriver area are included below.

> *Policy 4.5.33 Privately-maintained roads within the Sunriver Urban Unincorporated Community boundary shall continue to be maintained by the Sunriver Owners Association.*
>
> *Policy 4.5.34 The bicycle/pedestrian path system in Sunriver shall continue to be maintained by the Sunriver Owners Association or as otherwise provided by a maintenance agreement.*
>
> *Policy 4.5.35 The County will encourage the future expansion of bicycle/pedestrian paths within the Sunriver Urban Unincorporated Community boundary in an effort to provide an alternative to vehicular travel.*
>
> *Policy 4.5.36 All public roads maintained by the County shall continue to be maintained by the County. Improvements to County maintained public roads shall occur as described the County Transportation System Plan.*
>
> **Project Relevance:** The updated TSP will be adopted as the transportation element of the County's Comprehensive Plan. Recommendations resulting from this planning process must either be consistent with existing policies, including those identified above, or the TSP process should result in proposed amendments to adopted policies. The County is embarking on a process to update its Comprehensive Plan, which may not be complete prior to the completion of this TSP update.

Deschutes County Code

The Deschutes County Code (DCC) regulates development within unincorporated Deschutes County and implements the long-range land use vision embodied in the Comprehensive Plan and TSP. The code contains requirements that address the relationship between land use development and transportation system development. Requirements in Title 22 Procedures Ordinance, Title 18 County Zoning, and Title 17 Subdivisions all have a bearing on how the transportation system is implemented. Titles 19 to 21 include zoning ordinances or districts related the unincorporated areas of city UGBs for Bend, Sisters, and Redmond.

The Subdivision ordinance includes design standards for transportation facilities. Minimum right-of-way and road widths are provided in Section 17.36.060; requirements for frontage roads are in Section 17.36.100. Sidewalk installation requirements for urban areas are in Section 17.36.130 and are required on both sides of the road; outside of urban areas, sidewalk requirements are found in Section 17.48.175. Also, Section 17.36.150 defines block lengths, requiring blocks are no longer than 1,200 feet. Special provisions for blocks over 800 feet are provided in Section 17.36.140. Minimum design standards for bikeways, roads, and structures are found in DCC 17.48. Road

dedication procedures and approval criteria are described in DCC 17.52. Design standards for bicycle, pedestrian, and transit requirements are found in Section 17.36.140.

Title 18, County Zoning, includes specific provisions for certain zones as well as supplementary provisions for development in unincorporated areas outside of UGBs. Section 18.116.031 has requirements for bicycle parking. Section 18.128.210 has requirements for bicycle and pedestrian infrastructure in planned developments, which include multimodal connections. Traffic Impact Studies are described in Section 18.116.310, including when a study is required and guidelines for the studies.

Chapter 19A addresses the Bend Urbanizable District (UA), which is located within the Bend UGB. The development standards for the district include this additional provision related to transportation improvements: *19A.01.040B. Frontage improvements must be built to City Standards and Specifications when required under certain City of Bend reviews.*

Redmond Urban Area Zoning Ordinance DCC 20.16 requires standards for public improvements, where public improvements are initiated by City of Redmond, must conform with Redmond public work standards and specifications. Additionally, the section establishes clear vision areas and measurement procedures.

> **Project Relevance:** County Subdivision requirements related to roadway design will need to be consistent with the updated TSP. Amendments to DCC requirements related to access, traffic impact analyses, and parking standards may be recommended as part of this planning process to implement the updated TSP, ensure consistency between the code and TSP, and strengthen compliance with the TPR.

Central Oregon Coordinated Human Services Transportation Plan (2018)

The 2018 Central Oregon Coordinated Human Services Transportation Plan updates individual county plans, combining them into one regional plan with systemwide and individual strategies for the Confederated Tribes of Warm Springs, Deschutes, Crook, and Jefferson counties. All jurisdictions are served by the same public transit system, Cascade East Transit.

The purpose of the plan is to improve transportation services for people with disabilities, seniors, and individuals with lower incomes by identifying opportunities to coordinate existing resources and services, including general public services available in the area. The plan identifies priorities that are used to direct state and federal funds. An overview of existing transportation resources and services, a needs assessment, and prioritized coordination strategies are described in the plan.

The following highest priority Regional strategies, those that apply to the regional transportation system, are found in Section 4.a:

1. *Improve affordability of transit services to low-income individuals and veterans.* Provide subsidized fares for low income clients and veterans needing access to health and human services.
2. *Ongoing coordination*. Establish a structure for ongoing dialogue on coordination needs and opportunities among public transportation providers and the human and health services

communities. This includes a proposal to explore developing one regional STF Committee for Central Oregon with members from Crook, Deschutes, and Jefferson Counties and the Confederated Tribes of Warm Springs, and to use this group for high-level regional coordination activities.

3. *Expand public transportation services to late in the evening and on weekends*. Work with human and health services stakeholders to identify priorities for expansion of services to later in the evenings and when/where to provide weekend services.
4. *Education and Outreach*. Develop a comprehensive marketing and awareness campaign. Provide more information to riders, the public, communities, and elected officials and leaders about the benefits of public transit and existing transit services.
5. *Create a Dedicated Local Public Fund for Transit***.** Identify priority geographies/communities and develop a local public tax base to provide additional services.

The Coordination Plan provides a set of region-scale priority strategies to guide transportation investments, summarized above. However, as there are still variations in need across Central Oregon, each local area also has its own set of priorities. The Deschutes County Priority strategies are found in Section 4.b.ii of the plan. The high and medium priority strategies for Deschutes County are listed below.

The high priority strategies for Deschutes County are listed in rank order.

1. Create a dedicated funding source for public transportation.
2. Support, maintain, and strengthen the existing transportation network, including both local service and community connector shuttles – leverage local public transportation investments to secure state and federal resources (Note: participants indicated that the "strengthen" part of this strategy was largely focused on providing fixed-route service in Redmond).
3. Expand service to later in the evening and weekends.
4. Education and Outreach. Develop a comprehensive marketing and awareness campaign. Provide more information to riders, the public, communities, and elected officials and leaders about the benefits of public transit and existing transit services.

The following are all considered medium priority strategies for Deschutes County, and are weighted equally.

- Create express bus routes.
- Improve Bend Dial A Ride system (i.e. caregiver, child riding with parent).
- Improve affordability of transit services to low-income individuals and veterans (e.g. subsidized fares and veterans ride programs)
- Ongoing coordination – establish a structure for ongoing dialogue on coordination needs and opportunities among public transportation providers and the human and health services communities.
- Develop electronic fare card system.

Following are additional strategies that received votes in the Deschutes County meeting. The additional strategies are not listed in rank order.

- Make winter transportation more usable.

- Consider density and/or mixed housing stock (e.g. transit oriented development - TOD).
- Travel training – provide travel training classes to individuals who use paratransit service to convert to fixed-route service.
- Create voucher system for ride-sharing programs.

Project Relevance: Updated TSP policies should encourage ongoing coordination with Cascade East Transit, particularly regarding the Deschutes County strategies identified in the plan.

Deschutes County Intelligent Transportation System Plan (2020)

The 2020 Deschutes County Intelligent Transportation System (ITS) Plan is an update to the 2011 ITS Plan. Since 2011, ODOT has worked collaboratively with Deschutes County and the cities of Bend, Sisters, Redmond, and La Pine to implement technology solutions to improve safety and management of the regional transportation system. The update incorporates newly identified needs and operations in the County, embraces advanced technology, prepares for emerging technologies, and provides support for a more integrated, collaborative system of operations and management. This ITS plan integrates Transportation Systems Management and Operations (TSMO) strategies, as these are recognized as being crucial to effectively implementing and sustaining ITS projects.

The 2020 ITS Plan includes an overview of current and future transportation conditions in Chapter 2 and a user needs assessment in Chapter 3. Further, a communications plan is provided in Chapter 4, a Regional ITS Architecture in Chapter 5, and a Deployment Plan in Chapter 6.

The Deployment Plan includes unconstructed projects from the 2011 ITS Plan and identifies new projects based on the needs assessment in Chapter 3. Within the plan, Chapter 6 includes project maps, descriptions, and costs, with more detailed descriptions of projects and cost estimates in Appendix E. Figure 16 identifies locations and project numbers.

Deschutes County is the lead on only two projects, listed below, and listed as a supporting agency on numerous other projects in the plan.

- Project No. 124 – Deschutes County Fair Ingress/Egress. Install communications and CCTV.
- Project No. 204 – Special Event Management System (Fairgrounds, Expo Center, and Amphitheatre). Deploy: traffic signal timing plans, portable dynamic message signs, parking management, and public transportation management. Supporting agencies: ODOT, Redmond, Bend.

  Project Relevance: The TSP update will review and integrate identified ITS Plan projects, as well as identify new projects through TSMO strategies to address safety and capacity needs identified through the planning process. The TSP will include objectives related to embracing technological advances and tools and their benefits to the transportation system.

Deschutes County Transportation Safety Action Plan (2019)

The State of Oregon has developed a statewide Transportation Safety Action Plan (TSAP) and set a goal of zero fatal and incapacitating injuries on Oregon's transportation system by 2035. The Deschutes County TSAP is a specific action plan developed to help the County work towards the state's goal by identifying and addressing safety issues specific to the County. This TSAP evaluates crash trends and issues based on current data and identifies a broad range of treatments including projects, policies, and programs to address identified issues.

Chapter 2 includes historic crash summary data. Chapter 3 through 6 are focused on solutions and actions for transportation safety, including systemic solutions, a speed management toolbox, location specific applications, and non-infrastructure measures. System solutions in Chapter 3 address design elements that can be incorporated for enhanced safety on a variety of transportation systems – roadway segments, curves, and intersections. The Speed Management Toolbox in Chapter 4 recommends treatments for speed management including pavement markings, physical roadway improvements, and signage. Chapter 5, Location Specific Application, establishes the screening criteria for locations of concern and lists them in Table 5, Top Sites for Safety Improvements. There are numerous locations identified in unincorporated Deschutes County, shown in Table 4 (Table 5 of the TSAP). Where the table indicates a concept has been developed, the plan provides an overview of the concept.

Table 5. Top Sites for Safety Improvement – Unincorporated Deschutes County

Intersection Location*	Intersection Involves an ODOT Facility?	Concept Developed?	Number of Reported Crashes, 2012-2016	Annualized EPDO Score
Unincorporated County				
US20/Ward Road/Hamby Road	Yes		22	111
US97/Vandevert Road	Yes		17	56
US20/Fryrear Road	Yes	Yes	14	50
Burgess Road/Day Road/Pine Forest Drive	No		20	45
Bear Creek Road/Ward Road	No	Yes	14	41
Alfalfa Market Road/Dodds Road	No	Yes	2	40
US20/Old Bend Redmond Highway	Yes		17	38
US20/O.B. Riley Road/Cook Avenue	Yes		15	37
US97/61st Street	Yes		13	35
US97/11th Street/Lower Bridge Way	Yes		13	33
61st Street/Quarry Ave/Canal Blvd	No		17	32
Northwest Way/Coyner Ave	No	Yes	9	31
Alfalfa Market Road/Walker Road	No	Yes	7	28
US97/Smith Rock Way/B Ave	Yes		13	28
Deschutes Market Road/Hamehook Road	No	Yes	10	27
US97/Burgess Road	Yes		7	27
US20/Hawks Beard (Black Butte Ranch)	No		5	26
El Camino Lane/Helmholtz Way	No		4	26
Canal Blvd/Helmholtz Way	No		7	25
Dickey Road/Nelson Road	No	Yes	3	24
US97/Galloway Ave	Yes		3	24
Butler Market Road & Powell Butte Highway*	No	Yes	9	7
Butler Market Road & Hamby*	No	Yes	9	7
Butler Market Road & Hamehook*	No	Yes	5	6
Baker Road & Cinder Butte*	No	Yes	5	5
S Century and Huntington*	No	Yes	5	5
Cline Falls Rd/Coopers Hawk Drive/ Falcon Crest Drive*	No	Yes	2	2
Lower Bridge Way/19th*	No	Yes	1	2
Lower Bridge Way/31st*	No	Yes	3	2
Lower Bridge Way/43rd*	No	Yes	3	2

Chapter 6 addresses other non-infrastructure safety measures including policy, planning, programming, and projects and identifies a list of related action items. Table 6 in the plan addresses safety culture and educational action items for Deschutes County along with project partners, and

funding needed. The focus areas are safety culture, enforcement, pedestrian/cyclists, and impaired or distracted driving. Those relevant to updating the Deschutes County TSP include:

- A3. Create a Deschutes County Safety Communications Plan, including an education and public outreach system, that promotes a roadway safety culture.
- A6. Develop and maintain policies to support the actions identified in the TSAP and to better incorporate safety into long-range planning and the project development process.
- A12. Develop criteria for identifying and designating safety corridors within the County.
- A34. Design roadways integrating pedestrian and bicyclist safety considerations by providing appropriate pedestrian and bicyclist infrastructure.
- A35. Develop a countywide bicycle route map that identifies the preferred bicycle routes (lower volume, lower speed, and available shoulders) and provide wayfinding to direct cyclists to these routes. Illuminate pedestrian crossings near schools in the County.
- A36. Complete the sidewalk system in unincorporated communities by closing gaps in the sidewalk system and providing appropriately designed crossings where needed.
- A42. Integrate technology advancements to improve transportation safety.
- A43. Evaluate options to collect and use traffic volume, near-misses, and other data to understand where perceived safety issues may exist.
- A44. Evaluate the ability to use crowdsourcing technology to identify risks and locations for additional assessment.

The complete list is found in Table 6 of the TSAP.

Chapter 7, Plan Implementation and Evaluation addresses performance measures the County can use to evaluate the success of the plan and use it for future updates of the plan. The outcome measures are focused on fatal and sever injury crash rates on County roads.

> **Project Relevance**: The TSAP, projects, policy or programming recommendations should be reflected in the updated TSP where appropriate. Goals and policies related to transportation safety will be echoed in the objectives of the TSP update planning process and will be used to update County transportation policy.

Draft Terrebonne Refinement Plan

The Terrebonne community, located in Deschutes County, is bisected by US 97. As US 97 highway traffic volumes have significantly increased in the last 10 years, side street traffic movements and pedestrian crossings have become more difficult. The purpose of the Terrebonne Refinement Plan was to develop short-, medium-, and long-term improvements and management options on the US 97 corridor to improve safety and operations in the community.

To serve near- and long-term highway and local demand, the draft Refinement Plan recommends a grade-separated interchange at the US 97/Lower Bridge Way intersection and for US 97 to be repurposed as a couplet (two northbound lanes and two southbound lanes) that would utilize the existing 11th Street as the northbound highway alignment and the existing US 97 right-of-way as the southbound alignment. The plan also considered a

five-lane cross-section that would provide additional capacity within the existing highway right-of-way (i.e., 11th Street would not become part of the state highway system). While the Terrebonne Refinement Plan was not adopted by the Board of County Commissioners, ODOT and Deschutes County are currently discussing the configuration of improvements for the highway through Terrebonne in association with the legislatively earmarked $21M investment for US 97 in Terrebonne per HB 2017 (2017). The TSP Update will address the future of US 97 through Terrebonne via identification of configuration options or identification of a future process to identify and select an option.

In addition to highway improvements, the following are recommended local connections categorized by priority that improve circulation in Terrebonne. Each will be considered for inclusion in the Deschutes County TSP update.

High Priority

- Formalize 9th Street from E Avenue to F Avenue
- Formalize E Avenue from 7th Street to 9th Street
- A Avenue from 11th Street to COID Canal and North-South Connection over the COID Canal from A Avenue to Smith Rock Way
- Construct H Avenue from 11th Street to 13th Street (Recommended for inclusion in the initial construction phase)

Medium Priority

- Formalize F Avenue from 19th Street to US 97 Frontage Road
- 4th Street connection from Forster Drive north approximately 1,000 feet
- Formalization of F Avenue Frontage Road to Barberry Drive
- A Avenue Extension from COID Canal to future 16th Street Extension
- 16th Street Extension from C Avenue to A Avenue
- 13th Street Extension from B Avenue to E Avenue
- E Avenue Extension from 11th Street to 16th Street

Low Priority

- 5th Street Extension from B Avenue south to Odem Avenue
- 6th Street Extension from A Avenue to US 97
- 16th Street Extension from A Avenue south of Terrebonne
- G Avenue Extension from 15th Street to 16th Street
- H Avenue Extension from 15th Street to 16th Street

Project Relevance: As recommended by the Refinement Plan, the Deschutes County TSP projects list should include design and construction of the local street enhancement projects. Improvements planned for US 97 should be incorporated, as coordinated through ongoing discussions between ODOT and Deschutes County.

Wickiup Junction Refinement Plan (2020, In Progress)

The Wickiup Junction Refinement Plan is a project led by ODOT and supported by the City of La Pine, with adoption anticipated by early 2021. As the La Pine community has grown farther to the north and traffic volumes on US 97 have continued to increase, the highway has increasingly been a barrier to community cohesion. The City, Deschutes County, and the ODOT have engaged in the Wickiup Junction Refinement Plan to help identify transportation improvements, both along the highway as well as along the local street system to better serve both city residents and businesses as well as regional traffic within the community. Several roads under Deschutes County ownership are included in the study area - Burgess Road, Rosland Road, Darlene Way, 1st St/Reed Road, and several other minor roads.

One of the anticipated outcomes of the Refinement Plan are identified potential short-, mid-, and long-term projects to enhance the transportation system for motorists, cyclists, pedestrians, and freight. Some of the key aspects of the planning effort focus on highway mobility, non-vehicle travel, gateway transitions, and local circulation.

As of August 2020, the alternatives analysis had been presented and workshopped with the public. A preferred alternative is under review as of Fall 2020, with the final draft Refinement Plan to be presented at hearings before the La Pine City Council and Deschutes County Board of Commissioners in in 2021.

> **Project Relevance**: The proposed improvements for the Wickiup Junction Refinement Plan are generally within the City of La Pine and may not require incorporation into the Deschutes County TSP. The current planning process is an opportunity to for the County to continue to collaborate with the project partners - ODOT and City of La Pine - to promote an efficient, interconnected transportation system within the Wickiup Junction study area.

Bend Transportation System Plan (2020)

The Bend Transportation System Plan (TSP) provides a policy and plan framework that will continue to enable Bend to design a balanced transportation system for the near-term and the extended future. Strategies for planning and implementing a wide range of transportation components are addressed in the TSP, including automobile, public transportation, bicycle, and pedestrian travel. The TSP addresses the transportation system within the Bend UGB. The TSP includes an overview of existing conditions, goals, future conditions, and improvement projects for the transportation system, which includes public transportation, bicycle and pedestrian facilities, the street system (locations, designs, and functional classifications), and potential funding sources.

There are various expansion areas identified in the Bend Comprehensive Plan that were brought into the UGB but not yet to be annexed, known as “Expansion Areas.” Figures 3-1 and 3-2 in the TSP show the location and intensity of projected growth in the Bend area through 2040, including specific opportunity areas and expansion areas identified through the 2016 UGB update.

The following are specific goals or actions included in the Bend TSP that are relevant to Deschutes County.

Goal 6 – Have a Regional Outlook and Future Focus

- *Coordinate and partner with other public and private capital improvement projects and local/regional planning initiatives*
- *Create a system that is design to implement innovative and emerging transportation technologies*.

The Bend TSP addresses transportation in unincorporated UGB areas in Goal 3, Facilitate Housing Supply, Job Creation, and Economic Development to Meet Demand/Growth:

- *Build new roads and upgrade existing roads to serve areas targeted for growth (prioritizing opportunity and expansion areas) and job creation.*

TSP Action 57 addresses funding in urbanizing areas:

> *Funding for transportation infrastructure in expansion areas, as identified in the 2016 urban growth boundary (UGB) expansion, will be determined either before or upon (unless exempted). Funding must be established prior to, or concurrently with, annexation. Transportation and infrastructure funding agreements will be memorialized for each expansion area property or properties in a development agreement as a part of a master plan or area plan approval and/or annexation.*

There are several TSP projects identified in the urban growth boundary outside of city limits. The Bend TSP identifies these as funding requirements of the City and possible funding sources to implement. Deschutes County is not expected to contribute to implementation of these projects.

> **Project Relevance:** Many roadway, intersection, pedestrian, and bicycle projects identified near the edge of the Bend city limits and UGB will need to be coordinated with Deschutes County to ensure the City and County systems are compatible and supportive of each other, especially for the active transportation network. Since the expansion areas must be planned – through master planning or area planning prior to adoption, the County should encourage participation in those processes to ensure effective coordination of a compatible and supportive transportation system between the City and the County.

Separately, the City of Bend and Deschutes County have entered into a Joint Management Agreement (2017) to guide and inform the transition and jurisdictional transfer of county roads to the City of Bend in association with development and annexation.

Redmond Transportation System Plan (2020)

The Redmond TSP was updated and adopted at the end of 2020. The Redmond TSP provides specific information regarding transportation needs within the City's UGB to guide future transportation investment.

The Redmond TSP identifies the following goals:

1. Provide a safe and efficient transportation network to complement key economic development priority areas, the comprehensive plan, recreational needs, and adopted state, regional and local plans and policies.

2. Advance community and statewide emergency preparedness efforts through support of the Oregon Resiliency Plan.

3. Provide transportation choices and address the needs and safety of all travelers, including people of all ages, abilities, ethnicities, and incomes.

4. Provide comfortable, convenient and safe pedestrian and bicycle facilities for all users.

5. Provide reliable and convenient transit service to Redmond residents, its businesses, and its connection to surrounding cities, as well as special transit options for the City's elderly and disabled residents.

6. Ensure efficient and effective freight transportation infrastructure is developed and maintained to support local and regional economic expansion and diversification consistent with City and Regional economic plans and policies.

7. Implement the plan in a timely fashion and keep it up to date with respect to local and regional priorities.

Policies explicit to Deschutes County include Policy 4.6, which states that the City will "coordinate with Deschutes County and other agencies to provide additional trail extensions throughout the community including connections beyond the city limits." Policy 7.1 calls for the City and County and other entities as applicable to work together to coordinate the design of Redmond's transportation system.

Figure 10 shows existing and planned bicycle facilities within the City of Redmond UGB and proposes a shared-use path extending outside of the UGB along the SW/NW Helmholtz Way corridor.

The TSP identifies the US 97 South Redmond Corridor Facility Plan as a project requiring multi-agency coordination to address traffic congestion, safety, local access needs, and pedestrian and bicycle needs. While the Facility Plan's project study area extends beyond the City's UGB in the south, there are no planned transportation improvements outside of the UGB.

The TSP also identifies a long-range potential project to replace the existing at-grade SW Quarry Avenue/US 97 intersection with a new interchange and calls for the City, County, and ODOT to monitor transportation needs in that location over time. The TSP acknowledges that this improvement project would require a Goal Exception and does not anticipate it to be reasonably likely to be funded within the TSP's 20-year planning horizon.

Project Relevance: The Redmond TSP identifies transportation improvements that extend beyond the City's UGB. Improvements that extend beyond the City UGB will need to be factored into the TSP update, to the extent that these improvements

have not already been incorporated into the current Deschutes County TSP or are already constructed and have been either programmed by ODOT or the City or have a reasonable chance of being funded by 2040.

Separately, the City of Redmond and Deschutes County have entered into a Joint Management Agreement (2007) to guide and inform transportation planning efforts and annexation for area within the Redmond UGB and Urban Reserve Area.

Sisters Transportation System Plan (2010, revised 2018)

The City of Sisters most recent TSP was completed in January 2010 and revised in 2018. The City has an overall transportation goal to provide and encourage a safe, convenient, and economic, transportation system.

Transportation-related goals and policies include Goal 9, Compatibility, which calls for developing a transportation system "that is consistent with the City's Comprehensive Plan and that coordinates with County, State, and Regional Plans." Policies under Goal 9 generally call for coordination between other jurisdictions to develop projects that collectively benefit applicable agencies, to collaborate so the transportation system can function as one system, and to ensure consistency between standards.

There were no changes to functional classifications for roads that link Deschutes County and the City of Sisters in the TSP, nor were any new roadways proposed outside the Sisters UGB.

The TSP identifies shared-use paths and single-use paths to increase connectivity throughout Sisters and improve connections to the surrounding tail system. Several of the existing or anticipated trails and shared-use paths extend into the County. Figures 5-1 and 6-1 in the 2018 TSP illustrate path improvements.

> **Project Relevance:** Consistent with the Sister's coordination policies, the County's TSP update process will coordinate with the City on identified needed improvements on County roadways and highway intersections identified in the local TSP. Updates to the County TSP regarding trails may occur based on the TGM grant discussed below and the City's existing and planned connections. Currently, the County does not have a Park and Recreation District, nor does the County operate and maintain a trails system.

La Pine Transportation System Plan (2013)

The City of La Pine adopted its TSP in 2013. The Plan focuses on priority projects, policies, and programs to provide guidance for operating and improving the multimodal transportation system within the City's UGB.

Deschutes County has jurisdiction over the majority of the City's arterial and collector system. Figure 3-2 in the TSP illustrates which agencies have jurisdiction on roadways within the City. The TSP states that the City should work with the County to outline a process by which urban improvements will be made to County maintained facilities. Identified items that need further

discussion include future funding sources, regular maintenance expenses, and jurisdictional transfer of improved roadways when an acceptable funding source has been identified and is in place.

Roadways in the La Pine TSP are classified using arterial, collector, and local classifications. All of the classifications except for local streets apply to roads under the County's jurisdiction. Table 4-4 in the Plan presents street design standards for street classifications, which include bicycle lanes, sidewalks, planter strip, pavement width, and total right-of-way.

TSP Table 4-5 summarizes multimodal projects identified in the Plan that would address existing or future needs within La Pine. Many of the projects listed in Table 4-5 call for upgrading streets in conformance with street design standards identified Table 4-4. Table 4-6 summarizes intersection improvement projects. Many of the identified projects are on roads under the County's jurisdiction.

> **Project Relevance:** The La Pine TSP calls for several roadway and intersection improvements on County-maintained roadways within the City's boundaries. In addition, the La Pine planning document also calls for discussion and coordination between the City and County for future funding sources, maintenance expenses, and jurisdictional transfers. The City and County should continue to coordinate on Deschutes County funding goals within La Pine city limits and eventual jurisdictional transfer of County roads into City of La Pine's jurisdiction.

Bend Airport Master Plan (2013)

The Bend Municipal Airport lies to the east of the City of Bend on County-zoned and administered lands and employs close to 500 people.[5] The Bend Airport Master Plan was last updated in 2013. An update to the 2013 Master Plan is currently underway and in the early stages of the process, having completed draft existing conditions exercises.

The Master Plan calls for extending the runway north, extending taxiways on either side of the runway, and adding new aircraft hold areas. The runway extension would require a realignment of Powell Butte Highway and potentially a Goal 3 (Agriculture) Exception. Right-of-way acquisition would be required for the northeast section of the realigned highway in order to connect to the highway, northeast of McGrath Road.

> **Project Relevance:** Deschutes County should again remind the City of Bend that any roadway improvements in the vicinity of the airport and any future roadway or intersection modifications needed to support future growth will require the City to apply to the County for land use approval, including a Goal 3 Exception. The Deschutes County TSP should also incorporate the Bend Airport Master Plan as part of the TSP modal plans.

[5] https://www.bendoregon.gov/government/departments/economic-development/bend-municipal-airport/airport-businesses

Cascades East Transit (CET) 2040 Transit Development Plan (2020)

The purpose of the Cascades East Transit (CET) 2040 Transit Development Plan is to create an updated regional transit master plan for Central Oregon. The Plan updates the previous Central Oregon Regional Transit Master Plan (2013) and the Bend Metropolitan Planning Organization's Public Transit Plan and Transit Corridor Land Use Assessment (2013). Because CET, which is operated by the Central Oregon Intergovernmental Council (COIC), provides public transit service to Bend and the region, transit in Central Oregon will benefit from having a single up-to-date plan to help guide it though a planning horizon of 2040.

The Transit Master Plan (Chapter 8), describes the Community Connector transit network, a network of fixed routes that connects riders between Bend and Redmond and the cities of Culver, La Pine, Madras, Metolius, Prineville, Sisters, and Warm Springs. Called a commuter bus service by the Federal Transit Administration (FTA), this service is considered an intercity bus service. The Community Connector is open to the general public and operates Monday through Friday. The following modifications to existing service are proposed:

- *Redmond-Bend* - Modifications to Route 24 for service between Redmond and Bend include re-routing within Bend to provide more direct service; increasing service frequency to all day and adding an evening trip; improving connections with local service in Redmond in coordination with a potential transition to flex/fixed-route service; and adding weekend service.
- *Prineville-Redmond* - Modifications to Route 26 for service between Prineville and Redmond include re-routing to serve the Redmond Airport and COCC; interlining with Route 24 for a one seat ride to Bend; increasing peak period trip frequency and adding an evening trip; adding midday service as a shopping/medical shuttle trip; increasing local circulation in Prineville via local Dial-A-Ride and/or Community Connector vehicles; and adding weekend service.
- *Sisters-Redmond* - Modifications to Route 28 for service between Sisters and Redmond include improving local stop branding and amenities within Sisters; increasing local circulation in Sisters via the Community Connector; and determining if smaller communities along route need service (e.g. Eagle Crest).
- *Sisters-Bend* - Modifications to Route 29 for service between Sisters and Bend include improving local stop branding and amenities within Sisters; providing a stop at Tumalo and Cascade Village in Bend; re-routing within Bend, like Route 24, to provide more direct service; increasing local circulation in Sisters via the Community Connector; and adding weekend service.
- *La Pine-Bend* - Modifications to Route 30 for service between La Pine and Bend include identifying an improved/more efficient stop for Deschutes River Woods (e.g. Riverwoods Country Store) or alternative way to serve Deschutes River Woods; re-routing within Bend to provide more direct service to downtown; re-routing to serve Sunriver; increasing frequency of weekday trips; adding a flex-route in La Pine; adding midday service via a

shopping/medical shuttle trip; adding weekend service; and adding service to the High Desert Museum and Lava Lands Visitor Center (potentially seasonally based).

New transit services in Deschutes County are also proposed, they are:

- *Redmond Airport Service* - New service to the Redmond Airport includes modifying Route 26 between the Redmond Hub and a Redmond Airport mobility hub – including a stop at Redmond COCC – and supplementing Route 24 by a local route connection between the Redmond Hub and Redmond Airport, serving early morning departures and afternoon arrivals.
- *Sunriver Service* - A new Route 31 provides service between La Pine and Sunriver, connecting employees to jobs in Sunriver, with stops at the Sunriver Starbucks and La Pine Fire Station on Huntington. An alternative to this route is to modify Route 30.
- *Shopping/Medical Shuttle Service* – A new shopping/medical shuttle service blends features of demand-responsive services and the Community Connector routes and should be implemented in the following communities as a midday service on existing routes: Sisters – Bend, Prineville – Redmond, La Pine – Bend (including Sunriver). These new shopper/medical shuttles can provide service to new markets: Crooked River Ranch, Juniper Canyon, Deschutes River Woods, Warm Springs; Simnasho and other outlying communities

Section 9.2 Transit-Supportive Strategies includes recommendations for jurisdictions in the CET service area to assist in implementing the Plan. The section includes recommended policy language and development provisions to including in local plans and codes. The Plan also includes specific guidance to each of the jurisdictions within the service area in implementing policies and development requirements consistent with the region's transit objectives. Implementation recommendations are found in Local Agency Overviews and Implementation Plans, in Technical Appendix Volume 1. Recommendations specific to Deschutes County include that the County review existing, locally-adopted comprehensive plan policies to determine consistency with model transit policy language and update development requirement to include transit-supportive code language.

Project Relevance: The TSP will reflect the transit service enhancements in Deschutes County, as well as be consistent with CET Master Plan policy and recommendations regarding transit planning in the region. Implementation recommendations from the Development Plan that were specific to Deschutes County will be considered as part of the implementation phase of the TSP update.

Central Oregon Rail Plan (2009)

The purpose of the Central Oregon Rail Plan planning effort was to develop a common regional strategy for Crook, Jefferson, and Deschutes counties to address various safety and congestion issues associated with roadway/railway at-grade crossings and to enhance freight mobility. The report addresses various rail-related safety, congestion, freight mobility, and economic development issues for central Oregon. The findings and recommendations are mostly focused around Deschutes County and Bend, but also include the following:

- Existing at-grade railroad crossings high priority locations for bridging existing at-grade crossings for the following locations:
    - BNSF/COPR Lines (Prineville Jct)/O'Neil Highway (Deschutes County/Redmond), ~$18M
    - BNSF Line / Airport Way (Deschutes County/Redmond), ~$14M
    - BNSF Line / Cooley Road (Deschutes County/Bend), ~$24M
    - BNSF Line / Reed Market Road (Deschutes County/Bend), ~$18M
    - BNSF Line / Baker Road (Deschutes County/Bend), ~$36M
    - BNSF Line / US 97 (Deschutes County/La Pine), ~$31M
- Freight Mobility and Rail Service implementation strategies, including:
    - Take advantage of and maximize opportunities with the area's shortline railroad, COPR, including industrial sites along the line, and freight terminal options such as at the Prineville Freight Depot and at the COPR interchange with BNSF at Prineville Junction.
    - For the Class 1 unit train operating model, ensure adequate on- and off-site support track along the BNSF mainline, and seek or create compatible (critical mass cargo) markets.
    - Seek agreement by shippers in Central Oregon to use a single designated intermodal complex.
- Discussion and recommendations for feasibility of a passenger or commuter rail in Central Oregon.

  Project Relevance: While the report is mainly focused on enhancements within the incorporated jurisdictions in Crook, Jefferson, and Deschutes Counties, the County may play a role in implementation strategies, including future multi-party agreements for future passenger and freight rail services or consolidation of at-grade rail crossings.

Cascade Lakes Highway Corridor and Bicycle Facilities Plan (2019)

Deschutes County and the Forest Service applied for Federal Lands Access Program (FLAP) funding in 2016 for a planning study. The scope of the planning project was to study the corridor and identify opportunities for safety improvements.

As described in the Plans' Problem Statement, the following problems were identified through "discussion with project partners, research on existing conditions, conversations with corridor users, and County information:"

- *Congestion, especially in the northern section of the corridor*
- *Parking on side of roadway which can cause safety issues*
- *Sight distance is compromised in some locations, due to grades, curves, and vegetation*
- *Speeding, especially in straightaways*
- *Unclear signage or lack of advanced signage*
- *Enforcement of speeding and parking violations is limited*

- *For some users, low awareness of cyclists and pedestrians*

The goals of the project were to 1) improve safety for all users of the corridor; and 2) provide a positive visitor experience. The existing conditions analysis described conditions throughout the corridor and site-specific issues, primarily related to trailheads.

The improvements recommended in the plan are shown in Figure 3 and summarized below:

- Implement the "green"-coded Very Low and Low cost improvements.
- Collect vehicle and bicycle traffic data (counts, turning movements, and speed if possible) to help determine the impacts of the Wilderness Strategy and to provide more information on the viability of the "yellow"-coded improvements. Key locations for traffic data are:
    - Study Begin (MP 21.98)
    - Todd Lake Intersection
    - Green Lakes Intersection
    - Devils Lake Intersection
    - Elk Lake Resort Intersection
    - S. Century Drive Intersection
- Collect counts during peak season, in 2019 (prior to Wilderness Strategy going into effect), 2020 (after Wilderness Strategy), then every 2 years for short term and every 5 years for long term.
- There are no preferred shoulder widths recommended because additional traffic data is needed to validate the use and need throughout the corridor. Four options with varying costs were provided in the plan.

  Project Relevance: The improvements recommended should be reevaluated and incorporated in the list of improvements in the TSP, where feasible.

Figure 1. Cascade Lakes Highway Corridor and Bicycle Facilities Plan Recommendations

Relative Cost	Timeline to Implement: Near-Term (0-5 years)	Mid-Term (5-10 years)	Long-Term (10+ years)
Very Low	NV1: Vegetation clearing (maintenance of original cleared areas); Improved/ additional guide, warning and regulatory signing; 6-inch edge line striping	MV1: Increased enforcement presence, especially during peak times	LV1: Increased enforcement presence, especially during peak times
	NV2: Increased enforcement presence, especially during peak times; educational outreach strategies	MV2: Educational outreach strategies	LV2: Educational outreach strategies
	NV3: Maintain good crash records; set simple performance goals	MV3: Maintain good crash records, monitor performance goals	LV3: Maintain good crash records, monitor performance goals
	NV4: Minor improvements at Devils Lake along CLH to limit parking.		
	NV5: Moderate improvements at Devils Lake along CLH to limit parking.		
Low	NL1: Additional clearing along curves, intersections; traditional bicycle warning signing	ML1: Collect regular traffic data at key locations	LL1: Collect regular traffic data at key locations
	NL2: Centerline rumble strips and delineators.		
	NL3: Collect regular traffic data at key locations		
	NL4: Dynamic warning signs for bicyclists.		
Medium	NM1: Transit Pilot Project	MM1: Parking lot expansion of Green Lakes and Devils Lake	
	NM2: Parking lot enhancements (revise existing layouts to be more efficient)	MM2: Additional congestion management/ITS solutions	
	NM3: Improvements at Devils Lake along CLH to limit parking, reduce speeds and improve crossing safety.		
High		MH1: Widen to 4' shoulders from begin through Elk Lake with minor areas of realignment	LH1: Widen to 4' shoulders from Elk Lake south to S. Century Dr.
		MH2: Widen to 5' shoulders from begin through Elk Lake with minor areas of realignment	LH2: Widen to 5' shoulders from Elk Lake south to S. Century Dr.
		MH3: Widen to 6' shoulders from begin through Elk Lake with minor areas of realignment	LH3: Widen to 6' shoulders from Elk Lake south to S. Century Dr.
		MH4: Bypass of existing Devils Lake alignment.	

Deschutes County Transportation SDC Ordinance and Methodology (2013)

System Development Charges (SDCs) are one-time fees imposed on new development, at the time of development, to recover a fair share of existing and planned facilities that provide capacity to serve growth. Consistent with state statutes, SDCs are the sum of two components:

- A reimbursement fee, design to recover costs associated with capital improvements already constructed or under construction, and
- An improvement fee designed to recover costs for future construction projects.

In 2013, Deschutes County revised its SDC methodology and rates. The rate was revised to $3,758 per peak-hour trip, and is inclusive a reimbursement fee and administrative recovery charge. The rate increases annually pursuant to an annual percentage increase or decrease in the construction cost index.

The SDC ordinance establishes a Transportation SDC Fund for gathering fees and distributing funds for capital improvements that provide for the increased capacity necessitated by new development. The SDC ordinance also establishes provisions for providing SDC credits and a review and appeals process.

The methodology calculates an improvement fee based on the number of PM peak hour trips added to the transportation system as a result of new development or redevelopment. The methodology does not include a separate reimbursement fee. The methodology includes updates to the Capital Improvement Project list, Deschutes County Transportation SDC Rate Sheet, and other policy considerations. The SDC rates are based on land uses found in the ITE and are slightly different than those found in the 2008 methodology.

> **Project Relevance**: Transportation SDCs contribute funds to transportation infrastructure in the County, including capital improvement program (CIP) projects. The SDC rates are determined in reference to the TSP, which identifies transportation needs. This TSP update process will reevaluate SDC costs and capacity estimates.

Deschutes County Road Moratorium (Resolution 2009-118)

Since 2006, Deschutes County has been operating under a road moratorium in which the County has suspended the acceptance of new County Roads (local road classification only) for maintenance until such time that road funding is deemed adequate to accept additional roads for maintenance. The resolution suspends the establishment of Local Improvement Districts unless contained within a Special Road District (District) or incorporated homeowners association (HOA) and maintenance responsibility is assured by the District or HOA.

With the moratorium in place, new development, through platting or other dedication instrument, creates Local Access Roads which are dedicated to the public, but not accepted for maintenance by Deschutes County. County code at 17.16.105 requires a maintenance agreement or covenant to be in place for new roads platted through the subdivision process.

> **Project Relevance**: The TSP will evaluate Resolution 2009-118 and provide guidance to the County Board of Commissioners related to the relevance of the resolution in the future.

Transportation Growth Management Grant to Update the Tumalo Community Plan and Implement the Rural Trails Portion of the Sisters Country Vision Implementation Plan (ongoing)

The County received a $75,000 grant from the ODOT/DLCD TGM program to update the 2012 Tumalo Community Plan and amend the County TSP map to incorporate various proposed trails and connectors identified in the Sisters Country Vision Implementation Plan (2019). The Tumalo Update will emphasize gaps in the bicycle and sidewalk system in Tumalo as well crossing US 20. The update will also look at potential transit stops in Tumalo. The rural trails portion will concentrate on potential bicycle, pedestrian and equestrian trails and connections between Sisters and Bend, Redmond, and Tumalo. With the cooperation of the USFS, several of these may be identified as future routes on the Deschutes National Forest.

> **Project Relevance**: The TGM grant may result in amendments to the Bike/Ped Goals and Policies section of the TSP. The TSP update should monitor the TGM grant analysis and incorporate relevant outcomes.

Appendix B:

Public Involvement Plan & Outreach Reports

MEMORANDUM

Date: Wednesday, July 12, 2023

To: Chris Doty, Cody Smith, and Peter Russell, Deschutes County

From: Matt Kittelson and Julia Kuhn, Kittelson & Associates

Subject: Deschutes County Transportation System Plan

INTRODUCTION

This Public Involvement Plan (PIP) will guide stakeholder and public engagement throughout the Deschutes County Transportation System Plan (TSP) update. The PIP reflects a commitment from Deschutes County to coordinate and carry out meaningful outreach activities and to actively engage with interested stakeholders throughout the project.

PROJECT OVERVIEW AND STUDY AREA

The Deschutes County TSP is the transportation element of the Deschutes County Comprehensive Plan. Last updated in 2012, the TSP sets a vision for the transportation system by providing goals, polices, and projects that address existing needs and support anticipated economic development and growth over the next 20 years.

The Deschutes County TSP addresses the needs of people walking, riding bikes, taking transit, and driving in the areas outside the incorporated cities of Bend, Redmond, Sisters, and La Pine. Each of the cities have a TSP that is coordinated with the County, including how streets and pathways interface at the edge of the Urban Growth Boundaries (UGB) for each. In addition, the Deschutes County TSP Update will include coordination with the Oregon Department of Transportation (ODOT) to help define the needs of the state highway facilities over the next 20 years, including US 97, US 20, OR 31, OR 242, and OR 126.

PUBLIC INVOLVEMENT PURPOSE AND GOALS

The TSP public involvement program will provide guidance on how the County will share information and gather input on the needs and possible ideas for facilities that help people walk, ride bikes, take transit, drive, and transport goods and services. This program will rely on active engagement and a robust outreach effort to a wide variety of stakeholders and interested parties.

To achieve these objectives, the County intends to:

- Communicate complete, accurate, understandable, and timely information to the public throughout the project.

- Actively engage residents, businesses, and organizations throughout the County to gain feedback on existing conditions, needs, deficiencies, and potential solutions.
- Collaborate with interagency partners.
- Comply with Civil Rights Act of 1964 Title VI requirements and ensuring that the public involvement process is consistent with applicable state and federal laws and requirements, and is sensitive to local policies, goals and objectives.

INITIAL KEY MESSAGES

Key messages will continue to be refined and expanded as the TSP progresses, more information is known, and the need for more detailed public information grows. Initially, the County will inform stakeholders that:

- The TSP is being updated to address existing needs and support growth consistent with the adopted Comprehensive Plan over the next 20 years.
- The TSP will include collaboration with all of the partner agencies, including ODOT, Bend, Redmond, Sisters, La Pine, Cascades East Transit, and other local, state, and federal entities to identify policies, projects, and programs to improve the transportation system within the county.
- The TSP will be guided by an advisory committee composed of people who live and work in the county and by a technical a committee staffed by agency partners.
- The TSP will address the needs of people driving, walking, riding bikes, and moving goods and services for the areas outside the UGBs of Bend, Redmond, Sisters, and La Pine.
- The TSP website can be used to sign up for project updates: www.deschutescountytsp.com. The website is also where you can get the latest information and provide input.

AUDIENCES

The County will engage a variety of potentially affected and/or interested individuals, residents, businesses and organizations, such as:

- Deschutes County staff and elected officials
- ODOT staff
- City of Bend
- City of Redmond
- City of Sisters
- City of La Pine
- Deschutes County Bicycle and Pedestrian Advisory Committee (BPAC)
- Bureau of Land Management
- US Forest Service
- Local businesses and business organizations
- Area residents
- Bike and pedestrian interests
- Freight interests
- CET
- Tourism and recreation interests, including the High Desert Museum
- Local state parks
- Bend – La Pine School District
- Redmond School District
- Accessibility groups

- Emergency services providers
- Local media

PROJECT DECISION-MAKING STRUCTURE

The decision-making structure for the TSP establishes a broad-based support for the planning process. All of the activities, engagement and technical work will be guided by a Project Management Team (PMT) composed of County staff. The PMT believes the best way to build support is to have an open, inclusive process. The PMT will compile all of the recommendations from the public, agency stakeholders and technical work and advise the Deschutes County Board of Commissioners (Board of Commissioners), which is the project's final decision maker.

To support development of a credible decision-making process, the Advisory Committee (AC) and Agency Partner Coordination Committee (APCC) will be appointed by the Board of Commissioners to provide community and technically based recommendations and guidance. The AC and APCC will develop recommendations to the PMT. If an AC or APCC recommendation is not followed, the PMT will specifically note it. All AC and APCC meetings will be open to the public and include a public comment period. Exhibit 1 reflects the advisory and decision making process that will guide the TSP.

Exhibit 1. Decision-Making Structure

Project Team Member Roles and Responsibilities for Public Involvement

The following are the key project members and their roles in implementing and overseeing the public involvement program:

Deschutes County

- **Chris Doty, Road Department Director.** Chris serves as the project manager for the TSP, providing key oversight and strategic visioning.
- **Cody Smith, County Engineer.** Cody oversees engineering projects within the County and provides an important link between the long-range planning of the TSP and near-term work the engineering department is engaged with.
- **Peter Russell, Senior Transportation Planner.** Peter is the key transportation planning expert for the County and provides technical review, policy guidance, and key input on transportation needs and solutions within the County.
- **Whitney Hale, Communications Director.** Whitney is the main point of contact for the County and provides guidance and direction on public engagement activities.

Kittelson & Associates

- **Matt Kittelson, Consultant Team Project Manager.** Matt is leading the consultant team and providing oversight on the project's outreach strategy.
- **Julia Kuhn, Consultant Team Project Principal.** Julia provides key strategic input and oversight for the project.
- **Carrie Theus, Consultant Team Lead Analyst.** Carrie will lead operational and safety analysis for the project.

PUBLIC INVOLVEMENT STRATEGIES AND SCHEDULE

Table 1 summarizes the engagement and informational tools and activities that will be used throughout the project to engage and inform potentially affected interests, stakeholders and the broader public.

Table 1. Public Engagement Tools

Tool/Activity	Description	Lead	Anticipated Schedule
Stakeholder Database	A database that will include potentially affected interests in the County, stakeholders, interested parties, and meeting attendees. The database will be updated after public events and will track those individuals and groups who express interest in the project. The database will be used for notification of the online open houses, project news and outreach materials.	Deschutes County	Ongoing

Tool/Activity	Description	Lead	Anticipated Schedule
Project Website	The project website, www.deschutescountytsp.com is the primary portal for public information and is an important tool to collect public input. The site will include a project description, an interactive comment mapping tool, project documents (maps, reports, graphics), and all public meeting information and materials.	Kittelson	Available throughout the TSP update process
Social Media	Project information and updates will be shared in a timely fashion on the County's social media channels.	County	Ongoing
Public Comment Log	Public comments (and responses) collected at public events and online will be logged.	Kittelson	Ongoing
Newsletters	Two newsletters will be created to introduce and inform the public outreach activities. Newsletters will be emailed to individuals on the stakeholder database.	Kittelson & County	Prior to each public meeting
Stakeholder Emails	In addition to emailed newsletters, the project team will send up to two additional emails to the project mailing list to provide project updates.	Kittelson	As determined by Deschutes County
Advisory Committee	The Advisory Committee will meet up to three times to provide community and technical review and to provide guidance on the Project. Members of the committee will be recruited from interested parties and participants in Public Meeting #1.	Kittelson	Meeting 1: August 2021 Meeting 2: December 2021
Agency Partner Coordination Committee	The Agency Advisory Committee will meet up to four times to provide technical review and regional input and coordination to provide guidance on the Project.	Kittelson	Meeting 1: January 21, 2021 Meeting 2: April 2021 Meeting 3: August 2021 Meeting 4: December 2021

Tool/Activity	Description	Lead	Anticipated Schedule
Public Meetings	The project will host public meetings at two key points in the process: Meeting 1 will introduce the project and solicit public input on existing conditions, needs, and opportunities. Meeting 2 will provide information and solicit feedback on possible solutions, projects, and programs. A detailed meeting plan and promotional fliers will be developed for each public meeting.	Kittelson	Meeting 1: April 2021 Meeting 2: August 2021
Media Outreach	Press releases will be distributed at key points in the project to local media sources	Deschutes County	Ongoing

MEASURING AND MONITORING OUTREACH ACTIVITIES

The PMT will evaluate the public involvement process on an ongoing basis to determine the effectiveness of the outreach effort.

At key milestones, the PMT will assess how well the program is effectively engaging the public. As part of this review, the team will also consider the following measurable objectives:

- Number and diversity of participants attending meetings or events.
- Number of website hits or downloads occurring during a specific time period.
- Number of social media engagements.
- Number of people who have signed up for the project mailing list.
- Number of project comments received (phone, email, comment cards, online).
- Whether the comments are relevant to the project (indicates project understanding).
- How project decisions have been modified because of public input.

NEXT STEPS

The PMT will review the public engagement plan with the Deschutes County Board of Commissioners prior to finalizing for use in the TSP. This plan will be shared with the Agency Partner Coordination Committee in January 2021.

Appendix C:

Methodology Memo

DRAFT METHODOLOGY MEMORANDUM

Date: Thursday, March 11, 2021

To: Chris Doty, Peter Russell, and Cody Smith, Deschutes County

From: Matt Kittelson, Julia Kuhn, and Carrie Theus

Project: Deschutes County TSP Update

Subject: Methodology Memorandum

This memorandum documents the methodology and key assumptions to be used in preparation of the existing and future conditions and alternatives analyses for the Deschutes County Transportation System Plan (TSP) Update. The methodologies included in this memorandum are based on guidance provided in the Oregon Department of Transportation (ODOT) *Transportation System Plan Guidelines* and the *Analysis Procedures Manual* (APM). The methodology and assumptions described in this memorandum will be used to help identify potential gaps and deficiencies in the transportation system related to:

- Future capacity needs along key roadways within the County;
- Roadway connectivity needs for people driving, emergency services, access to tourism, and the transport of goods and services;
- Traffic safety needs along key County facilities; and,
- Facilities and performance of the bicycle and pedestrian network.

This information will serve as a baseline for identifying a list of existing needs (gaps and deficiencies), identifying and evaluating potential solutions (projects, programs, policies, pilot projects, and studies), and developing a prioritized list of improvements for the TSP update.

The remainder of this memorandum summarizes the following:

- Location of the roadway segments where safety and capacity analyses will be conducted;
- Methodology for developing vehicular analyses volumes for existing and future conditions;
- Methodology for identifying roadway segments that are nearing and/or exceeding capacity;
- Crash analyses procedures; and,
- Pedestrian and bicycle analyses parameters.

Study Area

The TSP update will address the transportation system needs associated with County-operated facilities in areas that are outside the Bend, Redmond, Sisters, and La Pine Urban Growth Boundaries (UGBs).

Transportation facilities that are operated and maintained by ODOT, the Forest Service, Bureau of Land Management, and the four cities are not addressed.

Figure 1 reflects the roadway segments where capacity analysis will be reviewed as part of the TSP. The County has collected daily traffic counts at many of these locations each year, beginning in 2011 through 2019. To the extent possible, the 2019 counts will be used to develop year "2020 proxy volumes" to reflect existing conditions.

Traffic Capacity Review

For the purposes of performing a screening level review of both potential roadway capacity as well as connectivity needs along county roadways, we propose to apply the "Simplified Highway Capacity Method for the Highway Performance System" that was developed for use by the Federal Highway Administration.[1] The rural two-lane highway methodology within this report can be used as one of several helpful tools that can be used to help assess the future needs of the County's roadway system. For reference purposes, the methodology draws from the applicable roadway characteristics to assess a level of service, including:

- Daily roadway volumes;
- Posted speed;
- Generalized terrain information; and,
- Percentage of trucks.

However, for non-mountainous roadways, the methodology does not reflect any measurable differences in expected level of service for terrain and truck percentages. As an example, level-of-service "D" corresponds to the following:

- Posted Speed of 45 miles per hour – daily volumes of less than 13,900 vehicles
- Posted Speed of 50 miles per hour – daily volumes of less than 19,000 vehicles
- Posted Speed of 55 miles per hour – daily volumes of less than 24,000 vehicles

We will use the level-of-service "D" as the metric for which to identify potential changes to the roadway system. This metric can be matched with an assessment of various roadways versus the TSP goals and identified roadway connectivity and/or specific roadway projects needed to support continued economic development, emergency services, freight needs, resiliency efforts, etc.

[1] https://www.fhwa.dot.gov/policyinformation/pubs/pl18003/hpms_cap.pdf

Existing Year Traffic Volumes

With the ongoing COVID pandemic and its effect on "typical" traffic patterns, we propose to apply a two-percent growth factor to the 2019 traffic volumes on most County roadways to approximate 2020 daily volumes. We will coordinate with County staff to identify any specific facilities where a higher growth may be appropriate relative to 2019 counts. Further, given the planning-level screening analyses that we propose to use, we are not intending to apply any seasonal adjustment factors to daily traffic volumes along County roadways.

Forecast Year Traffic Volume Development

The 2012 County TSP relied on travel forecasts from the travel demand model developed by ODOT's Transportation Planning Analysis Unit (TPAU). This model has not been updated with current land use information for existing conditions or future analysis years so we instead reviewed ODOT's future highway volume table for potential growth rates to apply to the "existing" volumes to approximate year 2040 conditions. This review revealed that a two percent per year (linear, non-compounded) rate could be used to reflect future growth along County roadways. This review was based on several locations along the state highway system within Deschutes County, such as:

- US 97 at the Jefferson County/Deschutes County line – 1.9 percent per year;
- US 97 north of 1st Street in La Pine – 1.8 percent per year;
- Powell Butte Highway west of Deschutes County/Crook County line – 3.2 percent per year;
- McKenzie Highway west of Sisters – 1.6 percent per year;
- McKenzie-Bend Highway near Cline Falls Highway – 2.1 percent per year; and,
- Santiam Highway west of Sisters – 0.4 percent per year.

Unless otherwise identified by the County at specific roadway segments, we will apply a linear two-percent per year growth rate for screening purposes.

Crash Analyses

The County completed its Transportation Safety Action Plan (TSAP) for the areas outside the City UGBs in 2019. As part of the TSAP, all roads within unincorporated areas of the county were screened for the need for near-term or longer-term safety-oriented changes. Through that work, high priority improvement needs as well as systemic investment strategies were identified. Long-term concepts which may require further refinement are also identified.

As part of the TSP, we propose to include key outcomes of the TSAP, including both the near-term and longer-term projects identified. We do not propose any additional quantitative review of crash history and/or crash countermeasures. We do, however, propose to evaluate the potential for incorporation of the safety-oriented projects into projects being considered to address other TSP goals. Locations where such analysis would be useful will be identified through the existing and future conditions analysis.

Analysis of Bicycling, Walking and Transit Options

The analysis of facilities for people walking, riding bikes and/or taking transit is anticipated to focus on the following:

- Using available GIS data, field observations and online mapping, qualitatively identify key gaps within the bicycle system connecting unincorporated areas of the County with the City's UGBs as well as key recreational areas.
- Within the Terrebonne, Deschutes River Woods, and Tumalo communities, qualitatively identify key gaps within the sidewalk and/or trail system, particularly related to connecting residents with school bus stops.
- Incorporate the Central Eastside Transit (CET) Master Plan recommendations.

Incorporation of Other Plans

We plan to incorporate by reference a number of ongoing and/or recently adopted plans into the TSP update for the County. Examples of these plans include, but are not limited to:

- Redmond TSP;
- Bend TSP;
- Sisters TSP;
- La Pine TSP;
- Deschutes County Transportation Safety Action Plan;
- Redmond and Bend Airport Master Plans;
- Applicable elements of local refinement plans, corridor plans, etc.;
- Interchange Area Management Plans (e.g., Baker Road, Lower Bridge Way), etc.

Next Steps

We look forward to collaborating with you on the next steps and receiving your feedback on the methodology and key assumptions outlined in this memorandum.

Appendix D:

Existing & Future Needs

FINAL EXISTING CONDITIONS & FUTURE NEEDS MEMORANDUM

Date: October 1, 2021

To: Chris Doty, Peter Russell, and Cody Smith, Deschutes County

From: Matt Kittelson, Julia Kuhn, Ashleigh Ludwig, and Carrie Theus

Project: Deschutes County TSP Update

Subject: Existing Conditions & Future Needs Memorandum

This memorandum provides an overview of the existing and future transportation needs in Deschutes County. The needs were identified through feedback from the County and partner agency staff and by technical analyses of roadways, intersections, bike facilities, transit, walking routes, and transportation safety.

Most of the inventory and analysis results are presented in figures and tabular form with supplemental text provided, as needed, to explain the illustrated information. The information presented herein will form the basis of a series of transportation alternatives that can address the identified needs.

Table of Contents

01 | Plan Area

The TSP addresses transportation needs in Deschutes County except within the Urban Growth Boundaries (UGB) of the incorporated cities of Bend, Redmond, Sisters, and La Pine, each of whom has its own TSPs. The County TSP focuses on the primary roadways, bicycle facilities, pedestrian facilities, and transit facilities serving people in the County. The TSP also addresses the rail, air, marine, and pipeline systems. Figure 1 illustrates the location of the County within Central Oregon.

02 | Land Use and Population

The existing land use patterns, economic development opportunities, natural and protected resources, and population and job forecasts help inform the needs of people traveling within and to the County today and in the year 2040. This data can help provide for a discussion of opportunities and constraints related to future transportation system alternatives.

Land Use

For reference purposes, the County's Zoning Map is reflected in Appendix A. Development regulations for each of the County's zones are provided in the Deschutes County Development Code. As shown, much of the County lands are zoned for forest use or farm use with rural-oriented residential, industrial and commercial lands designated near the incorporated cities within the County.

In addition to land use, the protection of natural resources can also help inform the TSP alternatives. A map in Appendix A reflects the known wetlands as of March 2021.

Activity Centers

Connecting people walking, driving, riding bikes and taking transit to key "activity centers" in the County can also help to inform gaps in the existing transportation system as well potential changes to the existing system to help provide comfortable and convenient connections for people traveling. A map illustrating some of the key areas within the County is reflected in Appendix A.

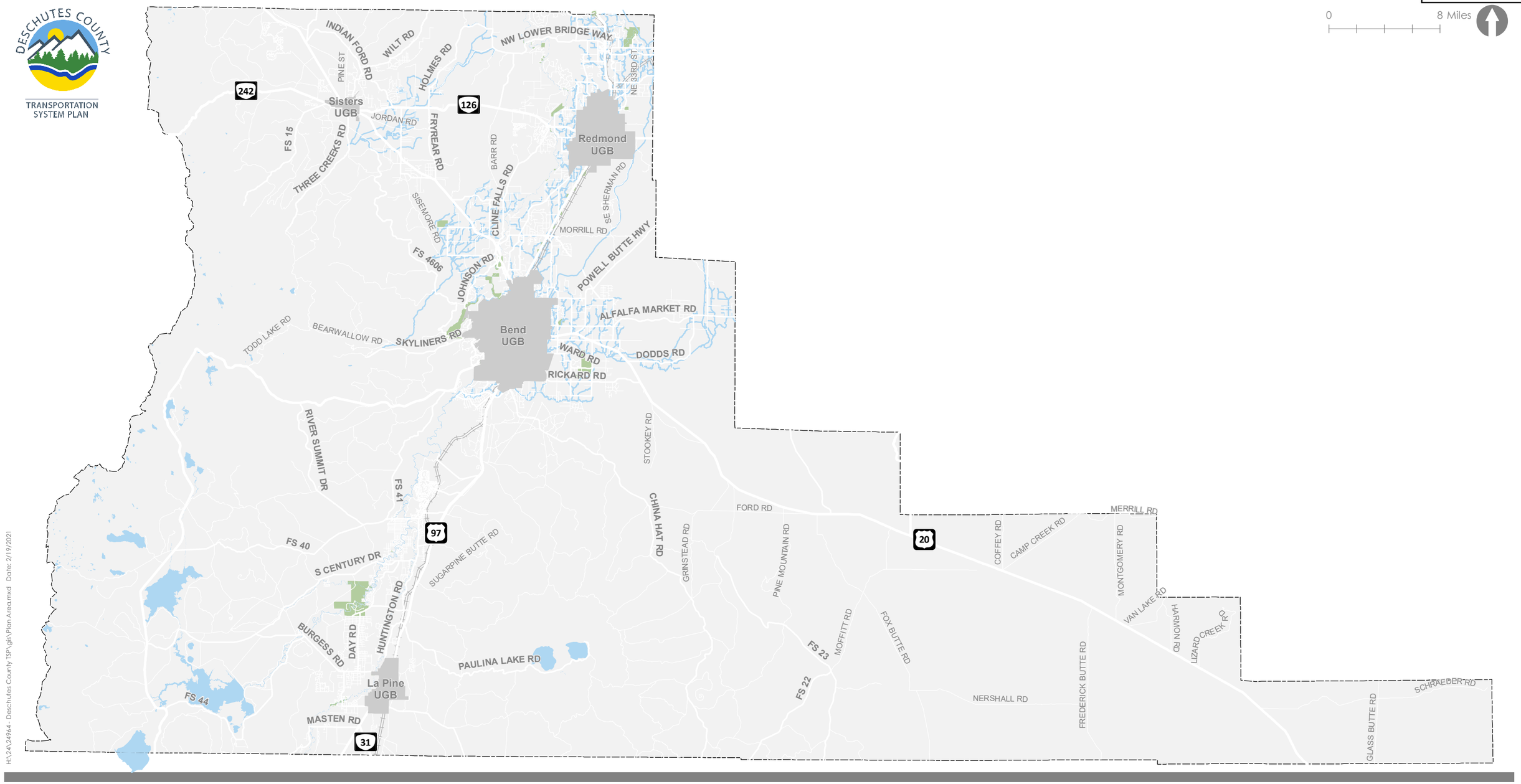
As shown in the Appendix, some of key areas for consideration include:

- Smith Rock State Park, which is located in the northeast corner of the County, east of Terrebonne along the Crooked River.
- Peter Skene Ogden State Scenic Viewpoint which is located in the northeast corner of the County (along the Jefferson Countyline).
- Cline Falls State Scenic Viewport which is located on the Deschutes River west of Redmond.
- Tumalo State Park which is along the Deschutes River north of Bend.
- La Pine State Park which is along the Deschutes River north of La Pine.
- Newberry National Volcanic Monument which is located inside of the Deschutes National Forest south of Bend.
- The High Desert Museum which is located south of Bend on US 97
- Mt Bachelor Ski Resort which is located in the southwest part of the County
- Multiple parks and camping areas
- Multiple golf courses and destination resorts
- Schools and civic uses within Terrebonne, Sunriver, and Tumalo.
- Badlands Wilderness approximately 15 miles east of Bend on US 20
- Trailheads on Cascades Lakes Highway for the Three Sisters Wilderness area

- High Cascade Lakes along Cascades Lakes Highway.
- Newberry National Monument off of Paulina Road

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



H:\24\24964 - Deschutes County TSP\gis\Plan Area.mxd Date: 2/19/2021

Parks
Water
UGBs

Data Source: ODOT, Oregon State Parks, Deschutes County

Figure 1

Plan Area
Deschutes County, Oregon

Population and Demographics

Overall growth in population and changes in demographics will inform the TSP alternatives. By Oregon Revised Statute 195.034, incorporated cities and counties are directed to formulate and adopt coordinated population projections. Table 1 shows the 2014 and 2019 certified population estimates as well as the population projections for 2020 through 2040. Table 1 illustrates the total County and incorporated City populations.

Based on the Certified Population Estimates prepared by Portland State University (PSU) Center for Population Research, Deschutes County is anticipated to experience a population growth of approximately 2.2 percent overall and 1.0 percent in the incorporated areas within the County. The anticipated growth in population will help inform the calculation of year 2040 traffic volumes using the County transportation facilities.

Table 1. Population Projections

Year	Deschutes County (Total)	Deschutes County (Unincorporated Areas)	City of Bend	City of Redmond	City of Sisters	City of La Pine
Certified Population Estimates						
2014	166,400	55,785	79,985	26,770	2,190	1,670
2019	193,000	66,130	91,385	30,600	2,985	1,900
Projected Population Estimate Forecasts						
2020	199,793	65,677	98,205	30,812	3,018	2,081
2030	244,018	75,362	123,574	38,524	3,889	2,670
2040	289,225	78,702	153,696	48,575	4,867	3,386

For reference purposes, the total population per block group within the incorporated areas of the County are shown in Appendix A (as reflected in 2019 American Community Survey (ACS)). As shown, the largest population blocks are located near the Urban areas within the County.

In addition to the overall population estimates, information demographic data can help inform transportation needs specific to minority groups, elderly, youth, low-income populations, disabled persons, limited-English proficiency households, and for those who do not have access to a private vehicle or choose not to use one. Demographic information at the block group level for the "transportation disadvantaged" populations within the County is reflected in Appendix A.

Key findings related to the demographic information can help identify potential changes to the transportation system to address the needs and safety of all travelers in mind, including people of all ages and abilities. As reflected in Appendix A, the demographic information revealed the following:

- The areas with the highest percentages of youth are primarily located in Tumalo and Terrebonne as well as adjacent to the Bend and Redmond UGBs. Connections for school students between their homes, the local community schools, and school bus stops will be considered as part of the needs analysis for the TSP.
- The highest percentage of elderly populations are located in the Sunriver area and adjacent to the Sisters, Redmond, and La Pine UGBs. Coordination with Cascades East Transit (CET) service and master planning to serve these residents will be incorporated into the TSP.
- The highest proportion of minority residents are in Tumalo and outside of the Redmond and Sisters UGB.
- The areas with the highest percentage of households below poverty are in the southwest corner of the County outside of the La Pine UGB and in the northeast corner of the County in Terrebonne.
- The highest concentration of population with disabilities are in the rural areas around La Pine, Redmond, and Sisters UGBs. Coordination with Cascades East Transit (CET) service and master planning to serve these residents will be incorporated into the TSP.
- The highest concentration of households with limited English is located in the rural northwest corner of the County outside of Sisters. Other areas with a high concentration are outside of the La Pine and Bend UGBs.
- The County's percent of households without vehicles is approximately 2%. The 2019 State's percent of households without vehicles is approximately 8%. The areas with the highest concentration of households without vehicles at 5-15% are to the west of La Pine and to the southeast of Redmond. Multimodal options, including rural transit, will be important considerations for these areas.

03 | Roadway System Inventory

The County's roadway system serves people driving, freight needs, people taking transit, and emergency response. This section summarizes the key findings associated with the existing roadway system and an identification of gaps in this system needed to serve travelers.

Roadway System Characteristics

The following section summarizes roadway jurisdictions, functional classification, street characteristics, and freight routes for County and State roadways.

ROADWAY JURISDICTION

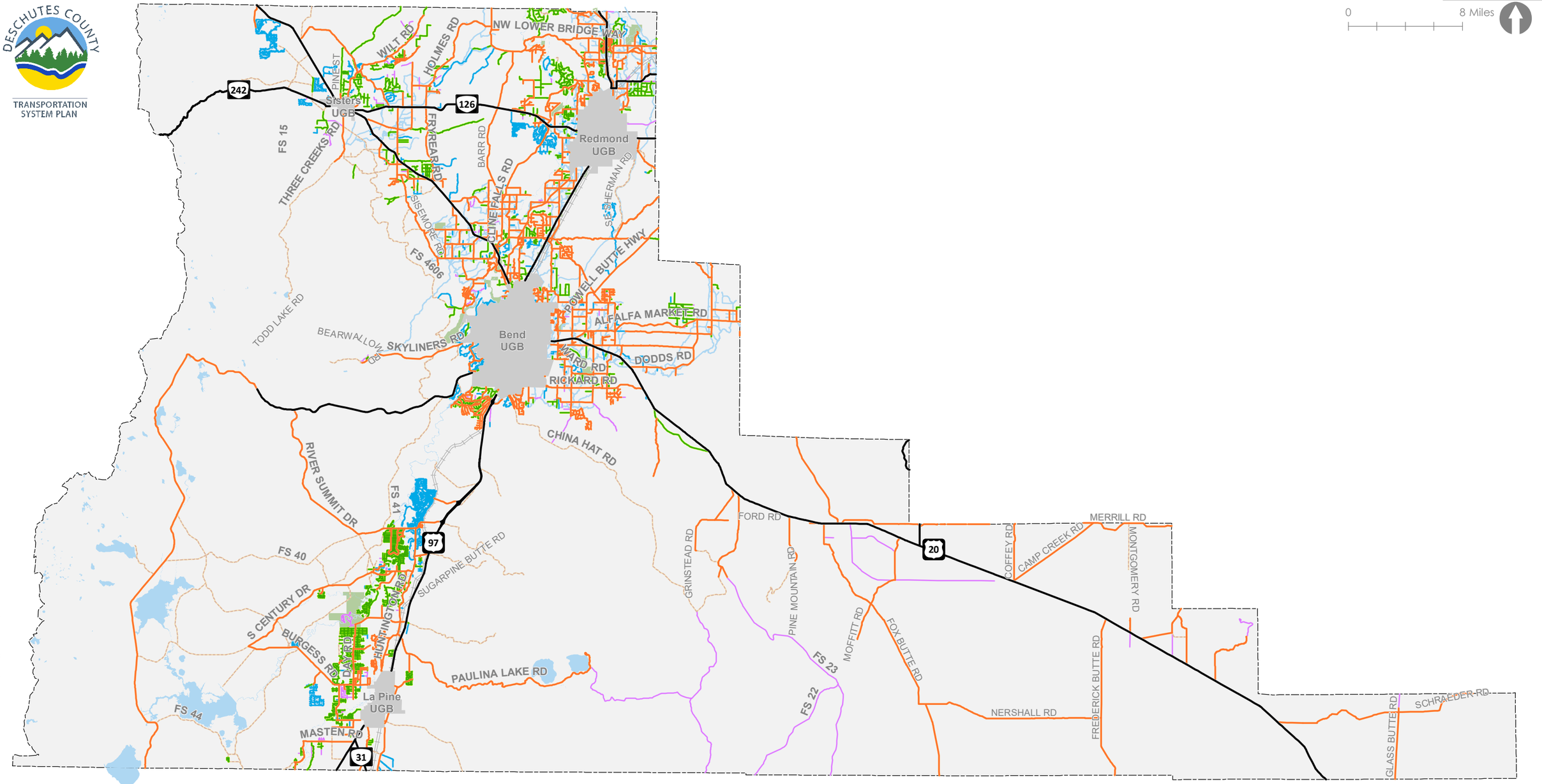
As shown in Figure 2, the majority of roadways within the County are owned and operated by the County, US Forest Service, Bureau of Land Management (BLM), or ODOT. In March 2021, the County maintained approximately 41 percent of the lane miles of roadways within the unincorporated areas, ODOT maintained approximately 10 percent, and the US Forest Service/BLM maintained approximately 12 percent. Local access roads, which are roads that the public has right to use, but are not maintained by ODOT, Deschutes County or any other government agency, comprise approximately 18 percent. The remaining 19 percent were maintained by a variety of community and private entities.

OREGON HIGHWAY PLAN (OHP) DESIGNATIONS

Per the Oregon Highway Plan, the state highways within the County are primarily designated as either statewide highways (i.e., US 97 and US 26) or district highways (i.e., the O'Neill Highway (OR 370)). The statewide highways are intended to serve the needs of travelers within Central Oregon as well as the overall state of Oregon. The district facilities are primarily intended to connect people within the County and the Central Oregon Region. Figure 3 shows the highways in the County and their corresponding OHP classification. The TSP alternatives will focus primarily on the county roadways as well as the intersection of those roadways with the state facilities. The classification of the state facilities at these key connection points can help inform transportation system alternatives intended to address the needs of local, regional and statewide travel.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



H:\24\24964 - Deschutes County TSP\gis\Roadway Jurisdictions.mxd Date: 3/11/2021

- State Roads
- County Roads
- BLM/Forest Service
- Local Access Road
- Private
- Unknown
- Parks
- Water

Data Source: Deschutes County

Figure 2

Functional Roadway Classifications
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles

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Statewide
Regional
District
Parks
Water

Data Source: ODOT

Figure 3

Oregon Highway Plan Designations
Deschutes County, Oregon

FUNCTIONAL CLASSIFICATION

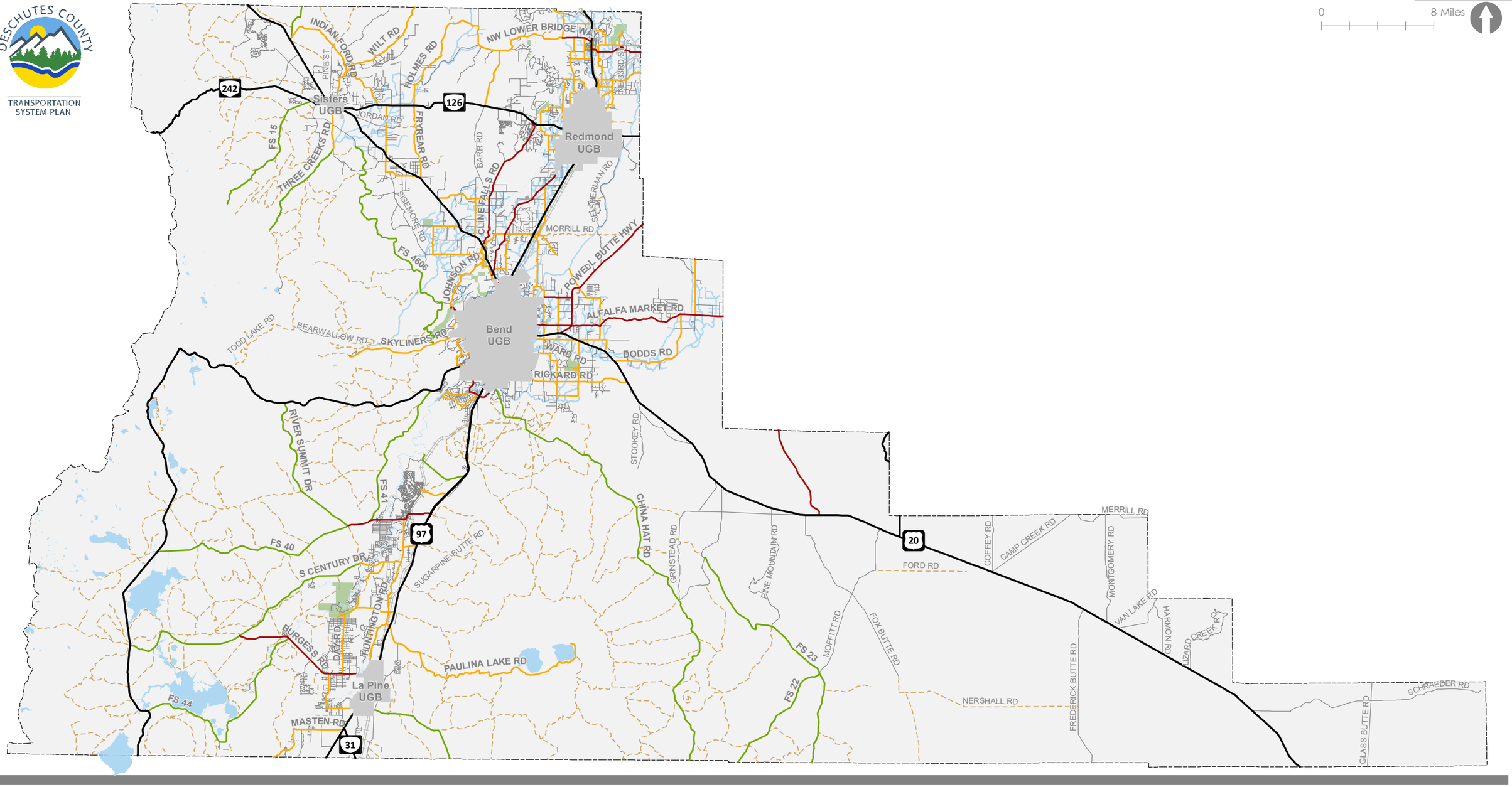
The County and ODOT maintain a "functional classification" system that reflects how roadways are intended to "look and feel" to people driving, walking, riding bikes, taking transit, and moving freight as well as whether the roadway serves local or more regional/statewide needs. The County's functional classification is based on the following hierarchy:

- Arterials are intended to serve more regional needs and provide connections to key activity centers within the County. They are also intended to represent the key movement of goods and services throughout and to/from the County. These roadways also provide connections to the incorporated UGBs within the County.
- Collectors primarily connect the rural areas of the county with the state facilities and the County arterials. These roadways provide important connections to much of the unincorporated areas of the County.
- Forest Highways provide access to recreational areas such as campsites, lakes, hiking, and biking trails in the County. Maintenance of these facilities is provided by the County and by the Forest Service, depending on location.
- Local roads serve specific areas within the County and can be paved or unpaved.

The functional classification of the roadways the County are shown in Figure 4. The TSP alternatives focus on the Arterials and Collector Roadways. As part of the TSP, the County will coordinate with ODOT and the local communities to identify the need to address inconsistencies between the various agencies' designated classifications of roadways within the County. Based on a preliminary review, the consistency of the classifications of six roadways may need to be addressed, including NW Lower Bridge Way, Smith Rock Way, Alfalfa Market Road, George Millican Road, Burgess Road and the O'Neill Highway (OR 370).

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



H:\24\24964 - Deschutes County TSP\gis\Functional Roadway Classifications.mxd Date: 3/11/2021

Data Source: Deschutes County

Roadway Classification

- Highway
- Arterial
- Collector
- Forest Highway
- Local
- Unimproved

- Parks
- Water

Figure 4

Functional Roadway Classifications Deschutes County, Oregon

FREIGHT ROUTES

Per the OHP, the designated Freight Routes in the County are shown in Figure 5. There are no freight routes on the County roadways, only on the state highways. Oregon's Motor Carrier Transportation Division's (MCTD) Freight Mobility Map classifies truck route mobility classifications and restrictions. The MCTD Freight Mobility Map for Deschutes County is shown in Figure 6. As shown in this figure, the following designations and characteristics will be considered as part of the TSP alternatives where County roadways intersect ODOT facilities.

Orange Routes shown on Figure 6 are generally unrestricted freight and oversize/overweight routes. These routes require Single Trip Permits for loads greater than 14' wide and may be used as unrestricted detour routes. All three routes are Reduction Review Routes. Reduction Review Routes are ODOT facilities that requires review of during planning, project development, development review, and maintenance to examine any "hole in the air" capacity. Reduction Review Routes are all parts of the state highway(s) that must be travelled to complete the prescribed route and/or connect with other state highways. This includes couplets and on and off ramps. These routes include:

- US 97: a Reduction Review Route permitting freight vehicles up to 14'6" (designated high clearance route) as well as triple trailer combinations.
- OR 126: a Reduction Review Route permitting freight vehicles up to 14'6" (designated high clearance route).
- US 20: a Reduction Review Route permitting freight vehicles up to 14'6" (designated high clearance route) and triple trailer combinations (although these vehicles are restricted during the holidays).

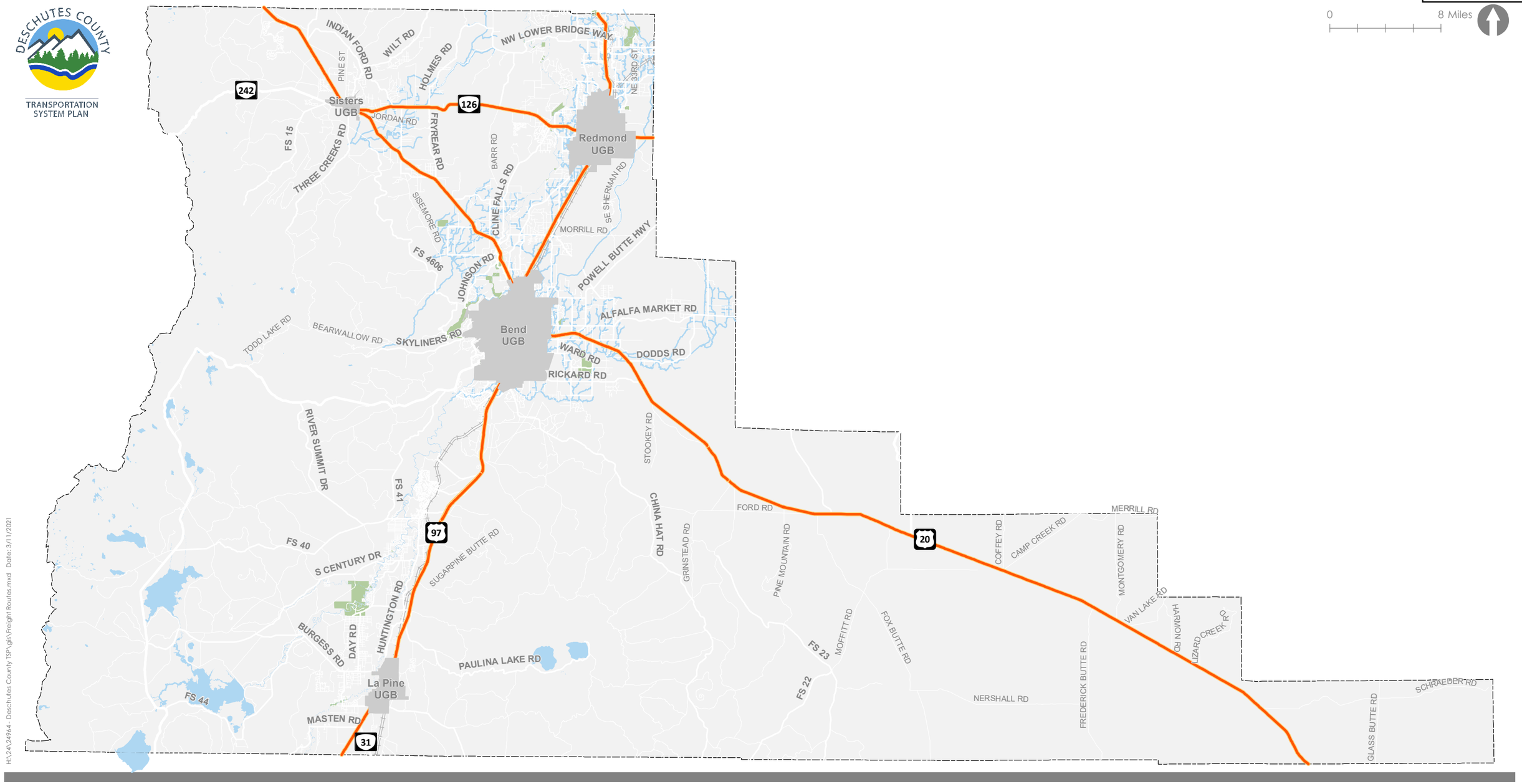
Blue Routes shown on Figure 6 are unrestricted to standard freight truck traffic but are either weight or width restricted for non-divisible and/or heavy haul loads. These routes include the Cascades Lakes National Scenic Bypass and OR 31 (the Fremont Highway).

Black and Yellow Routes shown on Figure 6 are highly restricted to truck and oversize load traffic and not considered viable for detour routes for trucks. The routes include OR 242 (McKenzie Highway), portions of OR 370 (the O'Neill Highway), and OR 27.

Finally, Magenta Routes have some restrictions for both length and/or width and are also not considered to be viable detour routes for trucks. The only route in Deschutes County that is this designation is a small portion of OR 242 (McKenzie Highway) from MP 84.69 to 92.22 outside of Sisters.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



H:\24\24964 - Deschutes County TSP\gis\Freight Routes.mxd Date: 3/11/2021

State Freight Routes
Parks
Water

Data Source: ODOT

Figure 5

Freight Routes
Deschutes County, Oregon

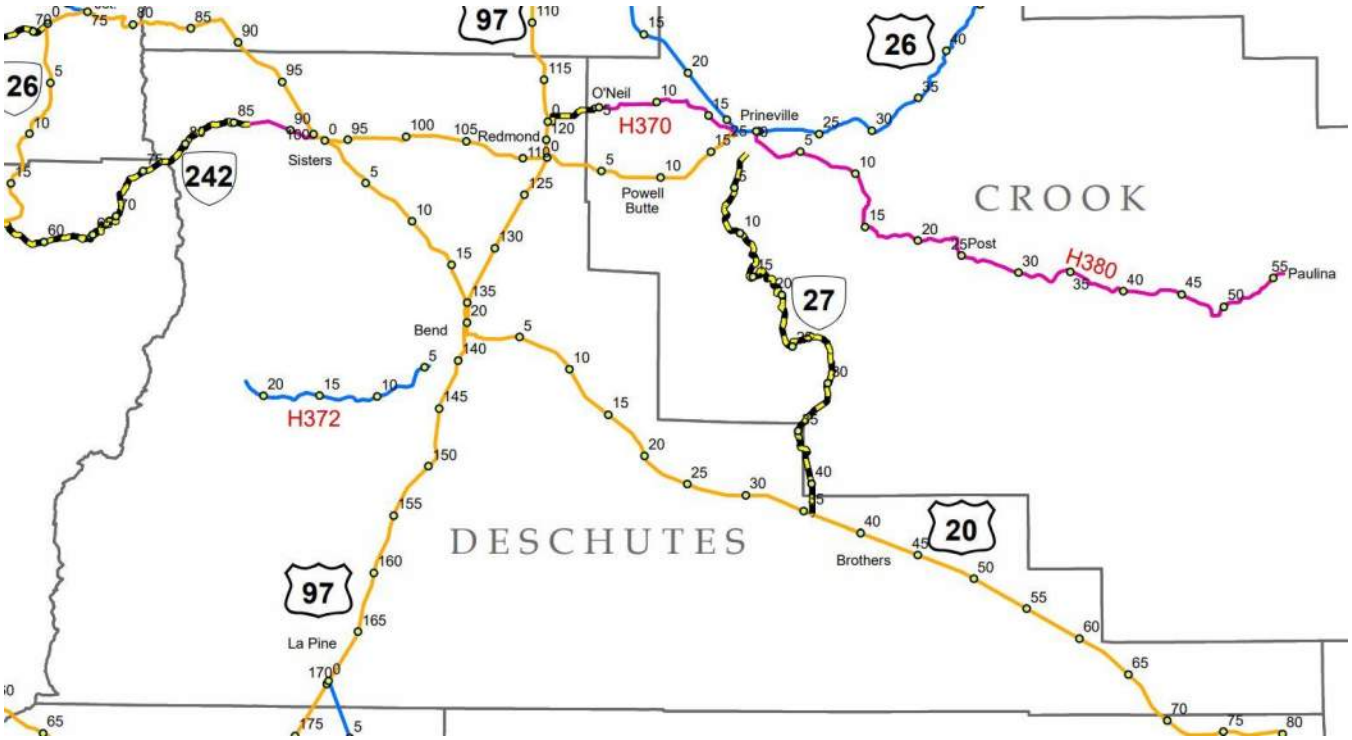


Figure 6. MCTD Freight Mobility Map- Deschutes County

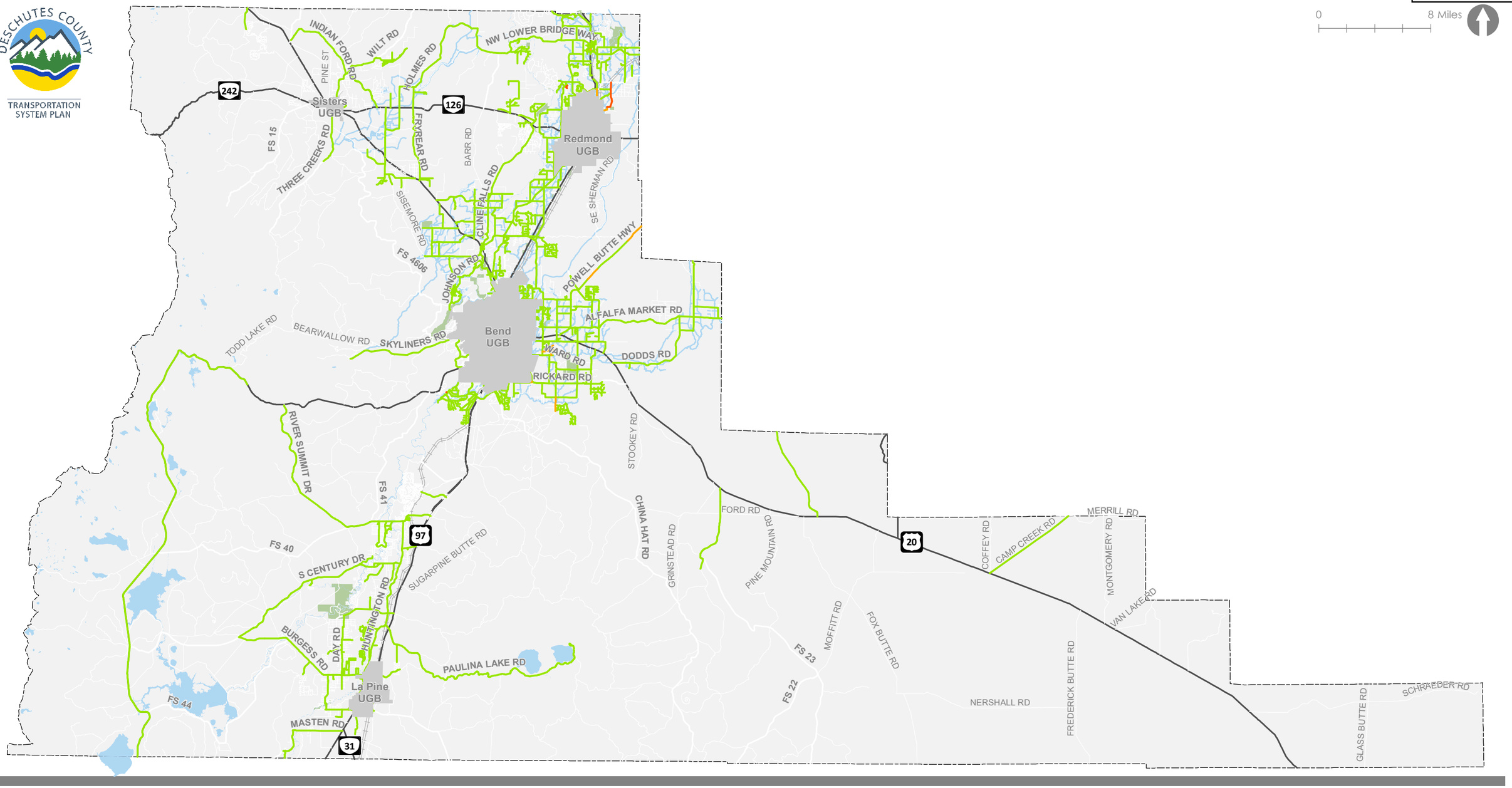
POSTED SPEED LIMIT AND PAVEMENT CONDITIONS ALONG COUNTY FACILITIES

Information about current 2018 pavement conditions on roadways within the County can help inform the prioritization of maintenance activities and resources. Pavement conditions along County roadways are rated using a technical rating process based on the frequency and severity of signs of damage or wear such as cracks, holes, and fissures. A score is assigned, called the pavement conditions index (PCI), which ranges from 0 to 100.

Qualitative ratings were assigned ranging from good (Category I) to poor (Category III) based on the PCI score for each roadway classification. Figure 7 illustrates the pavement condition for County facilities as measured in March 2021. This information will continue to inform the County's maintenance program to address roads in need of repair.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



H:\24\24964 - Deschutes County TSP\gis\Current Pavement Conditions.mxd Date: 3/11/2021

Data Source: Deschutes County

County Pavement Conditions

- Good
- Fair
- Poor

- Parks
- Water

Figure 7

Current Pavement Conditions Deschutes County, Oregon

Posted Speeds along ODOT Highways

Within the unincorporated areas of the County, the posted speed along ODOT highways primarily varies between 55 and 65 miles per hour (mph) with transitions to lower speeds adjacent to the City UGBs.

COUNTY ROADWAY CROSS SECTION STANDARDS

The County's cross-section standards are used to guide the construction of new roadways and/or changes to existing roadways. These standards correlate to the identified functional classification of a roadway. These standards get updated over time to reflect changing needs for the various users of the transportation system and economic development opportunities; therefore, many existing roadways within the County area not built to current standards. Further, the standards are not intended to imply that all roadways be rebuilt to match these standards, rather they are intended to help inform identified changes to specific roadways in the future.

The County's current roadway standards are shown in Table 2. Because the design of a roadway or corridor can vary based on the needs of the area, the current standards provide flexibility for segments based on adjacent land use and demand. There are separate standards shown in Table 3 and Table 4 for the unincorporated communities of Tumalo and Terrebonne. Current County standards do not require a sidewalk except for certain segments in Terrebonne and Tumalo; people walking or biking are assumed to use the shoulder or share the road on lower volume streets. DCC Chapter 17.48 and its Table A contains the County's road and street standards.

Table 2. County Existing Functional Classification and Cross Section Standards

Functional Classification	Right of Way (ft)	Pavement Width (ft)[1]	Travel Lane Width (ft)	Paved Shoulder Width (ft)	Gravel Shoulder Width (ft)	Turn Lane Width (ft)
State Highway	80-100	36-70	12	6	-	14
Minor Arterial	80	28-46[2]	11	3-5	2	14
Collector	60	28-46[2]	11	3-5	2	14
Local	60	20, 24[3]	-	-	2	-

(1) Pavement widths are variable, depending on such factors as anticipated traffic volumes, and whether the road section involves turn lanes, bike lanes, and whether frontage roads border an arterial or collector, etc.
(2) The larger of the two widths is necessary if a shoulder bikeway is required (4' for collector and 5' for arterial).
(3) 20' allowed for cul-de-sac's and roads with low anticipated traffic volumes. 24' width required for circulator and primary subdivision access roads.

Table 3. Tumalo Existing Functional Classification and Cross Section Standards							
Functional Classification	Right of Way (ft)	Pavement Width (ft)[1]	Travel Lane Width (ft)	Paved Shoulder Width (ft)	Gravel Shoulder Width (ft)	Turn Lane Width (ft)	Sidewalk Required
US Highway 20	80-100	60	12	4	6	14	No
Collector-Commercial	60	30	11	4	2	14	Yes
Collector-Residential	60	36	12	6	2	14	No
Local-Commercial	60	20	10	-	2	-	Conditional[2,3]
Local-Residential	60	20	10	-	2	-	No
Other- Alley (Commercial)	20	20	-	-	-	-	No
Other-Path/Trail	15	6 unpaved 8 paved[4]	-	-	2.5 (if paved)	-	-

(1) Pavement widths are variable, depending on such factors as anticipated traffic volumes, and whether the road section involves turn lanes, bike lanes, and whether frontage roads border an arterial or collector, etc.
(2) 5-foot curbless sidewalks with a drainage swale required on both sides of the road.
(3) 5-foot curbless sidewalks with drainage swales required in Terrebonne from West 19th Street to 15th Street on the south side of C Avenue (see Terrebonne Comprehensive Plan Map D-3), or those roads in Tumalo designated for sidewalks (see Tumalo Comprehensive Plan Map D2).
(4) The minimum width is 8 ft. However, 8 ft. wide multiuse paths are not recommended in most situations because they may become over-crowded. They should only be constructed as short connectors, or where long term usage is expected to be low, and with proper horizontal and vertical alignment to assure good sight distances. 10 ft is the standard width for a two-wat multi-use path but they should be 12 ft wide in areas with high mixed-use. Optimum width should be based on the relative use by cyclists and pedestrian. High use by skaters may also require greater width.

Table 4. Terrebonne Existing Functional Classification and Cross Section Standards

Functional Classification		Right of Way (ft)	Pavement Width (ft)[1]	Travel Lane Width (ft)	Paved Shoulder Width (ft)	Gravel Shoulder Width (ft)	Turn Lane Width (ft)	Sidewalk Required
US Highway 97		80-100	60	12	6	6	14	No[2]
Minor Arterial-Smith Rock Way	TeC	60	34	12	5	2	14	Yes[3]
	TeR	60	34	12	5	2	14	No
Minor Arterial-Lower Bridge Way		60	34	12	5	2	14	No
Collector-Commercial	TeC	60	24	12	-	2	-	Yes
	TeR	60	24	12	-	2	-	No
Collector-Residential	TeR	60	24	12	-	2	-	Conditional[4]
Local-Commercial	TeC	60	24	12	-	2	-	Yes[3]
	TeR	60	24	12	-	2	-	No
Local-Residential	TeR	60	20	12	-	2	-	Conditional[5]
Other- Alley (Commercial)		20	20	10	-	-	-	No
Path/Trail		15	6 unpaved 8 paved[6]	-	-	2.5 if paved	-	-

(1) Pavement widths are variable, depending on such factors as anticipated traffic volumes, and whether the road section involves turn lanes, bike lanes, and whether frontage roads border an arterial or collector, etc.
(2) 6-foot sidewalks required on both sides of Highway 97 between South 11th Avenue and Central Avenue intersections. Includes pedestrian crossing improvement at B Avenue and C Avenue intersection (see Terrebonne Comprehensive Plan Map D-3).
(3) 5-foot curbless sidewalks with a drainage swale required on both sides of the road.
(4) 5-foot curbless sidewalks with drainage swales required in Terrebonne from West 19th Street to 15th Street on the south side of C Avenue (see Terrebonne Comprehensive Plan Map D-3), or those roads in Tumalo designated for sidewalks (see Tumalo Comprehensive Plan Map D2).
(5) 5-foot curbless sidewalks with drainage swales required along school frontage on B Avenue and 5th Street (see Terrebonne Comprehensive Plan Map D-3).
(6) The minimum width is 8 ft. However, 8 ft. wide multiuse paths are not recommended in most situations because they may become over-crowded. They should only be constructed as short connectors, or where long term usage is expected to be low, and with proper horizontal and vertical alignment to assure good sight distances. 10 ft is the standard width for a two-wat multi-use path but they should be 12 ft wide in areas with high mixed-use. Optimum width should be based on the relative use by cyclists and pedestrian. High use by skaters may also require greater width.

State Highway Design Standards

Any future changes to the state highways within the County will be informed by the OHP, the state's Highway Design Manual (HDM), and the Blueprint for Urban Design, which provides more flexible standards for urban areas.

ACCESS MANAGEMENT AND SPACING GUIDANCE

Providing adequate access to streets, land uses, and activity centers is a key part of operating and planning for a transportation system that serves the needs of all users. ODOT and the County maintain standards to help balance the needs for both "through travelers" (including freight and public transportation) as well as serving the needs of area residents, employees, and visitors.

For state highways, access spacing guidelines are specified in the 1999 Oregon Highway Plan, Appendix C – Access Management Standards. Access to State Highways is controlled under Oregon Administrative Rule, Division 51 (OAR 734-051-4020(8)).

04 | Roadway Capacity

The evaluation of the ability of the existing roadways to serve both existing and future traffic volumes can help inform the TSP alternatives. The analysis presented herein focuses only on County arterials and collector roadways. The roadway capacity needs associated with the State facilities within the County have been previously identified through various planning efforts. The County will continue to partner with ODOT to monitor and identify additional needs through future planning and evaluation efforts.

Analysis Methodology and Performance Standards

The evaluation of roadway capacity needs was conducted based on the TSP's Methodology Memorandum. *The Methodology Memorandum is provided in Appendix B.* The County at DCC 18.116.310(H)(1) considers Level of Service (LOS) D to be acceptable when identifying existing and future deficiencies.

Existing Roadway Traffic Volumes and Capacity Analyses

As documented in Appendix B, the existing capacity reflects a comparison of year 2019 traffic volumes to information contained in the *Simplified Highway Capacity Calculation Method for the Highway Performance Monitoring System.* The traffic volumes on all the roadway segments analyzed reflect "acceptable" levels of service under existing conditions.

In addition to the analyses of roadway capacity, the TSP alternatives will also consider areas with potential geometry, sight lines, or other characteristics that may be identified by the Project Advisory Committee as well as the identified Safety Needs previously documented within the County.

FUTURE NO-BUILD TRAFFIC CONDITIONS SEGMENT ANALYSIS

To help inform TSP alternatives, estimated year 2040 traffic volumes were also compared to the capacity thresholds. The year 2040 estimates reflect a growth in traffic volumes of two percent per year (further details

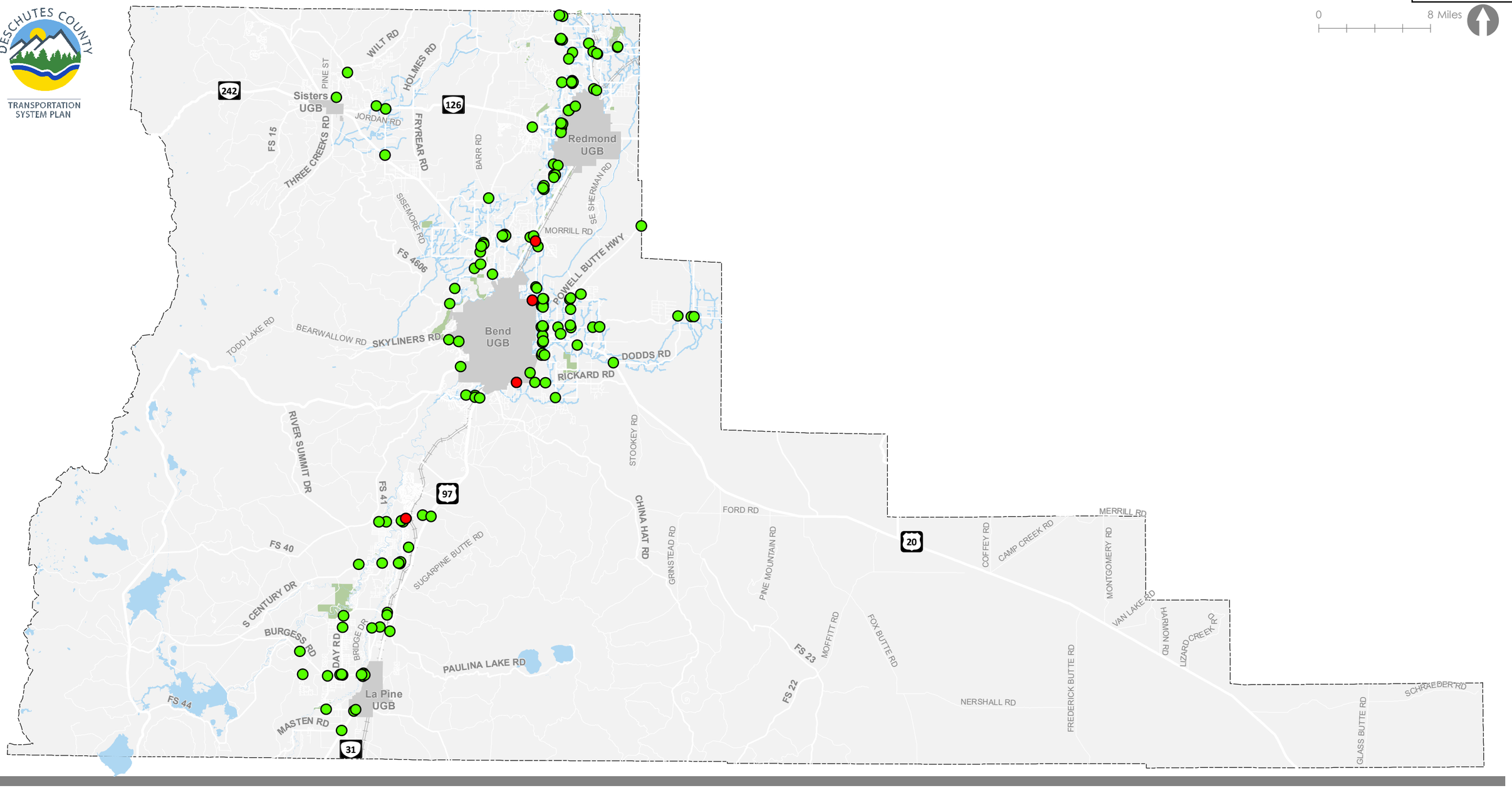
of the forecasting methodology are discussed in Appendix B). As reflected in Figure 8, the traffic volumes anticipated on the following roadways suggest the need to consider TSP alternatives that address vehicular capacity needs, including:

- Deschutes Market Road at Greystone Lane
- S Century Drive at Venture Lane

Given the location of these roadways in proximity to the Bend UGB and/or Sunriver, the County will coordinate alternatives at these locations with the City and local community.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



H:\24\24964 - Deschutes County TSP\gis\Count Locations Exceeding Threshold.mxd Date: 3/11/2021

- Exceeds County Standards
- Meets County Standards
- Railroads
- Parks
- Water
- UGBs
- County

Data Source: Deschutes County

Figure 8

2040 Roadway Segment Evaluation
Deschutes County, Oregon

05 | Crash Data Analysis

Prior to the TSP update, the County completed its 2019 Transportation Safety Action Plan (TSAP) that provided a range of projects, policies, and programs to address identified safety needs within the unincorporated areas of the County. The enclosed section summarizes the key findings of the TSAP.

Crash Review

The TSAP reflected information from ODOT's crash database for the period from January 1, 2012, through December 31, 2016. These crashes are categorized by the severity of the crash, including:

- Fatal
- Injury A (incapacitating or severe injury)
- Injury B (non-incapacitating or moderate injury)
- Injury C (possible/minor injury – complaint of pain)
- Property damage only (PDO) (no injury)

A total of 3,009 crashes were reported in unincorporated Deschutes County between 2012 and 2016. These crashes were relatively split between County and State facilities.

FATAL AND SEVERE CRASHES

The TSAP prioritized addressing fatal and severe crashes in the County. Figure 9 presents the year-over-year crash frequency in unincorporated Deschutes County including the number of crashes resulting in fatality or incapacitating injury. Figure 10 presents the year-over-year crash frequency on County facilities in unincorporated Deschutes County including the number of crashes resulting in fatality or incapacitating injury. As shown, fatal and incapacitating injuries in Deschutes County have shown an increasing trend in recent years though similar crashes on County-owned facilities have been relatively stable.

Table 5 presents crashes that occurred on county facilities by severity. Among the 1,519 crashes, nearly half (48 percent) resulted in some level of injury. Five percent were fatal or incapacitating injury crashes.

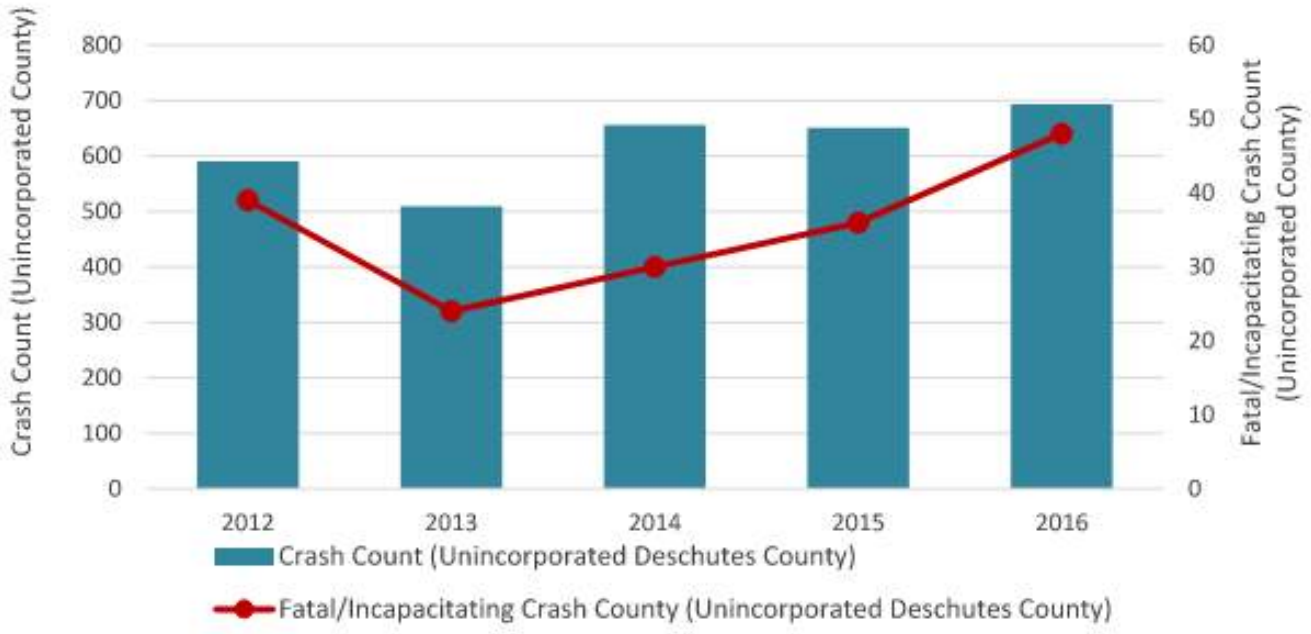


Figure 9. Crashes by Year, Deschutes County (Unincorporated), 2012-2016

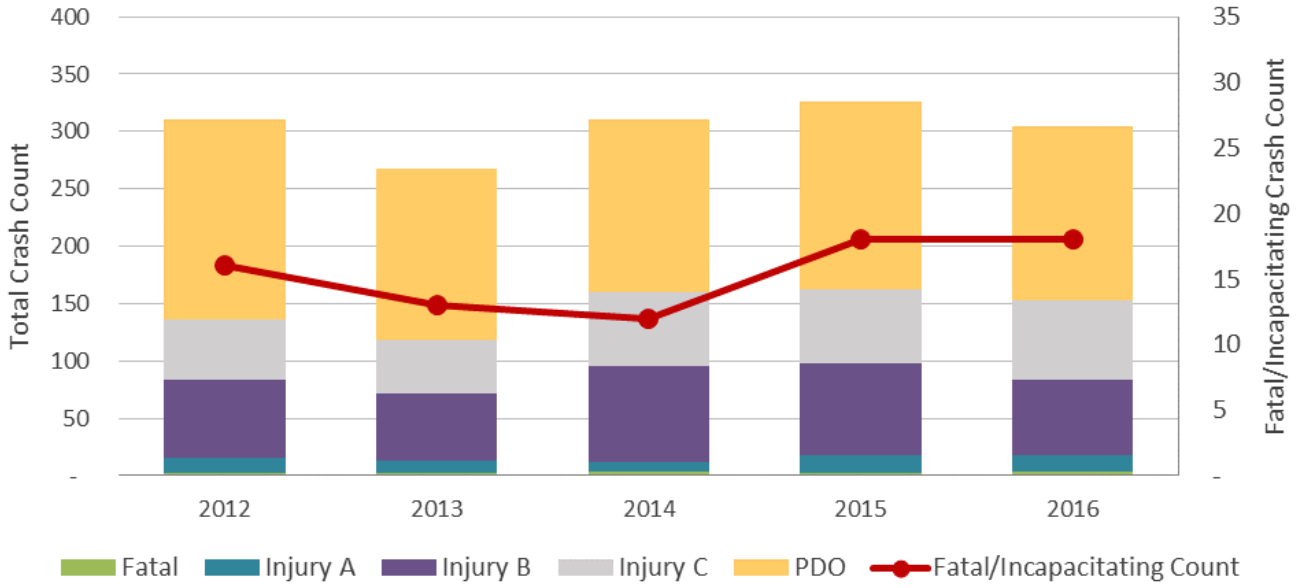


Figure 10. County Facility Crashes by Year, Deschutes County (Unincorporated), 2012-2016

Table 5. County Facility by Severity, Deschutes County (Unincorporated), 2012-2016						
	Fatal	Injury A	Injury B	Injury C	PDO	Total
Count	12	65	354	298	790	1,519
Share	<1%	4%	23%	20%	52%	100%

Source: ODOT

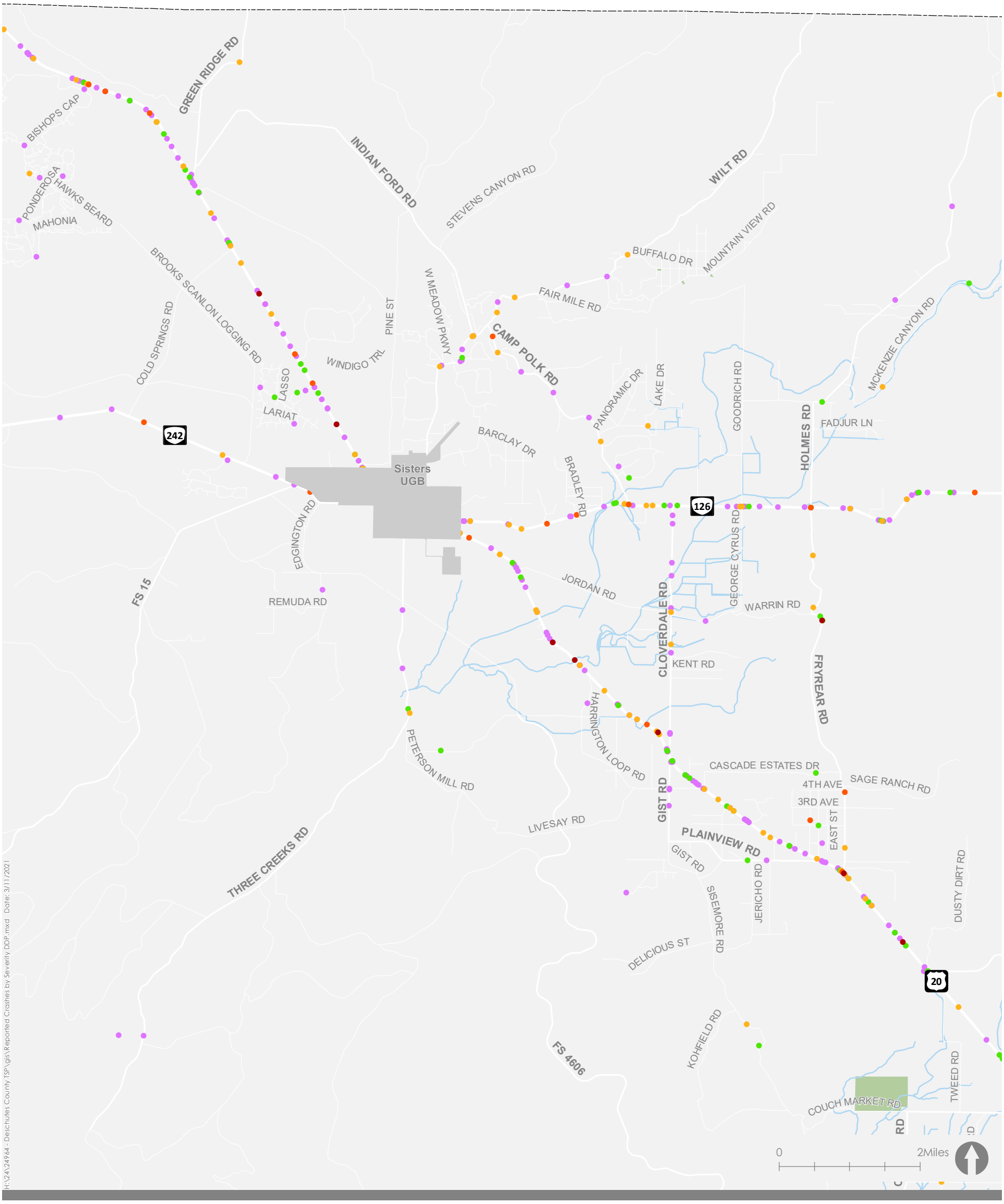
The TSAP also identified crashes by location (intersection or segment crashes) and by mode (including motor vehicle, bicyclist, or pedestrian crashes). Crashes within 250 feet of an intersection were considered *intersection crashes* and constituted approximately half the crashes on county facilities within unincorporated Deschutes County (52 percent), as shown in Table 6. For state facilities, 31 percent of reported crashes occurred at intersections. Non-intersection (segment) crashes were more likely to result in fatality or incapacitating injury compared to intersection crashes for both facilities.

Table 6. Crashes by Location, Deschutes County (Unincorporated), 2012-2016						
	Fatal	Injury A	Injury B	Injury C	PDO	Total (% Share)
State Facility						
Intersection	3	23	96	101	242	465 (31%)
Non-Intersection	28	43	173	205	576	1,025 (69%)
County Facility						
Intersection	3	26	171	170	418	788 (52%)
Non-Intersection	9	39	183	128	372	731 (48%)

Source: ODOT

Figure 11 illustrates the locations of the fatal and incapacitating crashes in unincorporated Deschutes County between 2012 and 2016. The majority of fatal and severe injury crashes occurred on State highways, which carry the highest traffic volumes and speeds.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN



Crash Severity

- Fatal
- Injury A
- Injury B
- Injury C
- PDO

- Parks
- Water

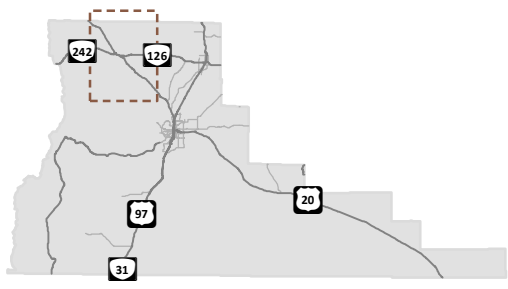


Figure 11

Deshutes County Reported Crashes from 2012 to 2016 by Severity
Sisters Area, Oregon

Data Source: ODOT

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

NW DOVE RD
NW QUAIL RD
NW ICE AVE
NW ROVEY AVE
NW 43RD ST
KIDDER RD
NW LOWER BRIDGE WAY
NW TEATER AVE
NW LOWER VALLEY DR
HUNT RD
NW 93RD ST
NW 83RD PL
NW GRUBSTAKE WAY
NW 19TH ST
C AVE
16TH ST
NE 9TH ST
NE WILCOX AVE
NE SMITH ROCK WAY
NE 1ST ST
NW 10TH ST
NE 5TH ST
NE 33RD ST
NE 41ST ST
NE ONEIL WAY
NW 83RD ST
NW 62ND ST
NW COYNER AVE
NW TETHEROW RD
BUCKHORN RD
NW 91ST ST
NW SPRUCE AVE
NW 101ST ST
NW POPLAR DR
NW LARCH DR
NW 74TH ST
NE WALNUT AVE
NE UPAS AVE
NE 45TH ST
NE NEGUS WAY
126
NW EAGLE DR
EAGLE CREST BLVD
E ANTLER AVE
SW CLINE BUTTE PIT RD
SW 58TH ST
SW 58TH ST
Redmond UGB
SE MCCAFFERY RD
VOR RD
CLINE FALLS RD
BARR RD
SW MCVEY AVE
GERKING MARKET RD
NEWCOMB RD
HARPER RD
SW CANAL BLVD
SW 77TH ST
INNES MARKET RD
MARSH RD
YOUNG AVE
97
61ST ST
JW BROWN RD
WHITE ROCK
TWIN BRIDGES RD
ARID AVE
GIFT RD
CONNARN RD
OLD BEND REDMOND HWY
93RD ST
73RD ST
PRONGHORN CLUB DR
SE SHERMAN RD
SWALLEY RD
STURGEON RD
94TH ST
86TH PL
78TH ST
76TH ST
97TH ST
89TH ST
HALF MILE LN
MORRILL RD
L BUTTE HWY
TUMALO RD
SIMON RD
20
DALE RD
0
1.5Miles

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Crash Severity

- Fatal
- Injury A
- Injury B
- Injury C
- PDO

- Parks
- Water

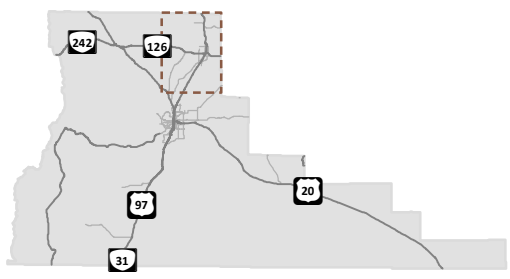
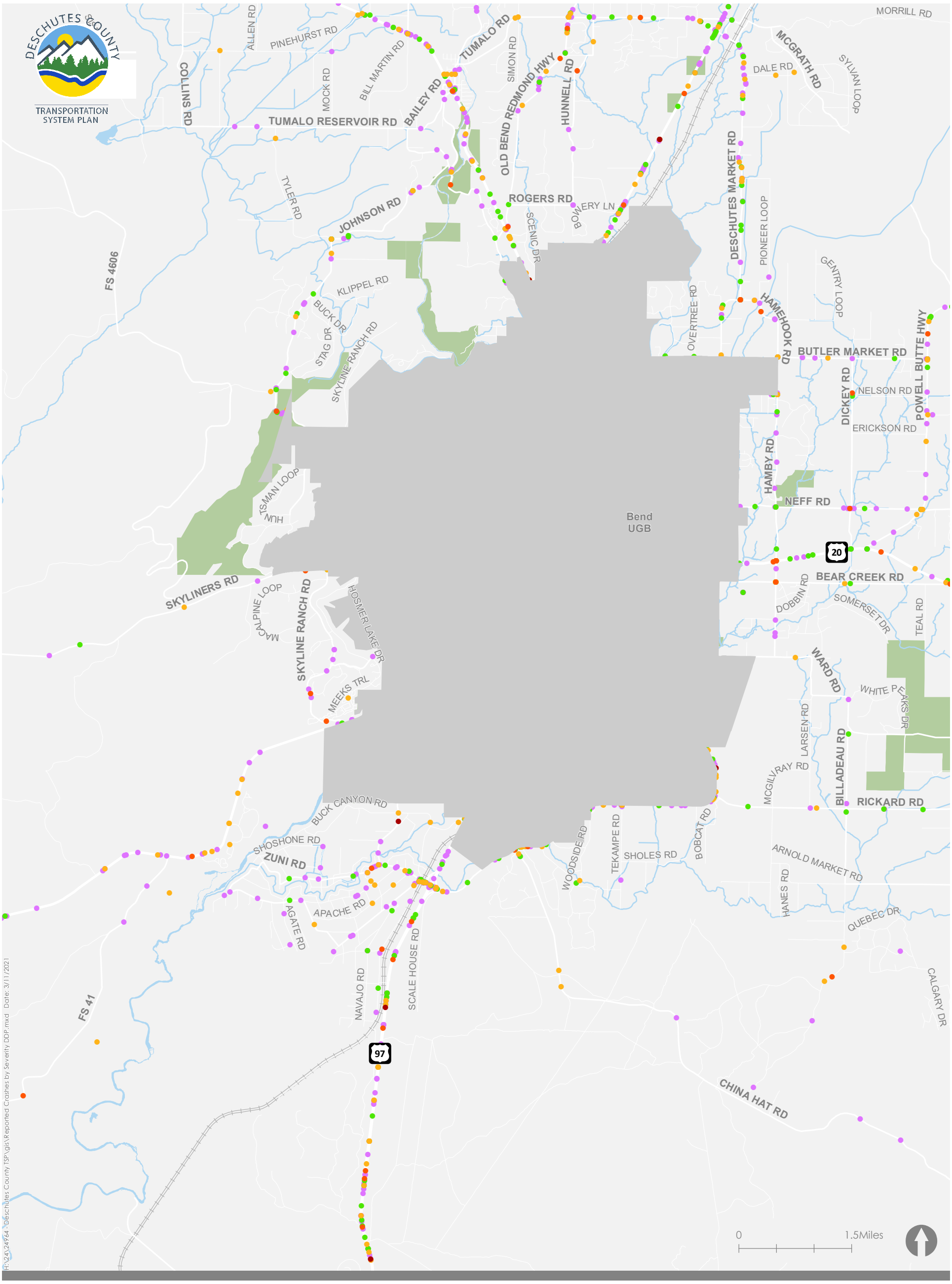


Figure 11

Deshutes County Reported Crashes from 2012 to 2016 by Severity
Redmond Area, Oregon

Data Source: ODOT



Crash Severity

- Fatal
- Injury A
- Injury B
- Injury C
- PDO

- Parks
- Water

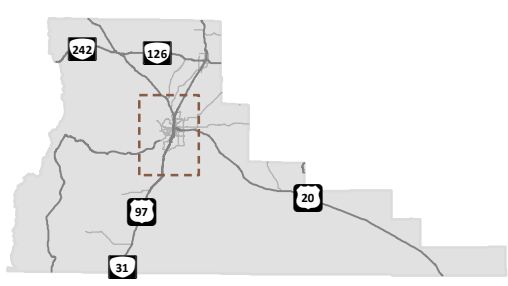


Figure 11

Deshutes County Reported Crashes from 2012 to 2016 by Severity
Bend Area, Oregon

Data Source: ODOT

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

RIVER SUMMIT DR
FS 41
BESSON RD
RIVER RD
BEAVER DR
SPRING RIVER RD
COVINA RD
ELSINORE RD
HERMOSA RD
JACINTO RD
STELLAR DR
SOLAR DR
SNOW GOOSE RD
UPLAND RD
FS 40
STAGESTOP DR
SWAN RD
S CENTURY DR
BIG RIVER DR
FOSTER RD
LAZY RIVER DR
97
SHAWNEE CIR
TAMARACK RD
SUGARPINE BUTTE RD
FOREST LN
SILVER FOX DR
FOSTER RD
WHITTIER DR
LAPINE STATE RECREATION RD
HUNTINGTON RD
PARK DR
LAVA DR
5TH ST
TWIN DR
SPARKS DR
7TH ST
PARKWAY DR
BOUNDARY RD
BURGESS RD
HOLIDAY DR
DAWN RD
GREEN FOREST RD
RIVERVIEW DR
WEST DR
BRIDGE DR
LOOP DR
SUNRISE BLVD
DAY RD
SHADY LN
RAINBOW DR
DEEDON RD
RANCH DR
DYKE RD
MEADOW LN
NEWBERRY RD
PAULINA LAKE RD
AMMON RD
ROSLAND RD
W DESCHUTES RIVER RD
FS 44
PONDEROSA WAY
ELDERBERRY LN
READ LOOP
DAVIS AVE
La Pine UGB
RIM DR
DEER AVE
JACKPINE RD
6TH ST
PIERCE RD
FINLEY BUTTE RD
JACKPINE LOOP
HUNTINGTON RD
DARLENE WAY
FS 22
MASTEN RD
31
0
1.5Miles

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Crash Severity

- Fatal
- Injury A
- Injury B
- Injury C
- PDO

Parks
Water

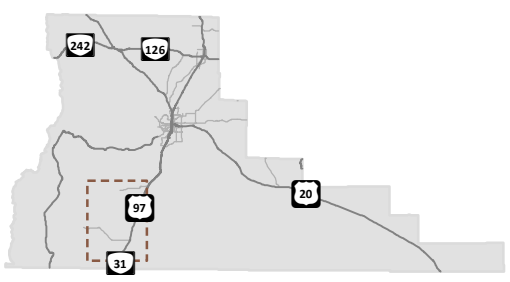


Figure 11

Deshutes County Reported Crashes from 2012 to 2016 by Severity
South County Area, Oregon

Data Source: ODOT

CRASH TYPE

Figure 12 shows a summary of the reported crash types as included in the TSAP. Lane departure crashes include those in which a vehicle exits its lane and hits a fixed object or animal, is involved in a head-on crash, or is overturned. As shown in the figure, these crashes together constitute the largest type of crashes in Deschutes County (1,921, 60 percent). Rear-end crashes are the second-most common crash type.

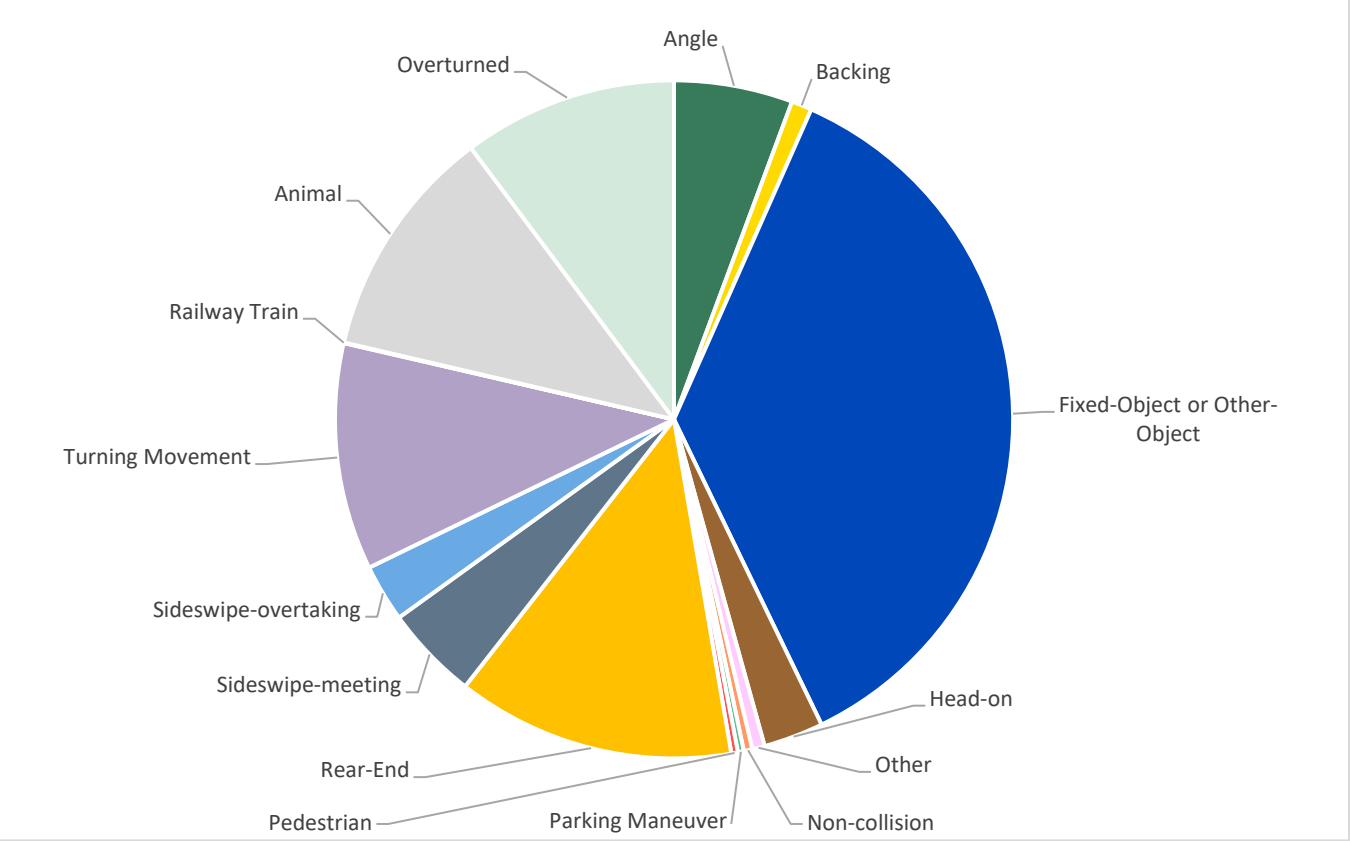
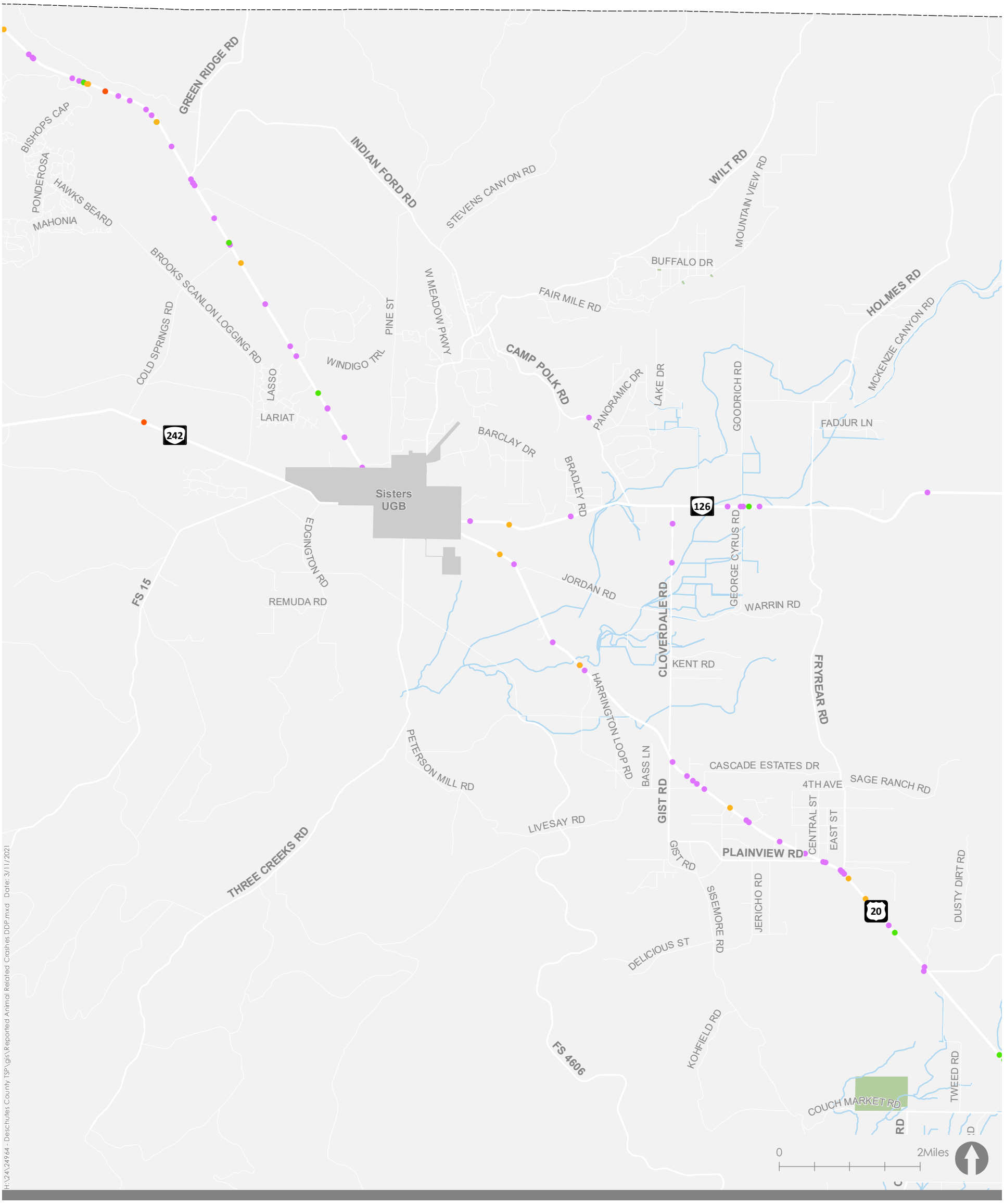


Figure 12. Countywide Crash Type (2012-2016)

Animal Crashes

Per the TSAP, crashes involving animals are shown in Figure 13. In accordance with Oregon House Bill (HB) 2834, the alternatives evaluation will also consider wildlife corridors, crossings, and safety.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN



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Animal Crashes by Severity

- Fatal
- Injury A
- Injury B
- Injury C
- PDO

- Parks
- Water

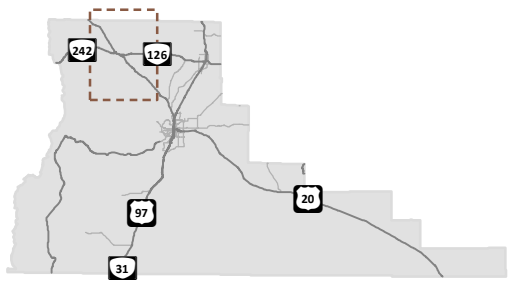

Figure 13

Deshutes County Reported Animal Related Crashes from 2012 to 2016 by Severity
Sisters Area, Oregon

Data Source: ODOT

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

HOLMES

NW DOVE RD
NW QUAIL RD
NW ICE AVE
NW ROVEY AVE
NW WIMP WAY
NW 43RD ST
NW ICE AVE
NW 27TH ST
KIDDER RD
NW LOWER BRIDGE WAY
NW 31ST ST
NW 19TH ST
13TH ST
16TH ST
NE 9TH ST
NE WILCOX AVE
C AVE
NE SMITH ROCK WAY
NW TEATER AVE
NW LOWER VALLEY DR
HUNT RD
NW 93RD ST
NW 83RD PL
NW GRUBSTAKE WAY
NW ODEM AVE
NE 1ST ST
NORTHWEST WAY
NW 10TH ST
NE 5TH ST
NE 33RD ST
NE 41ST ST
NW 62ND ST
NW COYNER AVE
NW 83RD ST
NW COYNER AVE
NE ONEIL WAY
NW CANAL BLVD
BUCKHORN RD
NW 91ST ST
NW TETHEROW RD
NE WALNUT AVE
NE UPAS AVE
NE 45TH ST
NE KING WAY
NE NEGUS WAY
NW HELMHOLTZ WAY
NW SPRUCE AVE
NW 101ST ST
NW LARCH DR
NW 74TH ST
126
NW EAGLE DR
EAGLE CREST BLVD
E ANTLER AVE
Redmond UGB
SW CLINE FALLS RD
SW CLINE BUTTE PIT RD
SW 58TH ST
SW 58TH ST
SE MCCAFFERY RD
VOR RD
BARR RD
CLINE FALLS RD
SW 58TH PL
SW 43RD ST
SW MCVEY AVE
GERKING MARKET RD
NEWCOMB RD
SW QUARRY AVE
SW CANAL BLVD
SW 77TH ST
SW 61ST ST
HARPER RD
INNES MARKET RD
MARSH RD
YOUNG AVE
TWIN BRIDGES RD
WHITE ROCK LOOP
OLD BEND REDMOND HWY
97
ARID AVE
GIFT RD
93RD ST
61ST ST
JW BROWN RD
CONNARN RD
SWALLEY RD
LIMESTONE AVE
73RD ST
PRONGHORN CLUB DR
SE SHERMAN RD
RUDI RD
STURGEON RD
94TH ST
97TH ST
85TH PL
85TH ST
89TH ST
78TH ST
76TH ST
PLEASANT RIDGE RD
TUMALO RD
HALF MILE LN
MORRILL RD
L BUTTE HWY
SIMON RD
HUNNELL RD
20
DALE RD
0
1.5Miles

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Animal Crashes by Severity

- Fatal
- Injury A
- Injury B
- Injury C
- PDO

- Parks
- Water

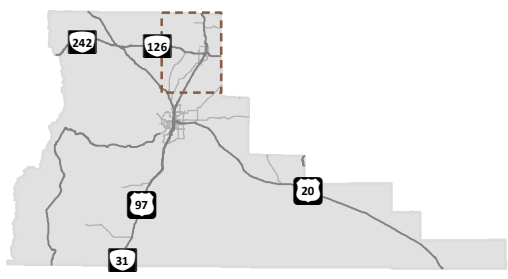
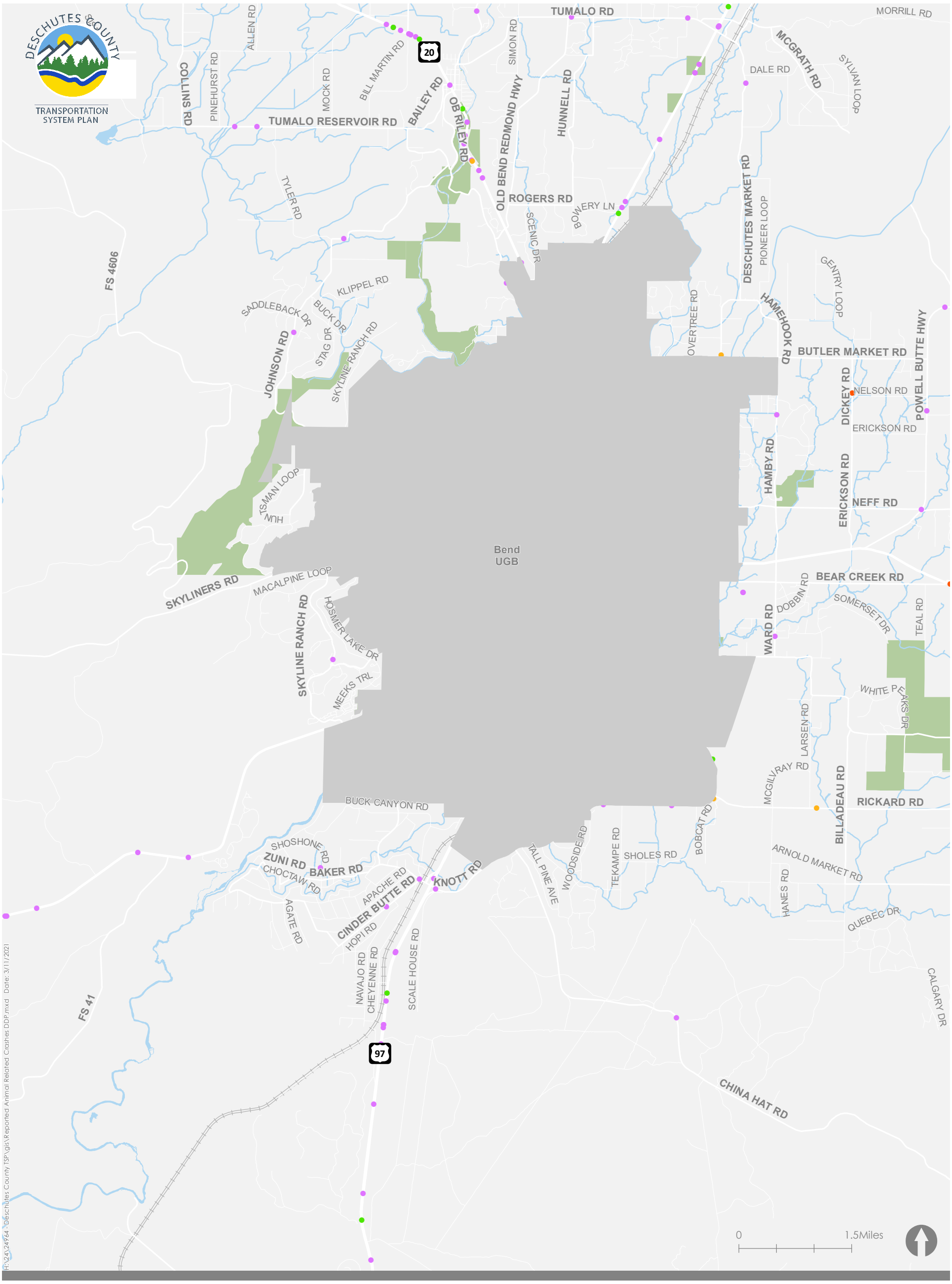


Figure 13

Deshutes County Reported Animal Related Crashes from 2012 to 2016 by Severity
Redmond Area, Oregon

Data Source: ODOT



Animal Crashes by Severity

- Fatal
- Injury A
- Injury B
- Injury C
- PDO

- Parks
- Water

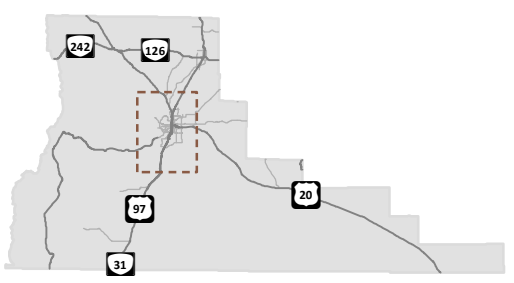


Figure 13

Deshutes County Reported Animal Related Crashes from 2012 to 2016 by Severity
Bend Area, Oregon

Data Source: ODOT

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

RIVER SUMMIT DR
SPRING RIVER RD
FS 41
BESSON RD
RIVER RD
BEAVER DR
AZUSA RD
COVINA RD
ELSINORE RD
GLENDALE RD
JACINTO RD
SOLAR DR
LUNAR DR
DANCING ROCK LOOP
TRAILMERE CIR
STELLAR DR
UPLAND RD
FS 40
STAGESTOP DR
SWAN RD
SNOW GOOSE RD
BLUE EAGLE RD
S CENTURY DR
BIG RIVER DR
FOSTER RD
LAZY RIVER DR
FOREST LN
SILVER FOX DR
FOSTER RD
SHAWNEE CIR
WOLF ST
TAMARACK RD
WHITTIER DR
97
SUGARPINE BUTTE RD
LAPINE STATE RECREATION RD
HUNTINGTON RD
PARK DR
LAVA DR
TWIN DR
SPARKS DR
5TH ST
2ND ST
3RD ST
4TH ST
7TH ST
BOUNDARY RD
PARKWAY DR
HOLIDAY DR
DAWN RD
GREEN FOREST RD
WEST DR
PAULINA LAKE RD
SUNRISE BLVD
DAY RD
RIVERVIEW DR
BRIDGE DR
LOOP DR
NEWBERRY RD
W DESCHUTES RIVER RD
BURGESS RD
SHADY LN
RAINBOW DR
ALPINE DR
DYKE RD
LEONA LN
DEEDON RD
RANCH DR
CENTER DR
MEADOW LN
FS 44
PONDEROSA WAY
ROSLAND RD
AMMON RD
DUSTAN RD
DAVIS AVE
ELDERBERRY LN
La Pine UGB
SPRUCE MEADOW RD
DORRANCE RD
RIM DR
DEER AVE
JACKPINE RD
FIR RD
ASH RD
6TH ST
PIERCE RD
FINLEY BUTTE RD
JACKPINE LOOP
HUNTINGTON RD
DARLENE WAY
FS 22
MASTEN RD
31
0
1.5Miles

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Animal Crashes by Severity

- Fatal
- Injury A
- Injury B
- Injury C
- PDO

- Parks
- Water

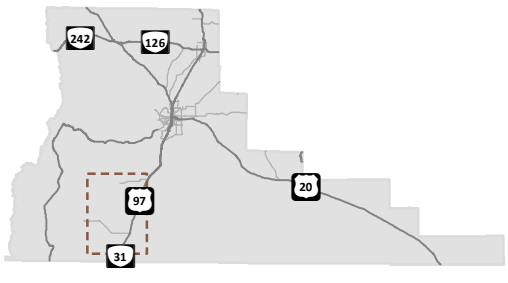


Figure 13

Deshutes County Reported Animal Related Crashes from 2012 to 2016 by Severity
South County Area, Oregon

Data Source: ODOT

Further detail on the analyses of the documented crash history on County roadway segments, intersections, severity, traveler behaviors, roadway conditions can be found in the TSAP.

CRASHES INVOLVING "VULNERABLE USES"

People walking, biking and riding motorcycles are more likely to be injured when a crash occurs. A more detailed review involving these users revealed that 139 crashes were reported within the County over the five-year time period. Key findings of this analyses revealed:

- Motorcyclists – 60 motorcycle crashes were reported on County roads, accounting for 4 percent of reported crashes on County roads and 26 percent of fatal/incapacitating crashes. Ninety-four percent of motorcycle crashes on County roads resulted in some level of injury, with 52 percent resulting in fatal or severe injury. More motorcycle crashes occurred on County roads (60 crashes) compared to State highways (32 crashes). Of the 60 motorcycle crashes on County roads, five involved alcohol or drugs, and 29 crashes involved speed.
- Pedestrians - four pedestrian-involved crashes were reported on County roads. See Appendix C for more details on the pedestrian-involved crashes. The pedestrian crashes were reported on the following roads:
    - Baker Road
    - Skyliners Road
    - Tumalo Road
    - Smith Rock Way
- Bicyclists (severity). Fifteen bicyclist-involved crashes were reported on County roads, and each of these 15 crashes resulted in some level of injury, including four incapacitating injury crashes. The TSAP did not identify any corridors with patterns of multiple bicycle crashes. The bicycle crashes were more common within or on the outskirts of developed areas (Bend, La Pine, Sunriver, Redmond, Terrebonne) and key routes between these communities. See Appendix C for more details on the bicyclist-involved crashes. The bicycle crashes were reported on the following roads:
    - S Century Drive (Sunriver)
    - Pioneer Lane
    - Day Road
    - Dorrance Meadow Road
    - Upper Deschutes Road
    - China Hat Road
    - Cheyenne Road/Cherokee Road
    - Powell Butte Highway/Nelson Road
    - Baker Road/Cinder Butte Road
    - Old Bend Redmond Highway
    - Johnson Road
    - 5th Street (in Tumalo)
    - Pinehurst Road
    - NW Lower Bridge Way
    - NE Crooked River Drive
    - Two bicycle crashes on state highways occurred at intersections with County roads: Highway 20 and Bear Creek Road; Highway 20 and Ward Road/Hamby Road

Potential Safety Needs

Top sites for safety improvements in unincorporated Deschutes County identified through the TSAP are listed below. These locations were identified based on a network screening of all County intersections, which weighted more severe crashes higher than less severe crashes. These intersections has the highest total score. Several of these locations have projects planned or in-process. This TSP update will further review the identified safety concerns and TSAP recommendations at these sites:

- US20/Ward Road/Hamby Road
- US97/Vandevert Road
- US20/Fryrear Road
- Burgess Road/Day Road/Pine Forest Drive
- Bear Creek Road/Ward Road
- Alfalfa Market Road/Dodds Road
- US20/Old Bend Redmond Highway
- US20/O.B. Riley Road/Cook Avenue
- US97/61st Street
- US97/11th Street/Lower Bridge Way
- 61st Street/Quarry Ave/Canal Blvd
- Northwest Way/Coyner Ave
- Alfalfa Market Road/Walker Road
- US97/Smith Rock Way/B Ave
- Deschutes Market Road/Hamehook Road
- US97/Burgess Road
- US20/Hawks Beard (Black Butte Ranch)
- El Camino Lane/Helmholtz Way
- Canal Blvd/Helmholtz Way
- Dickey Road/Nelson Road
- US97/Galloway Ave
- Butler Market Road & Powell Butte Highway
- Butler Market Road & Hamby
- Butler Market Road & Hamehook
- Baker Road & Cinder Butte
- S Century and Huntington
- Cline Falls Rd/Coopers Hawk Drive/ Falcon Crest Drive
- Lower Bridge Way/19th
- Lower Bridge Way/31st
- Lower Bridge Way/43rd

06 | Multimodal Transportation Analysis

The following section identifies the existing needs of people walking, riding bikes, and taking transit as well as the rail and air systems.

Existing Bicycle Facilities

Facilities for people biking in Deschutes County are shown in Figure 14. This inventory is based on available GIS data, including the shoulder width on state highways. This figure also reflects state roads where the paved shoulder width is at least six feet (which can be considered to be a minimum width for use by people walking

and biking along rural roadways).[1] On most of these facilities, there is no buffer between vehicles and people walking and biking on these roads, which can lead to a perceived high level of stress for walkers and cyclists, though low vehicle traffic, which is the case in most instances shown, can reduce level of stress when little or no shoulder is provided.

There are two Oregon Scenic Bikeways completely in the County, the Twin Bridges Scenic Bikeway and the Sisters to Smith Rock Scenic Bikeway. The Twin Bridges Scenic Bikeway loops 36 miles from Bend through Central Oregon to show off snow-capped mountains, rimrock canyons, high-desert rangeland, and the Deschutes River. The Sisters to Smith Rock Scenic Bikeway is a 37-mile one way route that begins in Sisters and takes riders through pastures, a canyon, and Terrebonne. The McKenzie Pass Scenic Bikeway is considered a "partial route" with the Deschutes County section located between the McKenzie summit and the City of Sisters; the western half is in Lane County. This route is closed during the winter months but is accessible to bicycles in the spring before it reopens to cars.

Other County bike facilities include trails in Oregon State Parks and Bend Parks and Recreation District parks outside of the UGB areas. Oregon State Parks in the County with trails are Smith Rock State Park, Tumalo State Park, and La Pine State Park. Trails located in the unincorporated County owned and maintained by Bend Parks and Recreation District include Shevlin Park trails, canal trails, the Deschutes River Trail, the Rails w/ Trails Corridor, the Cascade Highlands Trail, the TransCanada Trail, and the Powerline Trail. Various destination resorts also have private bike trails internal to the resort.

Many other recreational and hiking trails exist within the County. While the trails themselves are not an essential component of the County's transportation system, access to those facilities, including numerous official and unofficial trail heads along County roads support the quality of life of visitors and County residents. Locations where additional planning or infrastructures is needed to support these activities will be further explored through this TSP update.

Existing Pedestrian Facilities

Facilities for people walking in Deschutes County are shown in Figure 15. This figure also shows the existing and planned pedestrian facilities in the unincorporated communities of Terrebonne and Tumalo. Roadways adjacent to schools or other key activity centers for people walking (e.g., parks, trail connections, rural commercial areas, etc.) located in unincorporated areas may be appropriate locations for dedicated pedestrian and bicycle facilities. Rural communities in the County generally lack sidewalks. In Terrebonne, there are sidewalks along the frontage of Terrebonne Elementary School but no sidewalks directly west of the school. In Tumalo, there is also sidewalk along the frontage of Tumalo Community School but this sidewalk does not connect to the other sidewalks in the community. Wide paved shoulders may be adequate in unincorporated communities but dedicated, separated sidewalks or trails may be appropriate to connect to key destinations such as schools within the rural communities.

[1] Although people walking and biking may use shoulders less than six feet wide, four feet is generally accepted as the minimum adequate width to accommodate these users. Six feet was used as the minimum due to the geometry and nature of the roadways. Four feet is the minimum on open shoulders.

County Bikeway Standards

The County's existing bikeway standards are shown in Table 7 and contained in DCC Chapter 17.48, Design and Construction Specifications, Table B.

Table 7. County Minimum Bikeway Design Standards

Type	On/Off Road	Width[1]			Vertical Clearance		Lateral Clearance (each side)		Use
		Min.	Stand.	High Use	Min.	Stand.	Min.	Stand.	
Multiuse Path	Off	8′	10′	12′	8′	10′	2′	3′	-
Mt. Bike Trail	Off		2′		7′	10′			-
Bike Lane	On	4′ w/ open shoulder 5′ w/ curb or parking	6′						Use on urban arterial or major collector, or rural roads near urban areas with high anticipated bike use
Shoulder Bikeway	On	4′	4′ w/ open shoulder 5′ w/ curb or other barrier	6′					Recommended on higher speed, and traffic volume rural roads
Shared Roadway	On								Recommended only on local roads with speeds of 25 mph or less, and <3,000 ADT

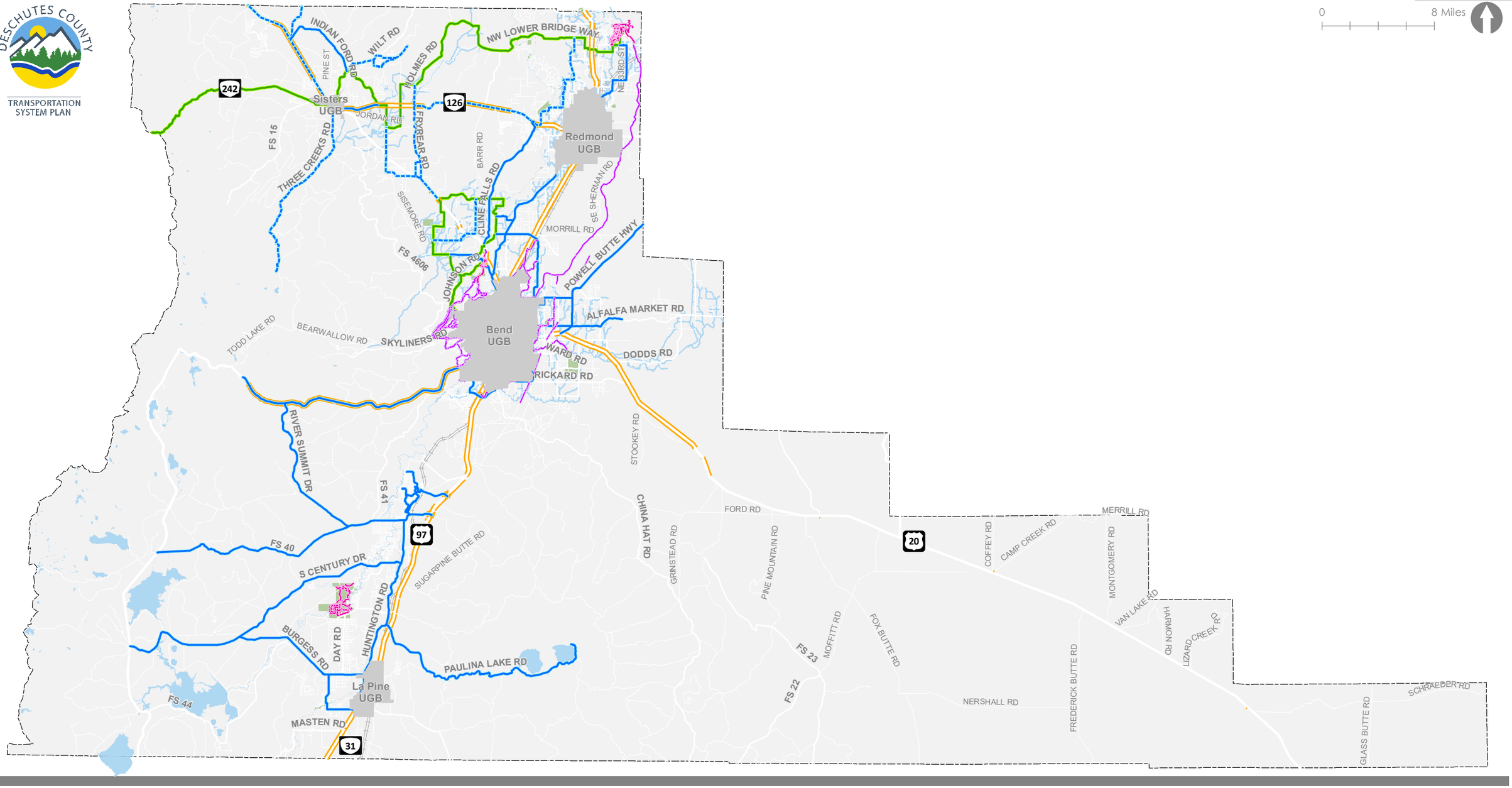
(1) 10 ft is the standard width for a two-way multi-use path; they should be 12 ft wide in areas with high mixed-use. Faster moving bicycles require greater width than pedestrians; optimum width should be based on the relative use by these two modes. High use by skaters may also require greater width. The minimum width is 8 ft. However, 8-ft. wide multi-use paths are not recommended in most situations because they may become over-crowded. They should only be constructed as short connectors, or where long-term usage is expected to be low, and with proper horizontal and vertical alignment to assure good sight distances.

The County designates certain roadways as Bikeways. Per County policies, shoulders on these roads are widened or maintained through ongoing maintenance activities, as feasible, to 6 feet to provide space for those riding bikes. Many of the County bikeways do not yet have 6' paved shoulders.

Given the rural context, the County's cross section standards do not specify the need for sidewalks along roadways except within areas of the unincorporated communities of Terrebonne and Tumalo.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



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County Bikeway
County Bikeway - Proposed Addition
Oregon Scenic Bikeways
Oregon State Park Trails
Bend Parks and Recreation District Trails
Paved Shoulders 6 Ft or Greater

Parks
Water
UGBs

Data Source: ODOT, Oregon State Parks, Deschutes County

Figure 14

Deschutes County Bike Facilities Area, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

NW LOWER BRIDGE WAY
NW 12TH ST
FOSS DR
18TH CT
17TH LN
12TH LN
ANGUS LN
ANGUS CT
13TH ST
H AVE
NE 1ST ST
MORNING GLORY DR
BO
WOOD LN
BARBERRY DR
MAJESTIC ROCK DR
FORSTER DR
15TH ST
16TH ST
G AVE
NE XENOLITH ST
4TH ST
F AVE
E AVE
2ND
6TH ST
7TH ST
8TH ST
11TH ST
CENTRAL AVE
NW 18TH ST
3RD ST
5TH ST
9TH ST
19TH ST
NW 19TH ST
C AVE
97
B AVE
NW SMITH ROCK WAY
A AVE
17TH ST
NW SEDGEWICK AVE
NE 1ST ST
NW ODEM AVE
NW 19TH ST
NW 14TH ST

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Existing Sidewalk
Planned Sidewalk
Parks
Water
Unincorporated Cities

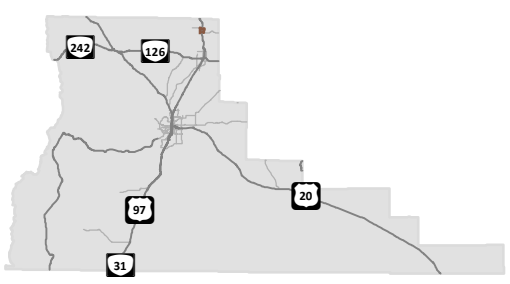
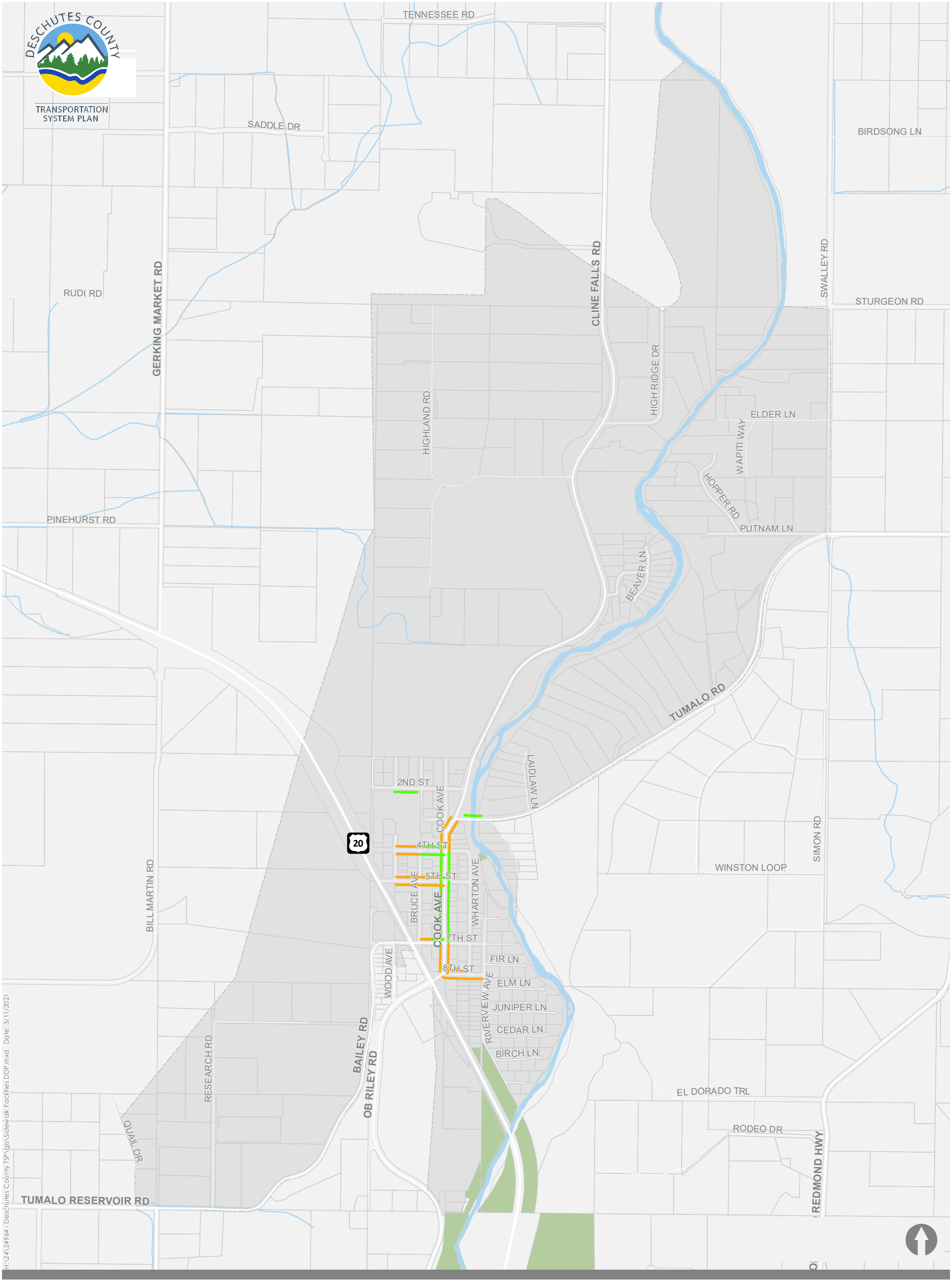


Figure 15

Deschutes County Sidewalk Facilities
Terrebonne , Oregon

Data Source: Deschutess County



Existing Sidewalk

Planned Sidewalk

Parks

Water

Unincorporated Cities

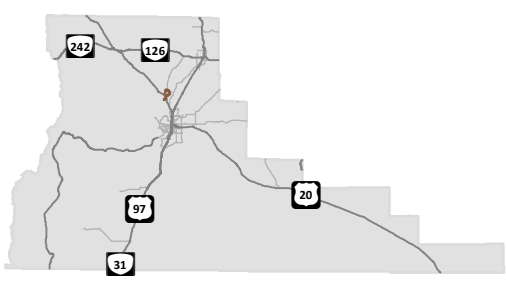


Figure 15

Deschutes County Sidewalk Facilities
Tumalo , Oregon

Data Source: Deschutess County

Public Transit System

Public transportation is provided by Cascades East Transit (CET). Both public and private bus transportation providers also serve intercity connections in Oregon.

CET provides connections within the County and between Deschutes County with surrounding other counties. CET operates eight Community Connector fixed routes that connect riders between Bend, Redmond, La Pine, Sisters, Terrebonne, Madras, and Prineville, shown in Figure 16. These services are open to the general public and operates Monday through Friday. Table 8 summarizes the key service areas, hours, trips per day, and fare zones for routes between 22 and 30.

CET Route 18 is a shuttle service in the winter season from Bend to Mt. Bachelor, which stops at Hawthorne Station, Mt. Bachelor Park-and-Ride, Meissner Sno-Park, and Mt. Bachelor's West Village Lodge. The shuttle operates Monday to Thursday from 6:40 a.m. to 5:30 p.m. and Friday and Saturday from 6:40 a.m. to 6:30 p.m., making multiple trips. Riders can purchase shuttle tickets at Mt. Bachelor's Guest Services, at Safeway on Century Drive, or from the bus driver using exact change.

The Central Oregon Breeze offers daily bus trips between the Portland Area and Central Oregon, including stops within the Bend and Redmond UGBs, including at the Bend bus station, Redmond transit hub, and the Redmond Airport. The Redmond transit hub stop is a "flag stop" that must be reserved at least 24 hours in advance.

POINT provides connection to many cities throughout Oregon and Amtrack and Greyhound services. The Eastern Route provides service between Bend and Ontario, making a total of 11 stops at cities such as Brothers, Hampton, and Burns. There is usually one 5-hour trip per day in each direction. The Oregon Department of Transportation (ODOT)'s Rail and Public Transit Division funds and manages the POINT service through contracts with private transit carriers. Tickets can be purchased from Amtrak, Greyhound, and local independent ticket agents.

The Grant County People Mover has two routes with connections to Bend and Redmond. The services are open to anyone. One route goes from Monument, Oregon, to Bend and stops in Redmond among other cities outside the County. This service is offered every Wednesday and Friday and requires reservation. The other route goes from Prairie City to Bend and also stops in Redmond among other cities outside the County. This service is offered on Monday, Wednesday, and Friday. On the days of service for both routes, there is an eastbound and westbound trip. Home pickup is available for an additional charge. Reservations can be made by phone.

Pacific Crest Bus Lines offers a Eugene to Bend daily charter bus service. It can be reserved for sports teams, weddings, school field trips, or other group travel events. There is usually one trip per day available in each direction. Tickets can be purchased from Amtrak, Greyhound, and local independent ticket agents.

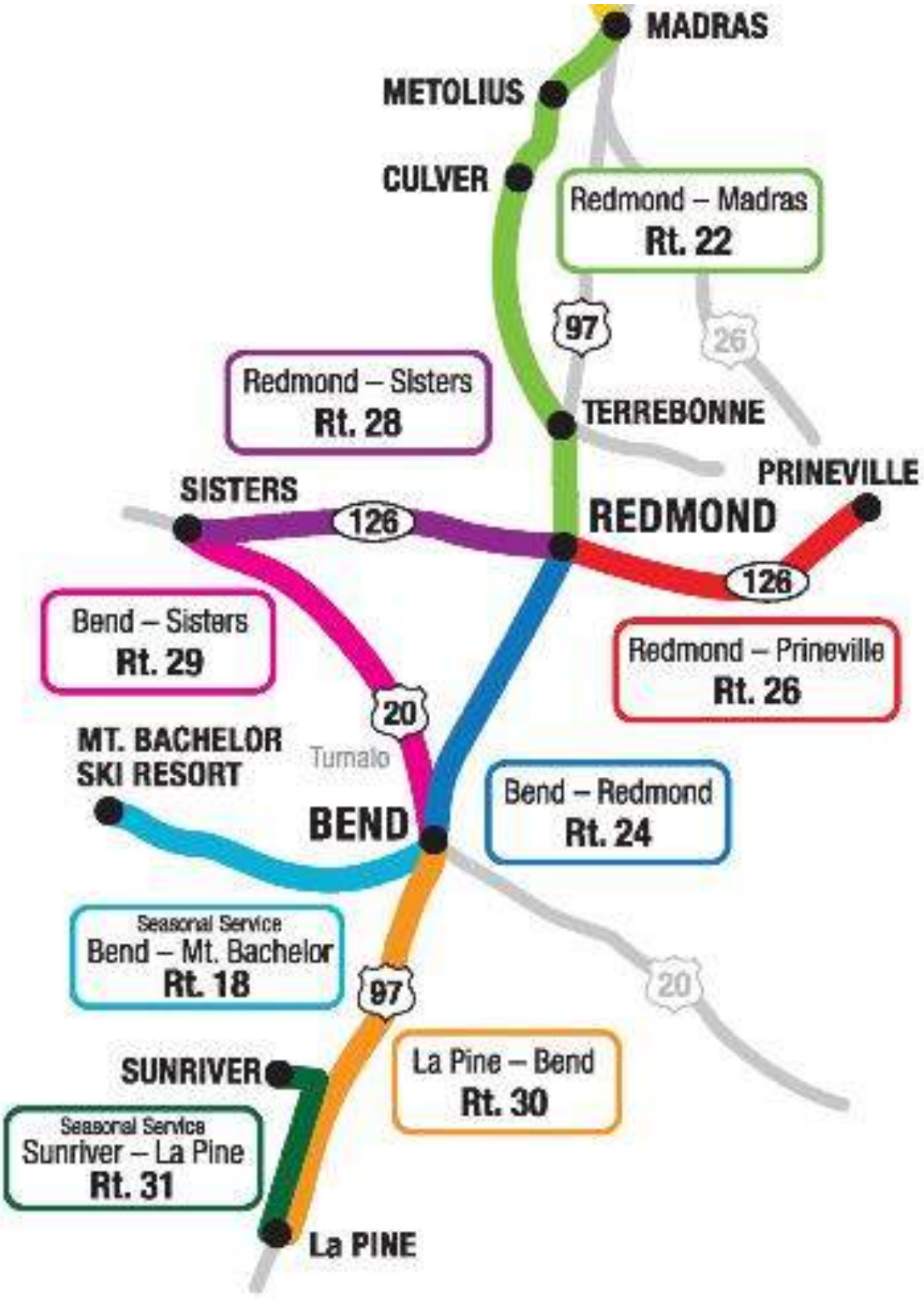


Figure 16. CET Routes in Deschutes County

Table 8. Deschutes County Community Connector Routes Service Summary

Fixed Route	Key Destinations		Hours	Trips per Day		Fare Zone
				NB/EB	SB/WB	
22 – Madras-Redmond	• Redmond Transit Center • Terrebonne Park & Ride • Culver	• Metolius City Hall • Madras DMV & Work Source	5:30am – 6pm	5	6	2 & 3
24 – Redmond -Bend	• Bend Hawthorne Station • Cascade Village • Redmond Transit Hub		6am – 7pm	9	9	1 & 2
26 – Prineville-Redmond	• Redmond Transit Center • Powell Butte School • Crook County Library	• Stryker Park • Prineville	6am – 6pm	5	5	2 & 3
28 – Sisters-Redmond	• Redmond Transit Center • Cloverdale Fire Station • Sisters		6am – 2:30pm	3	3	2 & 3
29 – Sisters-Bend	• Bend Hawthorne Station • Sisters		6:30am – 5pm	3	3	1 & 3
30 – Bend-La Pine	• Bend Hawthorne Station • Bend Walmart • Deschutes River Woods	• La Pine • Wickiup Junction	6:30am – 6:30 pm	4	3	1 & 3

Rural Dial-A-Ride service is offered within La Pine, Redmond, and Sisters. This service is open to the general public and does not have any eligibility requirements. Riders must call the day before service is needed to reserve a ride. Ride times are scheduled based on availability.

TRANSIT NEEDS

The following transit service needs were identified by CET for Community Connector routes within the incorporated portions of the County:

- More frequent service between Bend-Redmond
- Increased service on Saturdays and in the later evenings
- Increased frequency of weekday trips
- Interlining Routes 24 from Bend to Redmond and 26 from Prineville to Redmond
- Increased service to the Redmond airport
- New service to Sunriver, Deschutes River Woods

With Bend's growing popularity for recreational and outdoor activities for residents and visitors alike, the following locations within the unincorporated areas of County have been identified for where CET may expand its recreational services (depending on partnerships, available funding, and vehicle capacity):

- Sunriver (year-round)
- Black Butte Ranch (year-round)
- High Desert Museum (year-round)
- Smith Rock (spring and fall)
- Popular Central Oregon sno-parks (winter)
- Mt. Bachelor and the Cascades Lakes (summer)

CET also identified the need to provide expanded Dial-A-Ride service coverage to areas along the County's geographic boundaries.

In addition, the needs of the transportation disadvantaged can be considered relative to CET's identification of future service for:

- Student transportation for regional schools
- Free Dial-A-Ride bus fare for older adults

Finally, future capacity needs identified by CET include: New Route 24 stops at the airport and west of US 97

- New Sunriver service
- Enhanced pedestrian and bicycle connections to transit stops (City, County, and State ownership and planning)
- Further develop facilities that continue to support ADA access

Within the unincorporated and rural areas of the County, the CET Master Plan identifies the following:

- Increasing local circulation via local Dial-A-Ride and/or Community Connector vehicles;
- Providing service to Crooked River Ranch via shopper/medical shuttles;
- Potential service to Eagle Crest, providing a stop in Tumalo along Route 29;

- Improved/ more efficient stop for Deschutes River Woods (e.g. Riverwoods Country Store) or an alternative way to serve Deschutes River Woods via Route 30;
- Re-routing existing service lines to Sunriver;
- Adding service to the High Desert Museum and Lava Lands Visitor Center (potentially seasonally based); and,
- A new Route 31 and/or modification of Route 30 to connect La Pine and Sunriver

Finally, the transit capital investments identified in the CET Plan include fleet replacement and expansion and transit stops enhancement and additions.

Rail System

The Burlington Northern Santa Fe Railroad (BNSF) owns the rail line that parallels US 97 within the County. Union Pacific Railroad also has rights to use the line. The railroad passes through Terrebonne, Redmond, Bend, and La Pine and serves primarily industrial and agricultural purposes. The City of Prineville also owns a railway in the County that runs from Redmond to Prineville along OR 370. This a short line railway used for freight. These two rail lines in Deschutes County have connections at a junction north of Redmond. There are ten at-grade rail crossings located on County Roads throughout the County. The 2009 Central Oregon Rail Planning Report[2] lists the following locations in Deschutes County as the highest priority for bridging existing at-grade crossings-

- BNSF/COPR Lines (Prineville Jct)/O'Neil Highway
- BNSF Line / Airport Way
- BNSF Line / Cooley Road
- BNSF Line / Reed Market Road
- BNSF Line / Baker Road
- BNSF Line / US 97

There is no passenger rail service in the County. The nearest passenger rail service is provided in Portland and Chemult.

Air Transportation System

The largest public use airport in the County is Roberts Field-Redmond Municipal Airport (RDM) located in southeast Redmond, south of OR 126 and east of Highway 97. The City of Redmond owns and operates the airport, which is the fourth-largest airport in Oregon by commercial passenger boardings, and it is primary a commercial service airport. Commercial service is provided by Alaska Airlines, United Airlines, Delta Air Lines, American Airlines, Empire Airlines, Silver Air, Ameriflight, and Boutique Air. These carriers offer arriving and departing flights daily with direct flights to Denver, Portland, Salt Lake City, San Francisco, Phoenix, Los Angeles, and Seattle.

[2] *Central Oregon Rail Planning* (2009) by Central Oregon Area Commission on Transportation (COACT), page 11.

The Bend Municipal Airport is located 5.5 miles northeast of Bend on Powell Butte Highway. It caters to the needs of general aviators, hosts two flight training schools, and is home to numerous businesses. It provides charter flights and rental cars.

The Sunriver Airport is a privately owned general aviation airport located at the Sunriver destination resort 15 miles south of Bend and several miles west of Highway 97. The airport is open to the public year-round offering fuel and service. Rental cars can be arranged as well as transportation to the Sunriver Lodge.

The Sisters Eagle Airport is a privately owned, public use general aviation airport within the northeast edge of the City of Sisters on Camp Polk Road. The airport is open to the public with fuel and other select services available. The airport is unattended and supports locally based aircraft, but primarily accommodates recreation-oriented traffic. The airport has certain operational limitations, which are associated with runway orientation, prevailing winds, and high elevation terrain located approximately 2,000 feet northeast of the airport.

In addition to the four public-use airports previously listed, there are a number of private "personal use" air strips within the County.

07 | Bridge, Marine, and Pipeline System

Bridge System

There are 94 bridges located within the unincorporated areas of Deschutes County, as illustrated in Figure 17. The County owns and maintains 48 bridges, the State owns and maintains 36 bridges, Oregon State Parks owns and maintains two bridges, and other agencies own and maintain eight bridges.

There are 2 County bridges that have posted load ratings, summarized in Table 9.

Table 9. Bridges with Posted Load Ratings

Bridge ID	Carries	Crosses	MP	Bridge Type	Posting	Status	Sufficiency Rating
15452	Smith Rock Road	North Unit Can/Smith Rock	3.5	Bituminous	3, 10.0-19.9% below Legal Loads	P Posted for Load	76.9
17C30	Gribbling Road	COI Canal	1	Wood or Timber	0, >39.9% below Legal Loads	E Open, temp struct	22

Inspectors rate the bridges on structural integrity, functionality, scour rating, and other criteria, and assign a score called a sufficiency rating. The sufficiency rating is a numeric evaluation of a bridge's sufficiency to

remain in service. Sufficiency ratings range from zero to 100, with zero being entirely insufficient and 100 percent entirely sufficient. The sufficiency rating considers structural adequacy, serviceability, functional obsolescence, importance for public use, eligibility for federal replacement funds, and a few lesser factors. Bridges receiving low scores are posted to restrict the allowable maximum vehicle weight, rehabilitated, or replaced.

A sufficiency rating below 50 implies that the bridge is in poor condition and may need to be replaced. Bridges rated between 50 and 80 indicate that the bridge is in fair condition, and that rehabilitation, if cost-effective, will bring the bridge up to current standards. Bridges with sufficiency ratings above 80 may have specific elements that do not meet current minimum standards, but overall are in good or adequate condition in all areas and are not eligible for federal funding.

Based on the most recent bridge inspection reports, summarized in ODOT's database, the majority of the bridges within the County have sufficiency ratings higher than 80. There are three locations identified as "structurally deficient," as shown in Table 10.

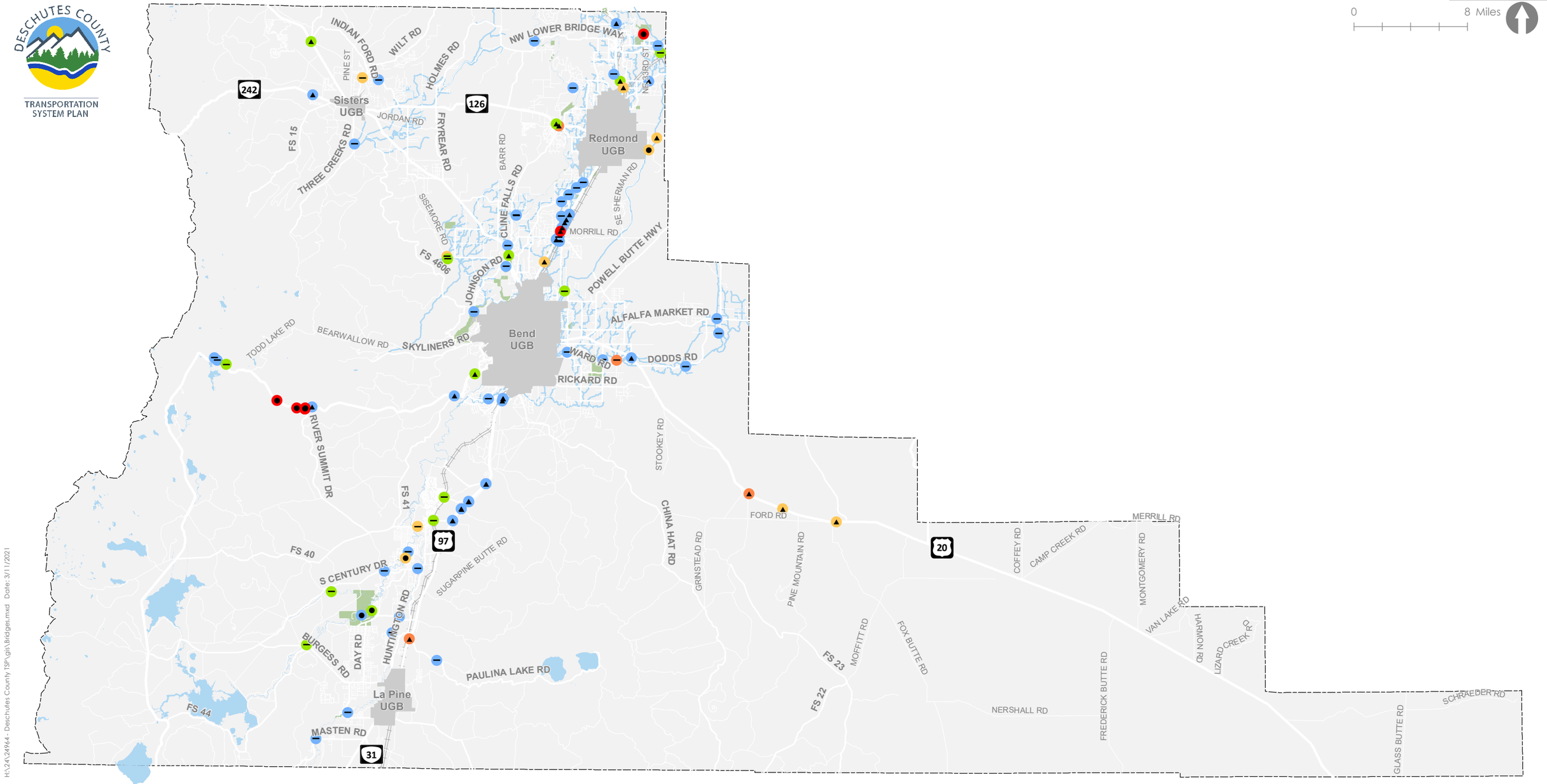
The status and other details of all existing bridges in Deschutes County, including bridges under ODOT control and those under County control, is tabulated in Appendix D.

Table 10. Bridges within Deschutes County Identified as Structurally Deficient

Bridge ID	Carries	Crosses	MP	Bridge Type	Status	Sufficiency Rating
17C02	Sisemore Road	Couch Lateral	6.77	Bituminous	A Open, no restriction	49.2
17C30	Gribbling Road	COI Canal	1	Wood or Timber	E Open, temp struct	22
21706	Foot Bridge	Crooked River	0	Wood or Timber	A Open, no restriction	-2

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



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Data Source: ODOT

Bridges by Sufficiency Rating

- <20
- 20 - 40
- 41 - 60
- 61 - 80
- >80

Bridges by Owner

- State Highway Agency
- County Highway Agency
- Other Agency

- Parks
- Water

Figure 17

Bridges
Deschutes County, Oregon

Pipeline

As summarized in the U.S. Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA)'s National Pipeline Mapping System,[3] one natural gas pipelines run through Deschutes County. The pipeline runs north-south through the County and loosely follows US97 from Redmond to La Pine. The pipeline is operated by Gas Transmission Northwest LLC. There is also a permanently abandoned gas pipeline in the City of Bend that is roughly 0.38 miles in length.

No needs were identified related to pipelines within the County.

Water

There are no navigable waterways[4] located in Deschutes County but there are several waterways and lakes that are used recreationally. As local and regional destinations, access to these bodies of water facilitate tourism, economic development, and environmental conservation efforts. Major bodies of water include Paulina Lake, East Lake, Wickiup Reservoir, Crane Prairie Reservoir, Sparks Lake, the Crooked River, and the Deschutes River.

08 | Summary of Needs

This section summarizes the findings and needs identified throughout this memorandum. This information will help to inform the consideration of TSP Alternatives to address existing and future needs.

Roadway System Inventory Needs

- The County will coordinate with ODOT and the incorporated communities to ensure consistency of individual roadway functional classification designations. Five roadways within the County were identified to have a different County classification than another governing jurisdiction.
- The County will continue to address needed roadway repairs through the ongoing maintenance program.
- The County does not have any designated local freight routes connecting to local industrial or other key destinations. The alternatives evaluation may explore County freight routes to serve key economic priority areas identified by the County.

Roadway Capacity Needs

- Two roadway segments were estimated to facilitate year 2040 traffic volumes that may result in LOS E or F conditions. The need for additional roadway capacity along theses roadways will be further evaluated:
    - Deschutes Market Road at Greystone Ln
    - S Century Drive at Venture Lane

[3] https://www.npms.phmsa.dot.gov/ https://www.npms.phmsa.dot.gov/

[4] Navigable waterways refers to all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide

Safety Needs

- This TSP update will explore the identified safety concerns and initial improvement concepts developed at the top County sites identified in the TSAP:
  - US20/Ward Road/Hamby Road
  - US97/Vandevert Road
  - US20/Fryrear Road
  - Burgess Road/Day Road/Pine Forest Drive
  - Bear Creek Road/Ward Road
  - Alfalfa Market Road/Dodds Road
  - US20/Old Bend Redmond Highway
  - US20/O.B. Riley Road/Cook Avenue
  - US97/61st Street
  - US97/11th Street/Lower Bridge Way
  - 61st Street/Quarry Ave/Canal Blvd
  - Northwest Way/Coyner Ave
  - Alfalfa Market Road/Walker Road
  - US97/Smith Rock Way/B Ave
  - Deschutes Market Road/Hamehook Road
  - US97/Burgess Road
  - US20/Hawks Beard (Black Butte Ranch)
  - El Camino Lane/Helmholtz Way
  - Canal Blvd/Helmholtz Way
  - Dickey Road/Nelson Road
  - US97/Galloway Ave
  - Butler Market Road & Powell Butte Highway
  - Butler Market Road & Hamby
  - Butler Market Road & Hamehook
  - Baker Road & Cinder Butte
  - S Century and Huntington
  - Cline Falls Rd/Coopers Hawk Drive/ Falcon Crest Drive
  - Lower Bridge Way/19th
  - Lower Bridge Way/31st
  - Lower Bridge Way/43rd

Multimodal Needs

- Many of the County bikeways and highways do not have paved shoulders that are at least six feet wide. This lack of paved shoulders requires people biking to share the lane on these high-speed roads.
- There are two Oregon Scenic Bikeways in the County which connect Sisters with Terrebonne and Bend with Tumalo as well as a partial that connects McKenzie Pass to Sisters.. These route likely experience some of the highest recreational bicyclist traffic in the County and will be reviewed related to providing facilities for people biking.
- Small unincorporated communities currently lack dedicate pedestrian and bicycle facilities. Many of the roadways adjacent to schools or other pedestrian trip generators (parks, trail connections, rural commercial areas, etc.) located in Terrebonne and Tumalo are missing sidewalks. These facilities may be appropriate to connect to key destinations within the communities. Safe Routes to School funding may an option to assist with implementation of TSP recommendations in small communities.
- The CET Master Plan has identified a number of locations for increasing frequency and service levels via existing Transit routes and Dial-A-Ride service. Connection to the CET facilities will be considered as part of TSP alternatives.

Bridge Needs

- The County will further evaluate the needs of three bridges identified as structurally deficient:
  - Sisemore Road at Couch Lateral (MP 6.77)
  - Gribbling Road at Coi Canal (MP 1.0)
  - Foot Bridge at Crooked River (MP 0.0)

Appendices

Appendix A: Land Use and Demographics

Appendix B: Methodology Memorandum

Appendix C: Pedestrian and Bicycle-Involved Crashes Reported on County Roads

Appendix D: Bridge Inventory

APPENDIX A


Deschutes County Zoning
City Limit
Zoning Designation
AD - Airport Development
EFUAL - Alfalfa Subzone
EFUHR - Horse Ridge Subzone
EFULA - La Pine Subzone
EFULB - Lower Bridge Subzone
EFUSC - Sisters/Cloverdale Subzone
EFUTE - Terrebonne Subzone
EFUTRB - Tumalo/Redmond/Bend Subzone
F1 - Forest Use 1
F2 - Forest Use 2
FP - Flood Plain
MUA10 - Multiple Use Agricultural
OS&C - Open Space & Conservation
RI - Rural Industrial
RC - Rural Commercial
RR10 - Rural Residential
SM - Surface Mining
UAR10 - Urban Area Reserve - 10 Acre Minimum
SR 2.5 - Residential 2.5 Acre Minimum
Urban Unincorporated Community
Rural Service Center
Resort Community
Rural Community
Rural Commercial
3 1.5 0 3 6
Miles
October 26, 2017
DISCLAIMER:
The information on this map was derived from digital databases on Deschutes County's G.I.S. Care was taken in the creation of this map, but it is provided "as is". Deschutes County cannot accept any responsibility for errors, omissions, or positional accuracy in the digital data or the underlying records. There are no warranties, express or implied, including the warranty of merchantability or fitness for a particular purpose, accompanying this product. However, notification of any errors will be appreciated.
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DESCHUTES COUNTY
Jefferson County
Linn County
Lane County
Crook County
Klamath County
Lake County
Black Butte Ranch
City of Sisters
Terrebonne
Eagle Crest
City of Redmond
Pronghorn
Tumalo
City of Bend
Alfalfa
Widgi Creek
Sunriver
City of La Pine
Millican
Brothers
Hampton
Cultus Lake
Crane Prairie Reservoir
Wickiup Reservoir
Davis Lake
Paulina Lake
East Lake

Deschutes County Comprehensive Plan

- City Limit
- Urban Growth Boundary
- Urban Reserve Area

Comprehensive Plan Designations

- Airport Development
- Agriculture
- Forest
- Open Space & Conservation
- Rural Commercial
- Rural Industrial
- Rural Residential Exception Area
- Rural Service Center
- Surface Mining
- Industrial
- Urban Unincorporated Community
- Rural Service Center
- Resort Community
- Rural Community
- Rural Commercial

3 1.5 0 3 6 Miles

October 26, 2017

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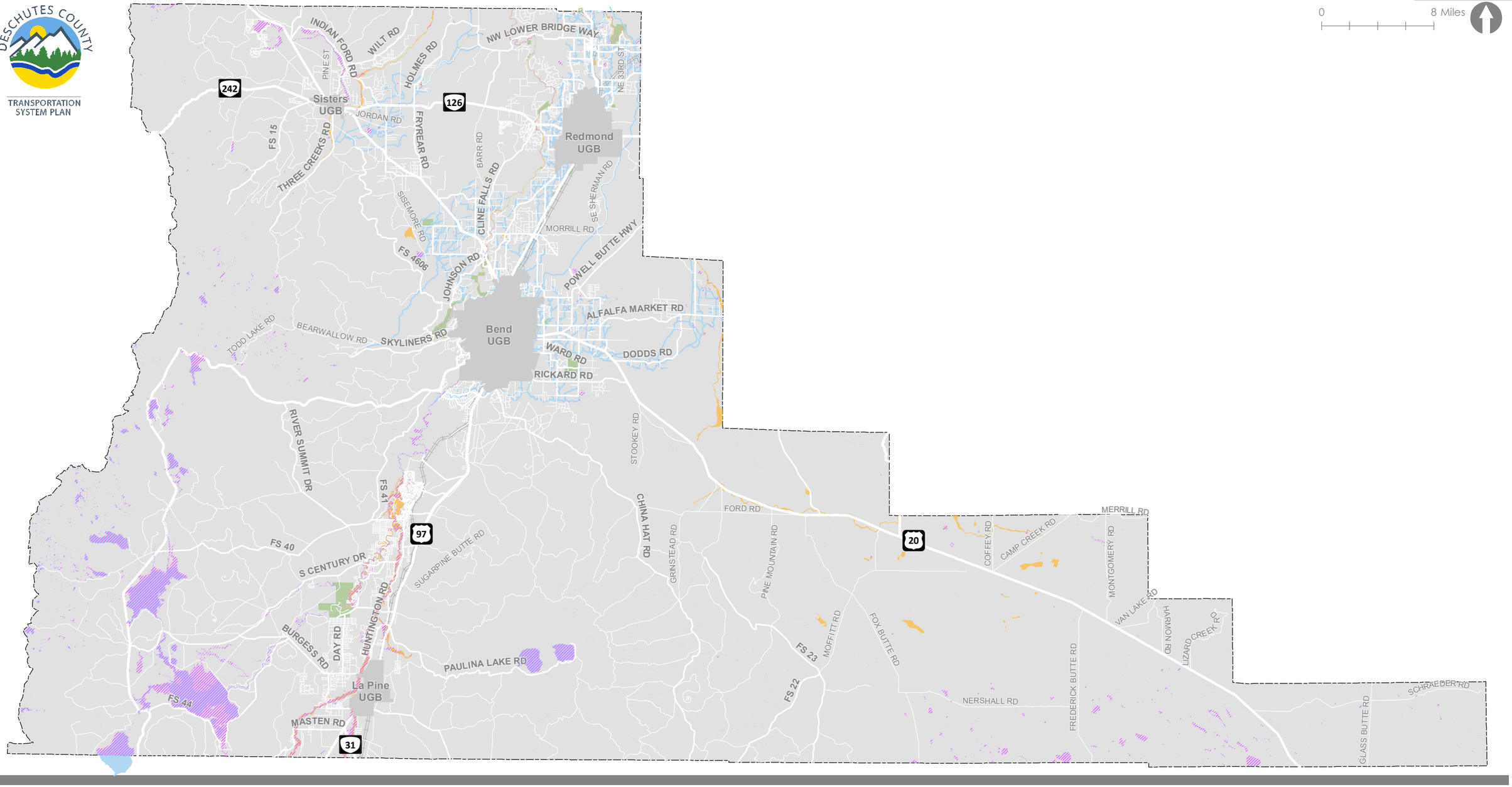
Jefferson County
Linn County
Lane County
Crook County
Klamath County
Lake County
Black Butte Ranch
Sisters
Eagle Crest
Terrebonne
Redmond
Pronghorn
Tumalo
Bend
Alfalfa
Widgi Creek
Sunriver
La Pine
Millican
Brothers
Hampton
Cultus Lake
Crane Prairie Reservoir
Wickiup Reservoir
Davis Lake
Paulina Lake
East Lake

Comprehensive Plan Deschutes County, Oregon Figure A-2

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



H:\24\24964 - Deschutes County TSP\gis\Figure A-03- Wetland Inventory.mxd Date: 4/13/2021

Wetland Inventory
FEMA Floodplain
Water
Parks

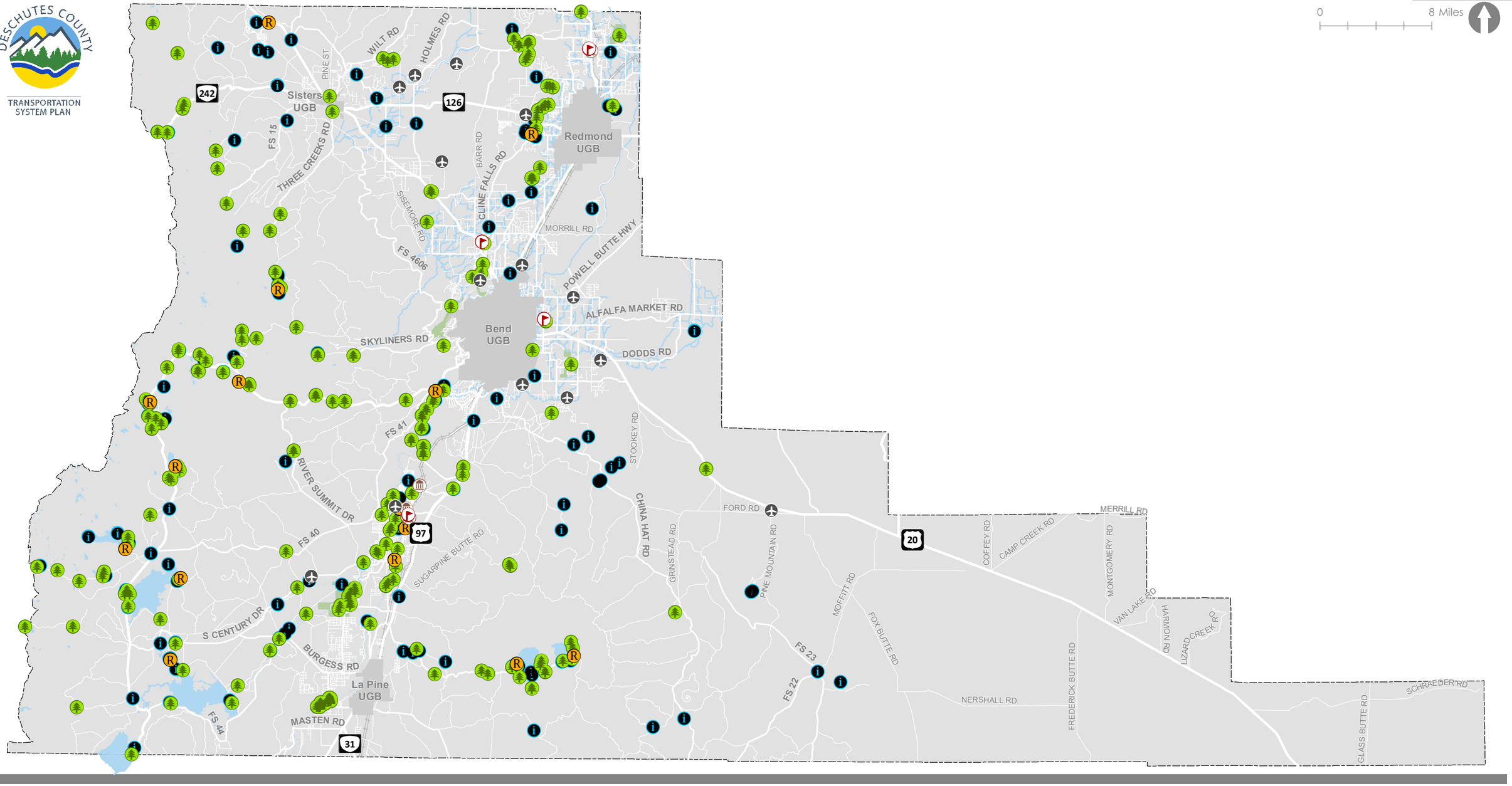
Data Source: Deschutes County

Figure A-3

Wetland Inventory
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



H:\24\24944 - Deschutes County TSP\gis\Figure A-04 Activity Centers.mxd Date: 4/13/2021

- Grade School
- Airport
- Park/Trail
- Point of Interest
- Community Buildings
- Resort
- Parks
- Water

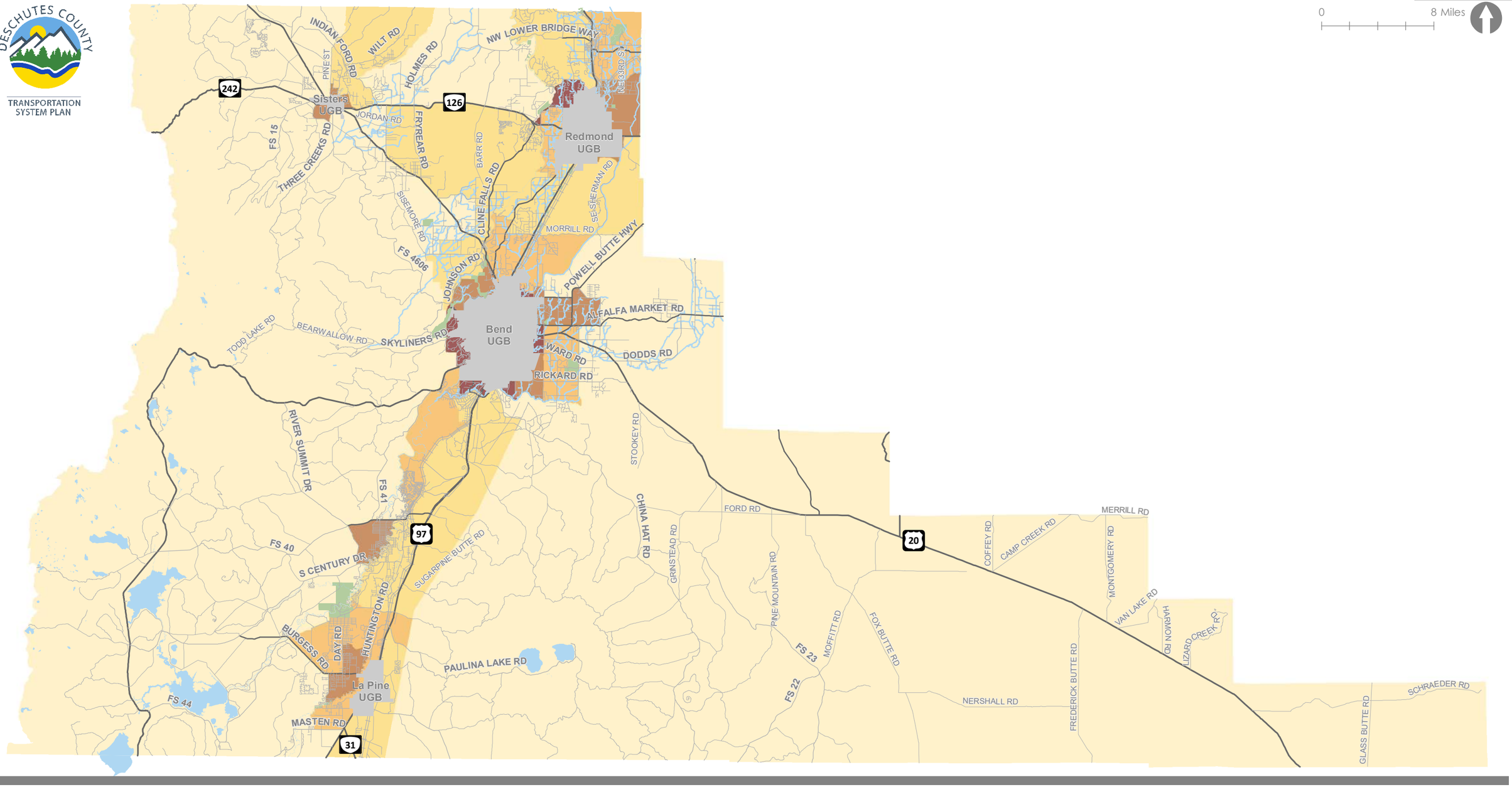
Data Source: Deschutes County

Figure A-4

Activity Centers
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



Population Density (People per Acre by Block Group)

- 0.00 - 0.08
- 0.09 - 0.16
- 0.17 - 0.34
- 0.35 - 1.01
- 1.02 - 5.83

- Parks
- Water

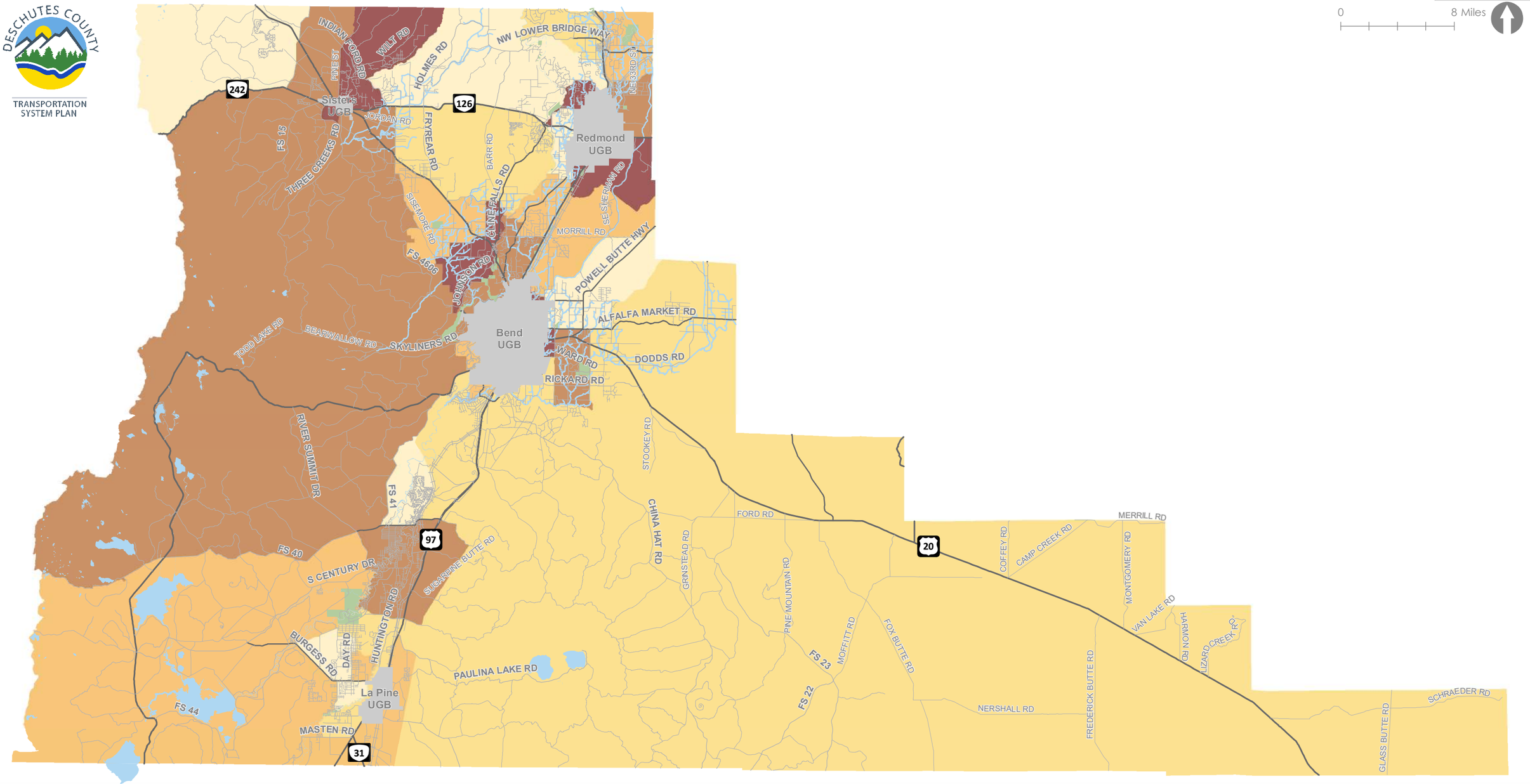
Data Source: American Comunity Survey Table ACS 5YR 2019 B01001

Figure A-5

Total Population
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



Minoity Population (Percentage by Block Group)

- 0% - 1.7%
- 1.8% - 5.4%
- 5.5% - 7.8%
- 7.9% - 10.8%
- 10.9% - 23.4%

- Parks
- Water

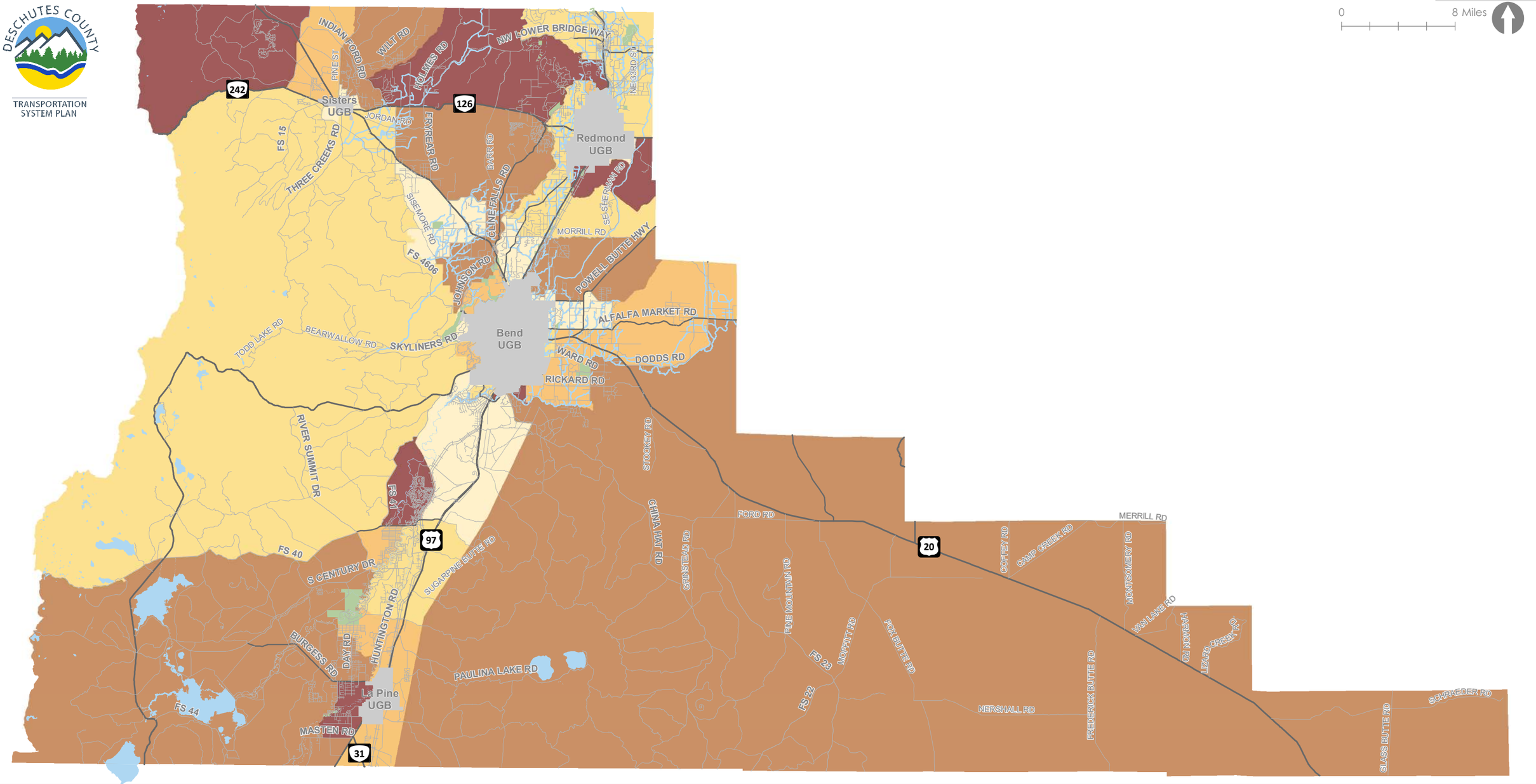
Data Source: American Comunity Survey Table ACS 5YR 2019 B02001

Figure A-6

Minority Population
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



Population Age 65 and Older (Percentage by Block Group)

- 8.6% - 17%
- 17.1% - 21.8%
- 21.9% - 27.5%
- 27.6% - 44.9%
- 45% - 82%

- Parks
- Water

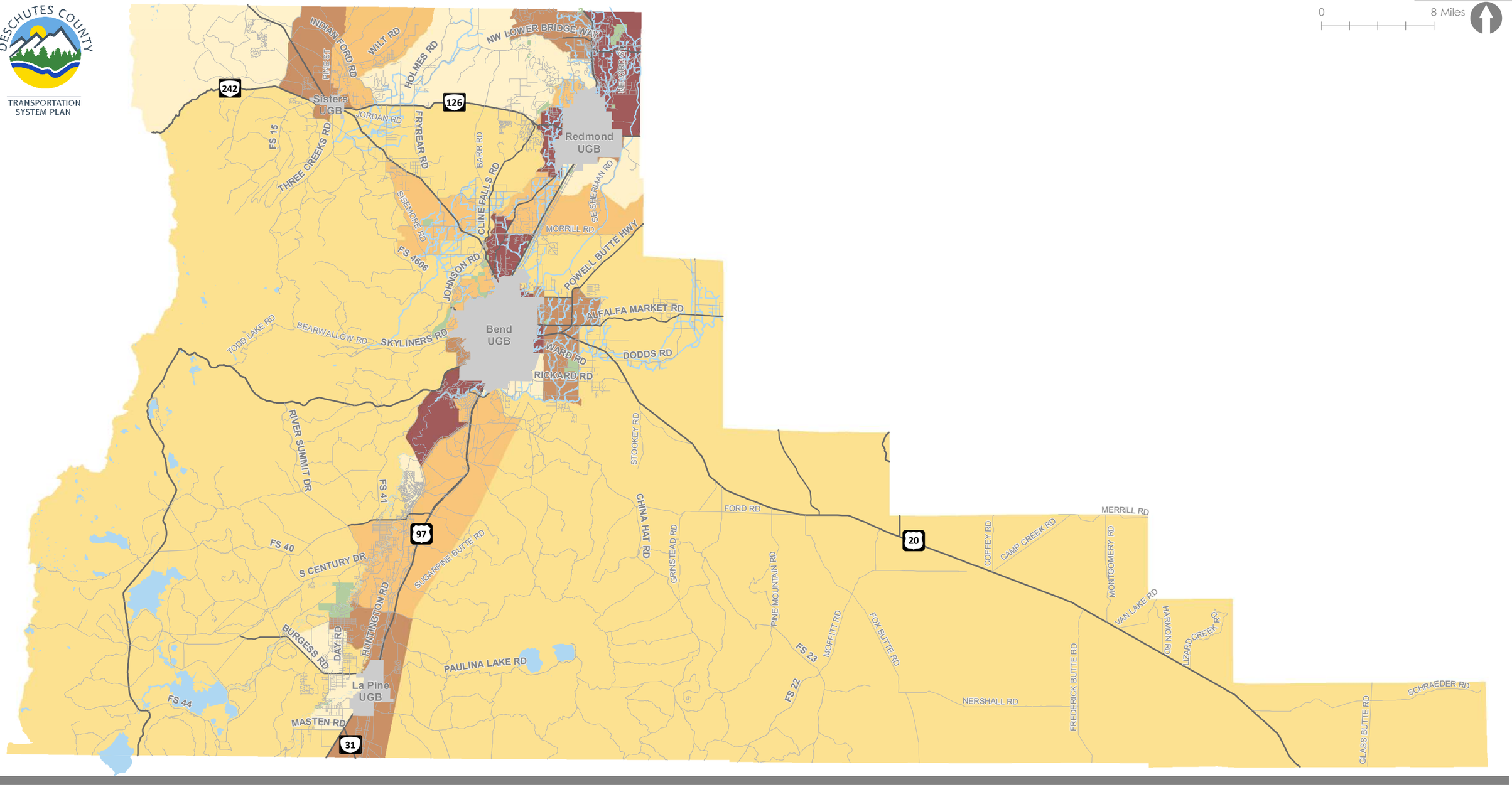
Data Source: American Comunity Survey Table ACS 5YR 2019 B01001

Figure A-7

Elderly Population
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



Data Source: American Comunity Survey Table ACS 5YR 2019 B01001

Population Under Age 18 (Percentage by Block Group)

- 0% - 10.6%
- 10.7% - 15.2%
- 15.3% - 20.5%
- 20.6% - 23.1%
- 23.2% - 32.8%

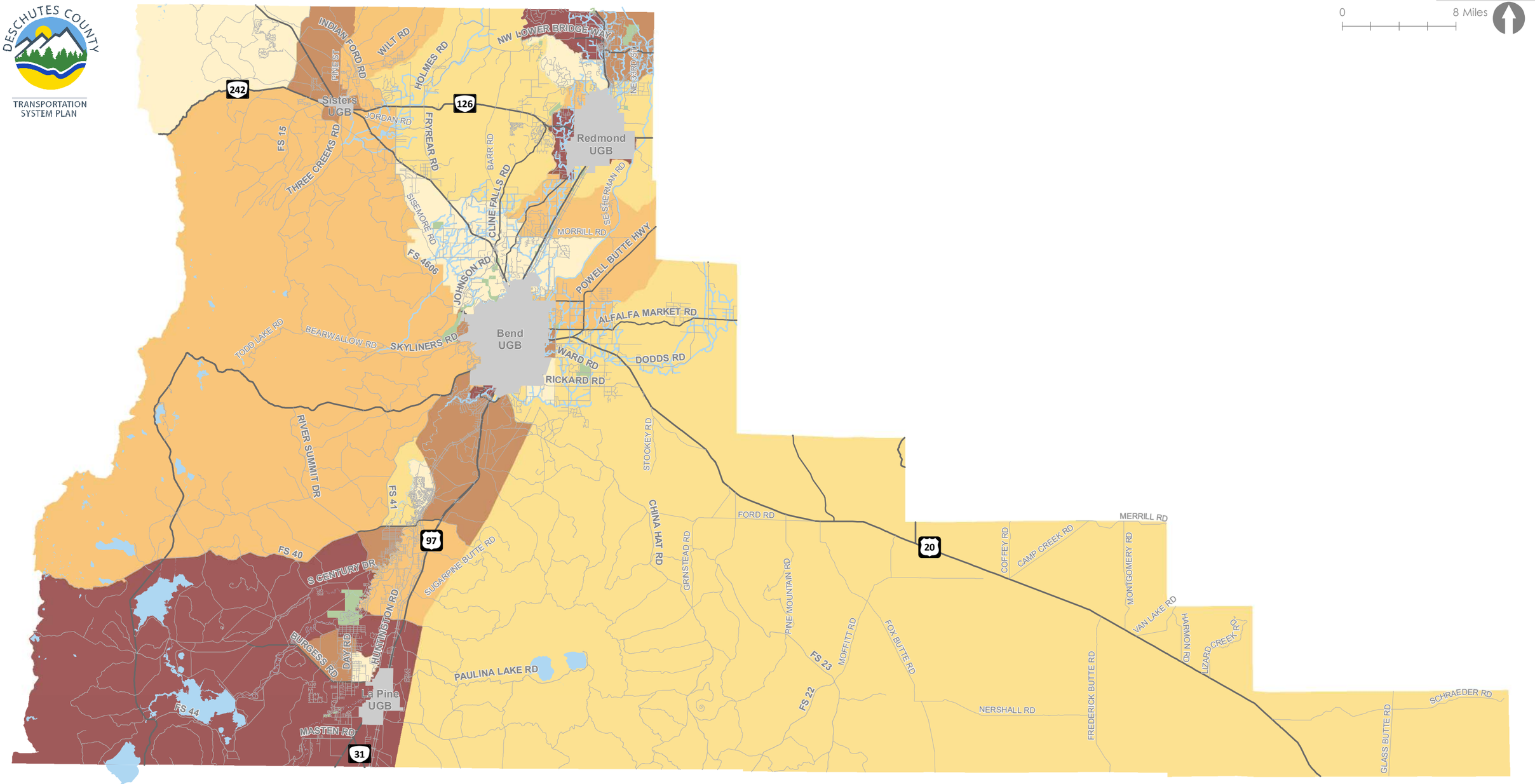
- Parks
- Water

Figure A-8

Youth Population
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



Data Source: American Comunity Survey Table ACS 5YR 2019 B17017

Households Below Poverty (Percentage by Block Group)

- 0% - 4%
- 5% - 6%
- 7% - 10%
- 20%
- 30%

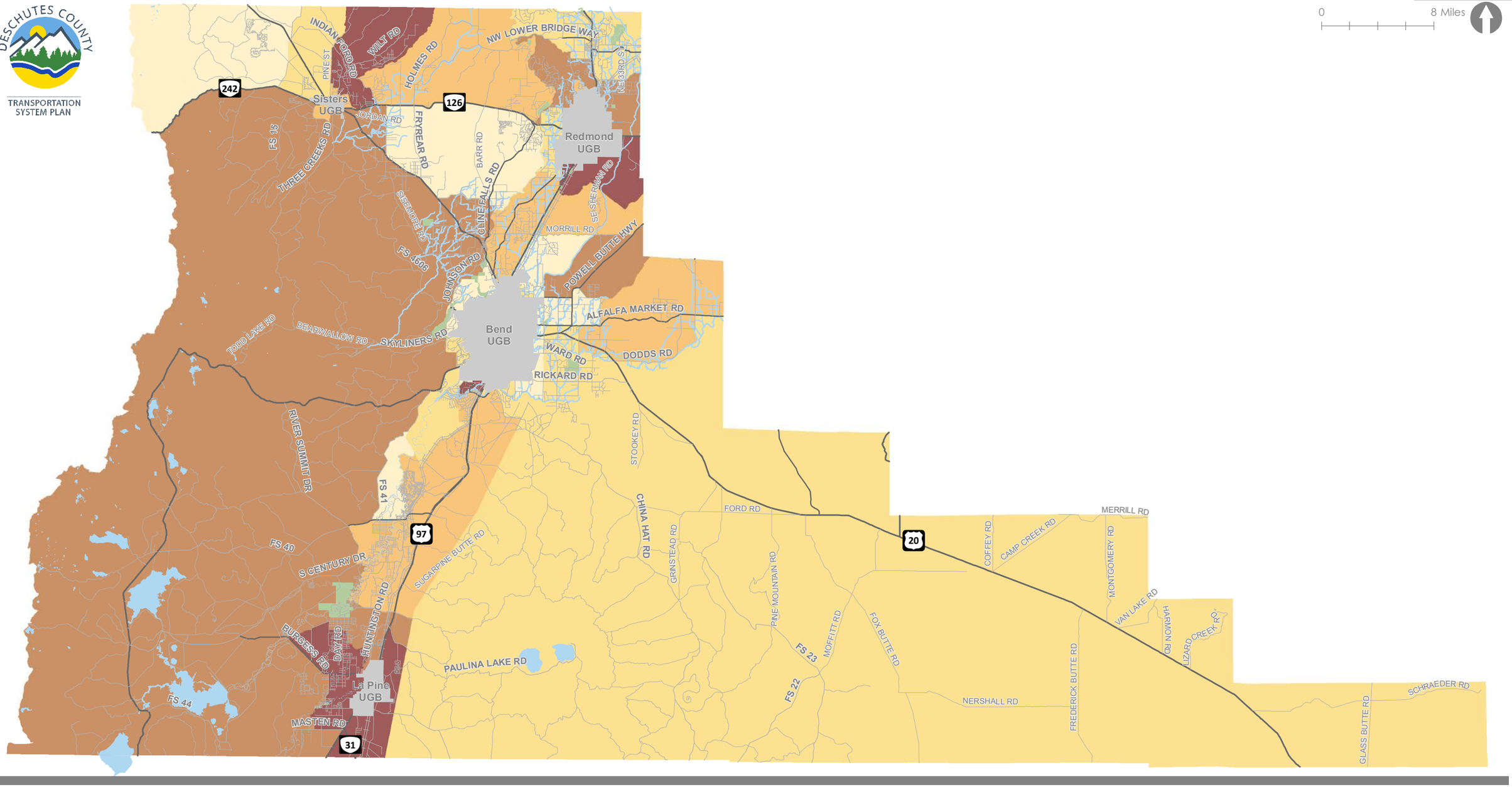
- Parks
- Water

Figure A-9

Low Income Households
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



Population with Disabilities (Percentage by Block Group)

- 0% - 10.4%
- 10.5% - 12.4%
- 12.5% - 18.2%
- 18.3% - 21.6%
- 21.7% - 50.3%

- Parks
- Water

Data Source: American Comunity Survey Table ACS 5YR 2019 C21007

Figure A-10

Population with Disabilities Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles

Sisters UGB
Redmond UGB
Bend UGB
La Pine UGB

INDIAN FORD RD
WILT RD
HOLMES RD
NW LOWER BRIDGE WAY
NE 33RD ST
PINE ST
242
126
JORDAN RD
FRYREAR RD
BARR RD
FS 15
THREE CREEKS RD
CLINE FALLS RD
SE SHERMAN RD
SISEMORE RD
MORRILL RD
FS 4606
JOHNSON RD
POWELL BUTTE HWY
ALFALFA MARKET RD
TODD LAKE RD
BEARWALLOW RD
SKYLINERS RD
WARD RD
DODDS RD
RICKARD RD
RIVER SUMMIT DR
FS 41
STOOKEY RD
CHINA HAT RD
FORD RD
MERRILL RD
97
20
FS 40
S CENTURY DR
SUGARPINE BUTTE RD
GRINSTEAD RD
COFFEY RD
CAMP CREEK RD
MONTGOMERY RD
PINE MOUNTAIN RD
VAN LAKE RD
HUNTINGTON RD
BURGESS RD
DAY RD
HARMON RD
LIZARD CREEK RD
FS 23
MOFFITT RD
FOX BUTTE RD
PAULINA LAKE RD
FS 22
FS 44
NERSHALL RD
FREDERICK BUTTE RD
SCHRAEDER RD
GLASS BUTTE RD
MASTEN RD
31

Households with Limited English (Percentage by Block Group)

- 0% - 0.9%
- 1% - 3.4%
- 3.5% - 6.2%
- 6.3% - 11.5%
- 11.6% - 52.7%

- Parks
- Water

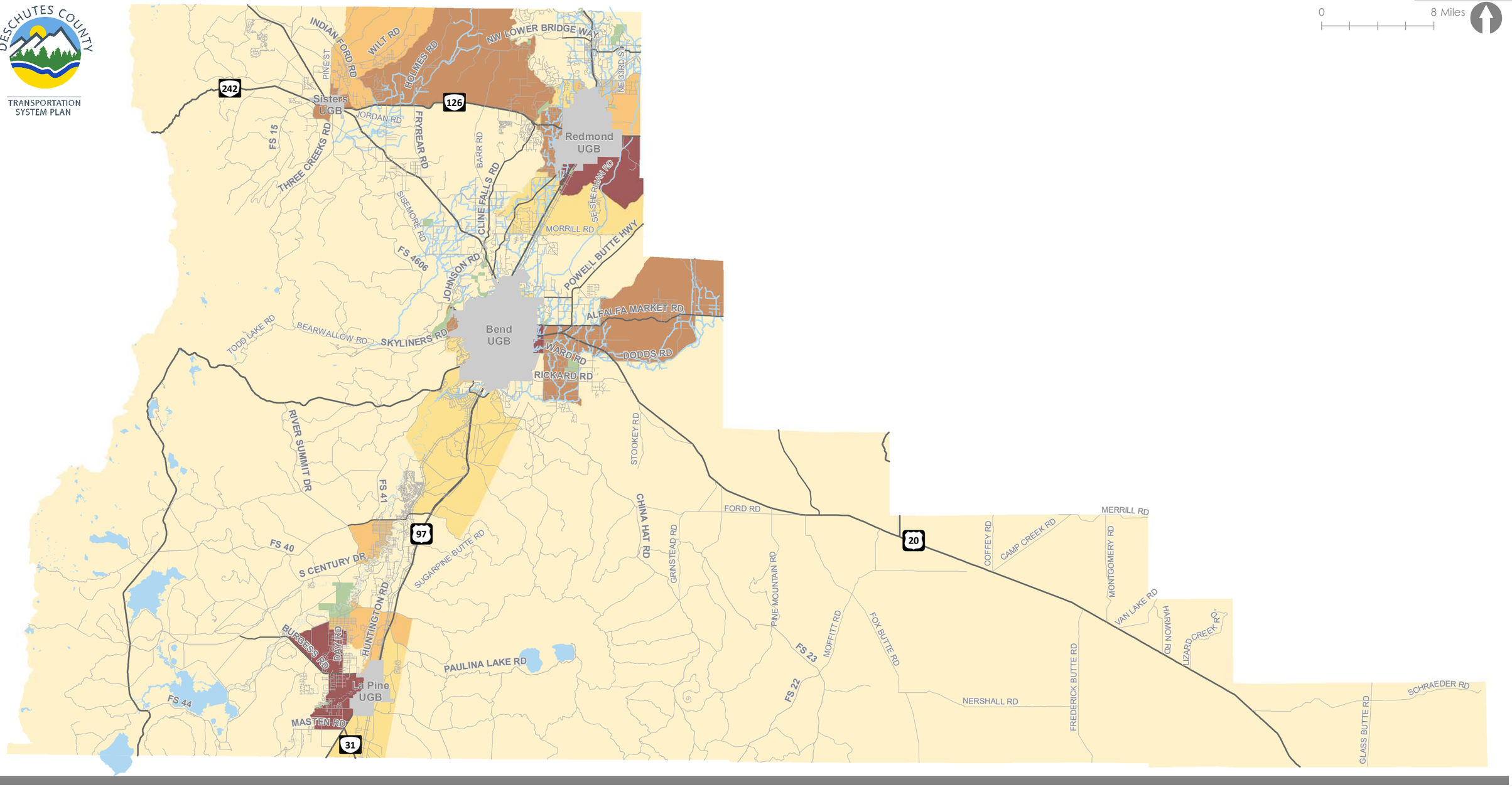
Data Source: American Comunity Survey Table ACS 5YR 2019 C16002

Figure A-11

Households with Limited English
Deschutes County, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



Households without Vehicles (Percentage by Block Group)

- 0%
- 0.1% - 1.2%
- 1.3% - 2.6%
- 2.7% - 5.2%
- 5.3% - 15.4%

- Water
- Parks

Data Source: American Comunity Survey Table ACS 5YR 2019 B25044

Figure A-12

Households without Vehicles Deschutes County, Oregon

APPENDIX B

DRAFT METHODOLOGY MEMORANDUM

Date: Thursday, March 11, 2021

To: Chris Doty, Peter Russell, and Cody Smith, Deschutes County

From: Matt Kittelson, Julia Kuhn, and Carrie Theus

Project: Deschutes County TSP Update

Subject: Methodology Memorandum

This memorandum documents the methodology and key assumptions to be used in preparation of the existing and future conditions and alternatives analyses for the Deschutes County Transportation System Plan (TSP) Update. The methodologies included in this memorandum are based on guidance provided in the Oregon Department of Transportation (ODOT) *Transportation System Plan Guidelines* and the *Analysis Procedures Manual* (APM). The methodology and assumptions described in this memorandum will be used to help identify potential gaps and deficiencies in the transportation system related to:

- Future capacity needs along key roadways within the County;
- Roadway connectivity needs for people driving, emergency services, access to tourism, and the transport of goods and services;
- Traffic safety needs along key County facilities; and,
- Facilities and performance of the bicycle and pedestrian network.

This information will serve as a baseline for identifying a list of existing needs (gaps and deficiencies), identifying and evaluating potential solutions (projects, programs, policies, pilot projects, and studies), and developing a prioritized list of improvements for the TSP update.

The remainder of this memorandum summarizes the following:

- Location of the roadway segments where safety and capacity analyses will be conducted;
- Methodology for developing vehicular analyses volumes for existing and future conditions;
- Methodology for identifying roadway segments that are nearing and/or exceeding capacity;
- Crash analyses procedures; and,
- Pedestrian and bicycle analyses parameters.

Study Area

The TSP update will address the transportation system needs associated with County-operated facilities in areas that are outside the Bend, Redmond, Sisters, and La Pine Urban Growth Boundaries (UGBs).

Transportation facilities that are operated and maintained by ODOT, the Forest Service, Bureau of Land Management, and the four cities are not addressed.

Figure 1 reflects the roadway segments where capacity analysis will be reviewed as part of the TSP. The County has collected daily traffic counts at many of these locations each year, beginning in 2011 through 2019. To the extent possible, the 2019 counts will be used to develop year "2020 proxy volumes" to reflect existing conditions.

Traffic Capacity Review

For the purposes of performing a screening level review of both potential roadway capacity as well as connectivity needs along county roadways, we propose to apply the "Simplified Highway Capacity Method for the Highway Performance System" that was developed for use by the Federal Highway Administration.[1] The rural two-lane highway methodology within this report can be used as one of several helpful tools that can be used to help assess the future needs of the County's roadway system. For reference purposes, the methodology draws from the applicable roadway characteristics to assess a level of service, including:

- Daily roadway volumes;
- Posted speed;
- Generalized terrain information; and,
- Percentage of trucks.

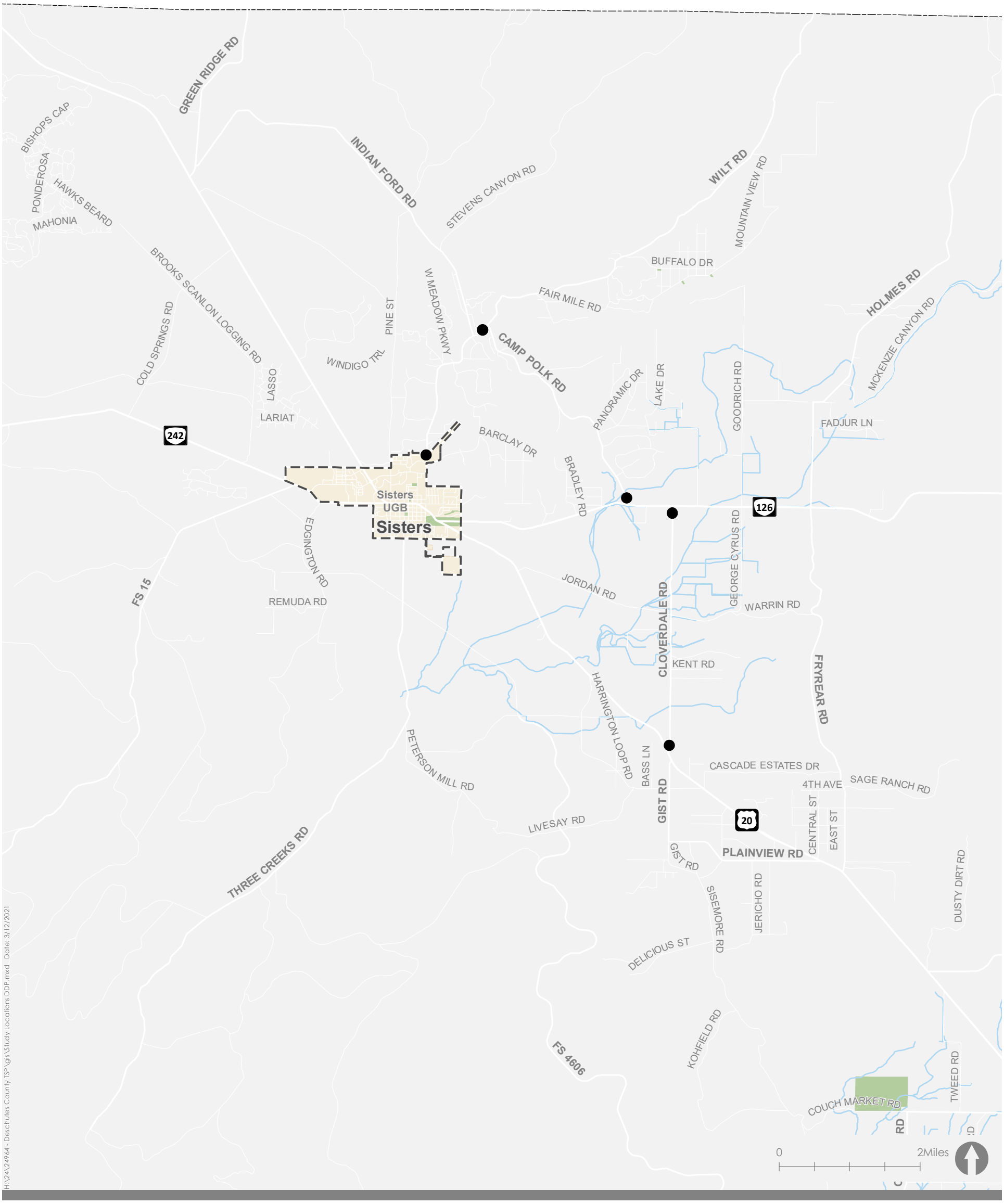
However, for non-mountainous roadways, the methodology does not reflect any measurable differences in expected level of service for terrain and truck percentages. As an example, level-of-service "D" corresponds to the following:

- Posted Speed of 45 miles per hour – daily volumes of less than 13,900 vehicles
- Posted Speed of 50 miles per hour – daily volumes of less than 19,000 vehicles
- Posted Speed of 55 miles per hour – daily volumes of less than 24,000 vehicles

We will use the level-of-service "D" as the metric for which to identify potential changes to the roadway system. This metric can be matched with an assessment of various roadways versus the TSP goals and identified roadway connectivity and/or specific roadway projects needed to support continued economic development, emergency services, freight needs, resiliency efforts, etc.

[1] https://www.fhwa.dot.gov/policyinformation/pubs/pl18003/hpms_cap.pdf

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN



H:\24\24964 - Deschutes County TSP\gis\Study Locations DDP.mxd Date: 3/12/2021

- Study Location
- Railroads
- Parks
- Water
- Cities
- UGB
- County

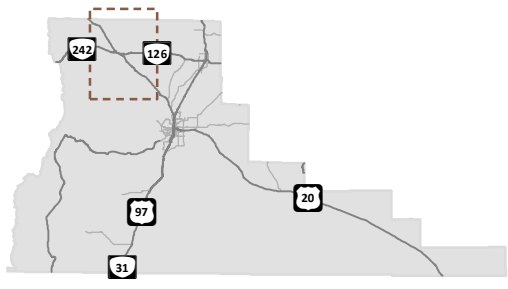


Figure 1

Data Source: Deschutes County

Study Locations
Sisters Area, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

Study Location
Railroads
Parks
Water
Cities
UGB
County

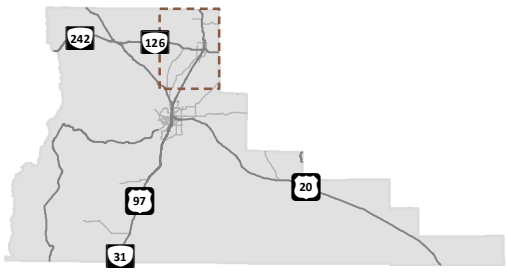


Figure 1

Data Source: Deschutes County

Study Locations
Redmond Area, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

TUMALO RD
MORRILL RD
COLLINS RD
PINEHURST RD
ALLEN RD
MOCK RD
BILL MARTIN RD
BAILEY RD
SIMON RD
HUNNELL RD
DALE RD
MCGRATH RD
SYLVAN LOOP
TUMALO RESERVOIR RD
OLD BEND REDMOND HWY
20
TYLER RD
JOHNSON RD
ROGERS RD
SCENIC DR
BOWERY LN
HUNTERS CIR
DESCHUTES MARKET RD
PIONEER LOOP
GENTRY LOOP
FS 4606
COOLEY RD
KLIPPEL RD
SADDLEBACK DR
BUCK DR
STAG DR
SKYLINE RANCH RD
GLEN VISTA RD
JAMISON ST
VOGT RD
BOYD ACRES RD
HIGH DESERT LN
NE 18TH ST
OVERTREE RD
REPINE DR
BUTLER MARKET RD
OB RILEY RD
EMPIRE AVE
NE BUTLER MARKET RD
DICKEY RD
NELSON RD
ERICKSON RD
NW STARVIEW DR
NW SUMMIT DR
NW MT WASHINGTON DR
MCCLAIN DR
NW PORTLAND AVE
NE 4TH ST
NE 6TH ST
NE 8TH ST
NE 11TH ST
NE NEFF RD
NE 27TH ST
EAGLE RD
HAMBY RD
NEFF RD
ERICKSON RD
POWELL BUTTE HWY
NW 12TH ST
NE 2ND ST
NE 5TH ST
Bend
Bend UGB
BEAR CREEK RD
DOBBIN RD
SOMERSET DR
TEAL RD
SKYLINERS RD
CALPINE LOOP
NW LOLO DR
GREEN LAKES LOOP
BROKEN TOP DR
SKYLINE RANCH RD
METOLIUS DR
SW REED MARKET RD
SE REED MARKET RD
FARGO LN
SE 27TH ST
STEVENS RD
MEEKS TRL
CENTURY DR
HOLLYGRAPE ST
BLAKELY RD
PARRELL RD
BROOKSWOOD BLVD
RAE RD
MURPHY RD
BROSTERHOUS RD
SE 15TH ST
FERGUSON RD
WARD RD
WHITE PEAKS DR
LARSEN RD
MCGILVRAY RD
BILLADEAU RD
RICKARD RD
97
BUCK CANYON RD
KNOTT RD
WOODSIDE RD
TEKAMPE RD
BOBCAT RD
SHOLES RD
ARNOLD MARKET RD
HANES RD
QUEBEC DR
ZUNI RD
CHOCTAW RD
SHOSHONE RD
BAKER RD
APACHE RD
AGATE RD
HOPI RD
NAVAJO RD
CHEYENNE RD
SCALE HOUSE RD
TALL PINE AVE
CHINA HAT RD
FS 41
CALGARY DR

0 1.5Miles

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- Study Location
- Railroads
- Parks
- Water
- Cities
- UGB
- County

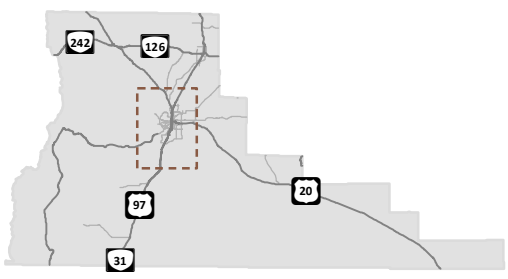

Figure 1

Data Source: Deschutes County

Study Locations
Bend Area, Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

RIVER SUMMIT DR
FS 41
BESSON RD
RIVER RD
BEAVER DR
SPRING RIVER RD
COVINA RD
ELSINORE RD
GLENDALE RD
JACINTO RD
SOLAR DR
LUNAR DR
NESTPINE DR
TRAILMERE CIR
STELLAR DR
UPLAND RD
FS 40
STAGESTOP DR
SWAN RD
SNOW GOOSE RD
BLUE EAGLE RD
S CENTURY DR
BIG RIVER DR
FOSTER RD
LAZY RIVER DR
FOREST LN
SHAWNEE CIR
TAMARACK RD
SUGARPINE BUTTE RD
BEAVER FOX DR
FOSTER RD
WOLF ST
WHITTIER DR
LAPINE STATE RECREATION RD
PARK DR
LAVA DR
TWIN DR
7TH ST
2ND ST
3RD ST
4TH ST
5TH ST
97
PARKWAY DR
BOUNDARY RD
HOLIDAY DR
DAWN RD
GREEN FOREST RD
RIVERVIEW DR
HUNTINGTON RD
WEST DR
PAULINA LAKE RD
SUNRISE BLVD
DAY RD
BRIDGE DR
LOOP DR
NEWBERRY RD
W DESCHUTES RIVER RD
SHADY LN
RAINBOW DR
ALPINE DR
DYKE RD
LEONA LN
DEEDON RD
RANCH DR
CENTER DR
MEADOW LN
CAGLE RD
AMMON RD
BURGESS RD
FS 44
PINE DR
DOE LN
ANTLER LN
SKIDGEL RD
ROSLAND RD
PONDEROSA WAY
DUSTAN RD
ELDERBERRY LN
La Pine
DAVIS AVE
La Pine UGB
DORRANCE MEADOW RD
RIM DR
JACKPINE RD
FIR RD
ASH RD
PENGRA ST
REED RD
DARLENE WAY
DEER AVE
6TH ST
MITTS WAY
RUSSELL RD
FINLEY BUTTE RD
PIERCE RD
HUNTINGTON RD
FS 22
JACKPINE LOOP
MASTEN RD
31
0
1.5Miles

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- Study Location
- Railroads
- Parks
- Water
- Cities
- UGB
- County

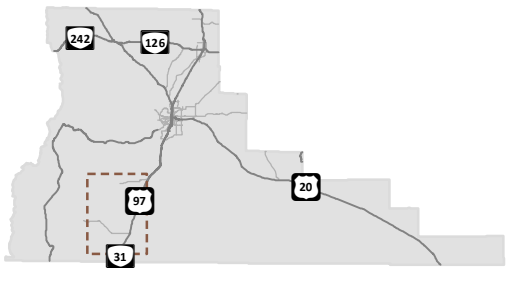

Figure 1

Data Source: Deschutes County

Study Locations
South County Area, Oregon

Existing Year Traffic Volumes

With the ongoing COVID pandemic and its effect on "typical" traffic patterns, we propose to apply a two-percent growth factor to the 2019 traffic volumes on most County roadways to approximate 2020 daily volumes. We will coordinate with County staff to identify any specific facilities where a higher growth may be appropriate relative to 2019 counts. Further, given the planning-level screening analyses that we propose to use, we are not intending to apply any seasonal adjustment factors to daily traffic volumes along County roadways.

Forecast Year Traffic Volume Development

The 2012 County TSP relied on travel forecasts from the travel demand model developed by ODOT's Transportation Planning Analysis Unit (TPAU). This model has not been updated with current land use information for existing conditions or future analysis years so we instead reviewed ODOT's future highway volume table for potential growth rates to apply to the "existing" volumes to approximate year 2040 conditions. This review revealed that a two percent per year (linear, non-compounded) rate could be used to reflect future growth along County roadways. This review was based on several locations along the state highway system within Deschutes County, such as:

- US 97 at the Jefferson County/Deschutes County line – 1.9 percent per year;
- US 97 north of 1st Street in La Pine – 1.8 percent per year;
- Powell Butte Highway west of Deschutes County/Crook County line – 3.2 percent per year;
- McKenzie Highway west of Sisters – 1.6 percent per year;
- McKenzie-Bend Highway near Cline Falls Highway – 2.1 percent per year; and,
- Santiam Highway west of Sisters – 0.4 percent per year.

Unless otherwise identified by the County at specific roadway segments, we will apply a linear two-percent per year growth rate for screening purposes.

Crash Analyses

The County completed its Transportation Safety Action Plan (TSAP) for the areas outside the City UGBs in 2019. As part of the TSAP, all roads within unincorporated areas of the county were screened for the need for near-term or longer-term safety-oriented changes. Through that work, high priority improvement needs as well as systemic investment strategies were identified. Long-term concepts which may require further refinement are also identified.

As part of the TSP, we propose to include key outcomes of the TSAP, including both the near-term and longer-term projects identified. We do not propose any additional quantitative review of crash history and/or crash countermeasures. We do, however, propose to evaluate the potential for incorporation of the safety-oriented projects into projects being considered to address other TSP goals. Locations where such analysis would be useful will be identified through the existing and future conditions analysis.

Analysis of Bicycling, Walking and Transit Options

The analysis of facilities for people walking, riding bikes and/or taking transit is anticipated to focus on the following:

- Using available GIS data, field observations and online mapping, qualitatively identify key gaps within the bicycle system connecting unincorporated areas of the County with the City's UGBs as well as key recreational areas.
- Within the Terrebonne, Deschutes River Woods, and Tumalo communities, qualitatively identify key gaps within the sidewalk and/or trail system, particularly related to connecting residents with school bus stops.
- Incorporate the Central Eastside Transit (CET) Master Plan recommendations.

Incorporation of Other Plans

We plan to incorporate by reference a number of ongoing and/or recently adopted plans into the TSP update for the County. Examples of these plans include, but are not limited to:

- Redmond TSP;
- Bend TSP;
- Sisters TSP;
- La Pine TSP;
- Deschutes County Transportation Safety Action Plan;
- Redmond and Bend Airport Master Plans;
- Applicable elements of local refinement plans, corridor plans, etc.;
- Interchange Area Management Plans (e.g., Baker Road, Lower Bridge Way), etc.

Next Steps

We look forward to collaborating with you on the next steps and receiving your feedback on the methodology and key assumptions outlined in this memorandum.

APPENDIX C

APPENDIX D

OBJECTID	BRIDGE_ID	BRIDGE_NAM	CARRIES	CROSSES	LENGTH_FT	WIDTH_FT	LANES	MAIN_SPANS	APPR_SPANS	DESIGN	MATERIAL	OWNER	NBI_BRIDGE	POSTING	SUF_RATING	MOVABLE_B
3	01135A	Arnold Ditch, Hwy 4	US 97 (HWY 004)	ARNOLD DITCH	19	120.5	5	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	N	5 At/Above Legal Loads	96.7	N
4	01421A	Central Oregon Canal, Hwy 7	US 20 (HWY 007)	CENTRAL OREGON CANAL	54	40	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	94.8	N
5	01671A	Irrigation Ditch, Hwy 4 at MP 128.37	US 97 (HWY 004)	IRRIGATION DITCH	7	0	4	1	0	19 Culvert	1 Concrete	State Highway Agency	N	5 At/Above Legal Loads	85	N
6	01672A	Irrigation Ditch, Hwy 4 at MP 128.84	US 97 (HWY 004)	IRRIGATION DITCH	7	0	4	1	0	19 Culvert	1 Concrete	State Highway Agency	N	5 At/Above Legal Loads	85	N
7	01673A	Irrigation Ditch, Hwy 4 at MP 129.05	US 97 (HWY 004)	IRRIGATION DITCH	6	0	4	1	0	19 Culvert	1 Concrete	State Highway Agency	N	5 At/Above Legal Loads	85	N
8	01674B	Irrigation Ditch, Hwy 4 at MP 129.43	US 97 (HWY 004)	IRRIGATION DITCH	6	0	4	1	0	19 Culvert	1 Concrete	State Highway Agency	N	5 At/Above Legal Loads	85	N
9	01676A	Swalley Canal, Hwy 4 at MP 132.16	US 97 (HWY 004)	SWALLEY CANAL	13	146	4	1	0	01 Slab	1 Concrete	State Highway Agency	N	5 At/Above Legal Loads	54.5	N
10	02769	Ochoco North Main Canal, Hwy 41	OR 126 (HWY 041)	OCHOCO N MAIN CANAL	48	32	2	2	0	02 Stringer/Girder	2 Concrete Continuous	State Highway Agency	Y	5 At/Above Legal Loads	56.5	N
11	03296B	Lateral F COI Canal, Hwy 4 at MP 118.02	US 97 (HWY 004) SB	LATERAL F CANAL	13	0	4	1	0	19 Culvert	3 Steel	State Highway Agency	N	5 At/Above Legal Loads	73.4	N
12	03367A	Paulina Creek, Hwy 4	US 97 (HWY 004)	PAULINA CREEK	6	93	2	1	0	19 Culvert	3 Steel	State Highway Agency	N	5 At/Above Legal Loads	26	N
13	03372A	Trout Creek, Hwy 15	OR 242 (HWY 015)	TROUT CREEK	23	36.9	2	1	0	22 Channel Beam	1 Concrete	State Highway Agency	Y	5 At/Above Legal Loads	93	N
14	03373A	Deschutes River, Hwy 15	OR 126 (HWY 015)	DESCHUTES RIVER	344	34.5	2	5	0	02 Stringer/Girder	2 Concrete Continuous	State Highway Agency	Y	5 At/Above Legal Loads	36.3	N
15	03374	Indian Ford Creek, Hwy 16	US 20 (HWY 016)	INDIAN FORD CREEK	10	0	2	1	0	19 Culvert	1 Concrete	State Highway Agency	N	5 At/Above Legal Loads	77.8	N
16	03378	Deschutes River, O B Riley Rd	O.B. RILEY ROAD	DESCHUTES RIVER	151	40	2	3	0	01 Slab	2 Concrete Continuous	County Highway Agency	Y	5 At/Above Legal Loads	90.7	N
17	03379	Pilot Butte Canal, Hwy 370	HWY 370	PILOT BUTTE CANAL	20	32.2	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	57.2	N
18	03380	Irrigation Ditch, Hwy 370 at MP 2.47	HWY 370	IRRIGATION DITCH	18	37.2	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	N	5 At/Above Legal Loads	84.1	N
19	03383A	Deschutes River, Tumalo Market Rd	TUMALO MARKET RD	DESCHUTES RIVER	144	44	2	3	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	94.1	N
26	09643A	Deschutes R, Hwy 4 Access Lapine Rec Area (ParkBr)	ACC RD LAPINE REC	DESCHUTES RIVER	270	40.3	2	6	0	01 Slab	2 Concrete Continuous	State Park	Y	5 At/Above Legal Loads	88.3	N
27	09643B	Little Deschutes River, Lapine State Park Rd	LaPine Ste Rec Rd	LITTLE DESCHUTES RIVER	150	41	2	3	0	01 Slab	2 Concrete Continuous	County Highway Agency	Y	5 At/Above Legal Loads	95.6	N
29	09818	COI Main Canal, Gosney Rd	GOSNEY RD	COI MAIN CANAL	54	34	2	2	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	95.5	N
30	09819	COI Main Canal, Ward Rd	WARD ROAD	COI MAIN CANAL	89	32	2	3	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	83.5	N
31	09C04A	Indian Ford Creek, Camp Polk Rd	CAMP POLK ROAD	INDIAN FORD CREEK	51	32	2	4	0	19 Culvert	2 Concrete Continuous	County Highway Agency	Y	5 At/Above Legal Loads	48.6	N
32	09C05A	Whychus Creek, Camp Polk Rd	CAMP POLK ROAD	WHYCHUS CREEK,CAMP POLK	49	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	93.5	N
33	09C125	COI Main Canal, Alfalfa Market Rd	ALFALFA MKT RD	COI MAIN CANAL	26	32	2	1	0	02 Stringer/Girder	7 Wood or Timber	County Highway Agency	Y	5 At/Above Legal Loads	93	N
34	09C36A	Tumalo Creek, Shevlin Park Rd	SHEVLIN PARK ROAD	TUMALO CREEK	51	40	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	93.5	N
38	09C783	Deschutes River, Burgess Rd	BURGESS RD	DESCHUTES RIVER	64	31	2	1	0	02 Stringer/Girder	3 Steel	County Highway Agency	Y	5 At/Above Legal Loads	60.1	N
39	0P020	Cattlepass, Hwy 7 at MP 22.47	US 20 (HWY 007)	CATTLEPASS	7	0	2	1	0	19 Culvert	3 Steel	State Highway Agency	N	5 At/Above Legal Loads	38.8	N
40	0P021	Cattlepass, Hwy 7 at MP 25.05	US 20 (HWY 007)	CATTLEPASS	7	0	2	1	0	19 Culvert	3 Steel	State Highway Agency	N	5 At/Above Legal Loads	41	N
41	0P022	Cattlepass, Hwy 7 at MP 28.73	US 20 (HWY 007)	CATTLEPASS	7	0	2	1	0	19 Culvert	3 Steel	State Highway Agency	N	5 At/Above Legal Loads	41	N
42	15450A	Deschutes River, Lower Bridge Rd	LOWER BRIDGE RD	DESCHUTES RIVER	122	36	2	1	0	04 Tee Beam	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	90.8	N
43	15452	North Unit Canal, Smith Rock Rd	SMITH ROCK ROAD	NORTH UNIT CAN/SMITHROCK	66	33	2	2	0	02 Stringer/Girder	7 Wood or Timber	County Highway Agency	Y	3 10.0-19.9%below	76.9	N
45	15454A	Pilot Butte Canal, Deschutes Pleasant Ridge Rd	PLEASANT RIDGE	PILOT BUTTE CANAL	56	48	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	91.9	N
46	16060	Three Creeks Canal, Three Creeks Rd	THREE CREEKS ROAD	THREE CREEKS CANAL	41	36	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	87.4	N
47	16061	Little Deschutes River, South Century Dr	S CENTURY DR	LITTLE DESCHUTES RIVER	100	44	2	2	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	90.2	N
48	16181	South Century Dr over BNRR	S CENTURY DR	BURLINGTON N. R.R.	129	56	2	3	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	78.7	N
50	16479	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV/TWIN BR	104	32	2	2	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	86	N
51	16480	Deschutes River, Sheep Ln	MOUNTAIN SHEEP LN	DESCHUTES R. SHEEP LN	121	16	1	3	0	01 Slab	5 Prestressed Concrete	Other Local Agencies	Y	5 At/Above Legal Loads	65.1	N
52	16497	Little Deschutes River, Masten Rd	MASTEN ROAD	LITTLE DESCHUTES RIVER	96	32	2	2	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	85.9	N
53	16519	Robert D. Maxwell Veterans Memorial Bridge	So. Century Dr.	Deschutes River	243	44.2	2	3	0	02 Stringer/Girder	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	95.7	N
58	16604	COI Canal, Dodds Rd	DODDS ROAD	COI CANAL	41	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	96	N
59	166840	Paulina Creek, Paulina Lake Rd	PAULINA LAKE RD	PAULINA CREEK	36	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	81.5	N
60	166860	COI Main Canal, Walker Rd	WALKER ROAD	C O I MAIN C. WALKER	45	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	96.9	N
61	16712	HWY 004 SB OXING Cottonwood Rd Con at MP 151.30	US 97 (HWY 004) SB	COTTONWOOD RD	49	43.8	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	98.3	N
64	16933	Little Deschutes River, Bridge Dr	BRIDGE DRIVE SRD4	LITTLE DESCHUTES RIVER	70	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	88.3	N
65	17202	Hwy 372 over Snow Trail	HWY 372	SNOW TRAIL	70	40	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	93.3	N
66	17223	sn_Hwy 372_WB_NS_MP21.38	None	HWY372	24	0	2	1	0	00 Other (NBI)	3 Steel	Other (NBI)		Unknown	-2	N
67	17224	sn_Hwy 372_WB_SS_MP18.76	None	HWY372	24	0	2	1	0	00 Other (NBI)	3 Steel	Other (NBI)		Unknown	-2	N
68	17227	sn_Hwy 372_WB_NS_MP20.91	None	HWY372	24	0	2	1	0	00 Other (NBI)	3 Steel	Other (NBI)		Unknown	-2	N
69	17242	sn_Hwy 372_EB_SS_MP19.39	None	HWY372	24	0	2	1	0	00 Other (NBI)	3 Steel	Other (NBI)		Unknown	-2	N
70	17243	sn_Hwy 372_EB_SS_MP18.88	None	HWY372	24	0	2	1	0	00 Other (NBI)	3 Steel	Other (NBI)		Unknown	-2	N
71	17251	Deschutes River, Hwy 17	US 20 (HWY 017)	DESCHUTES RIVER	165	54.7	3	3	0	02 Stringer/Girder	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	67.5	N
73	17281	Baker Road over Hwy 4	BAKER ROAD	US 97 (HWY 004)	140	39.2	2	1	0	05 Multiple Box Beam	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	93.5	N
87	17437	Arnold Ditch, Hwy 4 Conn	US 97 (HWY 004) CO	ARNOLD IRR CANAL	23	32.3	1	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	95.8	N
88	17923	Deschutes River, Spring River Rd	SPRING RIVER ROAD	DESCHUTES RIVER	180	44	2	3	0	01 Slab	6 P/S Conc Continuous	County Highway Agency	Y	5 At/Above Legal Loads	59.9	N
93	17C02	Couch Lateral, Sisemore Rd	Sisemore Road	COUCH LATERAL	105	16	1	5	0	11 Arch-Deck	2 Concrete Continuous	County Highway Agency	Y	5 At/Above Legal Loads	49.2	N
96	17C06	COI Canal, Gift Rd	GIFT ROAD	GIFT RD/C O I CANAL	32	33	2	2	0	02 Stringer/Girder	7 Wood or Timber	County Highway Agency	Y	5 At/Above Legal Loads	89.3	N
97	17C07	Pilot Butte Irrigation Canal, Young Ave	YOUNG AVE	PILOT BUTTE IRR CANAL	58	36	2	2	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	85.9	N
98	17C09	Pilot Butte Irrigation Canal, Quarry Ave	QUARRY AVE	PILOT BUTTE IRR CANAL	48	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	97	N
99	17C10	Pilot Butte Main Canal, SW 61st St	SW 61ST STREET	PILOT BUTTE MAIN CANAL	30	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	94.6	N
100	17C15A	Pilot Butte Canyon, 46th St	46TH ST-PHILLI	PILOT BUTTE CAN/46TH ST	33	32	2	1	0	02 Stringer/Girder	7 Wood or Timber	County Highway Agency	Y	5 At/Above Legal Loads	93.3	N
101	17C18	North Unit Canal, NE Wilcox Ave	NE WILCOX AVE	NORTH UNIT CANAL	61	34	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	88.4	N
104	17C30	COI Canal, Gribbling Rd	GRIBBLING ROAD	COI CANAL	40	13	1	1	0	02 Stringer/Girder	3 Steel	County Highway Agency	Y	0 >39.9% below	22	N
105	17C32	North Unit Main Canal, Hamehook Rd	HAMEHOOK ROAD	NORTH UNIT MAIN CANAL	52	31	2	2	0	02 Stringer/Girder	7 Wood or Timber	County Highway Agency	Y	5 At/Above Legal Loads	73.9	N
106	17C34	Little Deschutes River, Dorrance Meadow Rd	DORRANCE MDW ROAD	LITTLE DESCHUTES RIVER	76	31	2	3	0	02 Stringer/Girder	1 Concrete	County Highway Agency	Y	5 At/Above Legal Loads	86.8	N
107	17C35	Arnold Irrigation Canal, Baker Rd	BAKER ROAD	ARNOLD IRR. CANAL	27.5	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	85.5	N
108	17C37	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV	32	64	2	2	0	19 Culvert	3 Steel	County Highway Agency	Y	5 At/Above Legal Loads	91.3	N
110	17C540	Small Boat Canal, Solar Dr	SOLAR DRIVE	SMALL BOAT CANAL	23	28	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	85.6	N
111	17C550	Cottonwood Rd over BNRR	COTTONWOOD	B N R R O-XING	140	40	2	3	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	76	N
113	17C570	Tumalo Res Feed Canal, Seismore Rd	SEISMORE ROAD	TUMALO RES FEED CANAL	34	18.5	2	2	0	02 Stringer/Girder	3 Steel	County Highway Agency	Y	5 At/Above Legal Loads	75.3	N
115	17M001	North Unit Canal, Coyote Rd	COYOTE RD NG/BBRG1	NORTH UNIT CANAL	61	14	1	1	0	10 Truss-Thru	3 Steel	Other State Agencies	Y	5 At/Above Legal Loads	47.1	N
116	18001	Fall River, Fall River Rd	FALL RIVER ROAD	FALL RIVER	41	26	2	1	0	02 Stringer/Girder	7 Wood or Timber	County Highway Agency	Y	5 At/Above Legal Loads	76.9	N
121	18208	Deschutes Market Rd over Hwy 4	DESCHUTE MKT INTCH	US 97 (HWY 004)	140	39.2	2	1	0	05 Multiple Box Beam	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	81.8	N
122	18283	Cline Falls Rd over Hwy 15	CLINE FALLS HWY	OR 126 (HWY 015)	120	31.2	2	1	0	02 Stringer/Girder	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	61	N
123	18299	Pilot Butte Canal, Tumalo Rd 97 Overpass	TUMALO ROAD	PILOT BUTTE CANAL	56	48	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	100	N
125	18493	Deschutes Market Rd over Pumice Rd	Deschutes Market	PUMICE ROAD	100	49.2	3	1	0	05 Multiple Box Beam	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	99	N
126	18494	Deschutes Market Rd over BNRR	Deschutes Market	BNRR	176.6	49.1	3	3	0	05 Multiple Box Beam	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	99	N
145	19962	Hwy 4 over BNSF (Terrebonne)	US 97 HWY 004	BNSF	200	40	2	1	0	05 Multiple Box Beam	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	83	N
147	20206	South Century Bridge (NB)	US 97 (HWY 004) NB	S. CENTURY DR.	86	48	2	1	0	05 Multiple Box Beam	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	95	N
148	20207	SOUTH CENTURY BRIDGE (SB)	US 97 (HWY 004) SB	S. CENTURY DRIVE	86	48	2	1	0	05 Multiple Box Beam	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	100	N
149	20334	COI Canal-Lateral F, NW Galloway Ave	NW GALLOWAY AVE	COI CANAL-LATERAL F	27	32	2	2	0	02 Stringer/Girder	7 Wood or Timber	County Highway Agency	Y	5 At/Above Legal Loads	90	N
157	20552	HWY 004 NB OXING Cottonwood Rd Con. at MP 151.30	US 97 (HWY 004) NB	COTTONWOOD RD	65	44	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	100	N
162	20783	OREGON WATER WONDERLAND, WOOD DUCK COURT	WOOD DUCK COURT	OREGON WATER WONDERLAND	47	16.5	1	1	0	02 Stringer/Girder	3 Steel	Other Local Agencies	Y	5 At/Above Legal Loads	49.6	N
163	21014	HWY 004 SB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	52	44	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	95.5	N
164	21015	HWY 004 SB OXING Cottonwood Road at MP 149.55	US 97 (HWY 004)	Cottonwood Road	112	44	2	1	0	05 Multiple Box Beam	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	99.6	N
165	21016	HWY 004 NB OXING Cottonwood Road at MP 149.56	US 97 (HWY 004)	Cottonwood Road	114	44	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	99.6	N
166	21017	HWY 004 NB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	52	44	2	1	0	01 Slab	5 Prestressed Concrete	State Highway Agency	Y	5 At/Above Legal Loads	99.6	N
168	21702	Hwy 372, Multi-Use Trail	Hwy 372	Multi Use Trail	14.5	91	2	1	0	19 Culvert	3 Steel	State Highway Agency	N	5 At/Above Legal Loads	100	N
169	21706	Foot Bridge Crooked River at Smith Rock State Park	Foot Bridge	Crooked River	106	5	1	1	0	02 Stringer/Girder	7 Wood or Timber	State Park	N	5 At/Above Legal Loads	-2	N
170	21825	Pilot Butte Canal, Hwy 4 at MP 129.72	US 97 (HWY 004)	PILOT BUTTE CANAL	9	0	4	1	0	19 Culvert	3 Steel	State Highway Agency	N	5 At/Above Legal Loads	11	N
174	22384	Deschutes River, Tetherow Rd	TETHEROW ROAD	DESCHUTES RIVER	68	29.7	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	81	N
176	22450	Haul Trail Undercrossing	HWY 372	Rimrock Trail	14	0	2	1	0	19 Culvert	1 Concrete	State Highway Agency	N	5 At/Above Legal Loads	80	N
178	23100	Fall Cr_Cascade Lake Hwy_44.030112/121.738336	Cascade Lakes Hwy	FALL CREEK @SPARKS	65	36.5	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	97.7	N
184	23905	Soda Cr_Cascade Lakes Hwy_44.02602/121.72564	Cascade Lakes Hwy	Soda Creek	66	32	2	1	0	01 Slab	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	76.1	N
185	23906	cl_Goose Cr_Cascade Lakes Hwy_44.03275/121.742569	Cascade Lakes Hwy	Goose Creek	21.8	0	2	1	0	19 Culvert	5 Prestressed Concrete	County Highway Agency	Y	5 At/Above Legal Loads	85.3	N

OBJECTID	BRIDGE_ID	BRIDGE_NAM	CARRIES	CROSSES	DETOUR_LEN	INSP_DATE	CUSTODIAN	WEIGHT_RES	APPR_TYPE	APPR_MAT	DECK_RD_WD	YEAR	STATUS	STRUC_TYP	DECK_SURF_TYP
3	01135A	Arnold Ditch, Hwy 4	US 97 (HWY 004)	ARNOLD DITCH	0.97	2018-12-14	State Highway Agency		00 Not Applicable	0 Not Applicable	118	1962	A Open, no restriction	9 Other	6 Bituminous
4	01421A	Central Oregon Canal, Hwy 7	US 20 (HWY 007)	CENTRAL OREGON CANAL	18	2019-12-13	State Highway Agency		00 Not Applicable	0 Not Applicable	39.4	1988	A Open, no restriction	9 Other	6 Bituminous
5	01671A	Irrigation Ditch, Hwy 4 at MP 128.37	US 97 (HWY 004)	IRRIGATION DITCH	21	2016-10-12	State Highway Agency		00 Not Applicable	0 Not Applicable	78	1992	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
6	01672A	Irrigation Ditch, Hwy 4 at MP 128.84	US 97 (HWY 004)	IRRIGATION DITCH	21	2016-10-12	State Highway Agency		00 Not Applicable	0 Not Applicable	78	1992	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
7	01673A	Irrigation Ditch, Hwy 4 at MP 129.05	US 97 (HWY 004)	IRRIGATION DITCH	21	2016-10-12	State Highway Agency		00 Not Applicable	0 Not Applicable	78	1992	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
8	01674B	Irrigation Ditch, Hwy 4 at MP 129.43	US 97 (HWY 004)	IRRIGATION DITCH	21	2016-10-12	State Highway Agency		00 Not Applicable	0 Not Applicable	78	1992	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
9	01676A	Swalley Canal, Hwy 4 at MP 132.16	US 97 (HWY 004)	SWALLEY CANAL	12	2016-10-12	State Highway Agency		00 Not Applicable	0 Not Applicable	78	1937	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
10	02769	Ochoco North Main Canal, Hwy 41	OR 126 (HWY 041)	OCHOCO N MAIN CANAL	2.7	2018-12-12	State Highway Agency		00 Not Applicable	0 Not Applicable	30	1945	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
11	03296B	Lateral F COI Canal, Hwy 4 at MP 118.02	US 97 (HWY 004) SB	LATERAL F CANAL	7	2020-01-23	State Highway Agency		00 Not Applicable	0 Not Applicable	0	1991	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
12	03367A	Paulina Creek, Hwy 4	US 97 (HWY 004)	PAULINA CREEK	13	2018-04-30	State Highway Agency		00 Not Applicable	0 Not Applicable	0	1953	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
13	03372A	Trout Creek, Hwy 15	OR 242 (HWY 015)	TROUT CREEK	14	2019-09-27	State Highway Agency		00 Not Applicable	0 Not Applicable	33	1981	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
14	03373A	Deschutes River, Hwy 15	OR 126 (HWY 015)	DESCHUTES RIVER	13.15	2018-06-05	State Highway Agency		00 Not Applicable	0 Not Applicable	30	1957	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
15	03374	Indian Ford Creek, Hwy 16	US 20 (HWY 016)	INDIAN FORD CREEK	0	2016-05-18	State Highway Agency		00 Not Applicable	0 Not Applicable	38.4	1930	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
16	03378	Deschutes River, O B Riley Rd	O.B. RILEY ROAD	DESCHUTES RIVER	3	2018-03-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	32	1971	A Open, no restriction	2 Concrete Precast Panel	6 Bituminous
17	03379	Pilot Butte Canal, Hwy 370	HWY 370	PILOT BUTTE CANAL	3.3	2019-03-22	State Highway Agency		00 Not Applicable	0 Not Applicable	27.5	1961	A Open, no restriction	9 Other	6 Bituminous
18	03380	Irrigation Ditch, Hwy 370 at MP 2.47	HWY 370	IRRIGATION DITCH	4	2019-03-22	State Highway Agency		00 Not Applicable	0 Not Applicable	32.5	1964	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
19	03383A	Deschutes River, Tumalo Market Rd	TUMALO MARKET RD	DESCHUTES RIVER	2.99	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	32.5	1965	A Open, no restriction	9 Other	6 Bituminous
26	09643A	Deschutes R, Hwy 4 Access Lapine Rec Area (ParkBr)	ACC RD LAPINE REC	DESCHUTES RIVER	123.65	2019-02-07	11 State Pk/Frst/Reserve		00 Not Applicable	0 Not Applicable	32	1968	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
27	09643B	Little Deschutes River, Lapine State Park Rd	LaPine Ste Rec Rd	LITTLE DESCHUTES RIVER	9.33	2018-03-29	County Hwy Agency		00 Not Applicable	0 Not Applicable	32.5	1968	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
29	09818	COI Main Canal, Gosney Rd	GOSNEY RD	COI MAIN CANAL	5.56	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	32	1968	A Open, no restriction	9 Other	6 Bituminous
30	09819	COI Main Canal, Ward Rd	WARD ROAD	COI MAIN CANAL	2.19	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1968	A Open, no restriction	9 Other	6 Bituminous
31	09C04A	Indian Ford Creek, Camp Polk Rd	CAMP POLK ROAD	INDIAN FORD CREEK	5.62	2019-02-25	County Hwy Agency		00 Not Applicable	0 Not Applicable	31	1975	A Open, no restriction	N N/A (NBI)	6 Bituminous
32	09C05A	Whychus Creek, Camp Polk Rd	CAMP POLK ROAD	WHYCHUS CREEK,CAMP POLK	5.62	2019-02-25	County Hwy Agency		00 Not Applicable	0 Not Applicable	31	1986	A Open, no restriction	9 Other	6 Bituminous
33	09C125	COI Main Canal, Alfalfa Market Rd	ALFALFA MKT RD	COI MAIN CANAL	6	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	31	1978	A Open, no restriction	8 Wood or Timber	6 Bituminous
34	09C36A	Tumalo Creek, Shevlin Park Rd	SHEVLIN PARK ROAD	TUMALO CREEK	14	2018-03-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	38	1977	A Open, no restriction	9 Other	6 Bituminous
38	09C783	Deschutes River, Burgess Rd	BURGESS RD	DESCHUTES RIVER	32.97	2018-03-29	County Hwy Agency		00 Not Applicable	0 Not Applicable	26	1963	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
39	0P020	Cattlepass, Hwy 7 at MP 22.47	US 20 (HWY 007)	CATTLEPASS	6	2016-03-21	State Highway Agency		00 Not Applicable	0 Not Applicable	0	1954	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
40	0P021	Cattlepass, Hwy 7 at MP 25.05	US 20 (HWY 007)	CATTLEPASS	0	2016-03-21	State Highway Agency		00 Not Applicable	0 Not Applicable	0	1954	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
41	0P022	Cattlepass, Hwy 7 at MP 28.73	US 20 (HWY 007)	CATTLEPASS	0	2016-03-21	State Highway Agency		00 Not Applicable	0 Not Applicable	0	1954	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
42	15450A	Deschutes River, Lower Bridge Rd	LOWER BRIDGE RD	DESCHUTES RIVER	19	2019-02-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	32	1978	A Open, no restriction	9 Other	6 Bituminous
43	15452	North Unit Canal, Smith Rock Rd	SMITH ROCK ROAD	NORTH UNIT CAN/SMITHROCK	0.56	2019-02-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	32	1971	P Posted for load	8 Wood or Timber	6 Bituminous
45	15454A	Pilot Butte Canal, Deschutes Pleasant Ridge Rd	PLEASANT RIDGE	PILOT BUTTE CANAL	5	2018-03-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	46	1972	A Open, no restriction	9 Other	6 Bituminous
46	16060	Three Creeks Canal, Three Creeks Rd	THREE CREEKS ROAD	THREE CREEKS CANAL	123.65	2019-02-25	County Hwy Agency		00 Not Applicable	0 Not Applicable	34.1	1973	A Open, no restriction	9 Other	6 Bituminous
47	16061	Little Deschutes River, South Century Dr	S CENTURY DR	LITTLE DESCHUTES RIVER	8.25	2018-03-29	County Hwy Agency		00 Not Applicable	0 Not Applicable	32	1973	A Open, no restriction	9 Other	6 Bituminous
48	16181	South Century Dr over BNRR	S CENTURY DR	BURLINGTON N. R.R.	3.5	2018-03-28	County Hwy Agency		00 Not Applicable	0 Not Applicable	40	1976	A Open, no restriction	1 Concrete-Cast-in-Place	2 Integral Concrete
50	16479	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV/TWIN BR	1.69	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.6	1981	A Open, no restriction	9 Other	6 Bituminous
51	16480	Deschutes River, Sheep Ln	MOUNTAIN SHEEP LN	DESCHUTES R. SHEEP LN	123.65	2018-03-29	25 Other Local Agencies		00 Not Applicable	0 Not Applicable	15.5	1981	A Open, no restriction	9 Other	6 Bituminous
52	16497	Little Deschutes River, Masten Rd	MASTEN ROAD	LITTLE DESCHUTES RIVER	123.65	2018-03-29	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1981	A Open, no restriction	9 Other	6 Bituminous
53	16519	Robert D. Maxwell Veterans Memorial Bridge	So. Century Dr.	Deschutes River	8.25	2018-03-29	County Hwy Agency		00 Not Applicable	0 Not Applicable	36	1984	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
58	16604	COI Canal, Dodds Rd	DODDS ROAD	COI CANAL	18	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1983	A Open, no restriction	9 Other	6 Bituminous
59	166840	Paulina Creek, Paulina Lake Rd	PAULINA LAKE RD	PAULINA CREEK	123.65	2018-03-29	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1985	A Open, no restriction	9 Other	6 Bituminous
60	166860	COI Main Canal, Walker Rd	WALKER ROAD	C O I MAIN C. WALKER	4	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1985	A Open, no restriction	9 Other	6 Bituminous
61	16712	HWY 004 SB OXING Cottonwood Rd Con at MP 151.30	US 97 (HWY 004) SB	COTTONWOOD RD	0	2019-02-09	State Highway Agency		00 Not Applicable	0 Not Applicable	38.7	1984	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
64	16933	Little Deschutes River, Bridge Dr	BRIDGE DRIVE SRD4	LITTLE DESCHUTES RIVER	123.65	2018-03-29	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1989	A Open, no restriction	9 Other	6 Bituminous
65	17202	Hwy 372 over Snow Trail	HWY 372	SNOW TRAIL	40	2019-11-19	State Highway Agency		00 Not Applicable	0 Not Applicable	39.5	1991	A Open, no restriction	9 Other	6 Bituminous
66	17223	sn_Hwy 372_WB_NS_MP21.38	None	HWY372	40	2020-05-13	State Highway Agency		00 Not Applicable	0 Not Applicable	39.5	1991	A Open, no restriction		N N/A (no deck (NBI)
67	17224	sn_Hwy 372_WB_SS_MP18.76	None	HWY372	40	2020-05-13	State Highway Agency		00 Not Applicable	0 Not Applicable	39.5	1991	A Open, no restriction		N N/A (no deck (NBI)
68	17227	sn_Hwy 372_WB_NS_MP20.91	None	HWY372	40	2020-05-13	State Highway Agency		00 Not Applicable	0 Not Applicable	39.5	1991	A Open, no restriction		N N/A (no deck (NBI)
69	17242	sn_Hwy 372_EB_SS_MP19.39	None	HWY372	40	2020-05-14	State Highway Agency		00 Not Applicable	0 Not Applicable	39.5	1991	A Open, no restriction		N N/A (no deck (NBI)
70	17243	sn_Hwy 372_EB_SS_MP18.88	None	HWY372	40	2020-05-14	State Highway Agency		00 Not Applicable	0 Not Applicable	39.5	1991	A Open, no restriction		N N/A (no deck (NBI)
71	17251	Deschutes River, Hwy 17	US 20 (HWY 017)	DESCHUTES RIVER	3.27	2019-03-21	State Highway Agency		00 Not Applicable	0 Not Applicable	52	1993	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
73	17281	Baker Road over Hwy 4	BAKER ROAD	US 97 (HWY 004)	2.27	2018-12-14	State Highway Agency		00 Not Applicable	0 Not Applicable	36	1994	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
87	17437	Arnold Ditch, Hwy 4 Conn	US 97 (HWY 004) CO	ARNOLD IRR CANAL	5	2018-12-14	State Highway Agency		00 Not Applicable	0 Not Applicable	29.1	1994	A Open, no restriction	9 Other	6 Bituminous
88	17923	Deschutes River, Spring River Rd	SPRING RIVER ROAD	DESCHUTES RIVER	12	2018-03-28	County Hwy Agency		00 Not Applicable	0 Not Applicable	36	1995	A Open, no restriction	9 Other	6 Bituminous
93	17C02	Couch Lateral, Sisemore Rd	Sisemore Road	COUCH LATERAL	1.05	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	14.5	1914	A Open, no restriction	N N/A (NBI)	6 Bituminous
96	17C06	COI Canal, Gift Rd	GIFT ROAD	GIFT RD/C O I CANAL	3.57	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	32	1970	A Open, no restriction	8 Wood or Timber	6 Bituminous
97	17C07	Pilot Butte Irrigation Canal, Young Ave	YOUNG AVE	PILOT BUTTE IRR CANAL	1.46	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	35.5	1975	A Open, no restriction	9 Other	6 Bituminous
98	17C09	Pilot Butte Irrigation Canal, Quarry Ave	QUARRY AVE	PILOT BUTTE IRR CANAL	1.18	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1974	A Open, no restriction	9 Other	6 Bituminous
99	17C10	Pilot Butte Main Canal, SW 61st St	SW 61ST STREET	PILOT BUTTE MAIN CANAL	1.24	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1977	A Open, no restriction	9 Other	6 Bituminous
100	17C15A	Pilot Butte Canyon, 46th St	46TH ST-PHILLI	PILOT BUTTE CAN/46TH ST	2.04	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	31	1980	A Open, no restriction	8 Wood or Timber	6 Bituminous
101	17C18	North Unit Canal, NE Wilcox Ave	NE WILCOX AVE	NORTH UNIT CANAL	3	2018-03-30	County Hwy Agency		00 Not Applicable	0 Not Applicable	32	1971	A Open, no restriction	9 Other	6 Bituminous
104	17C30	COI Canal, Gribbling Rd	GRIBBLING ROAD	COI CANAL	0.46	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	12	1958	E Open, temp struct	8 Wood or Timber	7 Wood or Timber
105	17C32	North Unit Main Canal, Hamehook Rd	HAMEHOOK ROAD	NORTH UNIT MAIN CANAL	4	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	30	1977	A Open, no restriction	8 Wood or Timber	6 Bituminous
106	17C34	Little Deschutes River, Dorrance Meadow Rd	DORRANCE MDW ROAD	LITTLE DESCHUTES RIVER	10	2019-02-25	County Hwy Agency		00 Not Applicable	0 Not Applicable	27.9	1977	A Open, no restriction	2 Concrete Precast Panel	6 Bituminous
107	17C35	Arnold Irrigation Canal, Baker Rd	BAKER ROAD	ARNOLD IRR. CANAL	4	2018-03-28	County Hwy Agency		00 Not Applicable	0 Not Applicable	31.5	1966	A Open, no restriction	2 Concrete Precast Panel	6 Bituminous
108	17C37	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV	1.69	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	31	1974	A Open, no restriction	N N/A (NBI)	6 Bituminous
110	17C540	Small Boat Canal, Solar Dr	SOLAR DRIVE	SMALL BOAT CANAL	5	2018-03-28	County Hwy Agency		00 Not Applicable	0 Not Applicable	27.5	1972	A Open, no restriction	9 Other	6 Bituminous
111	17C550	Cottonwood Rd over BNRR	COTTONWOOD	B N R R O-XING	123.65	2018-03-28	County Hwy Agency		00 Not Applicable	0 Not Applicable	36.5	1984	A Open, no restriction	9 Other	6 Bituminous
113	17C570	Tumalo Res Feed Canal, Seismore Rd	SEISMORE ROAD	TUMALO RES FEED CANAL	99	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	16.5	1983	A Open, no restriction	8 Wood or Timber	7 Wood or Timber
115	17M001	North Unit Canal, Coyote Rd	COYOTE RD NG/BBRG1	NORTH UNIT CANAL	12	2019-12-13	21 Other State Agencies		00 Not Applicable	0 Not Applicable	12.5	1960	A Open, no restriction	8 Wood or Timber	7 Wood or Timber
116	18001	Fall River, Fall River Rd	FALL RIVER ROAD	FALL RIVER	75	2018-03-29	County Hwy Agency		00 Not Applicable	0 Not Applicable	24	1996	A Open, no restriction	8 Wood or Timber	6 Bituminous
121	18208	Deschutes Market Rd over Hwy 4	DESCHUTE MKT INTCH	US 97 (HWY 004)	24.85	2019-02-19	State Highway Agency		00 Not Applicable	0 Not Applicable	36.1	1998	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
122	18283	Cline Falls Rd over Hwy 15	CLINE FALLS HWY	OR 126 (HWY 015)	13.5	2018-06-05	State Highway Agency		00 Not Applicable	0 Not Applicable	28	1997	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
123	18299	Pilot Butte Canal, Tumalo Rd 97 Overpass	TUMALO ROAD	PILOT BUTTE CANAL	0.2	2019-02-26	County Hwy Agency		00 Not Applicable	0 Not Applicable	44	1997	A Open, no restriction	9 Other	6 Bituminous
125	18493	Deschutes Market Rd over Pumice Rd	Deschutes Market	PUMICE ROAD	0	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	46	2009	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
126	18494	Deschutes Market Rd over BNRR	Deschutes Market	BNRR	0	2018-03-27	County Hwy Agency		00 Not Applicable	0 Not Applicable	46	2009	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
145	19962	Hwy 4 over BNSF (Terrebonne)	US 97 HWY 004	BNSF	22.85	2020-01-21	State Highway Agency		00 Other (NBI)	0 Other	40	2005	A Open, no restriction	1 Concrete-Cast-in-Place	5 Epoxy Overlay
147	20206	South Century Bridge (NB)	US 97 (HWY 004) NB	S. CENTURY DR.	0.02	2018-11-27	State Highway Agency		00 Other (NBI)	0 Not Applicable	45.3	2006	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
148	20207	SOUTH CENTURY BRIDGE (SB)	US 97 (HWY 004) SB	S. CENTURY DRIVE	0.02	2018-11-27	State Highway Agency		00 Not Applicable	0 Not Applicable	48	2005	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
149	20334	COI Canal-Lateral F, NW Galloway Ave	NW GALLOWAY AVE	COI CANAL-LATERAL F	123.65	2019-02-27	County Hwy Agency		00 Other (NBI)	0 Other	31	1990	A Open, no restriction	8 Wood or Timber	6 Bituminous
157	20552	HWY 004 NB OXING Cottonwood Rd Con. at MP 151.30	US 97 (HWY 004) NB	COTTONWOOD RD	0	2019-02-07	State Highway Agency		00 Not Applicable	0 Not Applicable	41	2009	A Open, no restriction	9 Other	1 Monolithic Concret
162	20783	OREGON WATER WONDERLAND, WOOD DUCK COURT	WOOD DUCK COURT	OREGON WATER WONDERLAND	99.99	2019-07-16	County Hwy Agency		00 Not Applicable	0 Not Applicable	14	1984	A Open, no restriction	8 Wood or Timber	7 Wood or Timber
163	21014	HWY 004 SB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	1	2019-02-07	State Highway Agency		00 Not Applicable	0 Not Applicable	41	2011	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
164	21015	HWY 004 SB OXING Cottonwood Road at MP 149.55	US 97 (HWY 004)	Cottonwood Road	1	2019-02-07	State Highway Agency		00 Not Applicable	0 Not Applicable	41	2010	A Open, no restriction	1 Concrete-Cast-in-Place	1 Monolithic Concret
165	21016	HWY 004 NB OXING Cottonwood Road at MP 149.56	US 97 (HWY 004)	Cottonwood Road	1	2019-02-07	State Highway Agency		00 Not Applicable	0 Not Applicable	41	2009	A Open, no restriction	9 Other	1 Monolithic Concret
166	21017	HWY 004 NB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	1	2019-02-07	State Highway Agency		00 Not Applicable	0 Not Applicable	41	2010	A Open, no restriction	9 Other	1 Monolithic Concret
168	21702	Hwy 372, Multi-Use Trail	Hwy 372	Multi Use Trail	0	2017-10-30	State Highway Agency		00 Not Applicable	0 Not Applicable	40	2013	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
169	21706	Foot Bridge Crooked River at Smith Rock State Park	Foot Bridge	Crooked River	0	2018-05-07	11 State Pk/Frst/Reserve		00 Not Applicable	0 Not Applicable	4	1974	A Open, no restriction	8 Wood or Timber	7 Wood or Timber
170	21825	Pilot Butte Canal, Hwy 4 at MP 129.72	US 97 (HWY 004)	PILOT BUTTE CANAL	13	2018-10-29	State Highway Agency		00 Not Applicable	0 Not Applicable	0	2006	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
174	22384	Deschutes River, Tetherow Rd	TETHEROW ROAD	DESCHUTES RIVER	0.53	2019-02-27	County Hwy Agency		00 Other (NBI)	0 Not Applicable	17.5	2016	A Open, no restriction	2 Concrete Precast Panel	6 Bituminous
176	22450	Haul Trail Undercrossing	HWY 372	Rimrock Trail	123.65	2017-10-30	State Highway Agency		Not Applicable (P)	Not Applicable (P)	0	2016	A Open, no restriction	N N/A (NBI)	N N/A (no deck (NBI)
178	23100	Fall Cr_Cascade Lake Hwy_44.030112/121.738336	Cascade Lakes Hwy	FALL CREEK @SPARKS	11.6	2019-07-16	County Hwy Agency		Not Applicable (P)	Not Applicable (P)	34	2017	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
184	23905	Soda Cr_Cascade Lakes Hwy_44.02602/121.72564	Cascade Lakes Hwy	Soda Creek	123.65	2019-07-16	County Hwy Agency		00 Not Applicable	0 Not Applicable	29	2019	A Open, no restriction	1 Concrete-Cast-in-Place	6 Bituminous
185	23906	cl_Goose Cr_Cascade Lakes Hwy_44.03275/121.742569	Cascade Lakes Hwy	Goose Creek	123.65	2019-07-16	County Hwy Agency		00 Not Applicable	0 Not Applicable	0	2019	A Open, no restriction	N N/A (NBI)	6 Bituminous

OBJECTID	BRIDGE_ID	BRIDGE_NAM	CARRIES	CROSSES	BRIDGE_CON	DEFICIENCY	DKRATING	SUPRATING	SUBRATING	CULVRATING	SCOURCRIT	SCOUR_VULN	TIMBER_SUB	SPANS
3	01135A	Arnold Ditch, Hwy 4	US 97 (HWY 004)	ARNOLD DITCH	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	1-19' Precast RC Slb Prest widened
4	01421A	Central Oregon Canal, Hwy 7	US 20 (HWY 007)	CENTRAL OREGON CANAL	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	5 Stable w/in f	N	1-54' RC Slb Prest
5	01671A	Irrigation Ditch, Hwy 4 at MP 128.37	US 97 (HWY 004)	IRRIGATION DITCH	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	N	8 Stable Above	N	1-7' RC Slb
6	01672A	Irrigation Ditch, Hwy 4 at MP 128.84	US 97 (HWY 004)	IRRIGATION DITCH	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	N	8 Stable Above	N	1-7' RC Slb
7	01673A	Irrigation Ditch, Hwy 4 at MP 129.05	US 97 (HWY 004)	IRRIGATION DITCH	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	N	8 Stable Above	N	1-7' RC Slb
8	01674B	Irrigation Ditch, Hwy 4 at MP 129.43	US 97 (HWY 004)	IRRIGATION DITCH	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	N	8 Stable Above	N	1-7' RC Slb
9	01676A	Swalley Canal, Hwy 4 at MP 132.16	US 97 (HWY 004)	SWALLEY CANAL	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	7 Minor Deterioration	N	8 Stable Above	N	1-13' RC Slb
10	02769	Ochoco North Main Canal, Hwy 41	OR 126 (HWY 041)	OCHOCO N MAIN CANAL	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	5 Stable w/in f	N	2-24' RCDG
11	03296B	Lateral F COI Canal, Hwy 4 at MP 118.02	US 97 (HWY 004) SB	LATERAL F CANAL	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	N	8 Stable Above	N	12'6"x7'11" -168' Struct Plate Arch
12	03367A	Paulina Creek, Hwy 4	US 97 (HWY 004)	PAULINA CREEK	Fair		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	6 Deterioration	N	5 Stable w/in f	N	72" -93' CMP
13	03372A	Trout Creek, Hwy 15	OR 242 (HWY 015)	TROUT CREEK	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	5 Stable w/in f	N	1-21' Precast RC Channel Beam
14	03373A	Deschutes River, Hwy 15	OR 126 (HWY 015)	DESCHUTES RIVER	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	8 Stable Above	N	1-53', 1-74', 1-90', 1-74', 1-53' RCDG
15	03374	Indian Ford Creek, Hwy 16	US 20 (HWY 016)	INDIAN FORD CREEK	Fair		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	6 Deterioration	N	5 Stable w/in f	N	1-10'x4' RC Rigid Frame
16	03378	Deschutes River, O B Riley Rd	O.B. RILEY ROAD	DESCHUTES RIVER	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
17	03379	Pilot Butte Canal, Hwy 370	HWY 370	PILOT BUTTE CANAL	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	5 Stable w/in f	N	1-19' RC Slb Prest
18	03380	Irrigation Ditch, Hwy 370 at MP 2.47	HWY 370	IRRIGATION DITCH	Fair		6 Satisfactory	6 Satisfactory	5 Fair	N N/A (NBI)	N	5 Stable w/in f	N	1-18' RC Slb Prest
19	03383A	Deschutes River, Tumalo Market Rd	TUMALO MARKET RD	DESCHUTES RIVER	Fair		7 Good	7 Good	6 Satisfactory	N N/A (NBI)	N	5 Stable w/in f	N	
26	09643A	Deschutes R, Hwy 4 Access Lapine Rec Area (ParkBr)	ACC RD LAPINE REC	DESCHUTES RIVER	Fair		6 Satisfactory	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	1-36', 1-44', 2-55', 1-44', 1-36' RC Slb
27	09643B	Little Deschutes River, Lapine State Park Rd	LaPine Ste Rec Rd	LITTLE DESCHUTES RIVER	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	Y	
29	09818	COI Main Canal, Gosney Rd	GOSNEY RD	COI MAIN CANAL	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
30	09819	COI Main Canal, Ward Rd	WARD ROAD	COI MAIN CANAL	Fair		7 Good	6 Satisfactory	5 Fair	N N/A (NBI)	N	8 Stable Above	N	
31	09C04A	Indian Ford Creek, Camp Polk Rd	CAMP POLK ROAD	INDIAN FORD CREEK	Fair		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	5 Moderate Damage	N	8 Stable Above	N	
32	09C05A	Whychus Creek, Camp Polk Rd	CAMP POLK ROAD	WHYCHUS CREEK,CAMP POLK	Good		8 Very Good	8 Very Good	8 Very Good	N N/A (NBI)	N	8 Stable Above	N	
33	09C125	COI Main Canal, Alfalfa Market Rd	ALFALFA MKT RD	COI MAIN CANAL	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	8 Stable Above	N	
34	09C36A	Tumalo Creek, Shevlin Park Rd	SHEVLIN PARK ROAD	TUMALO CREEK	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
38	09C783	Deschutes River, Burgess Rd	BURGESS RD	DESCHUTES RIVER	Fair		6 Satisfactory	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
39	0P020	Cattlepass, Hwy 7 at MP 22.47	US 20 (HWY 007)	CATTLEPASS	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	N	N Not Over Wate	N	84" -80' CMP
40	0P021	Cattlepass, Hwy 7 at MP 25.05	US 20 (HWY 007)	CATTLEPASS	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	N	N Not Over Wate	N	84" -57' CMP
41	0P022	Cattlepass, Hwy 7 at MP 28.73	US 20 (HWY 007)	CATTLEPASS	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	N	N Not Over Wate	N	84" -60' CMP
42	15450A	Deschutes River, Lower Bridge Rd	LOWER BRIDGE RD	DESCHUTES RIVER	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	5 Stable w/in f	N	
43	15452	North Unit Canal, Smith Rock Rd	SMITH ROCK ROAD	NORTH UNIT CAN/SMITHROCK	Fair		6 Satisfactory	7 Good	6 Satisfactory	N N/A (NBI)	N	8 Stable Above	N	
45	15454A	Pilot Butte Canal, Deschutes Pleasant Ridge Rd	PLEASANT RIDGE	PILOT BUTTE CANAL	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
46	16060	Three Creeks Canal, Three Creeks Rd	THREE CREEKS ROAD	THREE CREEKS CANAL	Good		8 Very Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
47	16061	Little Deschutes River, South Century Dr	S CENTURY DR	LITTLE DESCHUTES RIVER	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	5 Stable w/in f	N	
48	16181	South Century Dr over BNRR	S CENTURY DR	BURLINGTON N. R.R.	Fair		6 Satisfactory	5 Fair	5 Fair	N N/A (NBI)	N	N Not Over Wate	N	
50	16479	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV/TWIN BR	Fair		7 Good	7 Good	5 Fair	N N/A (NBI)	Y	3 SC - Unstable	N	
51	16480	Deschutes River, Sheep Ln	MOUNTAIN SHEEP LN	DESCHUTES R. SHEEP LN	Fair		6 Satisfactory	6 Satisfactory	5 Fair	N N/A (NBI)	N	4 Stable, needs	N	
52	16497	Little Deschutes River, Masten Rd	MASTEN ROAD	LITTLE DESCHUTES RIVER	Fair		7 Good	6 Satisfactory	7 Good	N N/A (NBI)	N	5 Stable w/in f	N	
53	16519	Robert D. Maxwell Veterans Memorial Bridge	So. Century Dr.	Deschutes River	Good		8 Very Good	8 Very Good	7 Good	N N/A (NBI)	N	5 Stable w/in f	N	
58	16604	COI Canal, Dodds Rd	DODDS ROAD	COI CANAL	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
59	166840	Paulina Creek, Paulina Lake Rd	PAULINA LAKE RD	PAULINA CREEK	Good		8 Very Good	7 Good	8 Very Good	N N/A (NBI)	N	8 Stable Above	N	
60	166860	COI Main Canal, Walker Rd	WALKER ROAD	C O I MAIN C. WALKER	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
61	16712	HWY 004 SB OXING Cottonwood Rd Con at MP 151.30	US 97 (HWY 004) SB	COTTONWOOD RD	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	N Not Over Wate	N	1-50' RC Slb Prest
64	16933	Little Deschutes River, Bridge Dr	BRIDGE DRIVE SRD4	LITTLE DESCHUTES RIVER	Good		8 Very Good	8 Very Good	8 Very Good	N N/A (NBI)	N	8 Stable Above	N	
65	17202	Hwy 372 over Snow Trail	HWY 372	SNOW TRAIL	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	N Not Over Wate	N	1-70' RC Slb Prest
66	17223	sn_Hwy 372_WB_NS_MP21.38	None	HWY372	Good		N N/A (NBI)	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	
67	17224	sn_Hwy 372_WB_SS_MP18.76	None	HWY372	Good		N N/A (NBI)	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	
68	17227	sn_Hwy 372_WB_NS_MP20.91	None	HWY372	Good		N N/A (NBI)	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	
69	17242	sn_Hwy 372_EB_SS_MP19.39	None	HWY372	Good		N N/A (NBI)	8 Very Good	8 Very Good	N N/A (NBI)	Y	Unknown (NBI)	N	
70	17243	sn_Hwy 372_EB_SS_MP18.88	None	HWY372	Good		N N/A (NBI)	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	
71	17251	Deschutes River, Hwy 17	US 20 (HWY 017)	DESCHUTES RIVER	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	1-48', 1-66', 1-51' RCDG Prest Bulb-I
73	17281	Baker Road over Hwy 4	BAKER ROAD	US 97 (HWY 004)	Good		7 Good	7 Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-140' RCBG Prest Post-Ten
87	17437	Arnold Ditch, Hwy 4 Conn	US 97 (HWY 004) CO	ARNOLD IRR CANAL	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	1-22' RC Slb Prest
88	17923	Deschutes River, Spring River Rd	SPRING RIVER ROAD	DESCHUTES RIVER	Good		8 Very Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
93	17C02	Couch Lateral, Sisemore Rd	Sisemore Road	COUCH LATERAL	Poor	Structurally Deficient	4 Poor	4 Poor	4 Poor	N N/A (NBI)	N	8 Stable Above	N	
96	17C06	COI Canal, Gift Rd	GIFT ROAD	GIFT RD/C O I CANAL	Fair		7 Good	6 Satisfactory	6 Satisfactory	N N/A (NBI)	Y	U Unknown Scour	N	
97	17C07	Pilot Butte Irrigation Canal, Young Ave	YOUNG AVE	PILOT BUTTE IRR CANAL	Fair		7 Good	7 Good	5 Fair	N N/A (NBI)	N	8 Stable Above	N	
98	17C09	Pilot Butte Irrigation Canal, Quarry Ave	QUARRY AVE	PILOT BUTTE IRR CANAL	Fair		8 Very Good	8 Very Good	6 Satisfactory	N N/A (NBI)	N	8 Stable Above	N	
99	17C10	Pilot Butte Main Canal, SW 61st St	SW 61ST STREET	PILOT BUTTE MAIN CANAL	Good		8 Very Good	8 Very Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
100	17C15A	Pilot Butte Canyon, 46th St	46TH ST-PHILLI	PILOT BUTTE CAN/46TH ST	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
101	17C18	North Unit Canal, NE Wilcox Ave	NE WILCOX AVE	NORTH UNIT CANAL	Fair		7 Good	6 Satisfactory	7 Good	N N/A (NBI)	N	8 Stable Above	N	
104	17C30	COI Canal, Gribbling Rd	GRIBBLING ROAD	COI CANAL	Poor	Structurally Deficient	7 Good	5 Fair	3 Serious	N N/A (NBI)	Y	3 SC - Unstable	N	
105	17C32	North Unit Main Canal, Hamehook Rd	HAMEHOOK ROAD	NORTH UNIT MAIN CANAL	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
106	17C34	Little Deschutes River, Dorrance Meadow Rd	DORRANCE MDW ROAD	LITTLE DESCHUTES RIVER	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	8 Stable Above	Y	
107	17C35	Arnold Irrigation Canal, Baker Rd	BAKER ROAD	ARNOLD IRR. CANAL	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
108	17C37	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV	Fair		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	6 Deterioration	N	8 Stable Above	N	
110	17C540	Small Boat Canal, Solar Dr	SOLAR DRIVE	SMALL BOAT CANAL	Fair		7 Good	7 Good	6 Satisfactory	N N/A (NBI)	Y	3 SC - Unstable	N	
111	17C550	Cottonwood Rd over BNRR	COTTONWOOD	B N R R O-XING	Fair		7 Good	6 Satisfactory	7 Good	N N/A (NBI)	N	N Not Over Wate	N	
113	17C570	Tumalo Res Feed Canal, Seismore Rd	SEISMORE ROAD	TUMALO RES FEED CANAL	Fair		8 Very Good	6 Satisfactory	7 Good	N N/A (NBI)	N	8 Stable Above	N	
115	17M001	North Unit Canal, Coyote Rd	COYOTE RD NG/BBRG1	NORTH UNIT CANAL	Fair		5 Fair	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	8 Stable Above	N	
116	18001	Fall River, Fall River Rd	FALL RIVER ROAD	FALL RIVER	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
121	18208	Deschutes Market Rd over Hwy 4	DESCHUTE MKT INTCH	US 97 (HWY 004)	Good		7 Good	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-140' RCBG Prest Post-Ten
122	18283	Cline Falls Rd over Hwy 15	CLINE FALLS HWY	OR 126 (HWY 015)	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	N Not Over Wate	N	1-116' RCDG Prest Bulb-T
123	18299	Pilot Butte Canal, Tumalo Rd 97 Overpass	TUMALO ROAD	PILOT BUTTE CANAL	Good		8 Very Good	8 Very Good	7 Good	N N/A (NBI)	N	8 Stable Above	N	
125	18493	Deschutes Market Rd over Pumice Rd	Deschutes Market	PUMICE ROAD	Good		7 Good	8 Very Good	7 Good	N N/A (NBI)	N	N Not Over Wate	N	
126	18494	Deschutes Market Rd over BNRR	Deschutes Market	BNRR	Good		7 Good	8 Very Good	7 Good	N N/A (NBI)	N	N Not Over Wate	N	
145	19962	Hwy 4 over BNSF (Terrebonne)	US 97 HWY 004	BNSF	Good		7 Good	7 Good	7 Good	N N/A (NBI)	N	N Not Over Wate	N	1-200' RCBG Prest Post-Ten
147	20206	South Century Bridge (NB)	US 97 (HWY 004) NB	S. CENTURY DR.	Good		7 Good	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-86' RC Slb Prest
148	20207	SOUTH CENTURY BRIDGE (SB)	US 97 (HWY 004) SB	S. CENTURY DRIVE	Good		7 Good	7 Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-86' RC Slb Prest
149	20334	COI Canal-Lateral F, NW Galloway Ave	NW GALLOWAY AVE	COI CANAL-LATERAL F	Fair		6 Satisfactory	6 Satisfactory	6 Satisfactory	N N/A (NBI)	N	8 Stable Above	N	
157	20552	HWY 004 NB OXING Cottonwood Rd Con. at MP 151.30	US 97 (HWY 004) NB	COTTONWOOD RD	Good		7 Good	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-64' RC Slb Prest
162	20783	OREGON WATER WONDERLAND, WOOD DUCK COURT	WOOD DUCK COURT	OREGON WATER WONDERLAND	Fair		6 Satisfactory	7 Good	5 Fair	N N/A (NBI)	Y	U Unknown Scour	Y	
163	21014	HWY 004 SB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	Good		7 Good	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-52' RC Slb Prest
164	21015	HWY 004 SB OXING Cottonwood Road at MP 149.55	US 97 (HWY 004)	Cottonwood Road	Good		7 Good	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-112' RCBG Prest
165	21016	HWY 004 NB OXING Cottonwood Road at MP 149.56	US 97 (HWY 004)	Cottonwood Road	Good		7 Good	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-114' RCBG Prest
166	21017	HWY 004 NB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	Good		7 Good	8 Very Good	8 Very Good	N N/A (NBI)	N	N Not Over Wate	N	1-52' RC Slb Prest
168	21702	Hwy 372, Multi-Use Trail	Hwy 372	Multi Use Trail	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	8 No Major Problem	N	N Not Over Wate	N	186"x162"x91'2" CMP
169	21706	Foot Bridge Crooked River at Smith Rock State Park	Foot Bridge	Crooked River	Poor	Structurally Deficient	7 Good	4 Poor	7 Good	N N/A (NBI)	Y	U Unknown Scour	N	
170	21825	Pilot Butte Canal, Hwy 4 at MP 129.72	US 97 (HWY 004)	PILOT BUTTE CANAL	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	7 Minor Deterioration	Y	U Unknown Scour	N	108" -270' CMP
174	22384	Deschutes River, Tetherow Rd	TETHEROW ROAD	DESCHUTES RIVER	Good		8 Very Good	8 Very Good	8 Very Good	N N/A (NBI)	N	5 Stable w/in f	N	
176	22450	Haul Trail Undercrossing	HWY 372	Rimrock Trail	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	8 No Major Problem	N	N Not Over Wate	N	120" x 168" x 55' RCBC
178	23100	Fall Cr_Cascade Lake Hwy_44.030112/121.738336	Cascade Lakes Hwy	FALL CREEK @SPARKS	Good		8 Very Good	8 Very Good	8 Very Good	N N/A (NBI)	N	5 Stable w/in f	N	
184	23905	Soda Cr_Cascade Lakes Hwy_44.02602/121.72564	Cascade Lakes Hwy	Soda Creek	Good		8 Very Good	8 Very Good	8 Very Good	N N/A (NBI)	N	5 Stable w/in f	N	
185	23906	cl_Goose Cr_Cascade Lakes Hwy_44.03275/121.742569	Cascade Lakes Hwy	Goose Creek	Good		N N/A (NBI)	N N/A (NBI)	N N/A (NBI)	8 No Major Problem	N	5 Stable w/in f	N	

OBJECTID	BRIDGE_ID	BRIDGE_NAM	CARRIES	CROSSES	RAILRATING	RAILMAT	ODOT_REG	ODOT_DIST	CNTY_NAME	CITY_NAME	ADMIN_AREA	ROAD_IDENT	STRUCTURE_NUM	RTGOAL_SHV	REVIEW_EV	LAT
3	01135A	Arnold Ditch, Hwy 4	US 97 (HWY 004)	ARNOLD DITCH	1 Meets Standards	Multiple	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	01135A004 14327			43.9945
4	01421A	Central Oregon Canal, Hwy 7	US 20 (HWY 007)	CENTRAL OREGON CANAL	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	01421A007 00839			44.0374107
5	01671A	Irrigation Ditch, Hwy 4 at MP 128.37	US 97 (HWY 004)	IRRIGATION DITCH	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	01671A004 12837			44.1832854
6	01672A	Irrigation Ditch, Hwy 4 at MP 128.84	US 97 (HWY 004)	IRRIGATION DITCH	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	01672A004 12886			44.1776715
7	01673A	Irrigation Ditch, Hwy 4 at MP 129.05	US 97 (HWY 004)	IRRIGATION DITCH	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	01673A004 12905			44.1745215
8	01674B	Irrigation Ditch, Hwy 4 at MP 129.43	US 97 (HWY 004)	IRRIGATION DITCH	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	01674B004 12944			44.1695965
9	01676A	Swalley Canal, Hwy 4 at MP 132.16	US 97 (HWY 004)	SWALLEY CANAL	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	01676A004 13216			44.1344357
10	02769	Ochoco North Main Canal, Hwy 41	OR 126 (HWY 041)	OCHOCO N MAIN CANAL	0 Substandard	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	02769 041 00304			44.26205
11	03296B	Lateral F COI Canal, Hwy 4 at MP 118.02	US 97 (HWY 004) SB	LATERAL F CANAL	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	03296B004 11801			44.3197521
12	03367A	Paulina Creek, Hwy 4	US 97 (HWY 004)	PAULINA CREEK	N N/A or not required		Region 4	11	Deschutes	UNKNOWN	R4	1 Highway	03367A004 16202			43.7481941
13	03372A	Trout Creek, Hwy 15	OR 242 (HWY 015)	TROUT CREEK	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	03372A015 08940			44.3026111
14	03373A	Deschutes River, Hwy 15	OR 126 (HWY 015)	DESCHUTES RIVER	1 Meets Standards	Multiple	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	03373A015 10765			44.2736
15	03374	Indian Ford Creek, Hwy 16	US 20 (HWY 016)	INDIAN FORD CREEK	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	03374 016 09502			44.3566666
16	03378	Deschutes River, O B Riley Rd	O.B. RILEY ROAD	DESCHUTES RIVER	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	03378 A08 00300	SHV Category 2		44.1294687
17	03379	Pilot Butte Canal, Hwy 370	HWY 370	PILOT BUTTE CANAL	1 Meets Standards	Multiple	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	03379 370 00021			44.3127
18	03380	Irrigation Ditch, Hwy 370 at MP 2.47	HWY 370	IRRIGATION DITCH	1 Meets Standards	Multiple	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	03380 370 00247			44.3199882
19	03383A	Deschutes River, Tumalo Market Rd	TUMALO MARKET RD	DESCHUTES RIVER	0 Substandard	Multiple	Region 4	10	Deschutes	UNKNOWN	06	5 Highway-pedestrian	03383AB75 00005	SHV Category 2		44.1507305
26	09643A	Deschutes R, Hwy 4 Access Lapine Rec Area (ParkBr)	ACC RD LAPINE REC	DESCHUTES RIVER	0 Substandard	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	R4	5 Highway-pedestrian	09643A004 16053	SHV Category 2		43.7721104
27	09643B	Little Deschutes River, Lapine State Park Rd	LaPine Ste Rec Rd	LITTLE DESCHUTES RIVER	1 Meets Standards	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	09643BE16900103	SHV Category 2		43.7708687
29	09818	COI Main Canal, Gosney Rd	GOSNEY RD	COI MAIN CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	09818 D02 01058	SHV Category 2		44.0352691
30	09819	COI Main Canal, Ward Rd	WARD ROAD	COI MAIN CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	09819 D56 00080	SHV Category 2		44.0425607
31	09C04A	Indian Ford Creek, Camp Polk Rd	CAMP POLK ROAD	INDIAN FORD CREEK	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	09C04AC32 00223			44.3202187
32	09C05A	Whychus Creek, Camp Polk Rd	CAMP POLK ROAD	WHYCHUS CREEK,CAMP POLK	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	09C05AC32 00414	SHV Category 2		44.3182993
33	09C125	COI Main Canal, Alfalfa Market Rd	ALFALFA MKT RD	COI MAIN CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	09C125D01 00929	SHV Category 2		44.0777993
34	09C36A	Tumalo Creek, Shevlin Park Rd	SHEVLIN PARK ROAD	TUMALO CREEK	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	BEND	06	1 Highway	09C36AA11 00263	SHV Category 2		44.0829187
38	09C783	Deschutes River, Burgess Rd	BURGESS RD	DESCHUTES RIVER	0 Substandard	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	5 Highway-pedestrian	09C783E08 00783	SHV Category 1		43.7410691
39	0P020	Cattlepass, Hwy 7 at MP 22.47	US 20 (HWY 007)	CATTLEPASS	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	0P020 007 02247			43.8994635
40	0P021	Cattlepass, Hwy 7 at MP 25.05	US 20 (HWY 007)	CATTLEPASS	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	0P021 007 02504			43.8843441
41	0P022	Cattlepass, Hwy 7 at MP 28.73	US 20 (HWY 007)	CATTLEPASS	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	0P022 007 02873			43.8714493
42	15450A	Deschutes River, Lower Bridge Rd	LOWER BRIDGE RD	DESCHUTES RIVER	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	15450A030 00634	SHV Category 2		44.3597194
43	15452	North Unit Canal, Smith Rock Rd	SMITH ROCK ROAD	NORTH UNIT CAN/SMITHROCK	0 Substandard	Timb Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	15452 C42 00350			44.3488691
45	15454A	Pilot Butte Canal, Deschutes Pleasant Ridge Rd	PLEASANT RIDGE	PILOT BUTTE CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	15454AD31 00011	SHV Category 2		44.15979722
46	16060	Three Creeks Canal, Three Creeks Rd	THREE CREEKS ROAD	THREE CREEKS CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	16060 A14 00277	SHV Category 2		44.2528305
47	16061	Little Deschutes River, South Century Dr	S CENTURY DR	LITTLE DESCHUTES RIVER	1 Meets Standards	Multiple	Region 4	11	Deschutes	UNKNOWN	06	5 Highway-pedestrian	16061 E20202266	SHV Category 2		43.8204104
48	16181	South Century Dr over BNRR	S CENTURY DR	BURLINGTON N. R.R.	1 Meets Standards	Multiple	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	16181 E20 02685	SHV Category 2		43.8693993
50	16479	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV/TWIN BR	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	16479 B33C00047	SHV Category 2		44.1816604
51	16480	Deschutes River, Sheep Ln	MOUNTAIN SHEEP LN	DESCHUTES R. SHEEP LN	0 Substandard	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	16480 000000110	SHV Category 2		43.7768604
52	16497	Little Deschutes River, Masten Rd	MASTEN ROAD	LITTLE DESCHUTES RIVER	0 Substandard	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	16497 E06 00320	SHV Category 2		43.6454191
53	16519	Robert D. Maxwell Veterans Memorial Bridge	So. Century Dr.	Deschutes River	1 Meets Standards	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	5 Highway-pedestrian	16519 411207171	SHV Category 2		43.8175993
58	16604	COI Canal, Dodds Rd	DODDS ROAD	COI CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	16604 D42 00342	SHV Category 2		44.0292187
59	166840	Paulina Creek, Paulina Lake Rd	PAULINA LAKE RD	PAULINA CREEK	0 Substandard	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	1668400F0600290	SHV Category 2		43.7271382
60	166860	COI Main Canal, Walker Rd	WALKER ROAD	C O I MAIN C. WALKER	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	1668600D2700675	SHV Category 2		44.0633
61	16712	HWY 004 SB OXING Cottonwood Rd Con at MP 151.30	US 97 (HWY 004) SB	COTTONWOOD RD	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	16712 004 15133			43.8896769
64	16933	Little Deschutes River, Bridge Dr	BRIDGE DRIVE SRD4	LITTLE DESCHUTES RIVER	0 Substandard	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	16933 000000022	SHV Category 2		43.7545694
65	17202	Hwy 372 over Snow Trail	HWY 372	SNOW TRAIL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	17202 372 01828			43.9838996
66	17223	sn_Hwy 372_WB_NS_MP21.38	None	HWY372	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	Other (NBI)	17223 372 02138			43.98269
67	17224	sn_Hwy 372_WB_SS_MP18.76	None	HWY372	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	Other (NBI)	17224 372 01876			43.98207
68	17227	sn_Hwy 372_WB_NS_MP20.91	None	HWY372	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	Other (NBI)	17227 372 02091			43.9902
69	17242	sn_Hwy 372_EB_SS_MP19.39	None	HWY372	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	Other (NBI)	17242 372 01939			43.98258
70	17243	sn_Hwy 372_EB_SS_MP18.88	None	HWY372	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	Other (NBI)	17243 372 01888			43.98207
71	17251	Deschutes River, Hwy 17	US 20 (HWY 017)	DESCHUTES RIVER	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	17251 017 01509			44.1406885
73	17281	Baker Road over Hwy 4	BAKER ROAD	US 97 (HWY 004)	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	17281 004 14345			43.9921
87	17437	Arnold Ditch, Hwy 4 Conn	US 97 (HWY 004) CO	ARNOLD IRR CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	17437 004C14327			43.9947
88	17923	Deschutes River, Spring River Rd	SPRING RIVER ROAD	DESCHUTES RIVER	1 Meets Standards	Multiple	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17923 419200052			43.8631694
93	17C02	Couch Lateral, Sisemore Rd	Sisemore Road	COUCH LATERAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C02 A09 00520	SHV Category 2		44.1393191
96	17C06	COI Canal, Gift Rd	GIFT ROAD	GIFT RD/C O I CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C06 B08 00050			44.1816493
97	17C07	Pilot Butte Irrigation Canal, Young Ave	YOUNG AVE	PILOT BUTTE IRR CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C07 B11 00140	SHV Category 2		44.1961496
98	17C09	Pilot Butte Irrigation Canal, Quarry Ave	QUARRY AVE	PILOT BUTTE IRR CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C09 B20 00050	SHV Category 2		44.2105805
99	17C10	Pilot Butte Main Canal, SW 61st St	SW 61ST STREET	PILOT BUTTE MAIN CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C10 B29 00154	SHV Category 2		44.2036111
100	17C15A	Pilot Butte Canyon, 46th St	46TH ST-PHILLI	PILOT BUTTE CAN/46TH ST	0 Substandard	Timb Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C15AB46 00122			44.21575
101	17C18	North Unit Canal, NE Wilcox Ave	NE WILCOX AVE	NORTH UNIT CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C18 C23 00300	SHV Category 2		44.3561305
104	17C30	COI Canal, Gribbling Rd	GRIBBLING ROAD	COI CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C30 035 00100			44.0347996
105	17C32	North Unit Main Canal, Hamehook Rd	HAMEHOOK ROAD	NORTH UNIT MAIN CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C32 D57 00100			44.105
106	17C34	Little Deschutes River, Dorrance Meadow Rd	DORRANCE MDW ROAD	LITTLE DESCHUTES RIVER	0 Substandard	Re Conc Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	17C34 E14 00225	SHV Category 2		43.6726493
107	17C35	Arnold Irrigation Canal, Baker Rd	BAKER ROAD	ARNOLD IRR. CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C35 E19 00100	SHV Category 2		43.9941996
108	17C37	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV	N N/A or not required	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C37 B33200050			44.1819882
110	17C540	Small Boat Canal, Solar Dr	SOLAR DRIVE	SMALL BOAT CANAL	0 Substandard	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	17C5400E3500190	SHV Category 2		43.8369385
111	17C550	Cottonwood Rd over BNRR	COTTONWOOD	B N R R O-XING	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C550E15600190	SHV Category 2		43.8936691
113	17C570	Tumalo Res Feed Canal, Seismore Rd	SEISMORE ROAD	TUMALO RES FEED CANAL	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	17C5700A0900025	SHV Category 1		44.1366191
115	17M001	North Unit Canal, Coyote Rd	COYOTE RD NG/BBRG1	NORTH UNIT CANAL	0 Substandard		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	17M001000000000			44.2499218
116	18001	Fall River, Fall River Rd	FALL RIVER ROAD	FALL RIVER	0 Substandard	Timb Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	18001 410400045	SHV Category 1		43.7959385
121	18208	Deschutes Market Rd over Hwy 4	DESCHUTE MKT INTCH	US 97 (HWY 004)	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	18208 004 13028			44.1576111
122	18283	Cline Falls Rd over Hwy 15	CLINE FALLS HWY	OR 126 (HWY 015)	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	18283 015 10740			44.2754993
123	18299	Pilot Butte Canal, Tumalo Rd 97 Overpass	TUMALO ROAD	PILOT BUTTE CANAL	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	18299 000 00000	SHV Category 2		44.1597611
125	18493	Deschutes Market Rd over Pumice Rd	Deschutes Market	PUMICE ROAD	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	18493 000 00000	SHV Category 2		44.1563333
126	18494	Deschutes Market Rd over BNRR	Deschutes Market	BNRR	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	18494 000 00000	SHV Category 2		44.1557083
145	19962	Hwy 4 over BNSF (Terrebonne)	US 97 HWY 004	BNSF	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	19962 004 11394	SHV Category 2		44.3784382
147	20206	South Century Bridge (NB)	US 97 (HWY 004) NB	S. CENTURY DR.	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	20206 004 15305			43.8695382
148	20207	SOUTH CENTURY BRIDGE (SB)	US 97 (HWY 004) SB	S. CENTURY DRIVE	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	20207 004 15308			43.8696993
149	20334	COI Canal-Lateral F, NW Galloway Ave	NW GALLOWAY AVE	COI CANAL-LATERAL F	0 Substandard	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	203340000000000			44.3268798
157	20552	HWY 004 NB OXING Cottonwood Rd Con. at MP 151.30	US 97 (HWY 004) NB	COTTONWOOD RD	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	20552 004 15130			43.8893
162	20783	OREGON WATER WONDERLAND, WOOD DUCK COURT	WOOD DUCK COURT	OREGON WATER WONDERLAND	0 Substandard	Metal Bridge Railing	Region 4	11	Deschutes	UNKNOWN	06	1 Highway	20783 000 00005	SHV Category 2		43.8309604
163	21014	HWY 004 SB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	21014 004 15200			43.8821
164	21015	HWY 004 SB OXING Cottonwood Road at MP 149.55	US 97 (HWY 004)	Cottonwood Road	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	21015 004 14955			43.9076
165	21016	HWY 004 NB OXING Cottonwood Road at MP 149.56	US 97 (HWY 004)	Cottonwood Road	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	21016 004 14956			43.9074
166	21017	HWY 004 NB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	1 Meets Standards	Re Conc Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	21017 004 15200			43.8817
168	21702	Hwy 372, Multi-Use Trail	Hwy 372	Multi Use Trail	1 Meets Standards		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	21702 372 00748			43.9969607
169	21706	Foot Bridge Crooked River at Smith Rock State Park	Foot Bridge	Crooked River	N N/A or not required	Timb Bridge Railing	Region 4	10	Deschutes	UNKNOWN	R4	3 Pedestrian-bicyle	21706 000 00000			44.3678687
170	21825	Pilot Butte Canal, Hwy 4 at MP 129.72	US 97 (HWY 004)	PILOT BUTTE CANAL	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	21825 004 12972			44.1659694
174	22384	Deschutes River, Tetherow Rd	TETHEROW ROAD	DESCHUTES RIVER	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	22384 C74 00100			44.31222222
176	22450	Haul Trail Undercrossing	HWY 372	Rimrock Trail	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	R4	1 Highway	22450 372 00514			44.01951111
178	23100	Fall Cr_Cascade Lake Hwy_44.030112/121.738336	Cascade Lakes Hwy	FALL CREEK @SPARKS	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	23100041070255 7			44.03011111
184	23905	Soda Cr_Cascade Lakes Hwy_44.02602/121.72564	Cascade Lakes Hwy	Soda Creek	1 Meets Standards	Metal Bridge Railing	Region 4	10	Deschutes	UNKNOWN	06	1 Highway	23905 000 02510			44.02601944
185	23906	cl_Goose Cr_Cascade Lakes Hwy_44.03275/121.742569	Cascade Lakes Hwy	Goose Creek	N N/A or not required		Region 4	10	Deschutes	UNKNOWN	06	1 Highway	23906 000 02610			44.03274722

OBJECTID	BRIDGE_ID	BRIDGE_NAM	CARRIES	CROSSES	LONG	HWYNUMB	LRS_KEY	MP	EFFECTV_DT	GIS_PRC_DT
3	01135A	Arnold Ditch, Hwy 4	US 97 (HWY 004)	ARNOLD DITCH	-121.3334	004	000400100S00	143.27	2020	8/12/2020
4	01421A	Central Oregon Canal, Hwy 7	US 20 (HWY 007)	CENTRAL OREGON CANAL	-121.1530611	007	000700100S00	8.39	2020	8/12/2020
5	01671A	Irrigation Ditch, Hwy 4 at MP 128.37	US 97 (HWY 004)	IRRIGATION DITCH	-121.2423913	004	0000000000000	128.37	2020	8/12/2020
6	01672A	Irrigation Ditch, Hwy 4 at MP 128.84	US 97 (HWY 004)	IRRIGATION DITCH	-121.2467774	004	0000000000000	128.84	2020	8/12/2020
7	01673A	Irrigation Ditch, Hwy 4 at MP 129.05	US 97 (HWY 004)	IRRIGATION DITCH	-121.2491052	004	0000000000000	129.05	2020	8/12/2020
8	01674B	Irrigation Ditch, Hwy 4 at MP 129.43	US 97 (HWY 004)	IRRIGATION DITCH	-121.2525055	004	0000000000000	129.44	2020	8/12/2020
9	01676A	Swalley Canal, Hwy 4 at MP 132.16	US 97 (HWY 004)	SWALLEY CANAL	-121.277266	004	0000000000000	132.16	2020	8/12/2020
10	02769	Ochoco North Main Canal, Hwy 41	OR 126 (HWY 041)	OCHOCO N MAIN CANAL	-121.1192604	041	004100100S00	3.04	2020	8/12/2020
11	03296B	Lateral F COI Canal, Hwy 4 at MP 118.02	US 97 (HWY 004) SB	LATERAL F CANAL	-121.1721798	004	0000000000000	118.01	2020	8/12/2020
12	03367A	Paulina Creek, Hwy 4	US 97 (HWY 004)	PAULINA CREEK	-121.4622972	004	0000000000000	162.02	2020	8/12/2020
13	03372A	Trout Creek, Hwy 15	OR 242 (HWY 015)	TROUT CREEK	-121.6085388	015	001500100S00	89.4	2020	8/12/2020
14	03373A	Deschutes River, Hwy 15	OR 126 (HWY 015)	DESCHUTES RIVER	-121.2585	015	001500100S00	107.65	2020	8/12/2020
15	03374	Indian Ford Creek, Hwy 16	US 20 (HWY 016)	INDIAN FORD CREEK	-121.6116527	016	001600100S00	95.02	2020	8/12/2020
16	03378	Deschutes River, O B Riley Rd	O.B. RILEY ROAD	DESCHUTES RIVER	-121.3314687	310201	0000000000000	4.02	2020	8/12/2020
17	03379	Pilot Butte Canal, Hwy 370	HWY 370	PILOT BUTTE CANAL	-121.1672104	370	037000100S00	0.21	2020	8/12/2020
18	03380	Irrigation Ditch, Hwy 370 at MP 2.47	HWY 370	IRRIGATION DITCH	-121.1315604	370	037000100S00	2.45	2020	8/12/2020
19	03383A	Deschutes River, Tumalo Market Rd	TUMALO MARKET RD	DESCHUTES RIVER	-121.3294382	314801	0000000000000	0.05	2020	8/12/2020
26	09643A	Deschutes R, Hwy 4 Access Lapine Rec Area (ParkBr)	ACC RD LAPINE REC	DESCHUTES RIVER	-121.5296798	004	0000000000000	160.53	2020	8/12/2020
27	09643B	Little Deschutes River, Lapine State Park Rd	LaPine Ste Rec Rd	LITTLE DESCHUTES RIVER	-121.4766993	415101	0000000000000	1.25	2020	8/12/2020
29	09818	COI Main Canal, Gosney Rd	GOSNEY RD	COI MAIN CANAL	-121.1933691	315501	0000000000000	1.03	2020	8/12/2020
30	09819	COI Main Canal, Ward Rd	WARD ROAD	COI MAIN CANAL	-121.2435802	320201	0000000000000	0.8	2020	8/12/2020
31	09C04A	Indian Ford Creek, Camp Polk Rd	CAMP POLK ROAD	INDIAN FORD CREEK	-121.5382691	116101	0000000000000	2.23	2020	8/12/2020
32	09C05A	Whychus Creek, Camp Polk Rd	CAMP POLK ROAD	WHYCHUS CREEK,CAMP POLK	-121.5151888	116102	0000000000000	4.14	2020	8/12/2020
33	09C125	COI Main Canal, Alfalfa Market Rd	ALFALFA MKT RD	COI MAIN CANAL	-121.0321798	315402	0000000000000	9.29	2020	8/12/2020
34	09C36A	Tumalo Creek, Shevlin Park Rd	SHEVLIN PARK ROAD	TUMALO CREEK	-121.3763104	310301	0000000000000	2.63	2020	8/12/2020
38	09C783	Deschutes River, Burgess Rd	BURGESS RD	DESCHUTES RIVER	-121.6068388	410602	0000000000000	7.83	2020	8/12/2020
39	0P020	Cattlepass, Hwy 7 at MP 22.47	US 20 (HWY 007)	CATTLEPASS	-120.9853913	007	0000000000000	22.47	2020	8/12/2020
40	0P021	Cattlepass, Hwy 7 at MP 25.05	US 20 (HWY 007)	CATTLEPASS	-120.9377691	007	0000000000000	25.04	2020	8/12/2020
41	0P022	Cattlepass, Hwy 7 at MP 28.73	US 20 (HWY 007)	CATTLEPASS	-120.8621472	007	0000000000000	28.73	2020	8/12/2020
42	15450A	Deschutes River, Lower Bridge Rd	LOWER BRIDGE RD	DESCHUTES RIVER	-121.2944885	217701	0000000000000	6.34	2020	8/12/2020
43	15452	North Unit Canal, Smith Rock Rd	SMITH ROCK ROAD	NORTH UNIT CAN/SMITHROCK	-121.1150388	218403	0000000000000	3.5	2020	8/12/2020
45	15454A	Pilot Butte Canal, Deschutes Pleasant Ridge Rd	PLEASANT RIDGE	PILOT BUTTE CANAL	-121.2569167	318101	0000000000000	1.77	2020	8/12/2020
46	16060	Three Creeks Canal, Three Creeks Rd	THREE CREEKS ROAD	THREE CREEKS CANAL	-121.5482885	111002	0000000000000	2.77	2020	8/12/2020
47	16061	Little Deschutes River, South Century Dr	S CENTURY DR	LITTLE DESCHUTES RIVER	-121.4513	411202	0000000000000	5.56	2020	8/12/2020
48	16181	South Century Dr over BNRR	S CENTURY DR	BURLINGTON N. R.R.	-121.4301104	411201	0000000000000	1.3	2020	8/12/2020
50	16479	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV/TWIN BR	-121.3174493	114001	0000000000000	0.47	2020	8/12/2020
51	16480	Deschutes River, Sheep Ln	MOUNTAIN SHEEP LN	DESCHUTES R. SHEEP LN	-121.5153694	400001	0000000000000	1.1	2020	8/12/2020
52	16497	Little Deschutes River, Masten Rd	MASTEN ROAD	LITTLE DESCHUTES RIVER	-121.5916107	410401	0000000000000	3.39	2020	8/12/2020
53	16519	Robert D. Maxwell Veterans Memorial Bridge	So. Century Dr.	Deschutes River	-121.4986802	411203	0000000000000	8.05	2020	8/12/2020
58	16604	COI Canal, Dodds Rd	DODDS ROAD	COI CANAL	-121.0759882	319101	0000000000000	3.38	2020	8/12/2020
59	166840	Paulina Creek, Paulina Lake Rd	PAULINA LAKE RD	PAULINA CREEK	-121.4231493	418201	0000000000000	2.82	2020	8/12/2020
60	166860	COI Main Canal, Walker Rd	WALKER ROAD	C O I MAIN C. WALKER	-121.0295	317701	0000000000000	6.75	2020	8/12/2020
61	16712	HWY 004 SB OXING Cottonwood Rd Con at MP 151.30	US 97 (HWY 004) SB	COTTONWOOD RD	-121.3811571	004	000400100S00	151.3	2020	8/12/2020
64	16933	Little Deschutes River, Bridge Dr	BRIDGE DRIVE SRD4	LITTLE DESCHUTES RIVER	-121.4864107	417501	0000000000000	0.22	2020	8/12/2020
65	17202	Hwy 372 over Snow Trail	HWY 372	SNOW TRAIL	-121.6035	372	037200100S00	18.28	2020	8/12/2020
66	17223	sn_Hwy 372_WB_NS_MP21.38	None	HWY372	-121.61288	372	037200100S00	21.38	2020	8/12/2020
67	17224	sn_Hwy 372_WB_SS_MP18.76	None	HWY372	-121.61331	372	037200100S00	18.76	2020	8/12/2020
68	17227	sn_Hwy 372_WB_NS_MP20.91	None	HWY372	-121.65295	372	037200100S00	20.91	2020	8/12/2020
69	17242	sn_Hwy 372_EB_SS_MP19.39	None	HWY372	-121.62519	372	037200100S00	19.39	2020	8/12/2020
70	17243	sn_Hwy 372_EB_SS_MP18.88	None	HWY372	-121.61331	372	037200100S00	18.88	2020	8/12/2020
71	17251	Deschutes River, Hwy 17	US 20 (HWY 017)	DESCHUTES RIVER	-121.3277604	017	001700100S00	15.09	2020	8/12/2020
73	17281	Baker Road over Hwy 4	BAKER ROAD	US 97 (HWY 004)	-121.3351	C0000	0000000000000	0	2020	8/12/2020
87	17437	Arnold Ditch, Hwy 4 Conn	US 97 (HWY 004) CO	ARNOLD IRR CANAL	-121.3338	C0000	000400100S00	143.27	2020	8/12/2020
88	17923	Deschutes River, Spring River Rd	SPRING RIVER ROAD	DESCHUTES RIVER	-121.4521111	419201	0000000000000	0.57	2020	8/12/2020
93	17C02	Couch Lateral, Sisemore Rd	Sisemore Road	COUCH LATERAL	-121.4151694	110601	0000000000000	6.77	2020	8/12/2020
96	17C06	COI Canal, Gift Rd	GIFT ROAD	GIFT RD/C O I CANAL	-121.2537194	210501	0000000000000	0.5	2020	8/12/2020
97	17C07	Pilot Butte Irrigation Canal, Young Ave	YOUNG AVE	PILOT BUTTE IRR CANAL	-121.2540194	210601	0000000000000	0.5	2020	8/12/2020
98	17C09	Pilot Butte Irrigation Canal, Quarry Ave	QUARRY AVE	PILOT BUTTE IRR CANAL	-121.2328187	211301	0000000000000	0.5	2020	8/12/2020
99	17C10	Pilot Butte Main Canal, SW 61st St	SW 61ST STREET	PILOT BUTTE MAIN CANAL	-121.2435191	210701	0000000000000	1.54	2020	8/12/2020
100	17C15A	Pilot Butte Canyon, 46th St	46TH ST-PHILLI	PILOT BUTTE CAN/46TH ST	-121.2232493	215301	0000000000000	0.5	2020	8/12/2020
101	17C18	North Unit Canal, NE Wilcox Ave	NE WILCOX AVE	NORTH UNIT CANAL	-121.1184382	217102	0000000000000	2.5	2020	8/12/2020
104	17C30	COI Canal, Gribbling Rd	GRIBBLING ROAD	COI CANAL	-121.1736798	318401	0000000000000	1	2020	8/12/2020
105	17C32	North Unit Main Canal, Hamehook Rd	HAMEHOOK ROAD	NORTH UNIT MAIN CANAL	-121.2483996	320301	0000000000000	0.85	2020	8/12/2020
106	17C34	Little Deschutes River, Dorrance Meadow Rd	DORRANCE MDW ROAD	LITTLE DESCHUTES RIVER	-121.5475607	410901	0000000000000	2.25	2020	8/12/2020
107	17C35	Arnold Irrigation Canal, Baker Rd	BAKER ROAD	ARNOLD IRR. CANAL	-121.3546	300601	0000000000000	1	2020	8/12/2020
108	17C37	Deschutes River, Twin Bridge Rd	TWIN BR RD	DESCHUTES RV	-121.3181298	114002	0000000000000	0.5	2020	8/12/2020
110	17C540	Small Boat Canal, Solar Dr	SOLAR DRIVE	SMALL BOAT CANAL	-121.4652694	412301	0000000000000	1.9	2020	8/12/2020
111	17C550	Cottonwood Rd over BNRR	COTTONWOOD	B N R R O-XING	-121.4156388	414301	0000000000000	2.69	2020	8/12/2020
113	17C570	Tumalo Res Feed Canal, Seismore Rd	SEISMORE ROAD	TUMALO RES FEED CANAL	-121.4144194	110602	0000000000000	6.98	2020	8/12/2020
115	17M001	North Unit Canal, Coyote Rd	COYOTE RD NG/BBRG1	NORTH UNIT CANAL	-121.1304771	000000	0000000000000	1	2020	8/12/2020
116	18001	Fall River, Fall River Rd	FALL RIVER ROAD	FALL RIVER	-121.5728798	410414	0000000000000	0.45	2020	8/12/2020
121	18208	Deschutes Market Rd over Hwy 4	DESCHUTE MKT INTCH	US 97 (HWY 004)	-121.2607805	C0000	0000000000000	0	2020	8/12/2020
122	18283	Cline Falls Rd over Hwy 15	CLINE FALLS HWY	OR 126 (HWY 015)	-121.2620694	015AJ	0000000000000	107.48	2020	8/12/2020
123	18299	Pilot Butte Canal, Tumalo Rd 97 Overpass	TUMALO ROAD	PILOT BUTTE CANAL	-121.2568888	C0000	0000000000000	0.05	2020	8/12/2020
125	18493	Deschutes Market Rd over Pumice Rd	Deschutes Market	PUMICE ROAD	-121.2577777	C318110	0000000000000	0.03	2020	8/12/2020
126	18494	Deschutes Market Rd over BNRR	Deschutes Market	BNRR	-121.2562472	C318110	0000000000000	0.12	2020	8/12/2020
145	19962	Hwy 4 over BNSF (Terrebonne)	US 97 HWY 004	BNSF	-121.1782104	004	000400100S00	113.94	2020	8/12/2020
147	20206	South Century Bridge (NB)	US 97 (HWY 004) NB	S. CENTURY DR.	-121.4027	004	000400200S00	153.05	2020	8/12/2020
148	20207	SOUTH CENTURY BRIDGE (SB)	US 97 (HWY 004) SB	S. CENTURY DRIVE	-121.4034194	004	000400100S00	153.08	2020	8/12/2020
149	20334	COI Canal-Lateral F, NW Galloway Ave	NW GALLOWAY AVE	COI CANAL-LATERAL F	-121.1813493	C0000	0000000000000	2.5	2020	8/12/2020
157	20552	HWY 004 NB OXING Cottonwood Rd Con. at MP 151.30	US 97 (HWY 004) NB	COTTONWOOD RD	-121.3806	004	000400200S00	151.3	2020	8/12/2020
162	20783	OREGON WATER WONDERLAND, WOOD DUCK COURT	WOOD DUCK COURT	OREGON WATER WONDERLAND	-121.4687493	C0000	0000000000000	0.05	2020	8/12/2020
163	21014	HWY 004 SB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	-121.3915	004	000400100S00	152	2020	8/12/2020
164	21015	HWY 004 SB OXING Cottonwood Road at MP 149.55	US 97 (HWY 004)	Cottonwood Road	-121.3568	004	000400100S00	149.55	2020	8/12/2020
165	21016	HWY 004 NB OXING Cottonwood Road at MP 149.56	US 97 (HWY 004)	Cottonwood Road	-121.3565	004	000400200S00	149.56	2020	8/12/2020
166	21017	HWY 004 NB OXING (Wildlife Passage) at MP 152.00	US 97 (HWY 004)	Wildlife Passage	-121.3909	004	000400200S00	152	2020	8/12/2020
168	21702	Hwy 372, Multi-Use Trail	Hwy 372	Multi Use Trail	-121.40245	372	0000000000000	7.48	2020	8/12/2020
169	21706	Foot Bridge Crooked River at Smith Rock State Park	Foot Bridge	Crooked River	-121.1390885	C0000	0000000000000	0	2020	8/12/2020
170	21825	Pilot Butte Canal, Hwy 4 at MP 129.72	US 97 (HWY 004)	PILOT BUTTE CANAL	-121.2549111	004	000400100S00	129.72	2020	8/12/2020
174	22384	Deschutes River, Tetherow Rd	TETHEROW ROAD	DESCHUTES RIVER	-121.2391667	220701	0000000000000	1	2020	8/12/2020
176	22450	Haul Trail Undercrossing	HWY 372	Rimrock Trail	-121.3740806	OR 372	00	5.14	2020	8/12/2020
178	23100	Fall Cr_Cascade Lake Hwy_44.030112/121.738336	Cascade Lakes Hwy	FALL CREEK @SPARKS	-121.7383361	04107	0000000000000	26.57	2020	8/12/2020
184	23905	Soda Cr_Cascade Lakes Hwy_44.02602/121.72564	Cascade Lakes Hwy	Soda Creek	-121.7256389	Cascade Lakes Hwy	0000000000000	25.1	2020	8/12/2020
185	23906	cl_Goose Cr_Cascade Lakes Hwy_44.03275/121.742569	Cascade Lakes Hwy	Goose Creek	-121.7425694	Cascade Lakes Hwy	0000000000000	26.1	2020	8/12/2020

Appendix E:

Projects Memorandum

DRAFT FINAL TRANSPORTATION PROJECT MEMORANDUM

Date: September 23, 2022

To: Chris Doty, Peter Russell, and Cody Smith, Deschutes County

From: Matt Kittelson, Julia Kuhn, and Daniel Bowers

Project: Deschutes County TSP Update

Subject: 2040 Transportation Projects

This memorandum presents potential changes to the transportation system that could help address existing and future needs in Deschutes County. The needs were identified through feedback obtained from County residents, partner agency staff and by technical analyses of roadways, intersections, bike facilities, transit, walking routes, and transportation safety. Many of the identified changes help to support plans that are identified by the local cities, the Oregon Department of Transportation (ODOT), other County planning efforts, the Transportation Safety Action Plan (TSAP) and/or local refinement and facility plans. For planning purposes and the County's future considerations related to the Capital Improvement Program (CIP), the alternatives identified have been prioritized as high, medium and low, and cost estimates are provided for each.

The information contained in this memorandum is presented primarily in graphical and tabular form with supporting text to further clarify/supplement the information.

The recommended multimodal transportation projects are organized into the following categories for implementation based on complexity, likely availability of funding, and assessment of need:

- Intersection changes,
- Roadway segments, including changes to functional classification,
- ODOT intersections and roadways,
- Pedestrian facilities,
- Bicycle facilities
- Bridges,
- Federal Land Access Program (FLAP) roads,
- Transit, and,
- Safety

Some projects may be accelerated and others postponed due to changing conditions, funding availability, public input, or more detailed study performed during programming and budgeting processes. Further, project design details may change before construction commences as public input, available funding, and unique site conditions are taken into consideration. Projects identified herein may be funded through a variety of sources including federal, state, county or local transportation funds, system development charges (SDCs), through partnerships with private developers, or a combination of these sources.

In addition, as part of TSP implementation, the County will continue to coordinate with ODOT and the local communities regarding project prioritization, funding and construction.

BASIS OF NEEDS ASSESSMENT

The May 2021 *Existing Conditions and Future Needs Memo* (herein referred to as the "May 2021 memo") summarized year 2021 and projected year 2040 needs related to people driving, riding bikes, walking, taking transit and moving freight. The needs were identified through feedback from the County and partner agency staff, through a technical analyses, and from feedback received from County residents. As summarized in that memo, there are a number of changes to the transportation system that could be implemented in the next 20 years to enhance safety and mobility for all users. These potential transportation system changes formed the basis of the projects and associated costs outlined in the enclosed memo.

PROJECT COSTS

The estimated construction costs for each project are provided in the subsequent tables. These costs are order-of-magnitude (e.g., planning-level) estimates that account for right-of-way, design engineering, and construction and generally include a 30 percent contingency factor[1]. The costs were calculated for each project using the methodology and procedures recommended by the American Association of Cost Engineers (Class 5 estimates). All costs are rounded to the nearest $100,000 and provided in 2021 dollars. The detailed costs include all estimation assumptions as well as any deviations related to unique topographic, right-of-way, or other constraints.

Where applicable, cost estimates include anticipated project funding that would provide bicycle or pedestrian facilities, including usable shoulder space.

Costs for individual transit corridors are not provided. The County and Cascades East Transit (CET) will continue to collaborate on capital improvements and strategic policies that can help implement more robust transit service throughout the County.

INTERSECTION CHANGES

As discussed in the May 2021 memo, the needs assessment at intersections focused on both vehicular capacity as well as potential geometry changes identified by the Project Advisory Committee as well as projects identified through the TSAP.

Two locations were identified where vehicular capacity changes would be needed in the next twenty years, including Deschutes Market Road at Greystone Lane, and S Century Drive at Venture Lane. Given the location of these roadways in proximity to the Bend Urban Growth Boundary (UGB) and Sunriver, respectively, the County will coordinate implementation of potential changes at these locations with the City and local community.

The TSP is not inclusive of all of the intersection projects that the County will pursue over the next twenty years. Rather, these have been identified as projects that the County can pursue to strategically improve the operational efficiency of specific intersections and important roadways. These projects can enhance system operations and can be completed as opportunities arise. In all cases, the County will review the appropriate

[1] Contigency factor determined based on the scope and scale of the planned project with larger projects typically utilizing a larger contigency factor.

intersection control options at the time of project development and delivery. The projects are illustrated in Figure 1 and in Table 1.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles

CI-8
CI-20
CI-18
CI-6
CI-4
CI-12
CI-16
CI-19
CI-9
CI-10
CI-15
CI-14
CI-1
CI-21
CI-13
CI-17
CI-11
CI-2
CI-7
CI-3
CI-5

Sisters UGB
Redmond UGB
Bend UGB
La Pine UGB

242
126
97
20
31

INDIAN FORD RD
WILT RD
HOLMES RD
PINE ST
NE 33RD ST
JORDAN RD
FRYREAR RD
FS 15
THREE CREEKS RD
BARR RD
CLINE FALLS RD
SE SHERMAN RD
SISEMORE RD
MORRILL RD
FS 4606
POWELL BUTTE HWY
ALFALFA MARKET RD
TODD LAKE RD
BEARWALLOW RD
SKYLINERS RD
WARD RD
DODDS RD
RICKARD RD
RIVER SUMMIT DR
FS 41
STOOKEY RD
GEORGE MILLICAN RD
CHINA HAT RD
FORD RD
GRINSTEAD RD
PINE MOUNTAIN RD
MERRILL RD
COFFEY RD
CAMP CREEK RD
MONTGOMERY RD
VAN LAKE RD
HARMON RD
LIZARD CREEK RD
FS 40
S CENTURY DR
SUGARPINE BUTTE RD
CASCADE LAKES HWY
BURGESS RD
DAY RD
HUNTINGTON RD
PAULINA LAKE RD
FS 44
MASTEN RD
FS 23
FS 22
MOFFITT RD
FOX BUTTE RD
NERSHALL RD
FREDERICK BUTTE RD
SCHRAEDER RD
GLASS BUTTE RD

County Intersection Project
Parks
Water
UGBs

Data Source: ODOT, Oregon State Parks, Deschutes County

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Figure 1

County Intersection Projects
Deschutes County, Oregon

Table 1. Intersection Changes and Associated Cost Estimates

ID	ROAD 1	ROAD 2	PROJECT DESCRIPTION	PRIORITY	COST ESTIMATE	BIKE/PED COMPONENT OF COST
CI-1	POWELL BUTTE HWY	BUTLER MARKET RD	ROUNDABOUT	HIGH	$2,500,000	-
CI-2	S CENTURY DR	SPRING RIVER RD	ROUNDABOUT	HIGH	$2,200,000	$200,000
CI-3	HUNTINGTON RD	SOUTH CENTURY DR	ROUNDABOUT	HIGH	$2,000,000	-
CI-4	NE 5TH ST	ONEAL HWY	REALIGNMENT	HIGH	$130,000	-
CI-5	BURGESS RD	DAY RD	SIGNAL	HIGH	$800,000	$100,000
CI-6	COYNER RD	NORTHWEST WAY	LEFT TURN LANES (NORTHWEST WAY ONLY)	HIGH	$400,000	-
CI-7	S CENTURY DR	VANDERVERT RD	ROUNDABOUT	MEDIUM	$2,100,000	-
CI-8	NW 43RD ST	NW CHINOOK DR/ NW POVEY AVE	REALIGNMENT, LEFT TURN LANE	MEDIUM	$700,000	-

ID	ROAD 1	ROAD 2	PROJECT DESCRIPTION	PRIORITY	COST ESTIMATE	BIKE/PED COMPONENT OF COST
CI-9	GRAYSTONE LN	PLEASANT RIDGE RD	REALIGNMENT, LEFT TURN LANE	MEDIUM	$2,700,000	-
CI-10	DESCHUTES MARKET RD	GRAYSTONE LN	SIGNAL WITH TURN LANES	MEDIUM	$2,300,000	-
CI-11	VENTURE LN	S CENTURY DR	ROUNDABOUT OR REALIGNMENT	MEDIUM	$2,100,000	-
CI-12	S CANAL BLVD	MCVEY AVE	REALIGNMENT	MEDIUM	$400,000	-
CI-13	CINDER BUTTE RD	CHEYENNE RD	REALIGNMENT	MEDIUM	$200,000	-
CI-14	JOHNSON RD	TYLER RD	REALIGNMENT	MEDIUM	$600,000	-
CI-15	CLINE FALLS HWY	COOK AVE/TUMALO RD	ROUNDABOUT OR REALIGNMENT	MEDIUM	$1,800,000	$200,000
CI-16	S CANAL BLVD	SW YOUNG AVE	REALIGNMENT	MEDIUM	$300,000	-
CI-17	BAKER RD	CINDER BUTTE RD	INTERSECTION IMPROVEMENTS	MEDIUM	$1,200,000	-

ID	ROAD 1	ROAD 2	PROJECT DESCRIPTION	PRIORITY	COST ESTIMATE	BIKE/PED COMPONENT OF COST
CI-18	NW LOWER BRIDGE WAY	NW 19TH ST	TURN LANES/REALIGNMENT	MEDIUM	$500,000	-
CI-19	OLD BEND REDMOND HWY	SWALLEY RD/ KIOWA DR	REALIGNMENT	LOW	$200,000	-
CI-20	NW LOWER BRIDGE WAY	NW 31ST ST	TURN LANES	LOW	$500,000	-
CI-21	BAKER RD	BROOKSWOOD BLVD	SIGNAL/TURN LANES	LOW	$1,400,000	$100,000

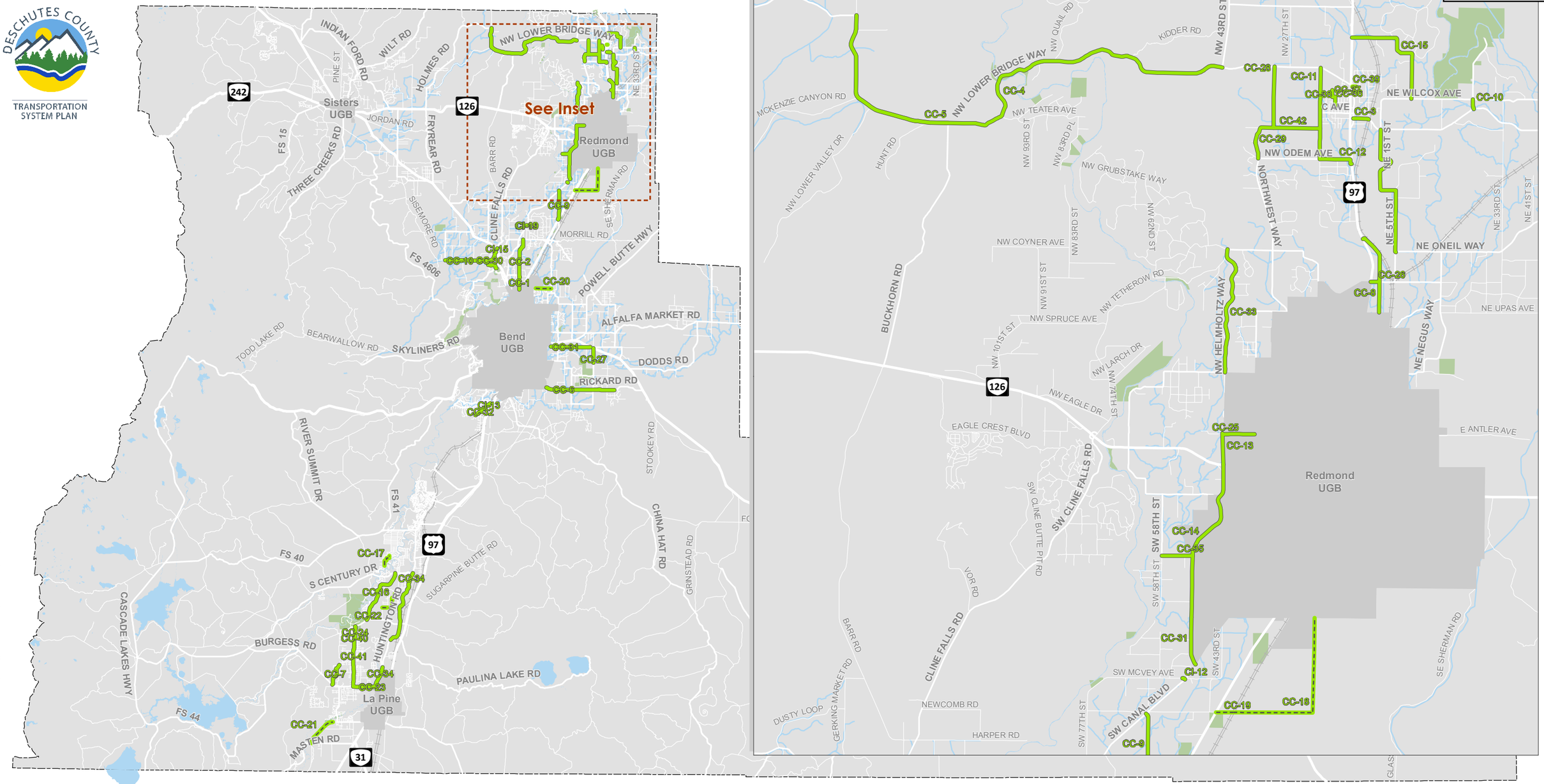
ROADWAY CHANGES

As discussed in the May 2021 memo, the needs assessment identified strategic roadway corridors where vehicular capacity and/or changes to the roadway characteristics may be needed to help support future growth and economic development in the region as well as to enhance the safety of all users. The identified projects also can help to strength connections between areas of the County and to other areas in Central Oregon. These projects are illustrated in Figure 2 and Table 2. The projects identified in Figure 2 will be implemented over time to reflect changing needs for the various users of the transportation system and economic development opportunities.

In reviewing Figure 2, it is helpful to note that many existing roadways within the County area not built to current County standards and that not all roadways within the County will be rebuilt to match these standards over the next twenty years. It is also important to note that changes to existing roadways (beyond those identified in the TSP) may be required as part of future land use approvals consistent with the roadway functional classification requirements.

In addition to the roadway changes, the County is proposing changes to the existing functional classification system based on review by County staff, input from stakeholders, and coordination with partner agencies. These changes will occur as part of TSP implementation. These are recommended changes are shown in Figure 3 and Table 3.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN



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County Road Projects
County Road Extension Projects
Parks
Water
UGBs

Data Source: ODOT, Oregon State Parks, Deschutes County

Figure 2

County Roadway Projects
Deschutes County, Oregon

Table 2. Roadway Changes and Associated Cost Estimates

ID	ROAD	BEGIN	END	PROJECT DESCRIPTION	PRIORITY	COST ESTIMATE	BIKE/PED COMPONENT OF COST
CC-1	HUNNELL RD	LOCO RD	RODGERS RD	NEW ROAD	HIGH	$1,600,000	$500,000
CC-2	HUNNELL RD	RODGERS RD	TUMALO RD	RECONSTRUCTION/ PAVE	HIGH	$3,900,000	$1,200,000
CC-3	SMITH ROCK WAY	HIGHWAY 97	RR XING/UGB TERREBONNE	WIDEN & OVERLAY	HIGH	$600,000	$200,000
CC-4	NW LOWER BRIDGE WAY	43RD ST	BUCKHORN RD	WIDEN & OVERLAY	HIGH	$7,300,000	$2,200,000
CC-5	NW LOWER BRIDGE WAY	BUCKHORN RD	HOLMES RD	WIDEN & OVERLAY	HIGH	$5,100,000	$1,500,000
CC-6	RICKARD RD	KNOTT RD/27TH ST	BOZEMAN TRAIL	WIDENING	MEDIUM	$2,300,000	$700,000
CC-7	SUNRISE LN	300' NORTH OF SHADY LN	BURGESS RD	COUNTY STANDARD IMPROVEMENT	MEDIUM	$1,300,000	$400,000
CC-8	ONEIL HWY	REDMOND CITY LIMITS	N. CANAL BLVD	WIDEN & OVERLAY	MEDIUM	$700,000	$200,000

ID	ROAD	BEGIN	END	PROJECT DESCRIPTION	PRIORITY	COST ESTIMATE	BIKE/PED COMPONENT OF COST
CC-9	61ST ST	S. CANAL BLVD	HWY 97	WIDEN & OVERLAY	MEDIUM	$1,800,000	$600,000
CC-10	TUMALO RESERVOIR RD	OB RILEY RD	COLLINS RD	WIDEN & OVERLAY	MEDIUM	$5,300,000	$1,600,000
CC-11	NW 19TH ST	NW LOWER BRIDGE WAY	NW ODEM AVE	COUNTY STANDARD IMPROVEMENT	MEDIUM	$2,700,000	$800,000
CC-12	NW ODEM AVE	NW 19TH ST	HWY 97	COUNTY STANDARD IMPROVEMENT	MEDIUM	$1,100,000	$300,000
CC-13	SW HELMHOLTZ WAY	OR 126	ANTLER AVE	WIDEN & OVERLAY	MEDIUM	$900,000	$300,000
CC-14	NE 1ST ST, NE KNICKERBOCKER AVE, AND NE 5TH ST	ONEIL HWY	SMITH ROCK WAY	WIDEN & OVERLAY	LOW	$3,400,000	$1,000,000
CC-15	NW EBY AVE, NE 5TH ST, NE CAYUSE AVE, AND NE 9TH ST	US 97	NE WILCOX RD	WIDEN & OVERLAY	LOW	$1,700,000	$500,000
CC-16	WHITTIER DR, WOLF ST, AND SHAWNEE CIRCLE	WHITTIER DR - END OF COUNTY MAINTENANCE	LAZY RIVER DR	COUNTY STANDARD IMPROVEMENT	LOW	$2,600,000	$800,000
CC-17	STELLAR DR, UPLAND RD, SAVAGE DR, WINCHESTER DR, BROWNING DR	STELLAR DR END OF COUNTY MAINTENANCE (@MILKY WAY)	STAGE STOP DR (@BROWNING DR/PITCH CT)	COUNTY STANDARD IMPROVEMENT	LOW	$1,300,000	$400,000

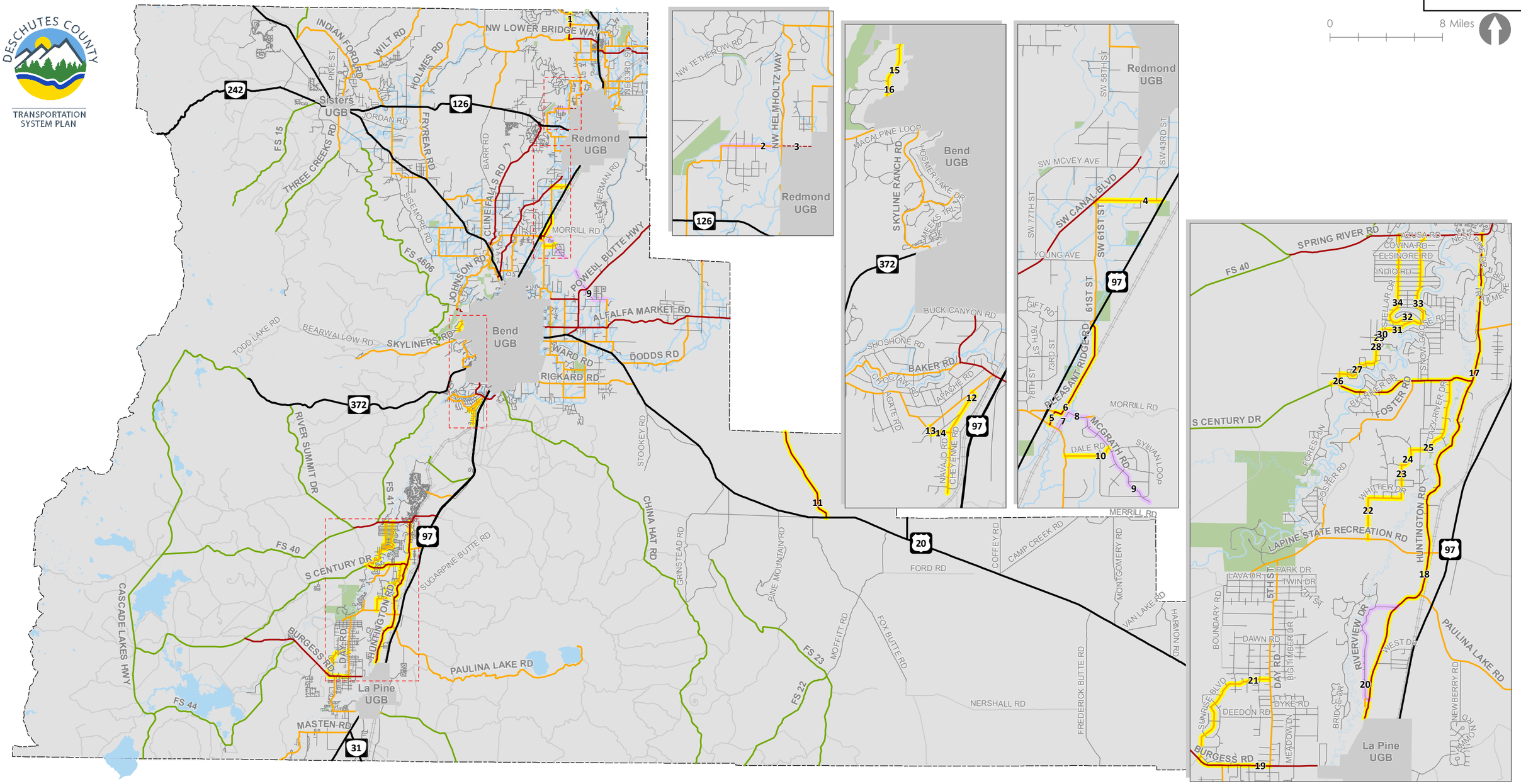
ID	ROAD	BEGIN	END	PROJECT DESCRIPTION	PRIORITY	COST ESTIMATE	BIKE/PED COMPONENT OF COST
CC-18	SW 19TH ST	END OF PAVEMENT – SW 19TH ST	BNSF RR CROSSING	ROADWAY EXTENSION	LOW	$7,300,000	$2,200,000
CC-19	SW 19TH ST	BNSF RR CROSSING	US 97 (@SW QUARRY AVE)	ROADWAY EXTENSION	LOW	$1,300,000	$400,000
CC-20	COOLEY RD	URBAN GROWTH BOUNDARY	DESCHUTES MARKET RD	ROADWAY EXTENSION	LOW	$2,900,000	$900,000
CC-21	6TH ST	MASTEN RD	6TH ST - END OF COUNTY MAINTENANCE	ROADWAY EXTENSION	LOW	$3,800,000	$1,100,000
CC-22	FOSTER RD	SOUTH CENTURY DR	LA PINE STATE REC. RD	COUNTY STANDARD IMPROVEMENT/ WIDEN & OVERLAY	LOW	$4,100,000	$1,200,000
CC-23	BURGESS RD	DAY RD	HUNTINGTON RD	WIDEN & OVERLAY	LOW	$1,900,000	$600,000
CC-24	5TH ST (LA PINE)	AMBER LN	LAPINE STATE REC. RD	WIDEN & OVERLAY	LOW	$800,000	$200,000
CC-25	W. ANTLER AVE	NW 35TH ST	NW HELMHOLTZ WAY	WIDEN & OVERLAY	LOW	$400,000	$100,000
CC-26	N. CANAL BLVD	ONEIL HWY	HIGHWAY 97	WIDEN & OVERLAY	LOW	$1,100,000	$300,000

ID	ROAD	BEGIN	END	PROJECT DESCRIPTION	PRIORITY	COST ESTIMATE	BIKE/PED COMPONENT OF COST
CC-27	GOSNEY RD	US 20	RICKARD RD	WIDEN & OVERLAY	LOW	$2,800,000	$800,000
CC-28	31ST ST	NW SEDGEWICK	NW LOWER BRIDGE WAY	WIDEN & OVERLAY	LOW	$1,000,000	$300,000
CC-29	NW ALMETER WAY	NORTHWEST WAY	NW SEDGEWICK AVE	WIDEN & OVERLAY	LOW	$500,000	$200,000
CC-30	BAILEY RD	US 20	TUMALO RESERVOIR RD	WIDEN & OVERLAY	LOW	$1,300,000	$400,000
CC-31	BEAR CREEK RD	CITY LIMITS	US 20	WIDEN & OVERLAY	LOW	$3,200,000	$1,000,000
CC-32	CINDER BUTTE RD	BAKER RD	MINNETONKA LN	WIDEN & OVERLAY	LOW	$1,300,000	$400,000
CC-33	NW HELMHOLTZ WAY	MAPLE AVE	NW COYNER AVE	WIDEN & OVERLAY	LOW	$2,500,000	$700,000
CC-34	HUNTINGTON RD	SOUTH CENTURY DR	BURGESS RD	WIDEN & OVERLAY, EXCLUDING PORTION FROM RIVERVIEW DR TO RIVERVIEW DR	LOW	$6,600,000	$2,000,000
CC-35	SW WICKIUP AVE	SW HELMHOLTZ WAY	SW 58TH ST	WIDEN & OVERLAY	LOW	$600,000	$200,000

ID	ROAD	BEGIN	END	PROJECT DESCRIPTION	PRIORITY	COST ESTIMATE	BIKE/PED COMPONENT OF COST
CC-36	4TH ST (TERREBONNE)	MAJESTIC ROCK DR	F AVE	COUNTY STANDARD IMPROVEMENT	LOW	$200,000	$100,000
CC-37	F AVE (TERREBONNE)	4TH ST	5TH ST	COUNTY STANDARD IMPROVEMENT	LOW	$100,000	-
CC-38	5TH ST (TERREBONNE)	F AVE	CENTRAL AVE	COUNTY STANDARD IMPROVEMENT	LOW	$300,000	$100,000
CC-39	H AVE (TERREBONNE)	11TH ST	12TH ST	COUNTY STANDARD IMPROVEMENT	LOW	$200,000	$100,000
CC-40	AMBER LN	5TH ST	DAY RD	REALIGNMENT	LOW	$300,000	$100,000
CC-41	DAY RD	AMBER LN	BURGESS RD	WIDEN & OVERLAY	LOW	$3,000,000	$900,000
CC-42	NW SEDGEWICK AVE	NW 19TH AVE	NW ALMETER WAY	WIDEN & OVERLAY	LOW	$1,000,000	$300,000

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



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Data Source: Deschutes County

- Highway
- Arterial
- Future Arterial
- Collector
- Forest Highway
- Local
- Unimproved
- Functional Class Upgrade
- Functional Class Downgrade
- Parks
- Water

Figure 3

Proposed Functional Roadway Classifications
Deschutes County, Oregon

Table 3. Proposed Change to Functional Classification

ID	ROAD	BEGIN	END	FUNCTIONAL CLASSIFICATION		COMMENTS
				CURRENT	PROPOSED	
1	43RD ST	NW LOWER BRIDGE WAY	NW CHINOOK AVE	COLLECTOR	ARTERIAL	ONE OF THE MAIN ROADS NW OF TERREBONNE, MAIN ACCESS TO CROOKED RIVER RANCH, 1/2 ACCESS ROADS TO CRR
2	NW MAPLE AVE	NW HELMHOLTZ WAY	NW 59TH ST	ARTERIAL	COLLECTOR	POSSIBLE DATABASE ERROR, UPDATING TO MATCH COUNTY MAPPING
3	NW MAPLE AVE	NW 35TH ST	NW HELMHOLTZ WAY	NA	ARTERIAL	FUTURE CONNECTION; CALLED OUT IN THE CITY OF REDMOND TSP; FROM TSP- "PROPOSED 3 LANE ARTERIAL TO IMPROVE CONNECTIVITY BETWEEN AND WITHIN EXISTING NEIGHBORHOODS, EMPLOYMENT, AND COMMERCIAL AREAS, TO PROVIDE CONNECTIONS TO NEWLY DEVELOPED OR DEVELOPING AREAS, AND TO PROVIDE ALTERNATIVE TRAVEL ROUTES FOR ALL MODELS TO EXISTING STREETS"
4	SW QUARRY AVE	US 97	S CANAL BLVD	LOCAL	COLLECTOR	IMPROVE CONNECTION TO CANAL WHICH IS AN ARTERIAL ROAD THAT RUNS PARALLEL TO 97, KEY ROAD SEGMENT IN CONNECTION TO NORTH TUMALO AREA FROM US 97, 2 LANE ROAD WITH NARROW GRAVEL SHOULDERS
5	GRAYSTONE LN	DESCHUTES MARKET RD	PLEASANT RIDGE RD	COLLECTOR	ARTERIAL	1275' SEGMENT THAT IS KEY IN THE EASTERN PARALLEL ROADS TO US 97, CONNECTION FOR US 97 ACCESS FROM TUMALO RD/DESCHUTES MARKET ROAD
6	PLEASANT RIDGE RD	GRAYSTONE LN	US 97	COLLECTOR	ARTERIAL	600' SEGMENT THAT IS KEY IN CONNECTION FOR US 97 ACCESS FROM TUMALO RD/DESCHUTES MARKET ROAD
7	19TH ST	DESCHUTES MARKET RD	MORRILL RD	COLLECTOR	LOCAL	1750' SEGMENT THAT CONNECTS TO RURAL FARMLAND AREA NE OF BEND, NO MAJOR TRAFFIC GENERATORS
8	MORRILL RD	19TH ST	MCGRATH RD	COLLECTOR	LOCAL	1675' SEGMENT THAT CONNECTS TO RURAL FARMLAND AND HIKING AREA NE OF BEND, NO MAJOR TRAFFIC GENERATORS, THE REST OF MORRILL ROAD IS LOCAL

ID	ROAD	BEGIN	END	FUNCTIONAL CLASSIFICATION		COMMENTS
				CURRENT	PROPOSED	
9	MCGRATH RD	MORRILL RD	END	COLLECTOR	LOCAL	ROAD THAT CONNECTS TO RURAL FARMLAND AREA NE OF BEND, NO MAJOR TRAFFIC GENERATORS
10	DALE RD	DESCHUTES MARKET RD	MCGRATH RD	LOCAL	COLLECTOR	4,180' SEGMENT THAT CONNECTS RURAL LAND TO DESCHUTES MARKET ROAD
11	GEORGE MILLICAN RD	US 20	COUNTY LINE	LOCAL	ARTERIAL	POSSIBLE DATABASE ERROR, UPDATING TO MATCH COUNTY MAPPING
12	NAVAJO RD	CINDER BUTTE RD	END	LOCAL	COLLECTOR	TRAFFIC FROM HOMES, DRIVEWAYS EVERY 50-100', 1' PAVED SHOULDER, CONNECTS TO CINDER BUTTE ROAD WHICH IS A COLLECTOR
13	MINNETONKA LN	CINDER BUTTE RD	CHEROKEE DR	LOCAL	COLLECTOR	TRAFFIC FROM HOMES, DRIVEWAYS EVERY 50-100', NO PAVED SHOULDER, CONNECTS TO CINDER BUTTE ROAD WHICH IS A COLLECTOR
14	CHEROKEE DR	MINNETONKA LN	NAVAJO RD	LOCAL	COLLECTOR	TRAFFIC FROM HOMES, DRIVEWAYS EVERY 50-100', 1' PAVED SHOULDER, CONNECTS TO MINNETONKA LANE AND NAVAJO ROAD THAT ARE BEING UPGRADED AS WELL
15	MCCLAIN DR	CITY LIMITS	SAGE STEPPE DR	LOCAL	COLLECTOR	POSSIBLE DATABASE ERROR, UPDATING TO MATCH COUNTY MAPPING
16	SAGE STEPPE DR	MCCLAIN DR	CITY LIMITS	LOCAL	COLLECTOR	1580' SEGMENT IN NEW DEVELOPED AREA, CONTINUES MCCLAIN DRIVE PROPOSED UPGRADE OF COLLECTOR
17	S CENTURY DR	SPRING RIVER RD	DESCHUTES RIVER XING	COLLECTOR	ARTERIAL	CONNECTION TO THE COMMUNITIES OF THREE RIVERS, CALDERA SPRINGS, AND CROSSWATER
18	HUNTINGTON RD	S CENTURY DR	CITY LIMITS	COLLECTOR	ARTERIAL	CONNECTION BETWEEN LA PINE, THREE RIVERS, AND SUNRISE; GRAVEL SHOULDER AND PAVED SHOULDER 0'-2'
19	BURGESS RD	DAY RD	SUNRISE BLVD	COLLECTOR	ARTERIAL	POSSIBLE DATABASE ERROR, UPDATING TO MATCH COUNTY MAPPING

ID	ROAD	BEGIN	END	FUNCTIONAL CLASSIFICATION		COMMENTS
				CURRENT	PROPOSED	
20	RIVERVIEW DR	HUNTINGTON RD	HUNTINGTON RD	COLLECTOR	LOCAL	PARALLEL TO HUNTINGTON ROAD, RURAL CONNECTIONS TO RIVER AND HOMES, CURVY ROAD
21	SUNRISE BLVD	BURGESS RD	DAY RD	LOCAL	COLLECTOR	CONNECTION TO MANY HOMES, DRIVEWAYS EVERY 50-300', GRAVEL SHOULDERS, PAVED SHOULDERS 0-2'
22	WHITTIER DR	LA PINE STATE REC. RD	WOLF ST	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO LA PINE STATE PARK FROM THREE RIVERS AND OTHER COMMUNITIES TO THE NORTH; 1/2 IS A GRAVEL ROAD, OTHER HALF IS PAVED WITH NO STRIPING
23	WOLF ST	WHITTIER DR	SHAWNEE CIRCLE	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO LA PINE STATE PARK FROM THREE RIVERS AND OTHER COMMUNITIES TO THE NORTH; GRAVEL ROAD
24	SHAWNEE CIRCLE	WOLF ST	LAZY RIVER DR	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO LA PINE STATE PARK FROM THREE RIVERS AND OTHER COMMUNITIES TO THE NORTH; GRAVEL ROAD
25	LAZY RIVER DR	SHAWNEE CIRCLE	S CENTURY DR	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO LA PINE STATE PARK FROM THREE RIVERS AND OTHER COMMUNITIES TO THE NORTH
26	BONANZA LN	S CENTURY DR	STAGE STOP DR	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES AND BIG RIVER GROUP CAMPGROUND
27	STAGE STOP DR	BONANZA LN	BROWNING DR	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES
28	BROWNING DR	STAGE STOP DR	WINCHESTER DR	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES
29	WINCHESTER DR	BROWNING DR	SAVAGE DR	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES
30	SAVAGE DR	WINCHESTER DR	UPLAND RD	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES

ID	ROAD	BEGIN	END	FUNCTIONAL CLASSIFICATION		COMMENTS
				CURRENT	PROPOSED	
31	UPLAND RD	SAVAGE DR	MILKY WAY	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES
32	MILKY WAY	STELLAR DR	SOLAR DR	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES
33	SOLAR DR	MILKY WAY	SPRING RIVER RD	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES
34	STELLAR DR	MILKY WAY	SPRING RIVER RD	LOCAL	COLLECTOR	ENHANCE CONNECTION ROUTE TO WEST THREE RIVERS HOMES

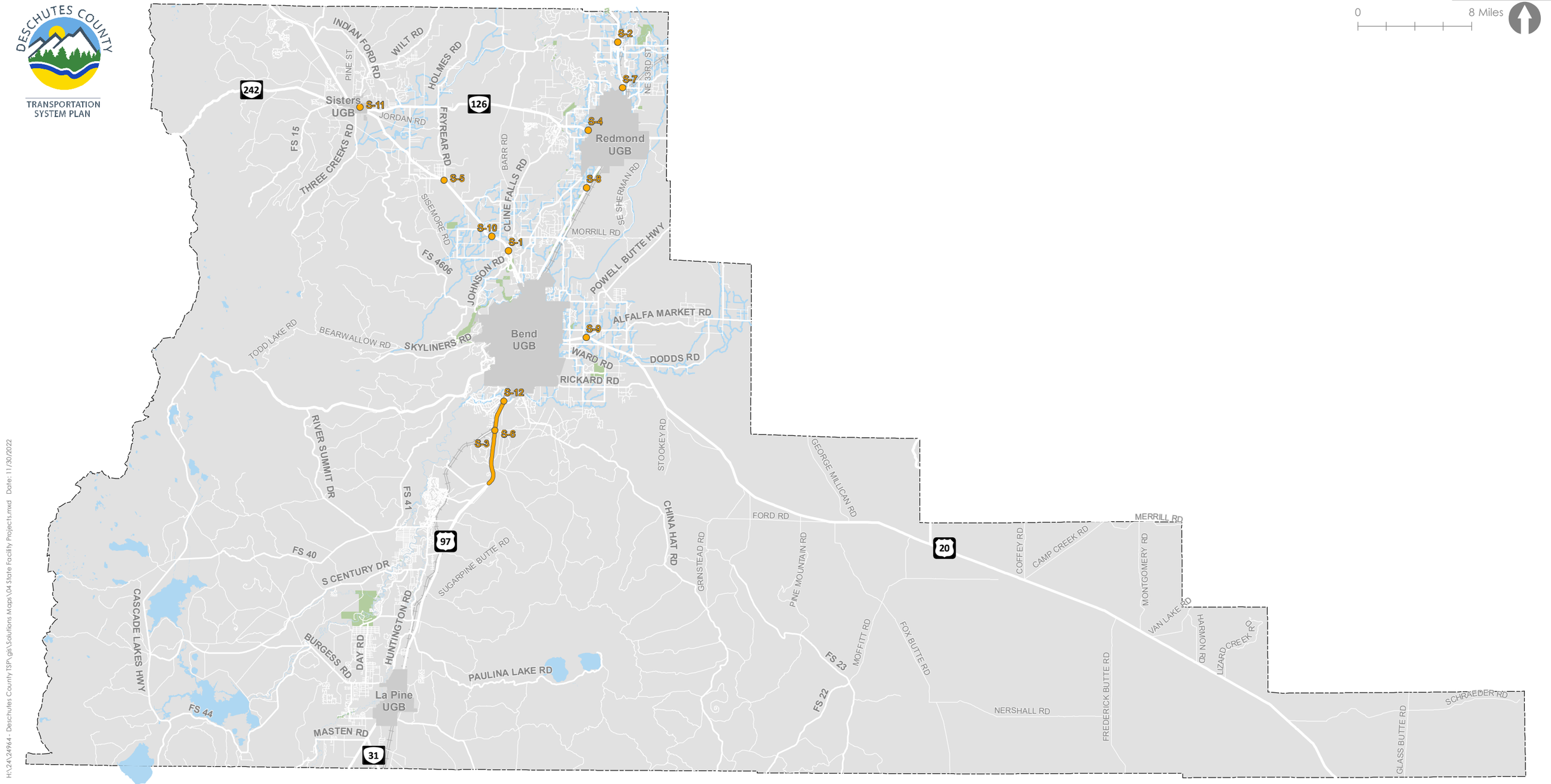
ODOT Intersections and Roadways

Future changes to a number of ODOT intersections and roadways within the County have been identified in previously adopted and/or acknowledged transportation plans. Through discussions between ODOT and County staff, Figure 4 and Table 4 identify the key locations for inclusion into the TSP. In addition to the listed projects, the County will continue to partner with ODOT to monitor and identify future projects that help to address the needs of local, regional and statewide travel.

As the road authority for projects on the state highway system, the timing, need, and funding for projects will directed by ODOT rules and regulations. In some cases, the County may partner with ODOT on implementation whereas in others, the projects will be planned, designed and constructed by ODOT.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



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Data Source: ODOT, Oregon State Parks, Deschutes County

State Highway Projects
Parks
Water
UGBs

Figure 4

State Facility Projects
Deschutes County, Oregon

Table 4. ODOT Intersections Changes and Associated Cost Estimates

ID	ROAD 1	ROAD 2	DESCRIPTION	NOTES	PRIORITY	COST	COUNTY CONTRIBUTION	BIKE/PED COMPONENT OF COUNTY CONTRIBUTION
S-1	US 20	COOK AVE/O.B. RILEY RD	TWO-LANE ROUNDABOUT	ODOT PROJECT PROGRAMMED FOR 2023	HIGH	$11,000,000	$9,100,000	$1,800,000
S-2	US 97	LOWER BRIDGE WAY	GRADE SEPARATED INTERCHANGE FROM US 97	INTERCHANGE PROJECT IDENTIFIED VIA US97: TERREBONNE/ LOWER BRIDGE WAY IMPROVEMENT PROJECT. ODOT PROJECT PROGRAMMED FOR 2023.	HIGH	$30,200,000	$10,000,000	$700,000
S-3	US 97	BAKER ROAD TO LAVA BUTTE	IMPLEMENTATION OF MULTIUSE PATH	ODOT PROJECT CURRENTLY IN DESIGN PHASE	HIGH	$3,000,000	-	-
S-4	OR 126	SW HELMHOLTZ WAY	TRAFFIC SIGNAL OR INTERSECTION IMPROVEMENT	COORDINATE WITH CITY OF REDMOND & ODOT ON SPECIFIC PROJECT. ALSO IDENTIFIED WITHIN REDMOND TSP.	MEDIUM	$1,000,000	$500,000	$100,000
S-5	US 20	FRYREAR RD	TURN LANE ON HIGHWAY, REALIGN	INTERSECTION IDENTIFIED WITHIN DESCHUTES COUNTY TSAP	MEDIUM	$3,000,000	$2,500,000	-
S-6	US 97	DESCHUTES RIVER WOODS SOUTH INTERCHANGE PROJECT	INTERCHANGE	THIS PROJECT WILL PROVIDE A GRADE SEPARATED INTERCHANGE ON US 97 THAT WILL CONNECT THE DESCHUTES RIVER WOODS SUBDIVISION (WEST) AND THE HIGH DESERT MUSEUM AREA (EAST). A FUTURE REFINEMENT PROCESS (INTERCHANGE AREA MANAGEMENT PLAN, OR OTHER) WILL DETERMINE THE CONNECTION POINT TO THE DRW. A GRADE SEPARATION OF THE BNSF RXR WILL ALSO BE REQUIRED.	LOW	$42,900,000	$10,000,000	-
S-7	US 97	PERSHALL-O'NEIL HWY	IMPLEMENT COMPONENTS OF THE INTERCHANGE AREA MANAGEMENT PLAN (IAMP) ADOPTED FOR THIS AREA.	THE COUNTY WILL COORDINATE WITH ODOT AND THE CITY OF REDMOND ON THE APPROPRIATE COUNTY INVOLVEMENT TO IMPLEMENT IAMP PROJECTS.	LOW	MULTIPLE PROJECTS	-	-

ID	ROAD 1	ROAD 2	DESCRIPTION	NOTES	PRIORITY	COST	COUNTY CONTRIBUTION	BIKE/PED COMPONENT OF COUNTY CONTRIBUTION
S-8	US 97	QUARRY RD	GRADE SEPARATED INTERCHANGE FROM US 97	PROJECT TIMING AND NEED TO BE FURTHER REFINED. MAY REQUIRE STATEWIDE PLANNING GOALS EXCEMPTIONS PRIOR TO IMPLEMENTATION. NEED FOR PROJECT LIKELY DRIVEN BY ECONOMIC DEVELOPMENT WITHIN REDMOND INDUSTRIAL LANDS	LOW	$50,000,000	$5,000,000	-
S-9	US 20	POWELL BUTTE HWY	ROUNDABOUT	PROJECT TIMING AND NEED TO BE FURTHER REFINED.	LOW	$5,000,000	$500,000	-
S-10	US 20	PINEHURST RD	TURN LANE ON HIGHWAY, REALIGN	PROJECT TIMING AND NEED TO BE FURTHER REFINED.	LOW	$3,000,000	$2,500,000	-
S-11	US 20	LOCUST ST	ROUNDABOUT	COUNTY CONTRIBUTION TO ODOT/ CITY OF SISTERS PROJECT	LOW	$6,000,000	$1,000,000	-
S-12	US 97	BAKER ROAD	IMPLEMENT COMPONENTS OF THE INTERCHANGE AREA MANAGEMENT PLAN (IAMP) FOR THIS AREA.	THE COUNTY WILL COORDINATE WITH ODOT AND THE CITY OF BEND ON THE APPROPRIATE COUNTY INVOLVEMENT TO IMPLEMENT IAMP PROJECTS.	LOW	MULTIPLE PROJECTS	-	-

PEDESTRIAN FACILITIES

Figure 5 and Table 5 reflect priorities for changes to the pedestrian system within Terrebonne and Tumalo. In general, the sidewalks identified in the TSP reflect providing sidewalks between the residential areas and schools as well as to provide connections to neighborhood commercial areas in the two communities.

Other changes to the pedestrian system as well as pedestrian crossing improvements may be provided in the future based on project development and design as well as funding opportunities. The County may require sidewalk construction as part of future land use actions as well, consistent with the Development Code requirements.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

TON RD
SADDLE DR
BIRDSONG LN
RUDI RD
SMOKEY BUTTE DR
GERKING MARKET RD
CLINE FALLS RD
SWALLEY RD
STURGEON RD
HIGHLAND RD
HIGH RIDGE DR
ELDER LN
HOPPER RD
PUTNAM LN
PINEHURST RD
TUMALO RD
2ND ST
COOK AVE
BP-3
20
BP-2
4TH ST
BP-6
BRUCE AVE
WHARTON AVE
WINSTON LOOP
SIMON RD
BP-1
BP-10
WOOD AVE
RIVERVIEW AVE
ELM LN
JUNIPER LN
CEDAR LN
BILL MARTIN RD
RESEARCH RD
BAILEY RD
OB RILEY RD
EL DORADO TRL
RODEO DR
QUAIL DR
TUMALO RESERVOIR RD
OLD BEND REDMOND HWY
HIGH MOWING LN
RIDGEWOOD DR
SCHIBEL RD
CROSSWINDS RD
TUMALO RIM DR
JOHNSON RD
SLEEWOOD RD
0
0.5Miles

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Pedestrian Projects
Parks
Water
Unincorporated Cities

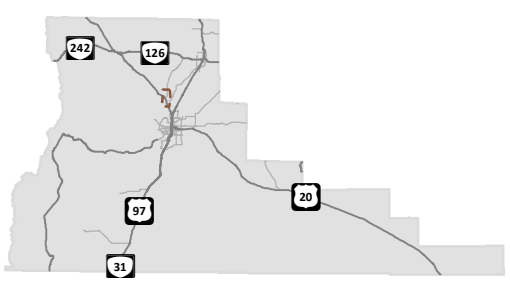

Figure 5A

Data Source: Deschutess County

Pedestrian Facility Projects
Tumalo , Oregon

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

NW LOWER BRIDGE WAY
NW 12TH ST
FOSS DR
12TH LN
17TH LN
18TH CT
ANGUS LN
ANGUS CT
13TH ST
H AVE
NE 1ST ST
MORNING GLORY DR
WOOD LN
BARBERRY DR
MAJESTIC ROCK DR
FORSTER DR
15TH ST
G AVE
16TH ST
F AVE
4TH ST
E AVE
2ND ST
6TH ST
7TH ST
8TH ST
11TH ST
97
CENTRAL AVE
NW 18TH ST
3RD ST
5TH ST
9TH ST
19TH ST
NW 19TH ST
BP-7
C AVE
BP-8
BP-4
BP-5
B AVE
BP-9
NW SMITH ROCK WAY
A AVE
17TH ST
NW SEDGEWICK AVE
NW ODEM AVE
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0.25Miles

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Pedestrian Projects
Parks
Water
Unincorporated Cities

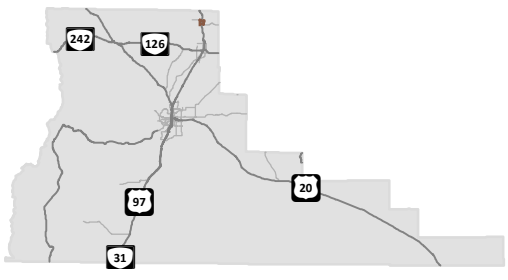

Figure 5B

Pedestrian Facility Projects
Terrebonne , Oregon

Data Source: Deschutess County

Table 5. Pedestrian Facilities and Associated Cost Estimates

ID	ROAD	BEGIN	END	DESCRIPTION	PRIORITY	COST
BP-1	7TH ST (TUMALO)	US 20	COOK AVE	5' SIDEWALK ON BOTH SIDES	HIGH	$300,000
BP-2	4TH ST (TUMALO)	WOOD AVE	BRUCE AVE	5' SIDEWALKS ON BOTH SIDES	HIGH	$300,000
BP-3	2ND ST/COOK AVE SIDEWALKS (SRTS-TUMALO)	US 20	TUMALO SCHOOL	5' SIDEWALKS IN AREAS WITHOUT	MEDIUM	$1,700,000
BP-4	5TH ST (TERREBONNE)	B AVE	C AVE	5' SIDEWALK ON EAST SIDE ONLY	MEDIUM	$200,000
BP-5	B AVE (TERREBONNE)	5TH ST	6TH ST	5' SIDEWALK, NORTH SIDE ONLY	MEDIUM	$200,000
BP-6	5TH ST (TUMALO)	WOOD AVE	COOK AVE	5' SIDEWALKS ON BOTH SIDES	MEDIUM	$500,000
BP-7	C AVE (TERREBONNE)	6TH ST	NW 19TH ST	5' SIDEWALKS ON BOTH SIDES	MEDIUM	$1,000,000
BP-8	C AVE (TERREBONNE)	US 97	16TH ST	5' SIDEWALK ON SOUTH SIDE ONLY	LOW	$600,000
BP-9	11TH ST (TERREBONNE)	CENTRAL AVE	U.S. 97	5' SIDEWALKS ON BOTH SIDES	LOW	$1,100,000
BP-10	8TH ST (TUMALO)	COOK AVE	RIVERVIEW AVE	5' SIDEWALKS ON BOTH SIDES	LOW	$400,000

BICYCLE FACILITIES

Deschutes County provides and maintains useable shoulders along roadways for use by people riding bikes though not all roadways are currently improved to include such facilities. The County has an aspirational bicycle route system, referred to as County Bikeways, where useable shoulders will be provided, as practical, as part of ongoing maintenance and roadway improvements projects. Facilities designated as County Bikeways are shown in Figure 6. Crossing improvements, though not specifically identified in the TSP, may be provided when bicycle facilities are constructed that cross major roads. The need for and type of crossing treatments as well as other facility changes will be evaluated at the time of project development and design. The County may provide such facilities as standalone projects or in conjunction with scheduled maintenance activities. At the time this memo was written, the County was evaluating potential changes to the Development Code requirements (as included in the County Code Title 22 requirements) related to bicycle facility requirements as part of land use actions. Future changes to Title 22 will be considered as part of TSP implementation.

In addition, as part of implementation of the TSP, changes to the bicycle network will continue to be informed as part of the County's Bicycle and Pedestrian Committee (BPAC) activities. BPAC's mission is "to promote and encourage safe bicycling and walking as a significant means of transportation in Deschutes County" and focuses on both changes to the system as well as public education and awareness and a review of safety and funding needs as part of implementation of potential projects.

As part of that coordination, Table 6 and Table 7 identify regional bicycle connections that have been developed and prioritized with input from BPAC. Table 5 identifies routes that would connect communities and serve broad transportation functions, such as commuting, recreation, or daily services. Table 6 identifies routes that primarily provide connections to recreational opportunities, which could also serve to improve transportation mode choices available to County residents and visitors.

Over time, strengthening the connections summarized in the tables will help to expand the overall bicycle infrastructure within the County. Specific routes, including roadways and specific projects needed to support or develop these routes, have not yet been identified. In addition, the funding to construct and maintain these facilities has not yet been identified. In the future, these costs may be funded by the County and/or a variety of agency partners, pending the actual alignment and project elements identified. The County will work with BPAC and agency partners, including ODOT and local jurisdictions, to advance development and implementation of preferred routes as resources allow.

Finally, the County, by reference, will adopt the Map 11 of the Bend Parks and Recreation District's (BPRD's) Comprehensive Plan (2018)[2] identifying future trail connections to parks within the County but outside the Bend (UGB) as well as those within the Deschutes National Forest. As noted in the BPRD plan, the trails have been prioritized for implementation but the actual alignments in the map are approximate and subject to future easement/user agreements to enable trail construction, availability of funding, and securing agreements from affected property owners for trailheads and parking areas. As part of TSP implementation, the County will coordinate with BPRD on the planning for and timing of new trails. It is important to note that not all County roadways are currently or will be designed to provide roadside parking for trailhead users. The County will work with BPRD to identify appropriate locations in the future to provide safe access for trail users as well as to roadway users not accessing the parks/trails.

[2] BPRD-Comp-Plan-Adopted-for-web.pdf (bendparksandrec.org)

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

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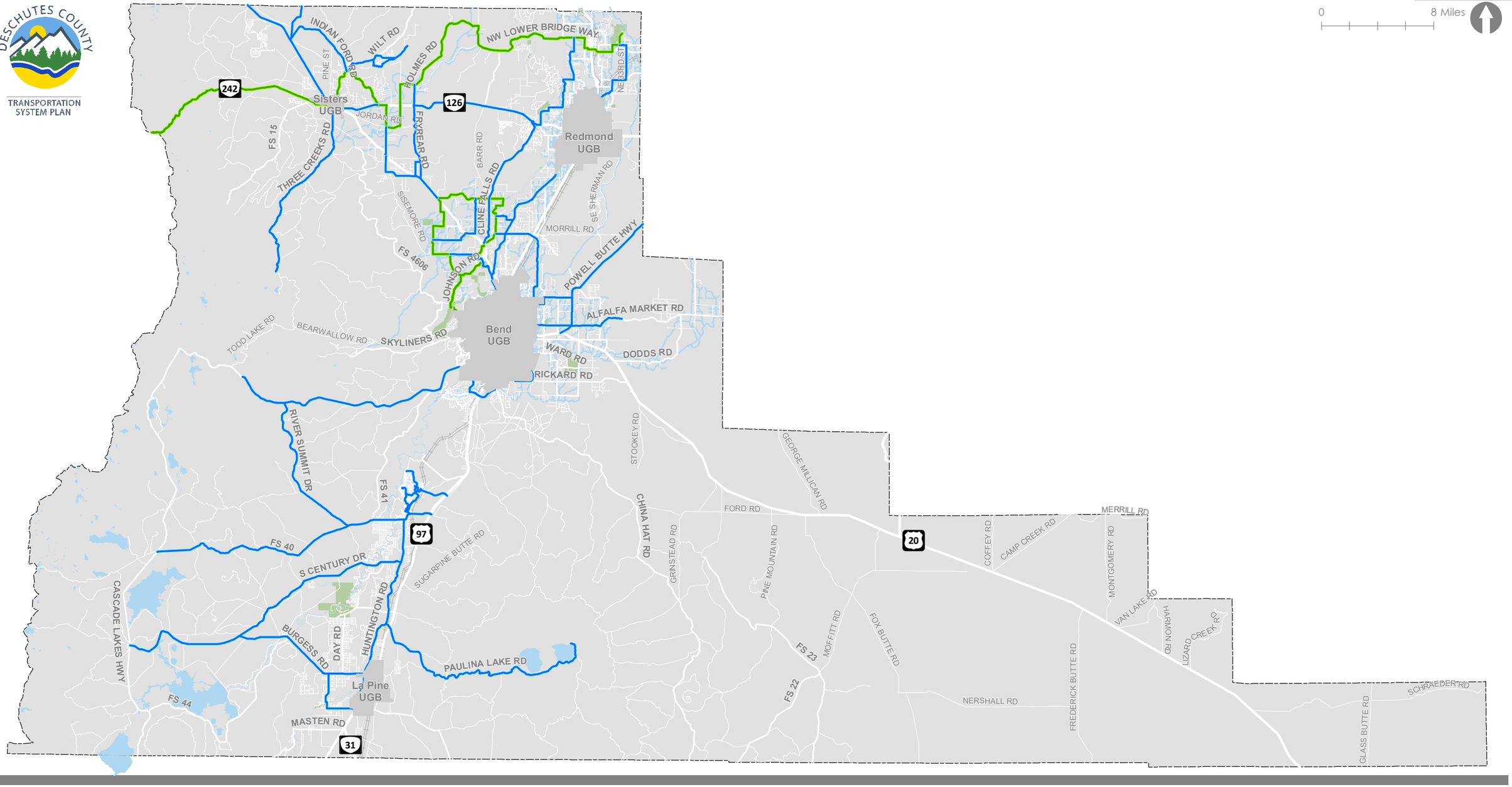

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County Bikeway
Oregon Scenic Bikeways
Parks
Water
UGBs

Data Source: ODOT, Oregon State Parks, Deschutes County

Figure 6

Bikeways
Deschutes County, Oregon

Table 6. Bicycle Route Community Connections

COMMUNITY CONNECTION	DESCRIPTION	PRIORITY
BEND TO REDMOND	VARIOUS ROUTES POSSIBLE. PREFERRED ROUTE ALIGNMENT HAS NOT BEEN IDENTIFIED.	HIGH
BEND TO SUNRIVER	ROUTE CURRENTLY IN DESIGN AS A MULTI-USE PATH ALONG US 97 (PROJECT S-3). WOULD CONNECT BEND, LAVA LANDS, AND SUNRIVER.	HIGH
BEND TO SISTERS	COULD INCLUDE BEND TO TUMALO AND/OR BEND TO TUMALO STATE PARK CONNECTION, WHICH IS ALSO A PRIORITY ROUTE, AND WOULD LIKELY INCLUDE COUNTY AND ODOT FACILITIES. FUTURE COORDIATION WILL BE REQUIRED. ADDITIONAL SISTERS TO TUMALO CONNECTION MAY BE NECESSARY IF BEND TO SISTERS ROUTE DOES NOT INLCUDE THE TUMALO COMMUNITY.	HIGH
REDMOND TO SISTERS	ROUTE COULD OCCUR ADJACENT TO OR WITHIN ODOT RIGHT-OF-WAY (OR 126)	HIGH
REDMOND TO TERREBONNE	ROUTE WOULD LIKELY OCCUR ADJACENT TO OR WITHIN ODOT RIGHT-OF-WAY (US 97)	HIGH
REDMOND TO TUMALO	ROUTE MAY OVERLAP WITH OTHER ROUTE DEVELOPMENT, SUCH AS BEND TO SISTERS OR POSSIBLE REDMOND TO SISTERS.	HIGH
SISTERS TO TERREBONNE & SMITH ROCK STATE PARK	ROUTE IS CURRENTLY PART OF A SCENIC BIKEWAY. IMPROVEMENTS TO THE EXISTING ROUTE, INCLUDING IMPROVED CROSSINGS, ARE NEEDED.	HIGH
SISTER TO BLACK BUTTE RANCH	SIGNIFICANT PRIOR PLANNING WHICH ASSUMED A MULTI-USE PATH PARALLEL US 20.	HIGH
DESCHUTES RIVER WOODS TO EAST SIDE OF BEND	ROUTE WOULD CONNECT AREA SOUTH OF BEND TO NEW DEVELOPMENT AREAS AND RECREATIONAL OPPORTUNITIES WITHIN OR NEAR SOUTHEAST BEND. ROUTE COULD BENEFIT FROM TRAIL CONSTRUCTION WITHIN FUTURE SE BEND DEVELOPMENTS.	MEDIUM
SUNRIVER TO LA PINE	ODOT IS CURRENTLY IN THE PLANNING STAGES TO IDENTIFY PREFERED ROUTE LOCATION.	MEDIUM
BEND TO PRINEVILLE	ROUTE COULD UTILIZE STATE HIGHWAYS AND/OR COUNTY ROADS. COORDINATION WITH ODOT AND CROOK COUNTY WILL BE REQUIRED.	LOW
REDMOND TO POWELL BUTTEE & PRINEVILLE	ROUTE COULD UTILIZE STATE HIGHWAYS AND/OR COUNTY ROADS. COORDINATION WITH ODOT AND CROOK COUNTY WILL BE REQUIRED.	LOW
BLACK BUTTE RANCH TO CAMP SHERMAN	ROUTE WOULD REQUIRE COORDINATION WITH FOREST SERVICE	LOW

Table 7. Bicycle Route Recreation Connections

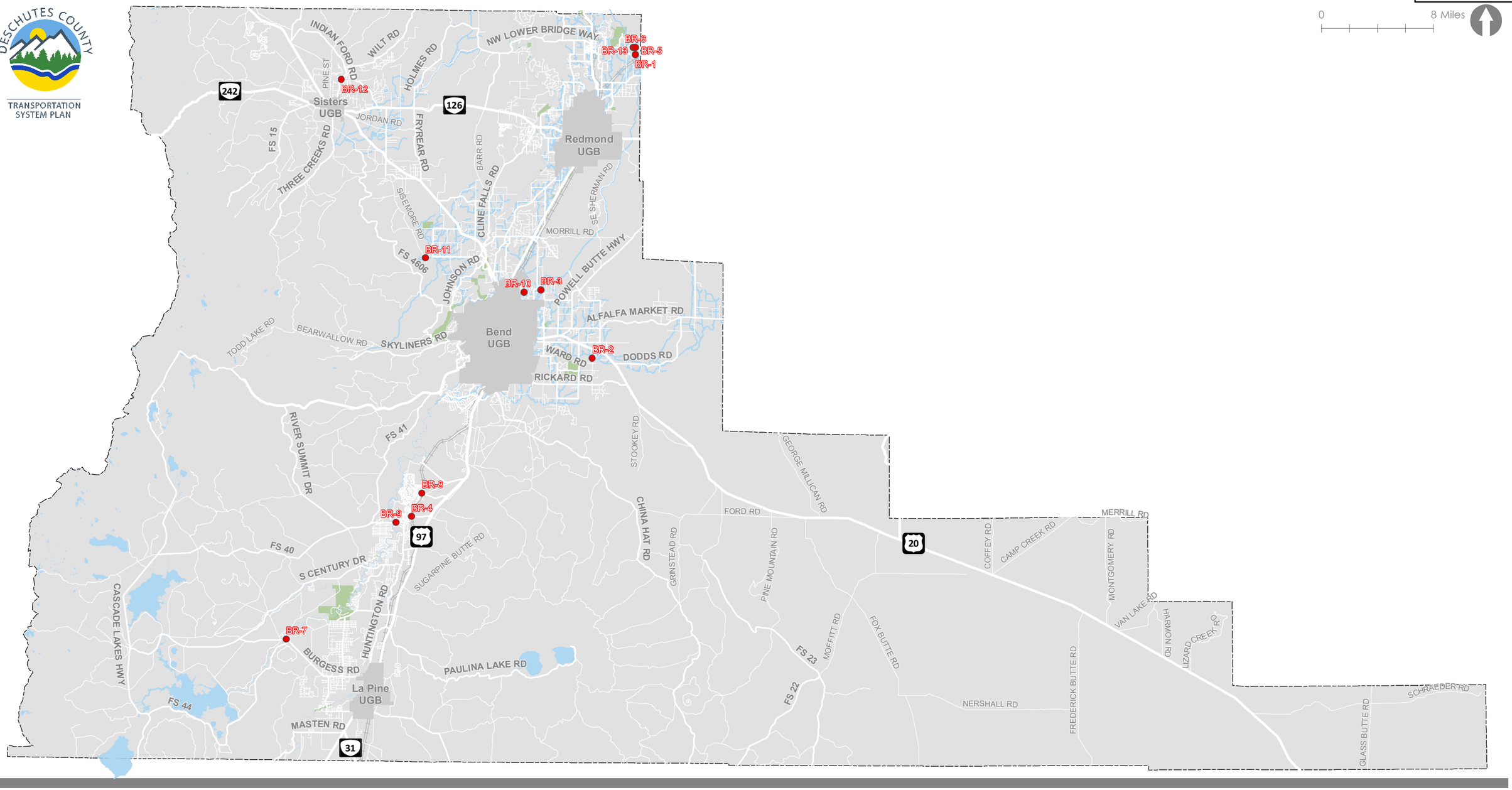
COMMUNITY CONNECTION	DESCRIPTION	PRIORITY
BEND TO CASCADES LAKES TRAILHEADS	CASCADE LAKES HIGHWAY CORRIDOR AND BICYCLE FACILITIES STUDY (2019) IDENTIFIES MANY NEEDED IMPROVEMENTS ALONG THE CORRIDOR. ROUTE WOULD PROVIDE ACCESS TO SIGNIFICANT RECREATIONAL OPPORTUNITIIES. ROUTE HIGHLY UTILIZED TODAY.	MEDIUM
BEND TO TUMALO STATE PARK	CURRENT CONDITIONS RESTRICT THE ROUTE TO PEDESTRIAN ONLY. BPRD HAS CONDUCTED PRIOR PLANNING ON THIS ROUTE, INCLUDING A CONNECTION TO RILEY RANCH.	MEDIUM
TUMALO TO TUMALO STATE PARK	ROUTE WOULD CONNECT TUMALO COMMUNITY TO RECREATION OPPORTUNITIES. COULD BE PART OF BEND TO SISTERS AND/OR TUMALO CONNECTION.	MEDIUM
LA PINE TO ROSLAND PARK	ROUTE WOULD CONNECT PLANNED MULTI-USE PATH WITHIN LA PINE TO ROSLAND PARK TO THE WEST.	MEDIUM
REDMOND TO RADLANDS RECREATION AREA	ROUTE WOULD CONNECT REDMOND TO RECREATION AREAS EAST OF TOWN. COORDINATION WITH REDMOND WILL BE NECESSARY.	MEDIUM
SUNRIVER TO CASCADE LAKES TRAIL HEADS	ROUTE EXISTS AND IS HEAVILY UTILIZED TODAY. IMPROVEMENTS NECESSARY TO INCREASE SHOULDER WIDTH IN SOME AREAS. POSSIBLE COORDINATION WITH SUNRIVER AND ODOT.	MEDIUM
REDMOND TO RECREATION AREAS TO WEST	ROUTE WOULD CONNECT REDMOND TO RECREATION AREAS, INCLUDING DESCHUTES RIVER, EAGLE CREST, CLINE BUTTE RECREATIONAL AREA, ETC.	LOW
BEND TO RECREATION AREAS TO THE EAST	ROUTE TO CONNECT BEND WITH RECREATION AREAS TO THE EAST INCLUDING RESORTS, BLM LANDS, BIKING TRAILS, ETC. LIKELY COORDINATION WITH BPRD.	LOW
CLINE BUTTE RECREATION AREA TO TUMALO	ROUTE INCLUDES PORITION OF TWO BRIDGES SCENIC BIKEWAY. IMPROVEMENTS TO THE EXISTING ROUTE, INCLUDING IMPROVED CROSSINGS, ARE NEEDED.	LOW

BRIDGES

In 2020, the majority of the County's bridges were rated as being structurally sufficient. Three bridges were noted as having rating associated with a "structurally deficient" categorization, including Sisemore Road at Couch, Gribbling Road across the Central Oregon Irrigation District canal, and Foot Bridge across the Crooked River. The County regularly reviews the structural ratings of its bridges and makes changes as funding and other opportunities arise. Projects to address these deficiencies and other county priorities are shown in Figure 7 and Table 8. These projects represent the County's current priorities but do not encapsulate all of the bridges that may be modified over time.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



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Bridge Projects
Parks
Water
UGBs

Data Source: ODOT, Oregon State Parks, Deschutes County

Figure 7

Bridge Projects
Deschutes County, Oregon

Table 8. Bridge Projects and Associated Cost Estimates

ID	ROAD	LOCATION	DESCRIPTION	PRIORITY	COST
BR-1	SMITH ROCK WAY	NORTH UNIT CANAL	REPLACEMENT	HIGH	$1,000,000
BR-2	GRIBBLING RD	CENTRAL OREGON CANAL	REPLACEMENT	HIGH	$900,000
BR-3	HAMEHOOK RD	-	REPLACEMENT	HIGH	$1,100,000
BR-4	S CENTURY DR	BNSF RR	REHABILITATION	HIGH	$2,700,000
BR-5	WILCOX AVE	-	REMOVAL	MEDIUM	$200,000
BR-6	WILCOX AVE	-	REMOVAL	MEDIUM	$100,000
BR-7	BURGESS RD	-	REPLACEMENT	MEDIUM	$2,100,000
BR-8	COTTONWOOD DR	BNSF RR	REPLACEMENT	LOW	$3,800,000
BR-9	SPRING RIVER RD	DESCHUTES RIVER	REHABILITATION	LOW	$400,000
BR-10	OLD DESCHUTES RD	PILOT BUTTE CANAL	REPLACEMENT	LOW	$400,000

ID	ROAD	LOCATION	DESCRIPTION	PRIORITY	COST
BR-11	SISEMORE RD	-	REPLACEMENT	LOW	$600,000
BR-12	CAMP POLK RD	-	REPLACEMENT	LOW	$1,400,000
BR-13	WILCOX AVE	-	NEW BRIDGE	LOW	$1,300,000

FEDERAL LANDS ACCESS PROGRAM ROADWAYS

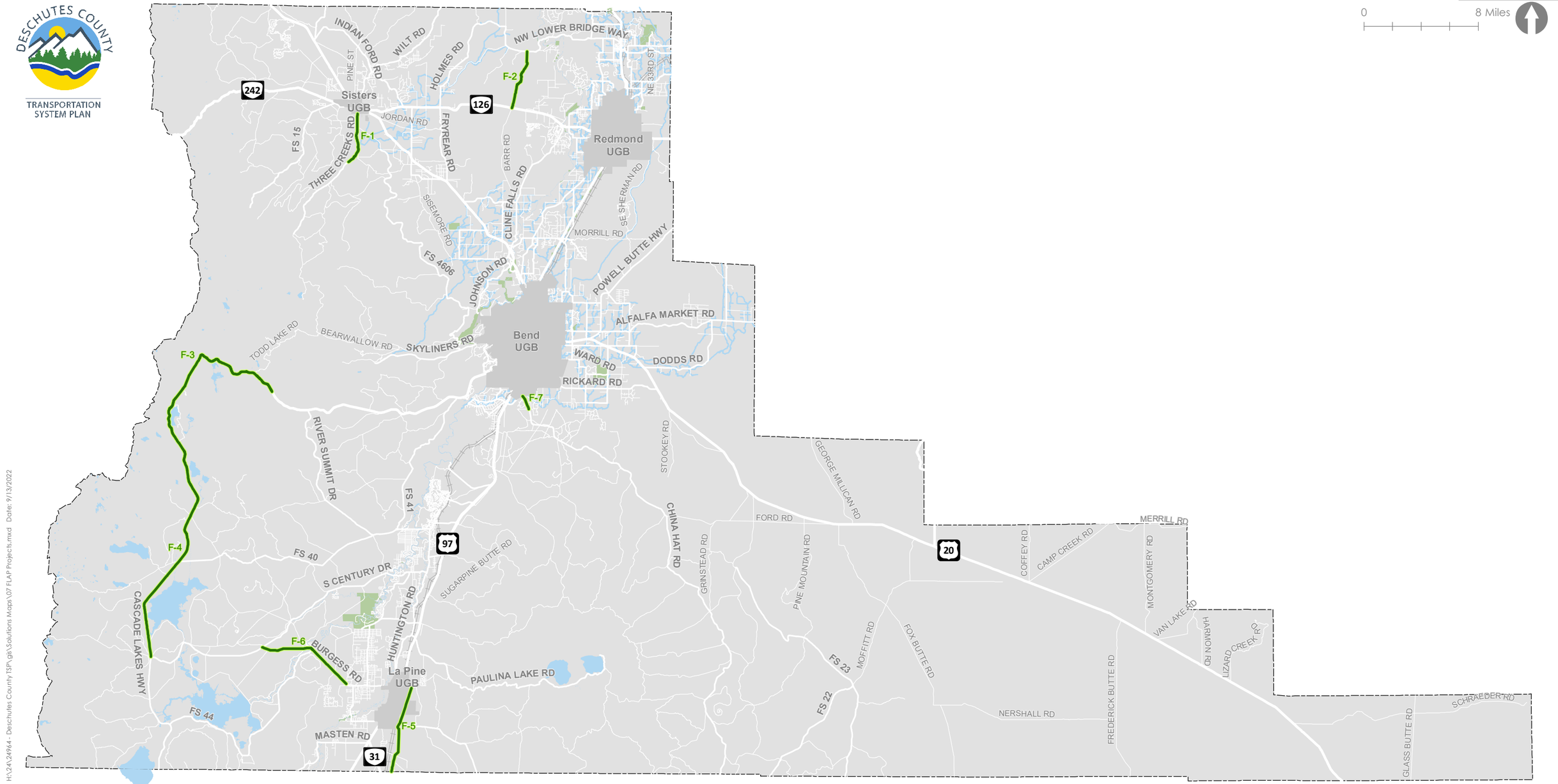
The Federal Lands Access Program (FLAP) was established to "improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands." This program is intended to provide supplemental funding to be used in combination with State and County funds for public roads, transit, and other transportation facilities. In particular, FLAP helps prioritize funding for "high-use recreation sites and economic generators." FLAP is funded through the Federal Highway Trust Fund and its allocation is based on road mileage, bridges, land area and number of visits to the lands.

FLAP provides funding opportunities to help the County deliver capital projects to increase access to Federal Lands. In addition, FLAP is a funding tool to help the County fund maintenance of existing roads that provide access to Federal Lands, such as those designated as Forest Highways and other roads that provide similar access.

Figure 8 and Table 9 identify the County's current priorities for future FLAP-funded projects. As part of TSP implementation, the County will continue to coordinate with all of the federal agencies, BPRD, Cascades East Transit, and ODOT on the request for future FLAP-funded projects.

DESCHUTES COUNTY
TRANSPORTATION SYSTEM PLAN

0 8 Miles



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Federal Land Access Projets
Parks
Water
UGBs

Data Source: ODOT, Oregon State Parks, Deschutes County

Figure **8**

FLAP Projects
Deschutes County, Oregon

Table 9. FLAP Roadways and Associated Cost Estimates

ID	ROAD	BEGIN	END	DESCRIPTION	PRIORITY	COST	COUNTY CONTRIBUTION	BIKE/PED COMPONENT OF COUNTY CONTRIBUTION
F-1	THREE CREEKS RD	SISTERS CITY LIMITS	FOREST SERVICE BOUNDARY	3.7-MILE-LONG SEGMENT SCOPED FOR WIDENING, PAVEMENT REHABILITATION, SAFETY IMPROVEMENTS, AND REMOVAL OF BR #16060	HIGH	$2,900,000	$600,000	$200,000
F-2	BUCKHORN RD	LOWER BRIDGE WAY	HIGHWAY 126	RECONSTRUCTION/ PAVE	MEDIUM	$6,500,000	$1,300,000	$400,000
F-3	CASCADE LAKES HWY	MILEPOST 21.98	ELK LAKE	WIDEN & OVERLAY; IMPROVE SIDE SLOPES; INCREASE HORIZONTAL SIGHT DISTANCE; INSTALL GUARDRAIL; INSTALL CENTERLINE RUMBLE STRIPS, POST-MOUNTED DELINEATORS AND HIGH-TYPE PAVEMENT MARKINGS; INSTALL SHOULDER RUMBLE STRIPS OR EDGE LINE RUMBLE STRIPS; POSSIBLE STRUCTURE ADJUSTMENTS AND CULVERT EXTENSIONS OR REPLACEMENTS; INSTALL LEFT-TURN AND RIGHT-TURN LANES AT MAJOR DESTINATIONS	MEDIUM	$12,200,000	$2,400,000	$700,000
F-4	CASCADE LAKES HWY	ELK LAKE	S CENTURY DR	WIDEN & OVERLAY; IMPROVE SIDE SLOPES; INCREASE HORISONTAL SIGHT DISTANCE; INSTALL GUARDRAIL; INSTALL CENTERLINE RUMBLE STRIPS, POST-MOUNTED DELINEATORS AND HIGH-TYPE PAVEMENT MARKINGS; INSTALL SHOULDER RUMBLE STRIPS OR EDGE LINE RUMBLE STRIPS; POSSIBLE STRUCTURE ADJUSTMENTS AND CULVERT EXTENSIONS OR REPLACEMENTS; INSTALL LEFT-TURN AND RIGHT-TURN LANES AT MAJOR DESTINATIONS	LOW	$9,000,000	$1,800,000	$500,000

ID	ROAD	BEGIN	END	DESCRIPTION	PRIORITY	COST	COUNTY CONTRIBUTION	BIKE/PED COMPONENT OF COUNTY CONTRIBUTION
F-5	DARLENE WAY	ROSLAND RD	COUNTY LINE	COUNTY STANDARD IMPROVEMENT OF FULL-LENGTH DARLENE WAY; ASSUMED NO ROW ACQUISITION ON EXISTING ALIGNMENT ACROSS BLM LAND	LOW	$6,800,000	$1,400,000	$400,000
F-6	BURGESS RD	SUNRISE CT	SOUTH CENTURY DR	WIDEN & OVERLAY	LOW	$5,300,000	$1,100,000	$300,000
F-7	CHINA HAT RD	KNOTT RD	ONE MILE SOUTH OF KNOTT RD AT THE DESCHUTES NATIONAL FOREST BOUNDARY	WIDEN & OVERLAY	LOW	$900,000	$200,000	$100,000

TRANSIT

By reference, the County will adopt the Cascade East Transit (CET) Master Plan. This Master Plan has a number of projects that can help increase service to the unincorporated areas of the County as well as to the High Desert Museum and Lava Lands Visitor Center. As part of TSP implementation, the County will continue to partner with CET to identify collaborative funding sources and future service enhancements.

TRANSPORTATION SAFETY ACTION PLAN PROJECTS

The County's 2019 Transportation Safety Action Plan (TSAP) provides a range of projects, policies, and programs to address identified safety needs within the unincorporated areas of the County. The County will adopt the TSAP, by reference, as part of the updated TSP.

The top sites for safety improvements in unincorporated Deschutes County identified through the TSAP are shown in Table 10. Table 11 also include projects that have been identified to address these needs and relevant status. As part of TSP implementation, the County will continue to identify future project refinements, as needed, monitor the timing of intersection changes at these locations, and seek funding opportunities and/or the potential to combine safety-related projects with other project development within the County.

Table 10. TSAP Priority Locations & Status

INTERSECTION	PROJECT IDENTIFIED?	STATUS
US 20/WARD RD/HAMBY RD	ROUNDABOUT	PROJECT COMPLETE
US 97/VANDEVERT RD	INTERSECTION IMPROVEMENT	PROJECT COMPLETE
US 20/FRYREAR RD	TURN LANE ON HIGHWAY, REALIGN FRYREAR ROAD(PROJECT SI-5)	COUNTY TO COORDINATE WITH ODOT ON FUTURE PROJECT REFINEMENT.
BURGESS RD/DAY RD/PINE FOREST DR	TURN-LANES	PROJECT COMPLETE
BEAR CREEK RD/WARD RD	NONE	COUNTY TO CONDUCT FUTURE PROJECT REFINEMENT.
ALFALFA MARKET RD/DODDS RD	NONE	COUNTY TO CONDUCT FUTURE PROJECT REFINEMENT.
US 20/OLD BEND REDMOND HWY	ROUNDABOUT	ODOT PROJECT PROGRAMMED FOR 2022
US 20/O.B. RILEY RD/COOK AVE	ROUNDABOUT	ODOT PROJECT PROGRAMMED FOR 2022
US 97/61ST ST	IMPROVED AS PART OF ODOT US 97 BEND TO REDMOND PROJECT	PROJECT COMPLETE
US 97/11TH ST/LOWER BRIDGE WAY	PART OF US97: TERREBONNE/ LOWER BRIDGE WAY IMPROVEMENTS	ODOT PROJECT PROGRAMMED FOR 2023
61ST ST/QUARRY AVE/CANAL BLVD	IMPROVED AS PART OF ODOT US 97 BEND TO REDMOND PROJECT	PROJECT COMPLETE

INTERSECTION	PROJECT IDENTIFIED?	STATUS
NORTHWEST WAY/COYNER AVE	ADD TURN LANES	PROJECT IDENTIFIED IN DESCHUTES COUNTY TSP.
ALFALFA MARKET RD/WALKER RD	NONE	COUNTY TO CONDUCT FUTURE PROJECT REFINEMENT.
US 97/SMITH ROCK WAY/B AVE	PART OF US97: TERREBONNE/ LOWER BRIDGE WAY IMPROVEMENTS	ODOT PROJECT PROGRAMMED FOR 2023
DESCHUTES MARKET RD/HAMEHOOK RD	ROUNDABOUT	COUNTY PROJECT PROGRAMED FOR 2022
US 97/BURGESS RD	TRAFFIC SIGNAL	PROJECT IDENTIFIED IN WICKIUP JUNCTION REFINEMENT PLAN. COUNTY TO COORDINATE WITH CITY OF LA PINE AND ODOOT ON FUTURE PROJECT REFINEMENT AND IMPLEMENTATION.
US 20/HAWKS BEARD (BLACK BUTTE RANCH)	NONE	COUNTY TO COORDINATE WITH ODOT ON FUTURE PROJECT REFINEMENT.
EL CAMINO LANE/HELMHOLTZ WAY	NONE	COUNTY TO CONDUCT FUTURE PROJECT REFINEMENT.
CANAL BLVD/HELMHOLTZ WAY	ADD TURN LANES	PROJECT COMPLETE
DICKEY RD/NELSON RD	NONE	COUNTY TO CONDUCT FUTURE PROJECT REFINEMENT.
US 97/GALLOWAY AVE	NONE	COUNTY TO COORDINATE WITH ODOT ON FUTURE PROJECT REFINEMENT.
BUTLER MARKET RD & POWELL BUTTE HWY	ROUNDABOUT	PROGRAMMED FOR 2023 CONSTUCTION
BUTLER MARKET RD & HAMBY	NONE	COUNTY TO CONDUCT FUTURE PROJECT REFINEMENT.
BUTLER MARKET RD & HAMEHOOK	NONE	INTERSECTION NOW UNDER CITY OF BEND JURISDICTION
BAKER RD & CINDER BUTTE	INTERSECTION IMPROVEMENT	PROJECT IDENTIFIED IN DESCHUTES COUNTY TSP
S CENTURY & HUNTINGTON	ROUNDABOUT	PROJECT IDENTIFIED IN DESCHUTES COUNTY TSP
CLINE FALLS RD/COOPERS HAWK DR/ FALCON CREST DR	NONE	COUNTY TO CONDUCT FUTURE PROJECT REFINEMENT.
LOWER BRIDGE WAY/19TH ST	TURN LANES/REALIGNMENT (PROJECT C-18)	PROJECT IDENTIFIED IN DESCHUTES COUNTY TSP.
LOWER BRIDGE WAY/31ST ST	TURN LANES (PROJECT C-20)	PROJECT IDENTIFIED IN DESCHUTES COUNTY TSP.
LOWER BRIDGE WAY/43RD ST	INCLUDED IN FUTURE ROADWAY IMPROVEMENT PROJECT (PROJECT CC-4)	PROJECT IDENTIFIED IN DESCHUTES COUNTY TSP.

NEXT STEPS

The County will be conducting an on-line Open House in fall 2022 to obtain feedback on the projects listed herein as well as to identify new potential projects for consideration. The results of the upcoming public engagement will enable the County to finalize the list of projects for inclusion into the updated TSP as well as to begin to identify potential funding sources.

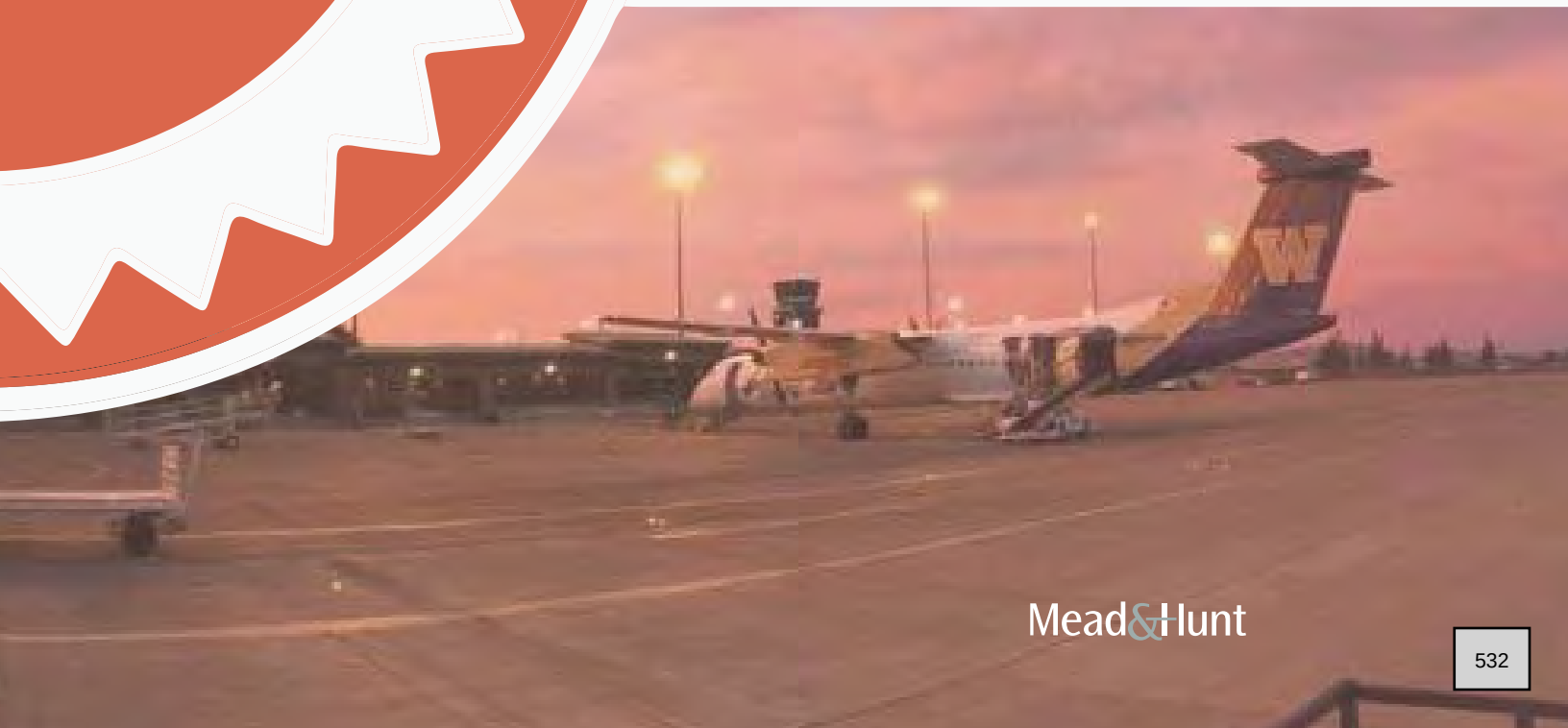
Appendix F:

Redmond Municipal Airport Master Plan

Fly REDMOND

REDMOND MUNICIPAL AIRPORT MASTER PLAN

2018



Mead&Hunt

REDMOND MUNICIPAL
AIRPORT MASTER PLAN

MARCH 2018

"The preparation of this document may have been supported, in part, with financial assistance from the Federal Aviation Administration through the Airport Improvement Program. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of these documents by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted herein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public law."

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GeoTerra
ESA
Mackenzie

Introduction Chapter

Chapter 1 – Airport Inventory

Chapter 2 – Aviation Activity Forecasts

Chapter 3 – Facility Requirements

Chapter 4 – Development Alternatives

Chapter 5 – Financial Feasibility

Appendices

Appendix A – ALP and Checklist
Appendix B – Supplemental Forecast Information
Appendix C – Recycling Plan
Appendix D – Implementation Guide
Appendix E – Coordination and Outreach Summary
Appendix F – Landside Development
Appendix G – Noise Inputs

Chapter Overview

The City of Redmond (City) initiated an update to the Airport Master Plan ("Plan") to assess the facility and service needs of the Redmond Municipal Airport ("the Airport") throughout the next 20 years. The Plan serves as a roadmap for bringing projects, people, and funding together in a coordinated manner, and provides strategic direction regarding the Airport's 20-year capital development plan and investment of resources.

The Plan is conducted in accordance with Federal Aviation Administration (FAA) guidance, as prescribed by grant assurances and mandated by regulatory standards. Conformance with FAA standards enables the City of Redmond to apply for federal and state funding in order to support the maintenance, expansion, and upgrade of airport facilities as demand warrants and funding is available.

Study Introduction

The Airport is owned by the City of Redmond, Oregon. The City of Redmond is a key stakeholder in the Plan. The Aviation Program Manager, Nettice Honn, is the daily project manager for the City. The City's planning and engineering departments are represented on the Planning Advisory Committee (PAC).

The Plan evaluates the Airport's needs over a 20-year planning period for airfield, airspace, terminal area, and landside facilities. The goal is to document the orderly development of Airport facilities essential to meeting City needs, in accordance with FAA standards, and in a manner complementary with community interests. The Plan results in a 20-year development strategy envisioned by the City, reflective of the updated Airport Capital Improvement Program (CIP), and graphically depicted by the Airport Layout Plan (ALP) drawings. The approved Plan allows the City to satisfy FAA assurances, and seek project funding eligible under the respective federal and state airport aid program.

The Master Plan will have the following core components, in accordance with FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans:*

1: Study Design
2: Project Management
3: Stakeholder Coordination and Outreach
4: Airports Geographic Information Systems
5: Airport Inventory
6: Demand Forecasts
7: Facility Requirements
8: Improvement Alternatives
9: Financial Feasibility
10: Implementation Plan
11: Airport Layout Plan
12: Documentation

Why is it Time for a Master Plan?

The Airport Master Plan was last updated in 2005, with the ALP drawings last revised in November 2013. Since the 2005 Master Plan, the FAA has updated airfield design standards and aviation activity trends have changed. The 2005 Master Plan does not include important developments as envisioned by the City. This Plan is funded by the City with a grant from the FAA Airport Improvement Program (AIP).

Airport master plans are generally updated every 10 years, depending on the planning outlook and complexity of the airport. The aviation market has seen major changes since 2005, with fuel prices increasing, Next Generation navigation technologies becoming commonplace, the demand for pilots growing worldwide, the accelerated development of unmanned aerial systems, and new FAA policies on airport development. The assumptions and facts that formed the basis for recommendations in the 2005 Master Plan are in need of an update to reflect an evolving marketplace.

The changes in the community around Redmond reinforce the need for a new master plan to reexamine growth projections and future facility needs. The Airport is centrally-located in Central Oregon, an area that has been experiencing unprecedented growth in population and business interests. The region's physical location on the east side of the Cascade Mountains contributes to the favorable weather experienced year round. This is a major factor in the attractiveness to both young families and those looking to retire. These growth patterns will be evaluated in the Plan and included in all facility design and analysis for the Airport's 20-year plan.

Study Goals and Process

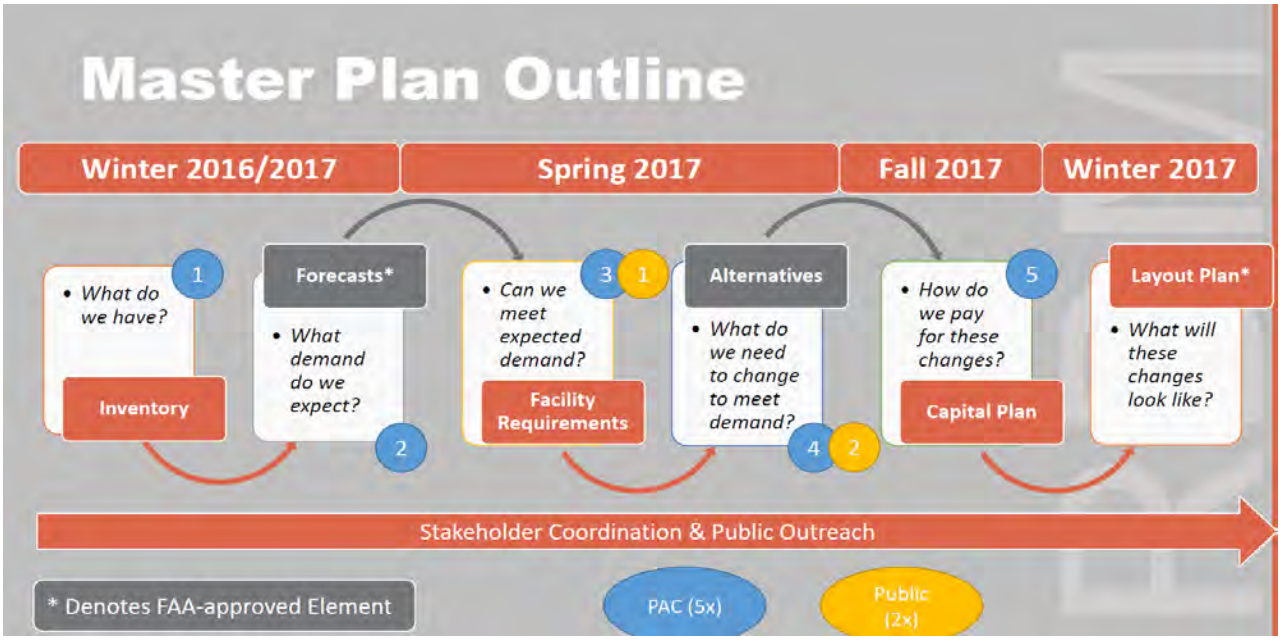
Master Plan Goals / Central Questions of the Master Plan

The core questions for this Plan include the following:

- ✓ How will Central Oregon's growth continue in the future, and what will the impact be on aviation activity?
- ✓ What role will General Aviation (GA) and United States Forest Service (USFS) activities play in the future?
- ✓ Is a runway extension justified, and if so, how long should it be, and in what direction?
- ✓ What is the viability of runway and terminal improvements previously depicted on the ALP?
- ✓ How can the passenger terminal and associated facilities accommodate continued passenger growth and additional carriers?
- ✓ What are the opportunities for increased airport revenue generation?
- ✓ How much property will be needed to satisfy the demand for future aviation use?
- ✓ What future changes in critical aircraft should the Airport plan for?
- ✓ Are aviation facilities adequate to meet the needs of the growing community?

The Planning Process and Timeline

FIGURE I-1: PROJECT TIMELINE & ROADMAP



Plan Participation

As a strategic visioning process, the Plan is structured to be responsive to Airport needs while being inclusive of broader community considerations. This approach builds stakeholder support for Plan recommendations and facilitates acceptance. The Plan's public involvement program is targeted to engage key Airport stakeholders (City and County elected officials, community leaders, on- and off-Airport stakeholders), address comments, and actively encourage public participation.

Agency Coordination

The FAA Seattle Airport District Office (ADO) is the primary external reviewing agency for this Plan. A representative from the Seattle ADO will be provided Plan deliverables and invited to attend PAC and public meetings. A visit will be made to the Seattle ADO two times during the Plan development to review key deliverables since the FAA is not always able to travel to Airport events.

The Oregon Department of Aviation (ODA) is a key stakeholder in the Plan. The Consultant and the Airport will keep ODA updated on Plan progress through routine communication, including scheduled teleconferences, and transmittal of Plan chapters.

Airport Committee

The purpose of the Airport Committee is to advise the City Council regarding issues that concern the development of the Airport. The Airport Committee supported Plan visioning, provided feedback on the Plan elements at key milestones, and will be essential to the Airport's ability to move forward with Plan recommendations.

Planning Advisory Committee

The PAC consists of aviation and non-aviation constituents selected to provide well-rounded Plan perspectives. The PAC serves in an advisory capacity to collectively review Plan recommendations and provide feedback to the Airport and Consultant. PAC input will be used to guide Plan developments. The PAC consists of members representing the following interests:

- ✓ USFS
- ✓ Redmond Economic Development, Inc.
- ✓ Redmond Chamber of Commerce
- ✓ Airport Tenant (GA Representative)
- ✓ Deschutes County
- ✓ City of Redmond Engineering Dept.
- ✓ City of Redmond Planning Division

- ✓ City of Bend
- ✓ Prineville (S39) Airport Management

The Airport project manager serves as an ex-officio member of the PAC. The FAA and ODA are informed of PAC meetings and invited to attend in an observer role.

Key Technical Stakeholders

While the PAC will provide a continuous sounding board throughout the Plan, there are some stakeholders that are expected to be interested in specific Plan elements and disinterested in others. The Consultant will meet with these stakeholders to collect their feedback on Plan elements that are of interest to them. These include:

Plan Element	Key Technical Stakeholders
Airport Inventory	Control Tower Law enforcement Passenger and Cargo Airlines Transportation Security Administration (TSA) Aircraft rescue and firefighting (ARFF) Businesses on airport property Airport hangar tenants
Demand Forecasts	Passenger and cargo airlines Control tower
Improvement Alternatives	Control tower TSA ARFF Deschutes County

Also, the City of Redmond is completing a Comprehensive Plan update and roadway engineering projects in the vicinity of the Airport concurrent with the Airport Master Plan. Close coordination between the Airport and community planning and development projects were pursued to help efforts of both organizations support common goals.

Public Outreach

This public involvement process is used to inform, educate, and solicit feedback from the public regarding the Plan process, major findings, and conclusions. Conducting public outreach meetings in an "open house" format provides the general public the opportunity to interact with the Airport and Consultant, ask questions, communicate concerns, and provide feedback.

The two (2) public meetings occur at the following Plan milestones.

- ✓ Facility Requirements and Initial Improvement Alternatives
- ✓ Refined Alternatives and Preliminary Capital Improvement Plan

A summary of public involvement is included as a Plan appendix.

SWOT Analysis

As part of the strategic planning process, a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis was conducted with the PAC to determine the appropriate strategic visions for the Airport, and specific goals and objectives to be addressed throughout the Plan. SWOT is a process for synchronizing strategic decision-making factors, and helps categorize the Airport's internal and external characteristics, qualities, and merits. When compiled, the SWOT factors help formulate Plan goals, provide the basis to pragmatically assess recommendations, and guide the Plan's overall developmental policy. The following SWOT factors were identified by the Planning Advisory Committee during the project kick-off meeting held November 5, 2016.

SWOT TABLE

		Helpful	Harmful
		To Achieving the Objective	To Achieving the Objective
Internal Origin	Attributes Within Airport Influence	Strengths	Weaknesses
External Origin	Attributes Outside of Airport Influence	Opportunities	Threats

Strengths:	characteristics that provide an advantage over others.
Weaknesses:	characteristics that create a disadvantage compared to others.
Opportunities	outside potential that the Airport could capitalize on.
Threats:	outside risks that could be detrimental to the Airport.

Strengths:

- ✓ Runway wind coverage and physical access
- ✓ Runway length
- ✓ Central location
- ✓ ARFF presence
- ✓ New terminal
- ✓ Security
- ✓ Business and tourist economy
- ✓ Size of Airport-owned property
- ✓ Frequency of flights
- ✓ Air Traffic Control Tower presence
- ✓ FAA grant assurances in place to keep the Airport intact

Weakness:

- ✓ TSA and security requirements to adhere to
- ✓ Limited infrastructure availability
- ✓ USFS airside expansion potential limited by lack of available land adjacent to current taxiways

Opportunities:

- ✓ Business and industry diversity in the area
- ✓ Hotel availability
- ✓ Transportation network companies (Uber)
- ✓ Transportation systems/multi-use path
- ✓ Terminal – Jet Bridges
- ✓ East bound flights
- ✓ Additional connections
- ✓ Time of flights (more at night)
- ✓ Emergency preparedness
- ✓ Airport land owned north of airfield (golf course area)
- ✓ Airport name/branding
- ✓ Improving access to the airfield particularly on the north side

Threats:

- ✓ Not isolated from national/international threats
- ✓ Availability of skilled workforce or higher education opportunities
- ✓ Lack of FBO maintenance technicians and training
- ✓ BLM and other open lands where transient population tends to gravitate
- ✓ GA competition in the region – users could go elsewhere
- ✓ Cascadia earthquake
- ✓ Could overshoot growth estimates and overbuild

1.0 AIRPORT INVENTORY

This Inventory Chapter documents 2016 conditions at the Redmond Municipal Airport (the Airport) and provides a foundation for the overall planning analysis in the subsequent chapters of the RDM Master Plan. The Inventory Chapter includes an overview of environmental conditions and land uses at and surrounding the Airport to provide a basis for evaluating planned improvements.

1.1 INTRODUCTION TO THE INVENTORY

This section summarizes the purpose and organization of this chapter, and defines the key elements that are included in the investigation.

1.1.1 CHAPTER PURPOSE AND ORGANIZATION

The Inventory Chapter looks at the physical layout of the Airport and documents 2016 conditions in terms of airfield design standards and aviation activity. The Master Plan does not address management policies and procedures, staffing or operational rules and regulations. These topics are addressed in other airport documents.

The chapter begins with an overview of the Airport that covers location, history, role in the community, property interests, and the components of airport operation. The Airport is a complex operation with three major facility areas: airside, landside, and the terminal building. The Inventory Chapter documents each of these three areas in terms of use, design, and condition.

- Airside facilities are those areas that are restricted from general public access – sometimes called "inside the fence." This includes runways and taxiways, facilities for general aviation parking and maintenance, air cargo and other private business facilities with direct access to the runway, airport safety and maintenance facilities and the area used by the United States Forest Service (USFS).
- Landside facilities are those that support airport activities without direct access to the airfield. They include internal roadways, parking areas, and non-aeronautical development areas.
- The terminal building provides a transition between the airside and landside areas for commercial airline passengers and provides spaces for the traveling public, airline and airport administration, and the Transportation Security Administration (TSA).

The chapter will cover airport activity and design standards, which will be used in later plan chapters to address the need for improvements, improvements that may be recommended, and as a basis for design alternatives.

The chapter looks beyond the boundaries of the Airport to consider surrounding land uses that are subject to aircraft overflight, and the catchment area from where the Airport draws its passengers and users. The Airport serves the businesses and residents of the City of Redmond, the nearby City of Bend, and Deschutes, Crook, and Jefferson counties. The community around the Airport drives the demand for commercial air service, general aviation, and air cargo. Other airports serving the region are documented as they impact demand at the Airport.

Environmental factors are inventoried as they influence aircraft flight. Weather factors, such as temperature and wind direction, impact aircraft performance and drive facility design considerations. Environmental conditions such as wetlands, air quality, and aircraft noise are documented so future development can be evaluated in terms of potential environmental impacts.

Information was collected in several ways, including a site visit to the Airport in October 2016; review of documents and records provided by the Airport, the City of Redmond, the FAA, and other public agencies; and interviews with the Airport tenants. Results are presented in the following sections:

- ✓ Airport Overview
- ✓ Airside Facilities
- ✓ Landside Facilities
- ✓ Terminal Building
- ✓ Aeronautical Setting
- ✓ Community Setting
- ✓ Aviation Activity
- ✓ Airport Economic & Financial Conditions
- ✓ Environmental Conditions

1.2 AIRPORT OVERVIEW

This section gives an overview of the Airport that covers location, history, role in the community, property interests, and the components of airport operation.

1.2.1 AIRPORT LOCATION

The Airport is in central Oregon's high desert just east of the Cascade mountain range. The Airport is the only commercial service airport in the region, located 150 miles from Eugene to the west, 150 miles from Portland to the northwest, and 220 miles from Pendleton to the northeast. The Airport is located in Deschutes County, in the City of Redmond. Redmond's location has been important to its growth and prosperity in terms of the area's population and economy. Redmond has been the hub of the local transportation network since the railroad arrived in 1911. Today, Redmond's location at the intersection of Oregon's Highways 126 and 97 provides driving connections in four directions including to Interstate 5 to the west and Interstate 84 to the north, as shown in **Figure 1-1**.

1.2.2 AIRPORT AND COMMUNITY HISTORY

The first runways were constructed in 1929 with the support of Redmond Ray Johnson American Legion Post and Redmond Commercial Club, which has since evolved into the Redmond Chamber of Commerce. The Works Progress Administration improved the Airport during the 1930s, and during World War II, the US Army Air Corps used the Airport for training B-17 and P-38 pilots. The first commercial flight at the Airport was in 1946. After its service during the war, the Airport was sold to the City of Redmond.

1.2.3 AIRPORT PROPERTY

Airport property includes 2,518 acres surrounding two runways oriented in an "X" configuration. The passenger terminal area is southwest of the runway intersection. Aviation uses have been developed on the west and north side of the Airport along the major access routes of SE Airport Way, SE Veterans Way, and Highway 126. Property uses and development areas are shown on **Figure 1-2,** and key airport facilities are shown in **Figure 1-3**.

Figure 1-1
REDMOND LOCATION MAP

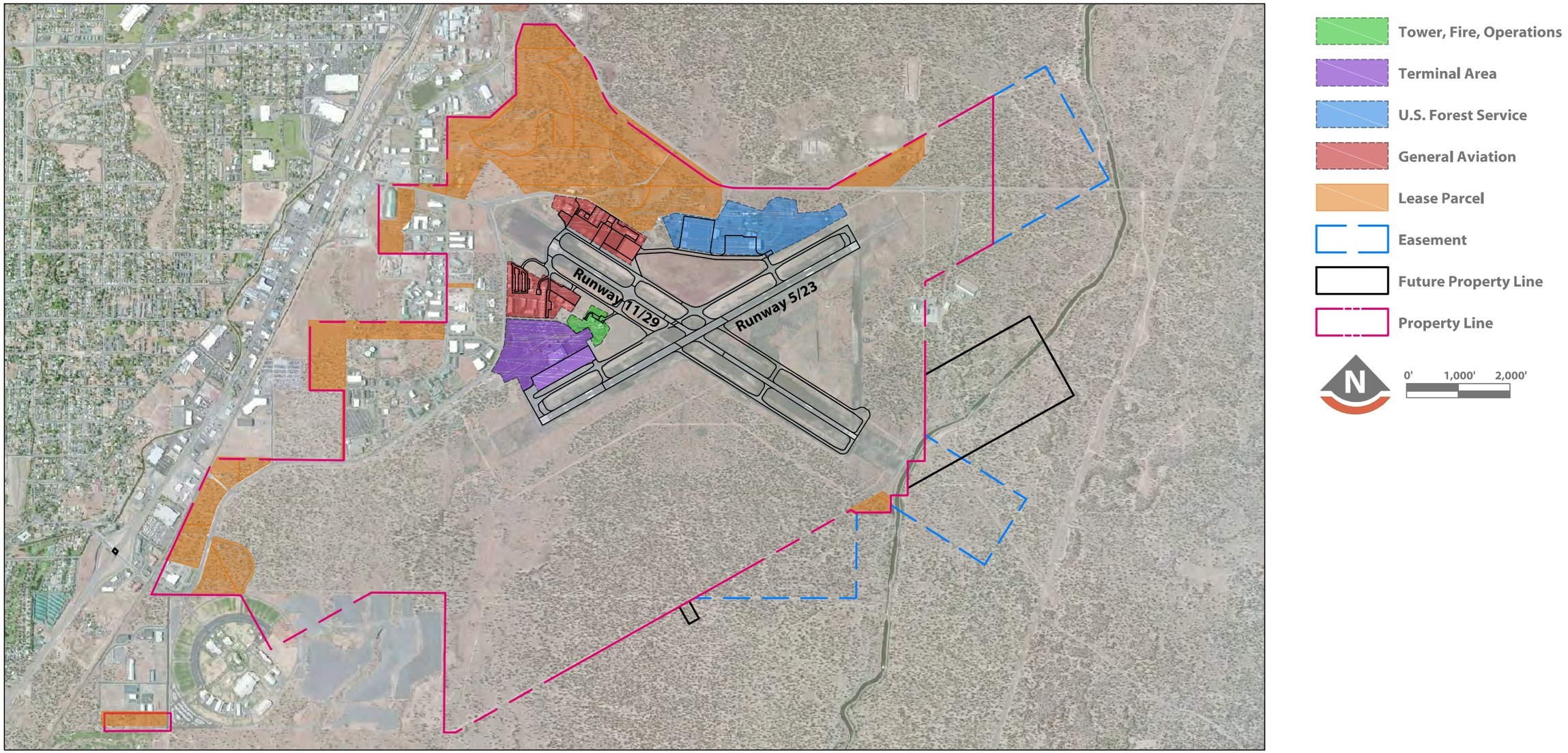


Figure 1-2
Property Map

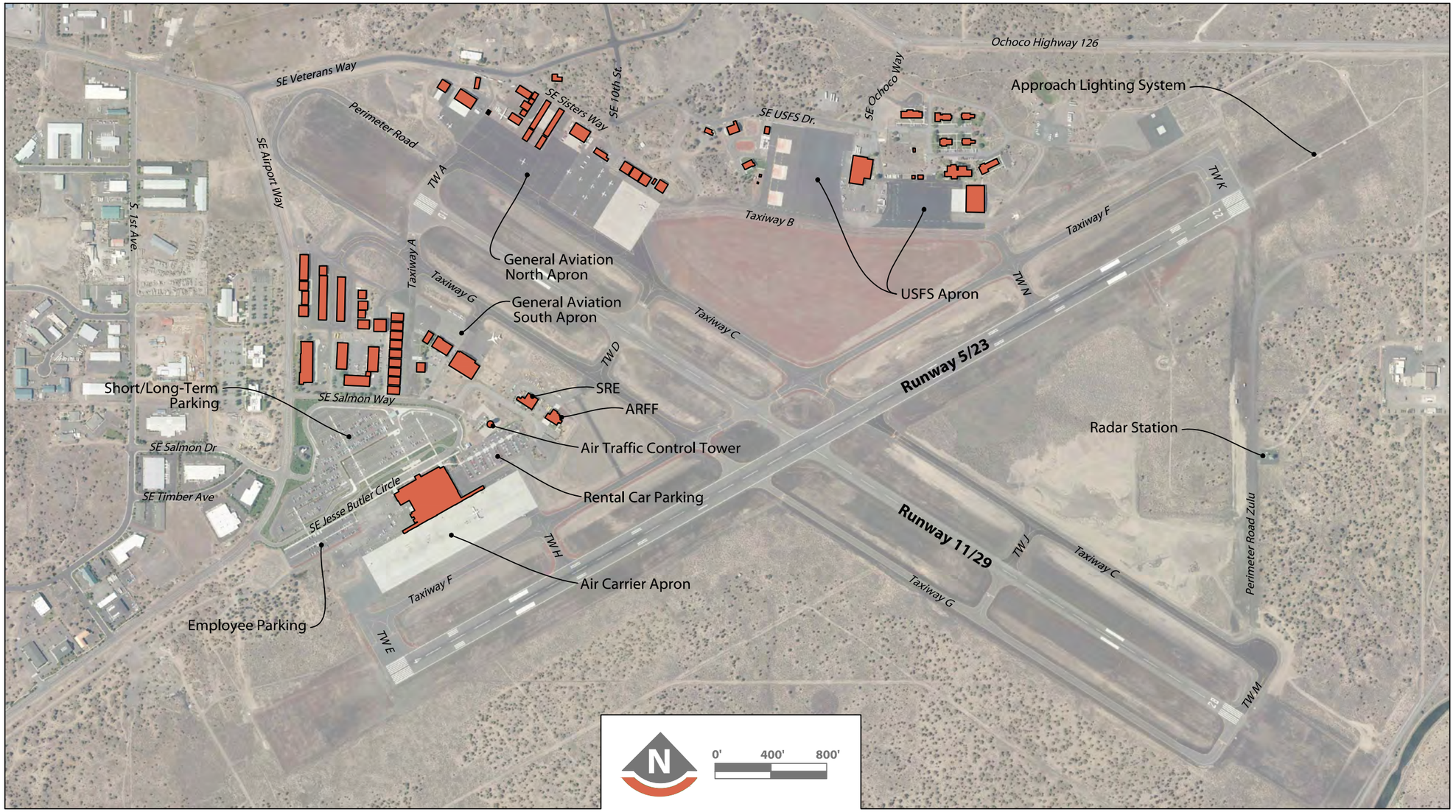


Figure 1-3
AIRPORT FACILITIES

1.2.4 OPERATIONAL OVERVIEW

MANAGEMENT

The Airport is owned by the City of Redmond. The Airport Director reports to the City Manager, and City employees are responsible for daily operations, programs, and services. City Council members, elected by the citizens of Redmond, are the City's policy makers. The City established an Airport Committee in 1991 to act in an advisory role to the City Council on airport-related matters. The Committee is composed of nine members: five appointed by Redmond; one appointed by the City of Bend; one appointed by Deschutes County; one appointed by Jefferson County; and one appointed by Crook County. Redmond recently instituted an Ex-Officio Youth member to help foster interest in aviation for young adults.

FUNCTIONAL CLASSIFICATIONS

The Airport is a public-use facility supporting commercial, general aviation, military, and USFS users. The Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS) classifies the Airport as a non-hub primary commercial service airport. The NPIAS is updated every two years and uses predetermined evaluation criteria including commercial service enplanements, proximity to other airports, and number of based aircraft to identify airports that are of importance to the national air transportation system. Airports that are included in the NPIAS are eligible for FAA Airport Improvement Program (AIP) funding. Classification as a non-hub airport is based on the Airport having more than 10,000 annual passenger enplanements, but less than 0.05 percent of total national commercial passenger enplanements.

Under the Code of Federal Regulations (CFR), the Airport is certified as a Class I FAA Part 139 facility, which means that the Airport maintains facilities intended to serve scheduled passenger aircraft with 30 or more passenger seats.

The Oregon Department of Aviation classifies the Airport as a Category I - Commercial Service Airport. Airports in this category have scheduled commercial air carrier service. The Airport Reference Code (ARC), described in greater detail in **Section 1.3.3**, is C-III, which means that facilities are designed for medium-sized commercial aircraft like the Boeing 737 and Airbus A320. **Table 1-1** describes key facility attributes.

Table 1-1. Airport Data

Airport Owner	City of Redmond
NPIAS Airport Category	Non-Hub
Airport Reference Code	C-III
Airport Acreage	2,518 acres
Airport Reference Point Coordinates	N 44° 15.24' W 121° 08.99'
Airport Elevation	3080 feet Above Mean Sea Level (AMSL)
Airport Traffic Control Tower	Open 14 hours daily (0500-1900 local time)

Sources: FAA Airport Master Record (Form 5010), Airport Website, Airport Directory, NPIAS.

1.3 AIRSIDE FACILITIES

"Airside" is a collective term for those areas of the Airport that are accessible to aircraft including runways, taxiways, aprons, and hangar areas. Facilities that directly support aviation activity include:

- ✓ Pavement: runways, taxiways and aprons
- ✓ Structures: aircraft storage and maintenance hangars, fixed base operators (FBOs), fuel storage, snow removal equipment (SRE) storage, and an aircraft rescue and firefighting facility (ARFF)
- ✓ Navigation aids: airfield and approach lighting, weather monitoring systems, radio beacons
- ✓ Airfield signage and markings: (indicators for precision and non-precision instrument runways)
- ✓ Airport traffic control tower (ATCT)
- ✓ Terminal building: Passenger support and services and administrative areas
- ✓ Safety areas: Property set aside to comply with FAA-mandated setbacks and clear zones

1.3.1 RUNWAY SYSTEM

Runways are numbered using a system that assigns a number to each runway end based on its magnetic alignment. The Airport's primary runway, Runway 5-23, is aligned in a northeast/southwest fashion and the crosswind runway, Runway 11-29, is aligned in a northwest/southeast fashion.

Precision instrument runway:
A runway end having an instrument approach procedure that provides course and vertical path guidance conforming to Instrument Landing System (ILS) or Microwave Landing System (MLS) precision approach standards.

Non-precision instrument runway:
A runway end having an instrument approach procedure that provides course guidance without vertical path guidance.

RUNWAY 5-23

Runway 5-23 is 7,038 feet long and 150 feet wide. The runway has an asphalt surface that is transverse-grooved to improve aircraft braking action, reduce hydroplaning, and improve directional control for aircraft when the pavement is wet and icy. The runway was reconstructed in 2016 and is in excellent condition. Runway 5-23 is served by a full-length parallel taxiway on the west side. The runway to parallel taxiway separation is 400 feet, which meets C-III design standards.

Runway 5-23 is a precision instrument runway with high-intensity runway lights (HIRL) and medium-intensity approach lighting system with runway alignment indicator lights (MALSR). These lights provide pilots with visual guidance for landings at night and during poor weather conditions.

RUNWAY 11-29

Runway 11-29 is 7,006 feet long and 100 feet wide. The runway has an asphalt surface and is transverse-grooved. Runway 11-29 is served by two full-length parallel taxiways on the north and south sides. The runway to parallel taxiway separation is 400 feet, which meets B-III design standards.

Runway 11-29 is a non-precision instrument runway with medium-intensity runway lights (MIRL).

Table 1-2 presents data for Runway 5-23 and **Table 1-3** presents data for Runway 11-29. NAVAIDs are defined in **Sections 1.3.6 and 1.3.7**.

Table 1-2. Runway 5-23 Data

Dimensions	Length: 7,038 feet, Width: 150 feet
Bearing	060/240 (True)
Effective Gradient	0.3%
Weight Bearing Capacity	Single-wheel: 68,000 lbs., Double-wheel: 110,000 lbs.
Surface	Asphalt-grooved. Good condition.
Markings	Precision instrument approach. Good condition
Lighting	High-Intensity Runway Edge Lights Runway End Identifier Lights (REIL) – Runway End 05 Visual Approach Slope Indicator (VASI) – Runway End 05 Precision Approach Path Indicator (PAPI) – Runway End 23 1,400 foot MALSR – Runway End 23
Signage	Distance To Go Signs

Sources: FAA Airport Master Record (Form 5010), Airport website.

Table 1-3. Runway 11-29 Data

Dimensions	Length: 7,006 feet, Width: 100 feet
Bearing	122/302 (True)
Effective Gradient	0.5%
Weight Bearing Capacity	Single-wheel: 28,000 lbs., Double-wheel: 40,000 lbs.
Surface	Asphalt-grooved. Good condition.
Markings	Non-precision instrument approach. Good condition
Lighting	Medium Intensity Runway Edge Lights REIL VASI – Runway End 11 PAPI – Runway End 29
Signage	Distance to Go Signs

Sources: FAA Airport Master Record (Form 5010), Airport website.

HELIPAD

The Airport has one helipad, which is used by the USFS and not available for public use. The helipad is 48 feet x 48 feet and has a concrete surface. Military and GA helicopters land on the runways and hover taxi to the FBO aprons to park.

1.3.2 TAXIWAY SYSTEM

Parallel taxiways: Taxiways that run alongside runways.

Connector taxiways: All other taxiways that connect the aircraft to all facilities.

Hot spots: Areas where incidents are more likely to occur because of airfield geometry.

The Airport has an extensive system of 12 asphalt taxiways that provides access between the runways and aircraft parking and storage facilities. Taxiways C, F, and G are parallel to the runways and the rest are connector taxiways. The parallel taxiways are 50 feet wide and the connector taxiways are 75 feet wide. Taxiway C and Taxiway G west of Runway 5-23 were reconstructed in 2011 and are in excellent condition. Taxiway C east of Runway 5-23 was constructed in 2013.

There are two areas on the airfield that the FAA has labeled as potential "hot spots," which is defined in FAA Advisory Circular 150/5300-13A, Change 1, *Airport Design* (AC-13A) as "a location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary." These two areas are the intersection of Taxiways F and G, and the intersection of Taxiways C and F.

The airfield's original design was in compliance with FAA standards of the time; however, FAA standards have since changed. Some existing taxiway connectors do not meet FAA guidance defined in AC-13A. These standards seek to promote safer operations by simplifying airfield geometry, and reducing the risk that a pilot will accidentally taxi onto a runway. Examples of non-standard conditions are Taxiway A's direct access from the North General Aviation Apron to Runway 11-29, and Taxiway H and E's direct access from the Air Carrier Apron to Runway 5-23. As these taxiways are reconstructed, they will need to be built to the latest design standards.

1.3.3 AIRFIELD DESIGN STANDARDS

The Airport is required to maintain facilities in line with FAA standards as part of an agreement for accepting FAA grant money. FAA design standards for runways are determined by the FAA coding system called the Runway Design Code (RDC), shown in **Table 1-4**. The RDC is made up of the aircraft approach category (AAC), the airplane design group (ADG), and the runway approach visibility minimums. The most demanding AAC and ADG at an airport sets the ARC. The FAA codes taxiways using a standard called the Taxiway Design group (TDG).

RUNWAY CLASSIFICATION AND DESIGN

The design aircraft is an aircraft that uses an airport on a regular basis, which the FAA defines as more than 500 operations per year. The Bombardier Q400 (operated by Alaska Airlines) is the most demanding aircraft that exceeds 500 annual operations. The Q400 has an approach speed of 120 knots, a wingspan of 93.3 feet, and tail height 27.4 feet. Per AAC and ADG standards, the Q400 is classified as a B-III aircraft. **Table 1-4** depicts the Airport's RDC, as indicated in bold font.

Runway Design Code (RDC):
The FAA coding system comprised of three standards that determine the ARC: the Aircraft Approach Category, Airplane Design Group, and Approach Visibility Minimums.

Aircraft Approach Category (AAC):
This first standard is based on the approach speed (in knots) of the design aircraft.

Airplane Design Group (ADG):
This second standard is based on the wingspan and the tail height (in feet) of the design aircraft.

Approach Visibility Minimums:
These are based on runway visual range (RVR), the approximate visibility (in feet) as measured by the RVR light transmission/reception equipment or equivalent weather observer report measurements. The depicted numerical value for RVR relates to runway visibility minimums represented in feet or forward visibility that have statute mile equivalents (4000 RVR = ¾ mile).

Table 1-4. Runway Design Code System

Aircraft Approach Category (AAC)		
AAC	Approach Speed	
A	Approach Speed less than 91 knots	
B	Approach speed 91 knots or more but less than 121 knots	
C	**Approach speed 121 knots or more but less than 141 knots**	
D	Approach speed 141 knots or more but less than 166 knots	
E	Approach speed 166 knots or more	
Airplane Design Group (ADG)		
Group Number	Wingspan (in feet)	Tail Height (in feet)
I	< 49'	< 20'
II	49' - < 79'	20' - < 30'
III	**79' - < 118'**	**30' - < 45'**
IV	118' - < 171'	45' - < 60'
V	171' - < 214'	60' - < 66'
VI	214' - < 262'	66' - < 80'
Approach Visibility Minimums		
RVR (ft.)	Flight Visibility Category (statue miles)	
VIS	Runways designed for visual approach use only	
5000	Not lower than 1 mile	
4000	Lower than 1 mile but not lower than ¾ mile	
2400	**Lower than ¾ mile but not lower than ½ mile**	
1600	Lower than ½ mile but not lower than ¼ mile	
1200	Lower than ¼ mile	

Source: FAA AC 150/5300-13A Airport Design.

RUNWAY SAFETY AREAS

The FAA defines the Runway Safety Area (RSA) as a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an aircraft undershoot, overshoot, or excursion from the runway. The runways at the Airport each have different RSA design standards. Runway 5-23 is designed to C-III standards, which is the Airport Reference Code as of 2016 and the standard needed for commercial aircraft such as the Boeing 737. Runway 11-29 is designed to B-III standards, suitable for handling aircraft with slower approach speeds. **Table 1-5** depicts runway RSA dimensions.

Table 1-5. Runway Safety Areas

	5-23	11-29
Runway Design Standard	C-III	B-III
Width	500’	400’
Length	9,038’	8,206
Length Beyond Runway Ends	1,000’	600’

RUNWAY PROTECTION ZONES

Runway Protection Zone (RPZ):
A trapezoid-shaped area off the end of each runway defined by the FAA as a zone to enhance the protection of people and property on the ground.

The Runway Protection Zone (RPZ) is a trapezoidal area off the end of the runway. This area is designated to enhance safety for aircraft operations and for people and objects on the ground. The FAA recommends that incompatible land uses, objects, and activities be located outside of the RPZ. The FAA has issued a Memo titled *Interim Guidance on Land Uses Within a Runway Protection Zone* to help airport sponsors understand what land uses are and are not compatible within the RPZ. The FAA recommends that an airport operator maintain full control of an RPZ, ideally through fee simple property acquisition. If this is not feasible, land use control may be achieved through the use easements. Highway 126 goes through the RPZ at the approach end of Runway 23. Veterans Way and Airport Way pass through the RPZ at the Runway 11 approach end. Since these roads are existing features, current FAA guidance does not require the roads to be moved. Actions that would introduce new incompatible land uses to the RPZ, either by airport or neighboring jurisdiction action, require coordination with FAA Headquarters. **Table 1-6** depicts RPZ standards for the Airport.

Table 1-6. Runway Protection Zone Dimensions for Runway Ends

	Length (ft.)	Inner Width (ft.)	Outer Width (ft.)	Acreage
5	1,700	500	1,010	29.465
23	2,500	1,000	1,750	78.914
11	1,700	500	1,010	29.465
29	1,700	500	1,010	29.465

Source: Airport ALP, AC-13A

TAXIWAY DESIGN AND STANDARDS

The TDG determines taxiway design standards. The TDG relates to the undercarriage dimensions of aircraft, based on the overall Main Gear Width and the Cockpit to Main Gear Distance. TDG also determines the taxiway edge safety margin and shoulder width of taxiways. Taxiway protection is determined by the ADG of the design aircraft. The ADG of an aircraft determines the taxiway protection areas, taxiway separation, and required wingtip clearance for aircraft using the taxiways. The TDG and ADG are determined by critical aircraft, the Q400. The Q400 has a TDG of three and ADG of III. **Table 1-7** depicts TDG three and ADG III standards.

Table 1-7. TDG 3 And ADG III Taxiway Standards	
Taxiway Width	50’
Taxiway Edge Safety Margin	10’
Taxiway Shoulder Width	20’
ADG III Standards	
Taxiway Protection	
Taxiway Safety Area (TSA)	118’
Taxiway Object Free Area (OFA)	186’
Taxilane OFA	162’
Taxiway Separation	
Taxiway Centerline to Parallel Taxiway/Taxilane Centerline	152’
Taxiway Centerline to Fixed or Movable Object	93’
Taxilane Centerline to Parallel Taxilane Centerline	140’
Taxilane Centerline to Fixed or Movable Object	81’
Wingtip Clearance	
Taxiway Wingtip Clearance	34’
Taxilane Wingtip Clearance	27’
Source: AC-13A	

1.3.4 AIRCRAFT APRONS

The Airport has four apron areas: the Air Carrier Apron, General Aviation North Apron, General Aviation South Apron, and the USFS Apron. The aprons serve the landside facilities including the passenger terminal building, the general aviation hangar facilities and FBOs, cargo facilities, and the USFS.

The Airport's aprons locations, sizes, and surface pavements are listed below:

- ✓ Air Carrier Apron, west of the runway intersection (378,675 square feet; concrete)
- ✓ General Aviation North Apron, northwest of the runway intersection (672,003 square feet; asphalt and concrete)
- ✓ General Aviation South Apron, north of the Air Carrier Apron and west of the runway intersection (110,475 square feet; asphalt)
- ✓ USFS, north of the runway intersection (473,175 square feet; asphalt and concrete)

1.3.5 FIXED BASE OPERATORS

FBOs support a wide range of GA aeronautical activities, providing services to aircraft and to pilots, the traveling public, and the airlines. There is one FBO at the Airport. The FBO is located on the North GA Apron, and on the South GA Apron. The FBO offers full service operations which include the following services:

- ✓ Aircraft ground handling
- ✓ Aircraft parking (ramp or tiedown)
- ✓ Fuel (100LL and Jet A)
- ✓ Hangars
- ✓ Nitrogen
- ✓ GPU/Power cart
- ✓ Passenger terminal and lounge
- ✓ Aerial tours/aerial sightseeing
- ✓ Aircraft charters
- ✓ Aircraft maintenance
- ✓ Aircraft cleaning/washing/detailing
- ✓ Aircraft parts
- ✓ Catering
- ✓ Rental cars
- ✓ Courtesy cars (free for pilots to use in the local area
- ✓ Public telephone
- ✓ Computerized weather
- ✓ Flight planning facilities
- ✓ Internet access
- ✓ Restrooms
- ✓ De-ice truck and De-ice Cart (type 1)

1.3.6 AIRCRAFT STORAGE

HANGARS

The Airport has box hangars and T-hangars on the north and south aprons. T-hangars store one aircraft while box hangars can accommodate multiple aircraft. Aircraft have direct access to Taxiway G for the south apron and Taxiway C for the north apron. Both taxiways are parallel to Runway 11-29 and have access to Runway 05-23. **Figures 1-4 and 1-5** show examples of hangars at the Airport. **Figure 1-6** shows the airport building layout.

Figure 1-4. Box Hangars

Figure 1-5. T-Hangars

1.3.7 SUPPORT FACILITIES

MAINTENANCE AND SNOW REMOVAL

The Airport has one support facility that houses airport maintenance and Snow Removal Equipment (SRE). The facility is located next to the ARFF and its bays face Taxiway G for quick access. The three storage bays contain plows and other SRE. The storage bay section of the building is approximately 85 feet by 45 feet. The Airport owns and operates the following SRE equipment:

- One 1995 Oshkosh model "HB" all wheel drive
- One 1976 Huber Grader, with a 12' reversible blade
- One 1985 Case Front End Loader
- One 2006 Cat Front End Loader
- Two 20' Pro-Tec snow pushers to attach to a front end loader
- One 12” Pro-Tec snow pusher to attach to a front end loader
- One 22’ reversible ramp plow
- One 2000 Oshkosh model “P” series six wheel, all steer, all wheel drive truck
- Two Bowmonk AFM2 Airfield Friction Meter Mark 3.
- One 1984 Oshkosh model WT-2206 all wheel drive with a 2009 slide in power plant and 20” rotary broom.
- One 2007 Ford F-550 deicing unit.
- One 2014 Wausau SnoDozer 3131

BUILDINGS

1	TERMINAL BUILDING
2	LANCAIR
3	INDUSTRIAL BUILDING
4	INDUSTRIAL BUILDING
5	INDUSTRIAL BUILDING
6	BUTLER AIRCRAFT SERVICES
7	BUTLER AIRCRAFT SERVICES
8	BUTLER AIRCRAFT SERVICES
9	HANGAR
10	HANGAR
11	HANGAR
12	T-HANGARS
13	T-HANGARS
14	HANGAR
15	PUBLIC WORKS DEPARTMENT
16	HANGAR
17	HANGAR
18	HANGAR
19	HANGAR
20	LEADING EDGE JET CENTER
21	T-HANGARS
22	HANGAR
23	T-HANGARS
24	HANGAR
25	LEADING EDGE JET CENTER
26	LEADING EDGE JET CENTER
28	HANGARS
29	AIRFIELD LIGHTING BUILDING
30	FOREST SERVICE
31	AIR TANKER BASE
32	FOREST SERVICE
33	FOREST SERVICE CASHE BLDG.
36	BUILDING
37	WELL PUMP HOUSE
38	STORAGE BUILDING
39	U.S. FOREST SERVICE AIR CENTER
40	U.S. FOREST SERVICE AIR CENTER
41	U.S. FOREST SERVICE AIR CENTER
42	U.S. FOREST SERVICE AIR CENTER
43	FOREST SERVICE
44	FOREST SERVICE
46	AIR TRAFFIC CONTROL TOWER
47	AIRPORT RESCUE & FIRE FIGHTING
51	SNOW EQUIP. & MAINT. STORAGE
52	WAREHOUSE
53	USFS HANGAR
54	SMOKEY HALL
55	FOREST SERVICE OFFICE BUILDING
56	LES SCHWAB HANGAR
57	BPA HELICOPTER HANGAR
58	HANGAR

Figure 1-6
HANGAR BUILDING PLAN

Airport personnel maintain the airfield and Airport-owned buildings. **Figure 1-7** shows the support facility used for maintenance and SRE. The support facility is in good condition. There is space between the support facility and the ARFF for future expansion of either facility should it be necessary.

Figure 1-7. SRE and Maintenance Support Facility

AIRCRAFT RESCUE AND FIRE FIGHTING

The Airport is required to maintain ARFF under Federal Aviation Regulation (FAR) Part 139, which governs the operation of airports with scheduled or unscheduled passenger service by aircraft of more than 30 seats. The Airport is classified with an ARFF Index B designation which applies to airports serving only aircraft that are shorter than 126 feet. The Index B designation specifies equipment types that must be on hand to respond to an aircraft accident. The Airport's ARFF facility is centered between the passenger terminal and the south GA apron with access to Taxiway G. ARFF vehicles include two crash trucks, one ambulance, and a mass casualty incident vehicle. The City of Redmond staffs the ARFF station with one active duty fire fighter at all times.

FUEL FACILITIES

Fuel is offered by the FBO to GA, airlines, military, and USFS. Both 100 low-lead (LL) and Jet A fuel are available from the FBO via full service fuel trucks as shown in **Figure 1-8**, and self-service 100LL is available on the South GA Apron. A list of fuel tanks, their ownership, and fuel type are listed below.

- At SRE building, diesel fuel tank used for SRE and maintenance
- South GA Apron, four tanks. Two are 20,000 gallons with Jet A fuel. One 500-gallon 100 LL fuel.
- North GA Apron, seven tanks. One private use 20,000 gallon Jet A. Two are out of commission and will eventually be removed. Two are out of commission and can be brought back if needed. One is a 20,000-gallon Jet A tank and one 12,000-gallon 100LL tank.

Figure 1-8. Fuel Trucks

UNITED STATES FOREST SERVICE (USFS) REDMOND AIR CENTER

The USFS Redmond Air Center plays a major role in supporting firefighting efforts in Oregon, Alaska, and Washington. Operations depend on the severity of the fire season, which generally lasts from May to October, so the number of operations varies annually. The base typically experiences approximately 780-800 operations per season.

Aircraft operating in and out of the base include C130s, RJ 85s, King Airs, and Sherpas (A and B versions). The USFS has also acquired 16 C130s (H/Q models) that are expected to arrive once reconstruction of Taxiway B is complete in 2017. The base has two aprons capable of accommodating the C130s. The station has an air tanker base on their leased property; hosts training for firefighting and prevention; and processes firefighters and sends them to incidents throughout the service region.

The FBO services the USFS base. The base has and will continue to be visited by traffic from other governmental organizations. Previous visitors include politicians, the Federal Bureau of Investigation, and Air Force One. The base is classified as a hub of operations, incident support base and critical asset for the Federal Emergency Management Agency (FEMA) and related emergency efforts in the event of a large scale natural disaster in the Pacific Northwest, such as an earthquake in the Cascadia subduction zone.

The USFS is planning for an expansion of its facilities to include a visitor center and fire cache on the leased property. The major improvements the base facility needs are improvements to the old roads that lead to the station and the utilities.

1.3.8 PAVEMENT

Pavement management reports are periodically updated to assist airports in the ongoing maintenance of airfield pavements. An airport Pavement Management Program (PMP) assesses the relative condition of the pavement sections and identifies pavement repair and rehabilitation needs and guides capital planning.

Airfield pavements are assessed using a scale known as the Pavement Condition Index (PCI). The PCI inspection assesses the types, severities, and amounts of distress observed in the pavements through a visual inspection. The evaluation is quantified using a scale from 0 (failed) to 100 (new) with ratings applied to individual pavement sections, providing an overall condition report for the Airport. The condition is an indication of the needs for maintenance and/or repair that will be required over a seven-year period. The most recent PCI values at the Airport were calculated in August 2010, and have been updated to reflect construction that has occurred since.

PAVEMENT STRENGTH

An airfield's required pavement strength is determined by aircraft fleet mix. There are two pavement strength classifications, "Utility" and "Other than Utility." Utility pavements are capable of handling aircraft up to 12,500 pounds maximum gross weight (MGW), while Other than Utility pavements can handle aircraft over 12,500 pounds MGW. When the design aircraft exceeds 12,500 pounds as the case at the Airport, the Aircraft Classification Number (ACN)-Pavement Classification Number (PCN) method is used to calculate what the pavement is capable of accommodating.

ACN:
The number that expresses the relative effect of an aircraft at a given configuration on a pavement structure for a specified standard of subgrade strength.

PCN:
A number that expresses the load-carrying capacity of a pavement for unrestricted operations.

The ACN-PCN method of determining pavement strength is intended to be used to report relative pavement strength, and not to be used for pavement design.

Table 1-8 illustrates the standard ACN-PCN reporting format, as described in AC 150/5335-5, *Standardized Method of Reporting Airport Pavement Strength - PCN*.

Table 1-8. Standard ACN-PCN Reporting Format				
	Pavement Type	**Subgrade Strength (CBR)**	**Tire Pressure (psi)**	**Method of Determination**
Numerical Value	R - Rigid	A - High (≥ 13 CBR)	W – no limit	T – Technical Study
		B – Medium (>8 but < 13 CBR)	X – 182-254	
	F - Flexible	C – Low (>4 but ≤ 8 CBR)	Y – 74-181	U – Using Aircraft
		D – Ultralow (≤ 4 CBR)	Z – 0-73	
### / R or F / A, B, C, or D / W, X, Y, or Z / T or U				
Source: Airport Records				

Table 1-9 includes the 2016 published weight bearing capacities for Runway 5-23 and Runway 11-29.

Table 1-9. Published Weight Bearing Capacity			
Runway	**Published Weight Bearing Capacity**		
	Single Wheel (SW)	**Dual Wheel (DW)**	**Dual Tandem Wheel (DTW)**
Runway 05-23	68,000 lbs.	110,000 lbs.	200,000 lbs.
Runway 11-29	28,000 lbs.	40,000 lbs.	N/A
Source: Airport Records			

Table 1-10 includes the recommended weight bearing capacity for Runway 05-23 and Runway 11-29 after using the ACN-PCN method for evaluating pavements.

Table 1-10. Recommended Weight Bearing Capacity – ACN-PCN Method			
Runway	**Recommended Weight Bearing Capacity**		
	SW	**DW**	**DTW**
Runway 05-23	120,000 lbs.	250,000 lbs.	-
Runway 11-29	94,000 lbs.	150,000 lbs.	-
Source: Airport Records			

Other airfield pavements' weight bearing and PCNs are included in **Table 1-11**.

Table 1-11. Other Pavements' Weight Bearing Capacity

Pavement	Weight Bearing Capacity		PCN
	SW	DW	
Taxiway A	68,000 lbs.	91,000 lbs.	26/F/C/X/T
Taxiway B	68,000 lbs.	91,000 lbs.	26/F/C/X/T
Taxiway C	74,000 lbs.	109,000 lbs.	28/F/A/X/U
Taxiway D	74,000 lbs.	109,000 lbs.	28/F/A/X/U
Taxiway E	120,000 lbs.	191,000 lbs.	54/F/C/X/T
Taxiway F	120,000 lbs.	191,000 lbs.	54/F/C/X/T
Taxiway G (East)	81,000 lbs.	121,000 lbs.	29/F/A/X/T
Taxiway G (West)	74,000 lbs.	109,000 lbs.	28/F/B/X/U
Taxiway H	120,000 lbs.	191,000 lbs.	54/F/C/X/T
Taxiway J (South)	81,000 lbs.	121,000 lbs.	29/F/A/X/T
Taxiway J (North)	74,000 lbs.	109,000 lbs.	28/F/B/X/U
Taxiway K	120,000 lbs.	191,000 lbs.	54/F/C/X/T
Taxiway M (South)	81,000 lbs.	121,000 lbs.	29/F/A/X/T
Taxiway M (North)	74,000 lbs.	109,000 lbs.	28/F/B/X/U
Taxiway N	120,000 lbs.	191,000 lbs.	54/F/C/X/T
Air Carrier Apron	76,000 lbs.	100,000 lbs.	29/F/C/X/U
GA North Apron	74,000 lbs.	109,000 lbs.	28/F/B/X/U
GA South Apron	23,000 lbs.	-	8/F/C/X/T

Source: Airport Records

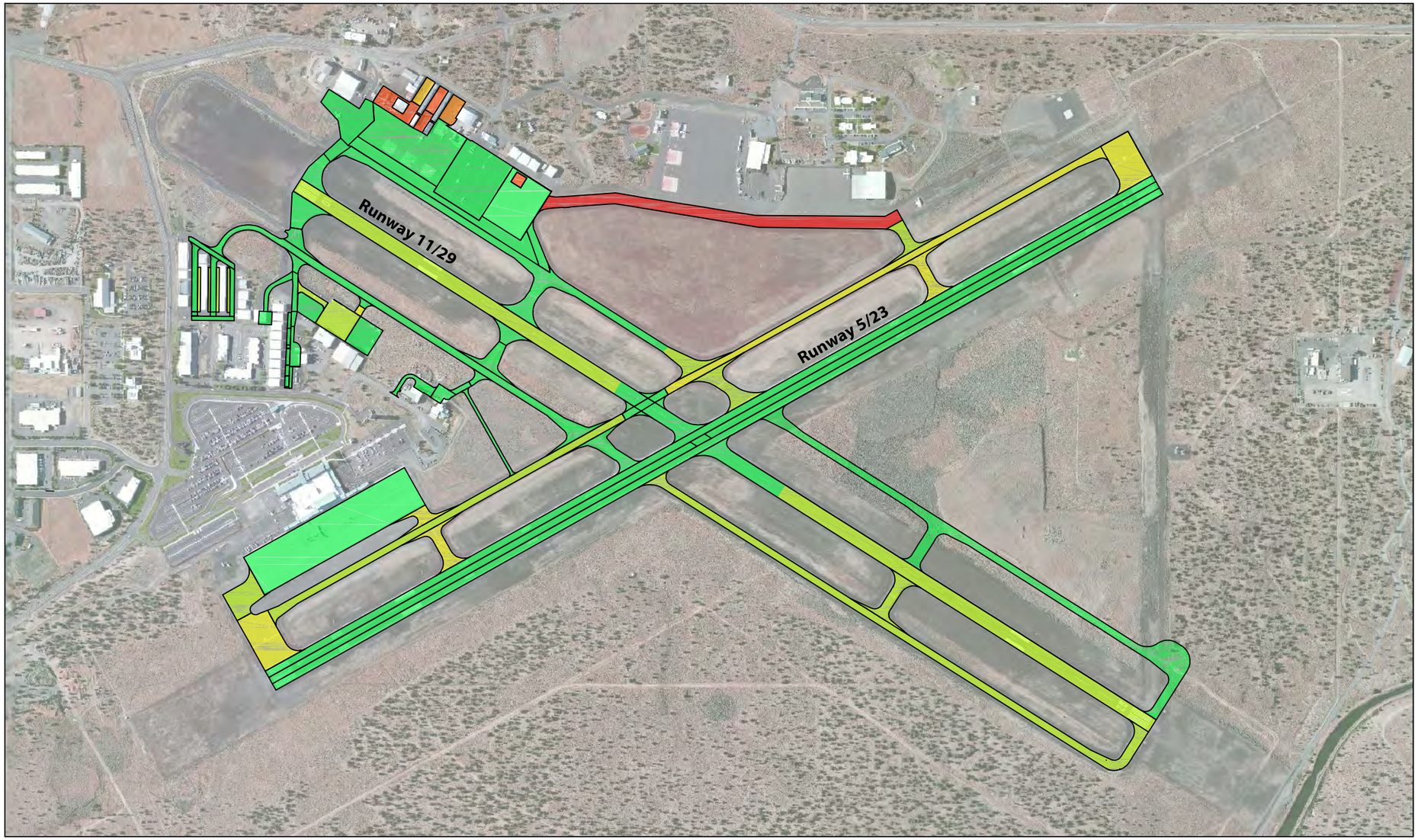


Figure 1-9
PCI Map

1.3.9 NAVIGATIONAL AIDS AND INSTRUMENT PROCEDURES

Aircraft taking off and landing at the Airport rely on instrument procedures, flight patterns, instrument and visual approach aids, and weather observation and communication for safe operations. This section describes these factors in greater detail.

INSTRUMENT PROCEDURES

Aircraft that use the Airport operate under both visual flight rules (VFR) and instrument flight rules (IFR). The Airport has established instrument approach (landing) and departure (take off) procedures that are provided by the ATCT to pilots as they arrive or depart the Airport. Instrument approach procedures are a series of predetermined maneuvers established by the FAA using electronic NAVAIDS. The procedures assist pilots in locating and landing at an airport during low visibility and cloud ceiling conditions. The eleven instrument approach procedures and one instrument departure procedure in effect at the Airport are summarized in **Table 1-12.**

Instrument Meteorological Conditions (IMC):
When visibility is poor and cloud ceilings are below a defined threshold, those are considered instrument meteorological conditions (IMC).

FAA regulations refer to flight relying on instruments as instrument flight rules (IFR), and IMC is occasionally referred to as "IFR conditions."

When visibility and cloud ceiling are above IMC, pilots may elect to fly using IFR or visual flight rules (VFR), which is where the pilot uses visual cues to safely operate the aircraft.

Table 1-12. Instrument Approach & Departure Procedures		
Approach Procedures	**Visibility (Nautical Miles, NM)**	**Descent Minimums (Feet)**
ILS OR LOC RWY 23	½	200
RNAV (RNP) Z RWY 05	7/8	276
RNAV (RNP) Z RWY 23	½	250
RNAV (GPS) RWY 11	7/8	250
RNAV (GPS) Y RWY 05	¾	250
RNAV (GPS) Y RWY 23	½	200
RNAV (GPS) Y RWY 29	1	480
RNAV (GPS) Z RWY 29	1	286
VOR/DME RWY 23	1 ¼	935
VOR-A	1	580
JUNIPER VISUAL RWY 23	Visual	Visual
Departure Procedure	**Takeoff Minimums**	
REDMOND THREE		
✓ RWY 5	Minimum climb of 390 feet per nautical mile (NM) to 13000	
✓ RWY 11	Minimum climb of 406 feet per NM to 13000	
✓ RWY 23	Minimum climb of 356 feet per NM to 13000	
✓ RWY 29	Minimum climb of 358 feet per NM to 13000	

In addition to the published instrument procedures, airlines generally have their own instrument procedures that are tailored to their operations specifications, aircraft types, and levels of crew certification. Airline-specific instrument procedures are proprietary and not used by the public, therefore, they are not included in the Inventory Chapter.

FLIGHT PATTERNS

Flight patterns at the Airport are depicted in **Figure 1-10** (Arrival), **Figure 1-11** (Departure), and **Figure 1-12** (Local). Arrival and departure routes show the typical flight patterns aircraft use when approaching or departing the Airport. Local patterns represent operations that occur around the Airport such as touch and go operations. The tracks shown in the figures represent the majority of flight patterns at the Airport. Weather, wind, ATCT direction, and pilot preference determine flight tracks and which runway end aircraft can use for arrivals and departures. .

Touch and Go
An aircraft maneuver where an aircraft lands, slows, then accelerates and takes off without leaving the runway. It is counted as two operations.

INSTRUMENT AND VISUAL APPROACH AIDS

NAVAIDs are visual and electronic guides that assist pilot navigation. Visual NAVAIDs include lights and wind indicators that can be seen through aircraft windows. Reliance on sight limits the utility of visual NAVAIDs when visibility is poor and at great distances. Electronic NAVAIDs are acquired by instruments onboard aircraft and help pilots navigate and land when it is not possible to do so through visual cues alone. Electronic NAVAIDs include terrestrial antennae that use radio frequencies and satellites that use the global positioning system (GPS). NAVAIDs can be used during all flight conditions and must be used when visibility and cloud ceilings are low enough to be considered instrument meteorological conditions (IMC). NAVAIDs for the Airport are listed in **Table 1-13**, and described in more detail in the section that follows.

- ✓ GPS: A satellite based navigational system
- ✓ MALSR: Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
- ✓ ILS: Instrument Landing System – ground based landing system
- ✓ REIL: Runway End Identifier Lights
- ✓ NDB: Non-Directional Beacon
- ✓ PAPI: Precision Approach Path Indicator
- ✓ VOR/DME: a VHF omnidirectional range (VOR) and distance measuring equipment (DME)

Table 1-13. Navigational Aids Summary by Runway

5-23	11-29
high intensity runway edge lights	medium intensity runway edge lights
Runway End 5	Runway End 11
REIL	REIL
VASI	VASI
Runway End 23	VOR A (Category A)
PAPI	GPS overlay
1,400 foot MALSR	Runway End 29
ILS	REIL
NDB	PAPI
VOR/DME	GPS

Source: FAA Airport Facility Directory

The Airport is equipped with two wind cones, which provide pilots with an indication of wind direction and speed. One wind cone is located next to the intersection of Taxiways F and G and is lighted. The second wind cone is located between the GA north apron and Runway 11-29 and is not lighted.

AIR TRAFFIC CONTROL AND COMMUNICATIONS

FAA's Air Traffic Services division manages the National Airspace System (NAS) using a series of control centers that have control or authority over different segments of aircraft travel:

- ✓ Airport Traffic Control Tower (ATCT)
  - May be run by FAA, or Contractor (The RDM ATCT is run by SERCO)
  - The vicinity of the airport
- ✓ Terminal Radar Approach Control facilities (TRACON)
  - Multiple airports (The Airport approach/departure control is operated by Seattle Center)
- ✓ Air Route Traffic Control Centers (ARTCC)
  - Regional area (The Airport controlled by Seattle Center)
  - Controls aircraft en-route

Airspace administered by the FAA is classified as either "controlled" or "uncontrolled," and defined as one of six classifications. Airspace designated as Class A, B, C, D, and E is controlled airspace, and Class G airspace is uncontrolled airspace. Class F airspace is not used in the United States. **Figure 1-13** depicts the airspace and aeronautical setting surrounding the Airport.

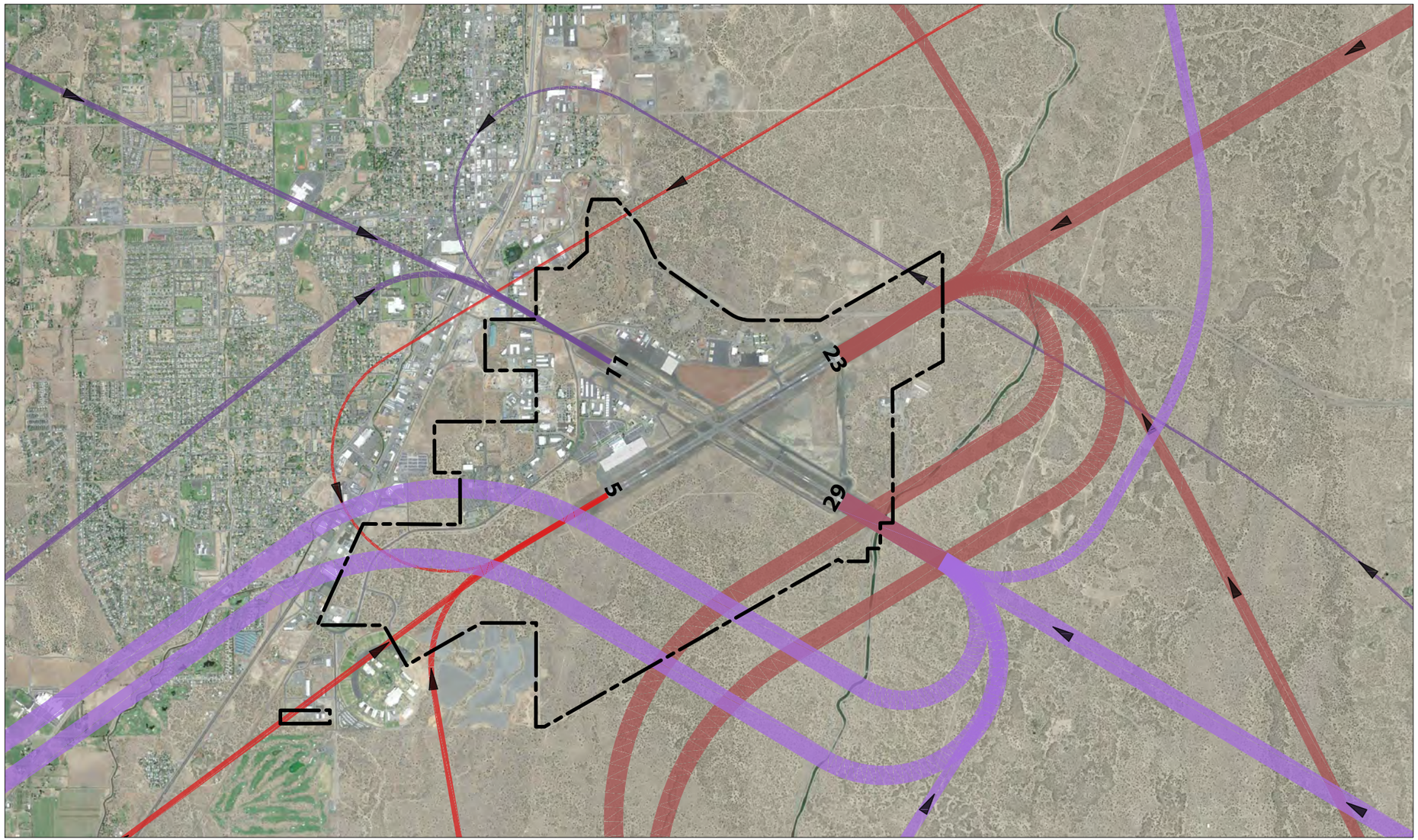


Figure 1-10
ARRIVAL FLIGHT PATTERNS

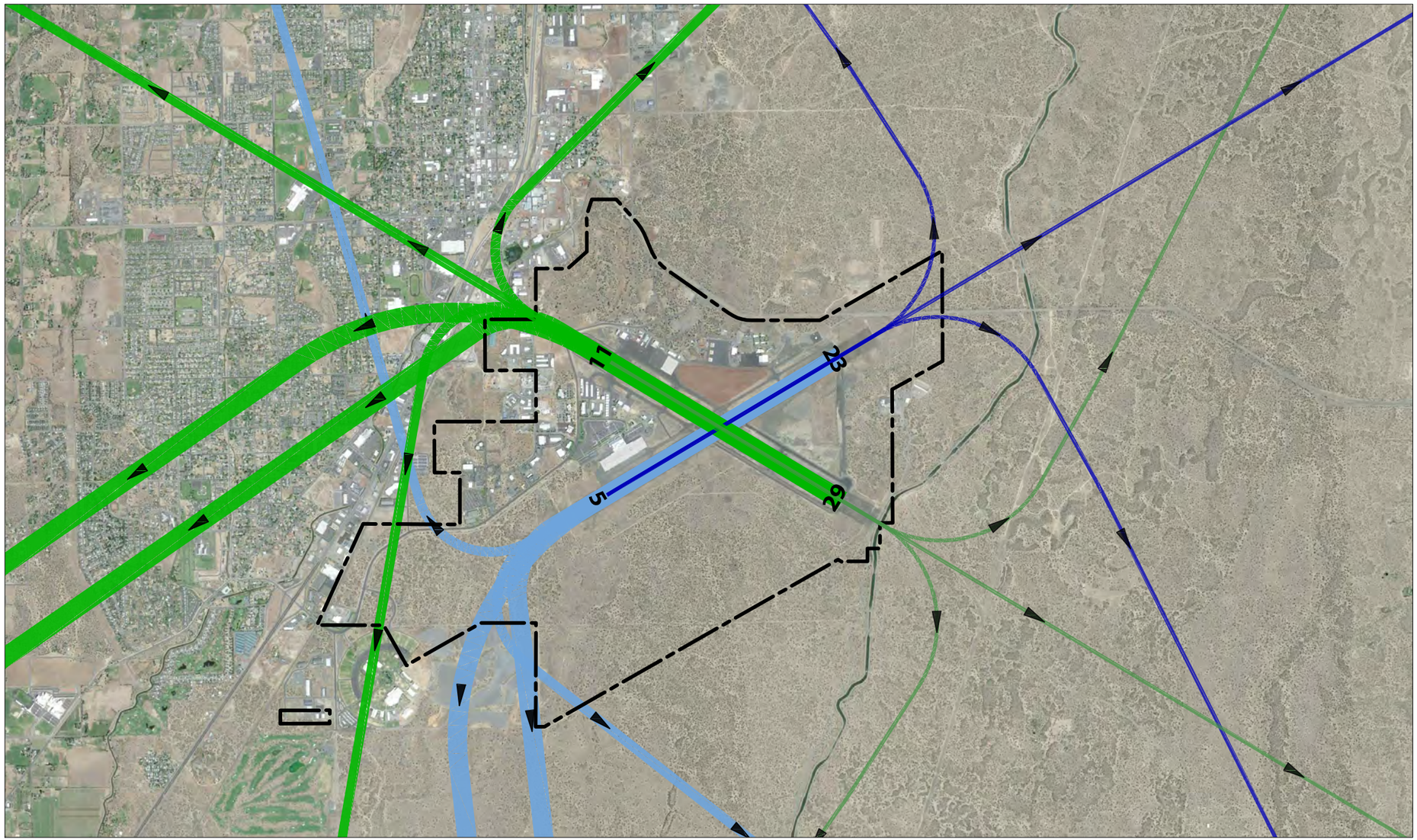


Figure 1-11
DEPARTURE FLIGHT PATTERNS

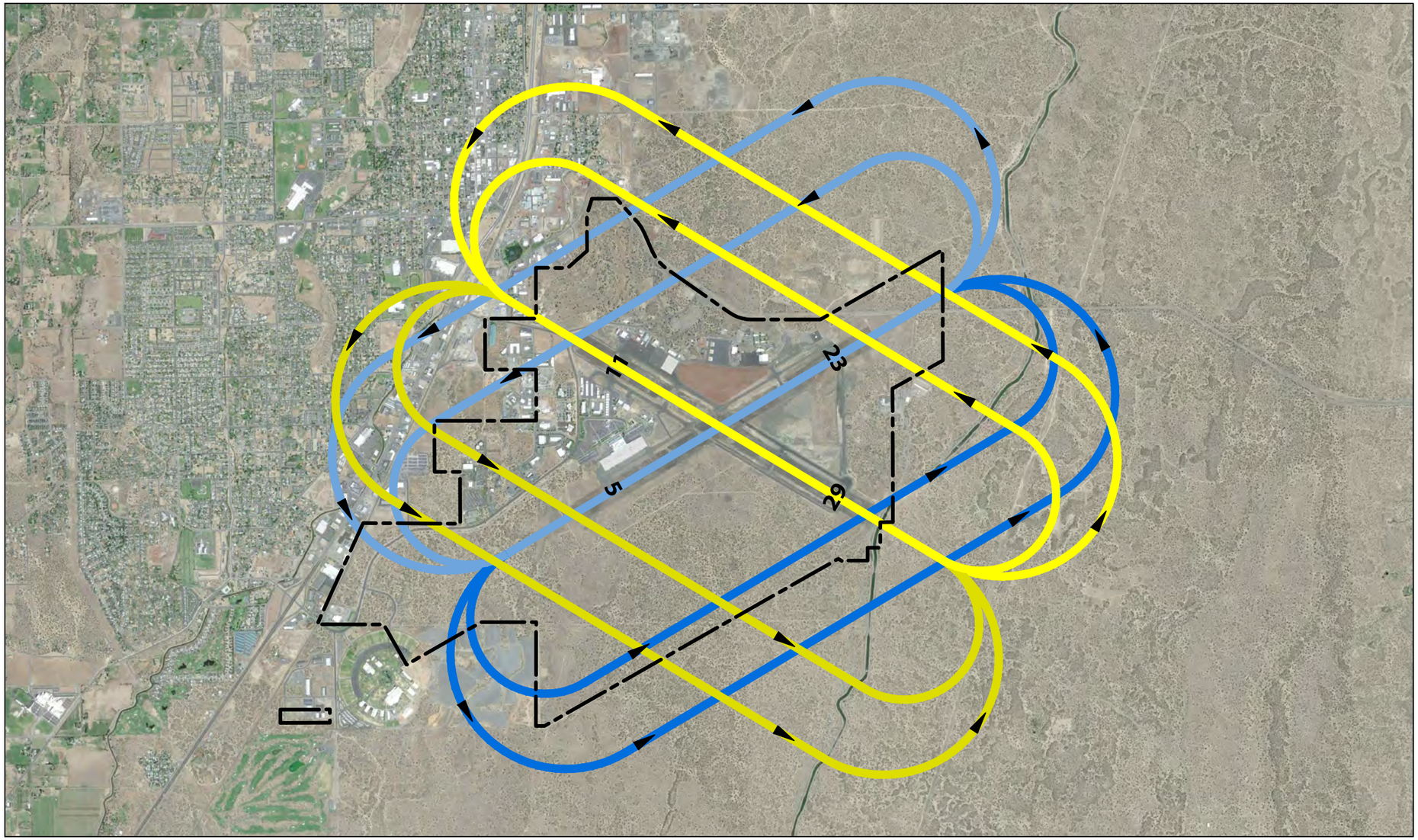
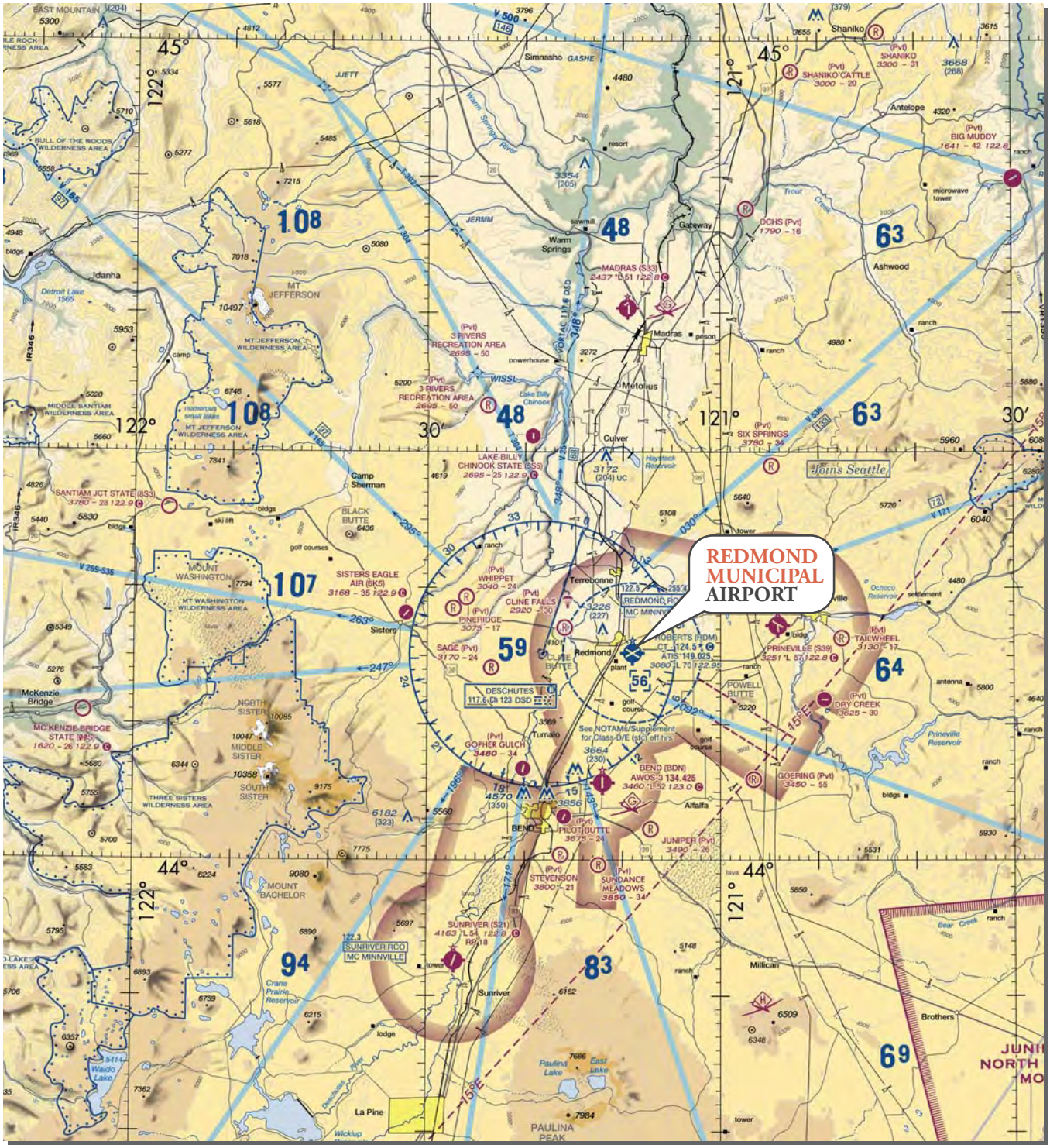


Figure 1-12
LOCAL FLIGHT PATTERNS



Scale 1" = 10 Nautical Miles

Source: *Sectional Aeronautical Chart: Seattle (December 2016, Klamath Falls (March 2017)*

Figure 1-13
AIRSPACE/NAVAIDS SUMMARY

The ATCT, located just to the northeast of the terminal, is a contract tower run by a private company. It is not owned by the FAA and the staff are not FAA employees. The airspace around The Airport is Class D airspace when the ATCT is in service. When the ATCT is not in service, the Airport operates under a Class E airspace designation. IFR operations in vicinity of the Airport are in contact with the Seattle ARTCC, which provides pilots with altitude, aircraft separation, and route guidance.

Pilots flying to the Airport are able to gather information about the Airport from a variety of information sources. The McMinnville Flight Service Station (FSS), another part of FAA's Air Traffic system, provides pilots with pre-flight briefings, assistance with opening and closing flight plans, pilot reports, weather reports, and notices to airmen. Weather information at RDM is broadcast by the automated surface observation system (ASOS).

1.3.10 CLIMATE – WIND AND WEATHER CONDITIONS

WIND

Wind observation data comes from the ASOS. The wind rose shows that prevailing winds come from the northwest and the south-south east. **Figure 1-14** illustrates the all-weather wind rose for the Airport. Inner circle increments that expand outwards represent the total number of observations. Numbers on the outside of the circle from 0 to 36 represent the direction from which the wind is prevailing. Colors represent the speed of the wind in knots. Colors will stretch out towards the edge of the circle for directions from which the wind is prevailing during observations. The observations occurred between 2006 and 2015.

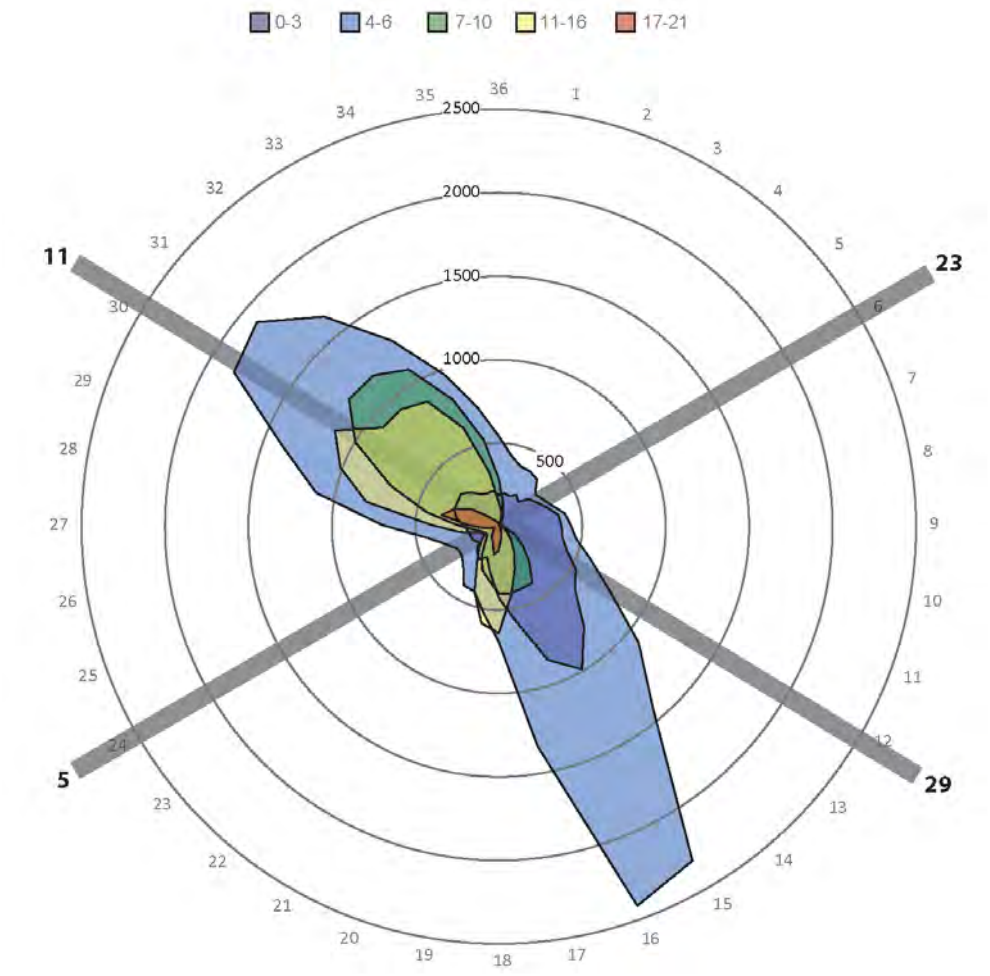
Wind data is vital for aircraft operations. Aircraft performance is enhanced when taking off and landing into the wind, and there are limits to how much crosswind and tailwind aircraft can handle. Wind direction and speed information helps pilots and air traffic control select the most appropriate runway for operation.

FAA standards for crosswind coverage are one of several factors that go into determining how many runways are needed, and what direction they should face. FAA standards state that runways should provide at least 95-percent coverage for aircraft that are expected to use the airport at least 500 times per year. Crosswind runways may be employed to improve wind coverage throughout the year and meet FAA criteria. The allowable crosswind component for each Runway Design Code is included in the **Table 1-14** below:

Table 1-14. Crosswind Component	
Runway Design Code	**Allowable Crosswind Component**
A-I and B-I*	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through C-III, D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IB through D-VI	20 knots
E-I through E-VI	20 knots

*Includes A-I and B-I small aircraft

Figure 1-14. All Weather Wind Rose



Source: FAA Airports Wind Rose Generator.

WEATHER

In addition to wind, temperature and precipitation affect aircraft operation. For example, high temperatures can increase required takeoff distance, which could alter takeoff power settings and require payload reduction. Precipitation can negatively impact braking during landing. The frequency and amount of snow influences the type and number of SRE necessary, which has equipment and material storage implications. Weather data comes from the ASOS at the Airport to provide an idea of the local climate in the area. Key weather conditions are listed in **Table 1-15** below.

Table 1-15. Weather Conditions

Average Annual Temperature	Maximum	62.1° F
	Minimum	32.7° F
	Average Hottest Month	July: 85.5° F
	Average Coldest Month	January: 22.2° F
Precipitation	Average Annual Total	8.64 Inches
	Average Monthly Maximum	January/December: 1.60 Inches
Snowfall	Average Annual Total	19.7 Inches

Source: Western Regional Climate Center, Redmond ASOS Station Data 1948 – 2016.

WEATHER OBSERVATION AND COMMUNICATION

Information about weather conditions is important to pilots as they make navigation decisions. The weather system in place at The Airport is an Automated Surface Observing System (ASOS). The monitoring units in this system are operated jointly by the National Weather Service, the FAA, and the Department of Defense.

When the ATCT is closed, there are communication systems in place to help pilots communicate with each other and gather information about the conditions at the airport and in the surrounding area. These include:

- Common Traffic Advisory Frequency (CTAF): A radio frequency, specific to each airport, used for communication between pilots operating at, and in the vicinity of, an Airport. The frequency for The Airport is 124.5. The CTAF is used during hours that the ATCT is closed.

- ✓ Universal Communication (UNICOM) station: An air-to-ground communication facility. The frequency for The Airport is 122.95. A pilot might use a UNICOM to communicate fuel needs or other requests to a FBO.
- ✓ Automatic terminal information service (ATIS): A continuous broadcast of recorded information, such as weather, active runways, available approaches and NOTAMs information, on a frequency specific to each airport. The frequency for The Airport is 119.025.

1.3.11 AIRFIELD MARKING AND LIGHTING

Airfield marking and lighting enhance pilot situational awareness and wayfinding. FAA guidance for airfield markings is defined in AC 150/5340-1, *Standards for Airport Markings* and AC 150/3540-30H *Design and Installation Details for Airport Visual Aids.* This section describes these elements.

RUNWAY MARKINGS

Runway markings are white in color and schematics depend on the approach category of the runway. The markings include the runway end designator, centerline, a threshold bar, aiming point, touchdown zone, and runway edge markings. Runway 05-23 is marked with precision instrument runway (PIR) markings and Runway 11-29 is marked with non-precision instrument runway (NPI) markings.

Table 1-16 lists the runway markings for Runway 05-23 and 11-29.

Runway end designator:
Numbers that identify the magnetic heading of a runway.

Centerline:
Dashed markings that denote the center of the runway.

Threshold bar:
Denotes the beginning of the runway available for landing.

Aiming point:
Provides a visual aiming point for landing operations.

Touchdown zone:
For landing operations, identifies the touchdown zone along a precision runway in 500-foot increments.

Runway edge markings:
Provide enhanced visual contrast between the runway edge and the surrounding terrain or runway shoulders and delineates the width of the suitable paved area for runway operations.

Table 1-16. Runway Markings

Marking	Runway 05-23 (PIR)	Runway 11-29 (NPI)
Runway end designator	X	X
Centerline	X	X

Threshold bar	X	X
Aiming point	X	X
Touchdown zone	X	
Runway edge markings	X	

Source: Airport Pavement and Marking Plan

TAXIWAY MARKINGS

Taxiway markings consist of yellow centerline and enhanced centerline markings, and hold position signs painted with white inscriptions on red backgrounds.

Centerline:
Continuous markings that denote the center of the taxiway.

Enhanced centerline:
Additional dashed markings on both sides of the centerline to provide visual cues of an upcoming runway hold position.

RUNWAY LIGHTING

Runway 05-23 has high-intensity runway edge lighting (HIRL), consistent with the runway's precision instrument approach capability. Runway 05 is equipped with a four-box visual approach slope indicator (VASI). Runway 23 is equipped with a four-box precision approach path indicator (PAPI).

Runway 11-29 has MIRL. Runway 11 is equipped with a four-box VASI and Runway 29 is equipped with a four-box PAPI. Both runway ends are equipped with REIL, where the pilot sees all red lights when the approach is too low, all white lights when the approach is too high, and both red and white lights when on the appropriate glide path.

HIRL/MIRL:
High/Medium Intensity Runway Lights include white edge lights (with amber lights near the runway ends to indicate runway remaining) and runway threshold lights. The threshold fixtures have split lenses (green/red) indicating the beginning (green) and end (red) of the runway.

REIL:
Runway End Identifier Lights are two synchronized unidirectional flashing lights that help to identify the runway when it is less distinct from its surroundings or during periods of low visibility.

VASI:
VASI project a beam of light having a white segment in the upper part of the beam and red segment in the lower part of the beam. VASIs perform a function similar to the PAPI.

PAPI:
PAPI project light along a standard glide path to a runway end, with red and white colored lights indicating the aircraft's vertical position (above, below, or on glide path) relative to the defined glide path.

TAXIWAY LIGHTING

The taxiways at the Airport are equipped with blue medium-intensity taxiway edge lighting.

OTHER LIGHTING

The Airport has a rotating beacon mounted on a tower support on the north side of the airfield. Rotating beacons are used to indicate the location of an airport to pilots flying at night or during reduced visibility. The beacon provides sequenced white and green flashing lights that rotate 360 degrees.

The Airport has a lighted wind cone located on the west corner of the Taxiway G and Taxiway F intersection.

Additional overhead lighting is located in the terminal area, aircraft parking aprons, and in the hangar areas. There are red obstructions lights mounted on the top of several airport structures and on near-airport obstructions including street lights.

1.3.12 OTHER AIRSIDE FACILITIES

Fencing and gates and service roads are airside facilities that fall outside of these previous categories are briefly discussed in this section.

FENCING AND GATES

The Airport has perimeter chain-link fencing with barbwire around the airfield perimeter to help prevent unauthorized access. Security gates provide access to the FBO, GA hangars, USFS, and controlled movement areas of the airfield.

SERVICE ROADS

The Airport has a system of service roads that extend around the property perimeter to provide access to the various NAVAIDs and weather system and to transition between landside facilities.

The air carrier apron has a white painted two-lane vehicle service road along the northwest side of the apron that provides access the terminal building. A paved vehicle service road extends from the south side of Taxiway A around the Runway 11 end to the north side of Taxiway A. An additional paved service road connects the ARFF station to Taxiway F.

The Airport has a gravel perimeter road that follows the perimeter fence around the Airport operations area. Additional gravel vehicle service roads provide access to the runway approach lighting systems, NAVAIDs, weather observation system, and the airport surveillance radar.

1.4 LANDSIDE FACILITIES

1.4.1 AIRPORT ACCESS AND VEHICLE PARKING

LOCAL ROAD NETWORK

The Airport is served by local two-lane, paved roads referred to as the local road network. Airport Way, which is the main road serving the Airport, intersects Highway 97 south of the Airport at the Deschutes County Fairgrounds. Airport Way connects with Veterans Way near the northwest corner of the Airport. Veterans Way connects to Highway 97 approximately one-half mile west of the Airport and is the Airport's main access point.

VEHICLE CIRCULATION FOR NON-AVIATION FACILITIES

The primary roads serving the Airport include Airport Way and Veterans Way runs along the west side of the Airport. Additionally, a network of paved local streets serves the nearby non-aviation uses. **Table 1-17** summarizes the Airport roadways, organized by classification.

Table 1-17. Airport Roadways By Classification		
Roadway Classification	**Roadway Name**	**Airport Development Area**
Major Arterial	OR Highway 126 (Ochoco Highway)	North Development Parcel North Business Park USFS Campus
Minor Arterial	19th Street	Fairgrounds Industrial Subarea
Minor Arterial	Airport Way	Airport Way Subarea Fairgrounds Industrial Subarea South Apron Side GA Subarea West Business Park
Minor Arterial	Veterans Way	North Business Park North Development Parcel West Business Park
Major Collector	Salmon Drive	West Business Park
Major Collector	Veterans Way	North Business Park
Local Street	1st Street	West Business Park
Local Street	2nd Court	West Business Park
Local Street	4th Street	West Business Park
Local Street	6th Street	South Apron Side GA Subarea West Business Park
Local Street	10th Street	North Business Park
Local Street	21st Street	Fairgrounds Industrial Subarea
Local Street	23rd Street	Fairgrounds Industrial Subarea
Local Street	Badger Avenue	Fairgrounds Industrial Subarea
Local Street	College Way	West Business Park
Local Street	Deerhound Avenue	Fairgrounds Industrial Subarea
Local Street	Mt. Hood Drive	Airport Way Subarea
Local Street	Lake Road	North Development Parcel
Local Street	Ochoco Way	USFS Campus
Local Street	Pumice Avenue	West Business Park
Local Street	Reindeer Avenue	West Business Park
Local Street	Salmon Avenue	South Apron Side GA Subarea West Business Park
Local Street	Sisters Way	North Business Park USFS Campus
Local Street	Tamarack Court	West Business Park
Local Street	Timber Avenue	West Business Park
Local Street	Umatilla Avenue	West Business Park
Local Street	USFS Drive	USFS Campus
Local Street	Wickiup Avenue	Airport Way Subarea

The intersection at Veterans Way and Airport Way is planned to be realigned as part of a separate project. Preliminary designs by the City of Redmond propose a new roundabout near the intersection of 1st Street and Veterans Way to provide expanded access and service to the North Development Parcel.

AUTOMOBILE PARKING FOR NON-AVIATION FACILITIES

Parking requirements for non-aviation uses at the Airport are defined by the City of Redmond Development Code, Section 8.0500. The City requires developments to provide a minimum number of parking spaces based on land use and specifies the dimensions of the standard parking and compact parking spaces as well as the width of the aisles.

TERMINAL AREA AUTO PARKING AND GROUND TRANSPORTATION

The passengers departing from the Airport have multiple options to access the terminal building. They may use the public parking lot for their private vehicles, can be dropped off at the curb by personal vehicles, or be delivered by taxis or shuttles. The employees have a separate parking area near the terminal separate from the passenger lot and the Airport vendors also have assigned parking separate from employee parking.

The long and short term parking lot (combined facility) accommodates 1,083 vehicles at a rate of $1.00 for each half hour, up to a daily maximum of $10.00. The seventh day is free.

The employee parking lot accommodates 189 vehicles and the vendor lot can accommodate 6 vehicles in marked parking stalls. The vendor lot can accommodate more vehicles besides the marked parking stalls.

GENERAL AVIATION AND OTHER FACILITIES AUTO PARKING

Table 1-18 lists the various aviation related parking areas at the Airport and provides a breakdown of the vehicle parking spaces by standard and the Americans with Disabilities Act (ADA) compliant spaces.

Table 1-18. Vehicle Parking

Location Identifier	Facility	Parking Spaces	
		Standard	ADA
1	FAA Airport Traffic Control Tower	8	1
2	South Apron Private Hangar – RDD Enterprises	21	2
3	Aircraft Rescue and Firefighting (ARFF)	10	2
4	Snow Removal Equipment (SRE)	3	1
5	South GA Apron FBO Building #1	35	1
6	South GA Apron FBO Building #2	6	0
7	Public Works Department	15	1
8	North GA Apron FBO	15	0
9	North Apron Private Hangars – BPA and Les Schwab	28	3
10	USFS	228	6

1.4.2 UTILITIES

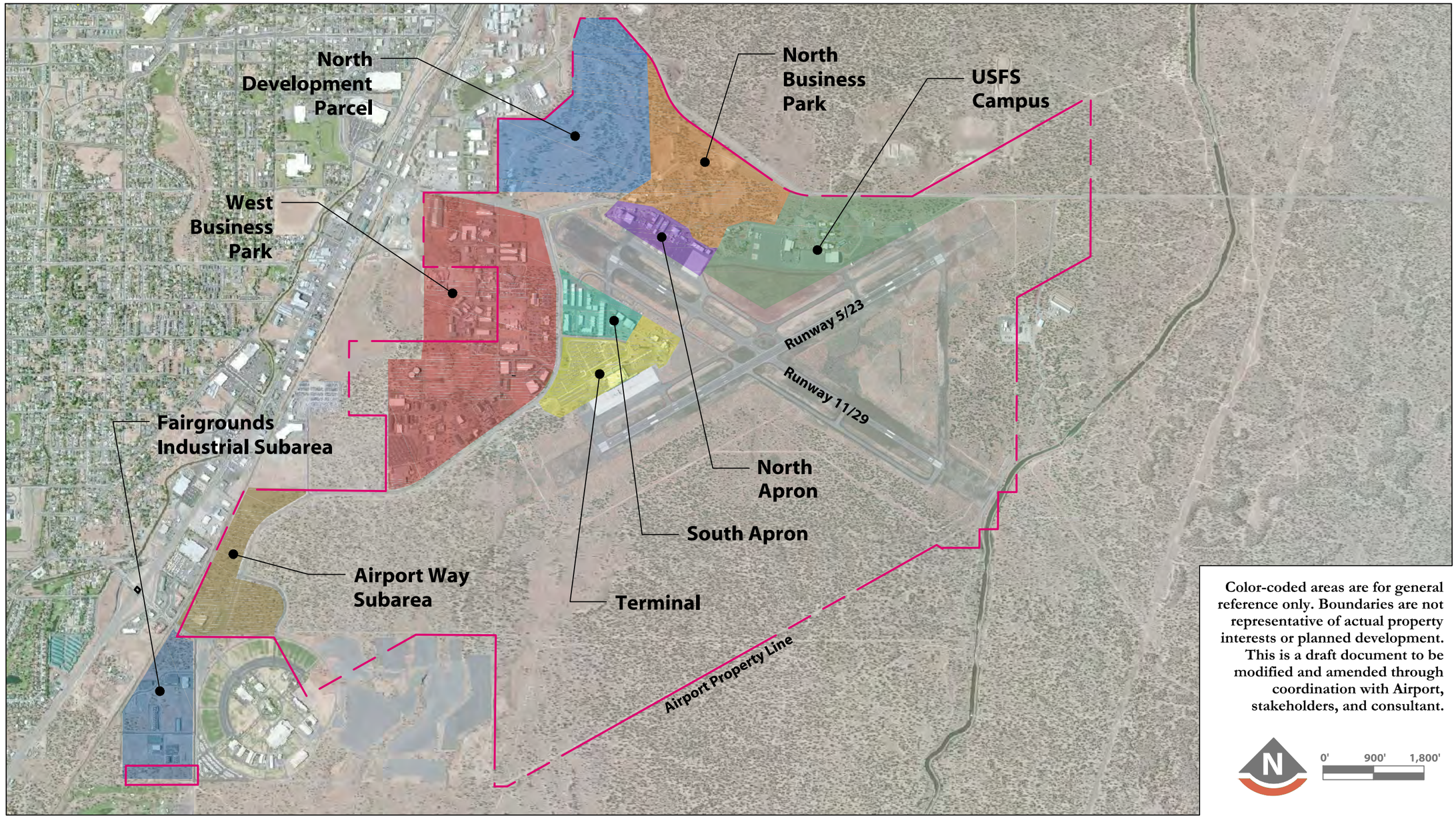
Utilities are significant elements in the immediate and long-range planning for the Airport. The Airport's location on the eastern edge of the City of Redmond city limits is in a generally commercial and light industrial region. The Airport currently holds several property interests both adjoining the Airport facility and in the surrounding vicinity. To consider these properties for future expansions would require analysis of the existing utilities and the potential of utility enhancements. This section of the report addresses the location, size, and general feasibility of using existing Airport property utilities for new airport development alternatives.

Figure 1-15 identifies development areas the Airport is considering for future development alternatives:

- USFS Campus: The northern area servicing the Redmond Air Center and Forest Service operations adjacent to Taxiway B.
- North Side GA: The apron, FBO, and hangars along the north side of the Airport, accessed by and south of SW Sisters Avenue.
- North Business Park: The area south of Hwy 126 and north of SW Sisters Avenue characterized by rocky juniper and sage terrain with sparse existing development.
- North Development Parcel: The old Redmond golf course land bound on the northwest by SE Lake Road, on the northeast, by Hwy 126, and to the south, by Veterans Way.
- South Side GA: The hangars, FBO, and businesses bound to the west by Airport Way, to the south, by Salmon Avenue, and accessing the Airport by Taxiways A and G.
- Terminal: The terminal area.
- West Business Park: The commercial/light industrial area to the west of Airport Way in which the Airport holds several property interests.
- Airport Way Subarea: The area of land west of Airport Way and immediately north of the Deschutes County Fairgrounds.
- Fairgrounds Industrial Subarea: The area of land west of 19th Street and south of Airport Way.

The sub-areas identified for this report and designated for potential future expansion appear to have sufficient existing utilities in close proximity. The USFS Campus and potentially parts of the North Side GA are the exception. Most of the utilities in this area appear to be insufficient for future expansion because they were sized to serve only the area of the USFS Campus.

The following sections discuss each utility providing service on or in the vicinity of the Airport as depicted in **Figure 1-16 through 1-19.**



Color-coded areas are for general reference only. Boundaries are not representative of actual property interests or planned development. This is a draft document to be modified and amended through coordination with Airport, stakeholders, and consultant.

N

0' 900' 1,800'

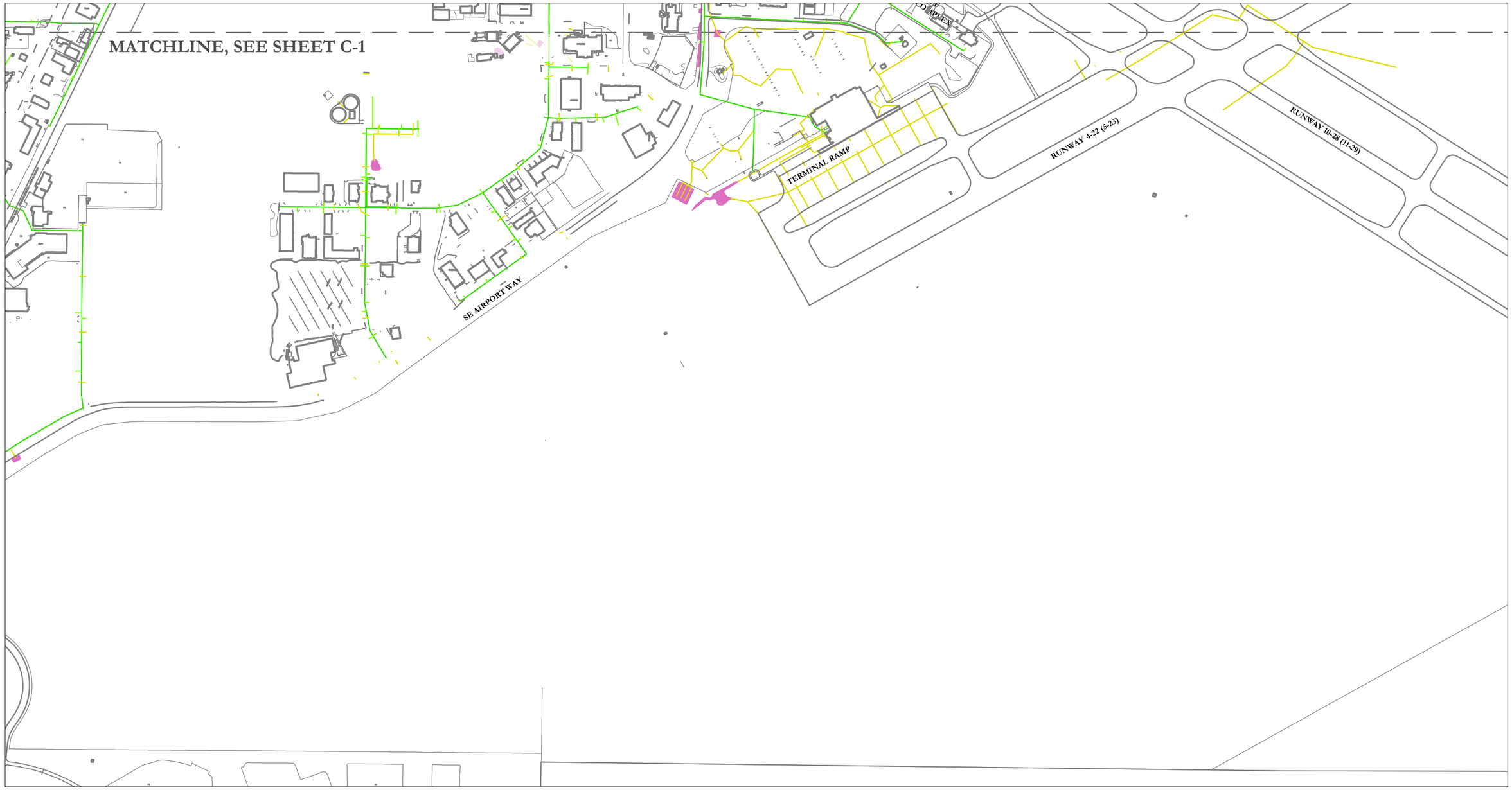
Figure 1-15
Development Areas

LEGEND:

- STORM PIPE
- SEWER MAIN
- SEWER LATERAL
- STORM DETENTION BASIN

REDMOND MUNCIPAL
AIRPORT MASTER PLAN

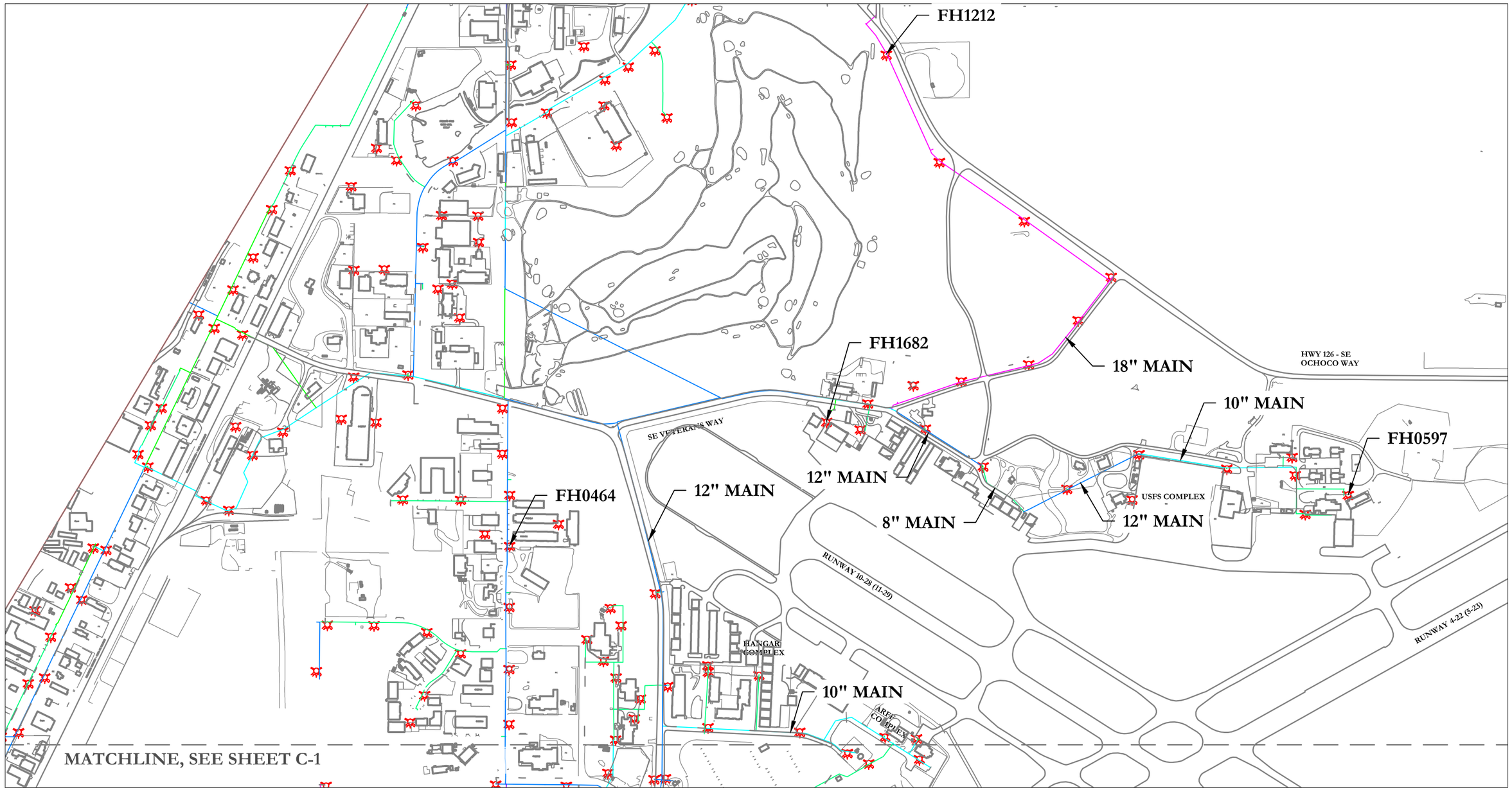
Figure 1-16
EXISTING STORM AND SEWER MAINS AND LATERALS



LEGEND:

- STORM PIPE
- SEWER MAIN
- SEWER LATERAL
- STORM DETENTION BASIN

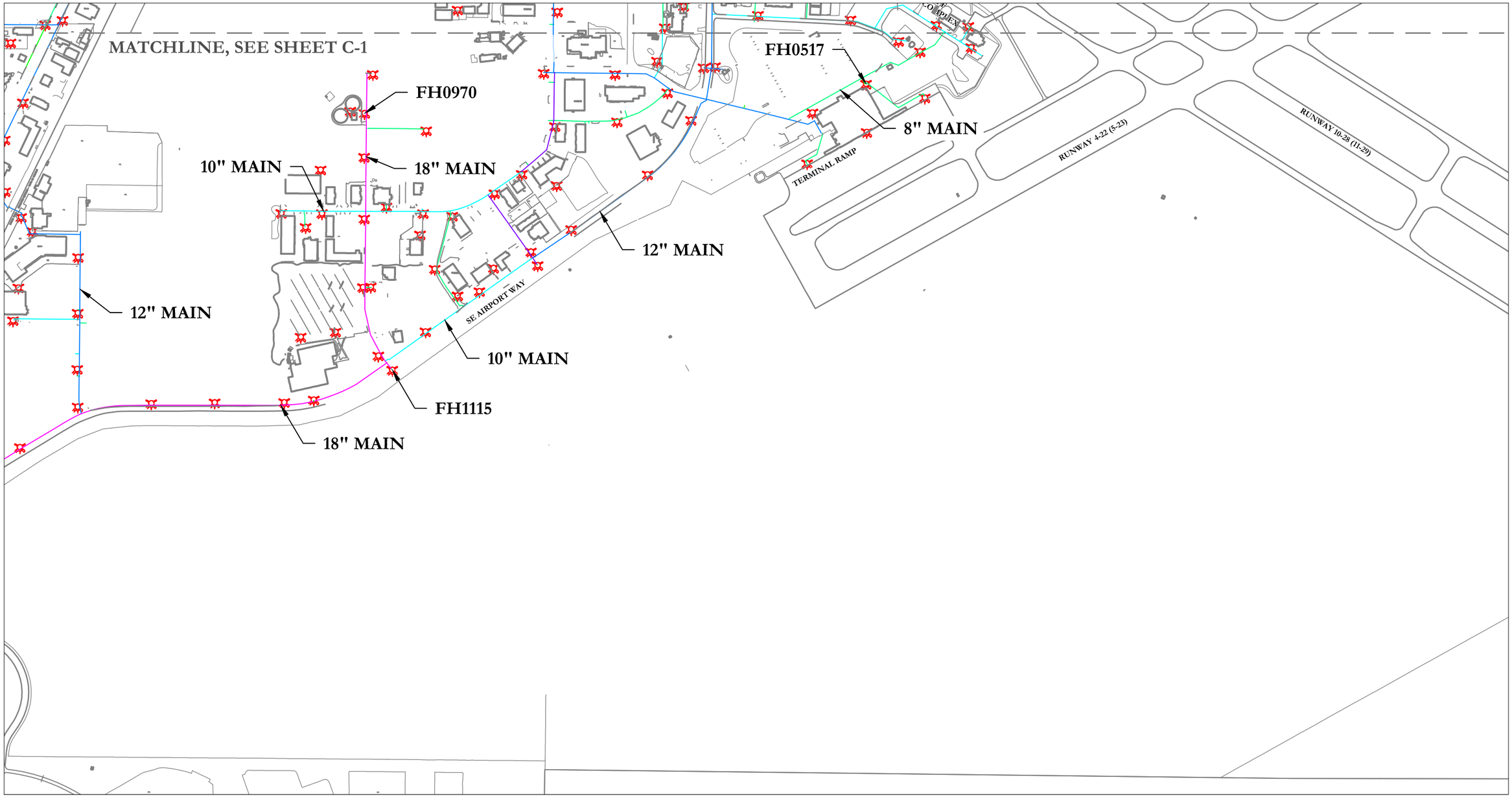
Figure 1-17
EXISTING STORM AND SEWER MAINS AND LATERALS



LEGEND:

- 6" MAIN
- 8" MAIN
- 10" MAIN
- 12" MAIN
- 14" MAIN
- 16" MAIN
- 18" MAIN
- EXISTING HYDRANT

Figure 1-18
EXISTING WATER
MAINS AND LATERALS



LEGEND:

- 6" MAIN
- 8" MAIN
- 10" MAIN
- 12" MAIN
- 14" MAIN
- 16" MAIN
- 18" MAIN
- EXISTING HYDRANT

REDMOND MUNCIPAL
AIRPORT MASTER PLAN

Figure 1-19
EXISTING WATER
MAINS AND LATERALS

ELECTRIC

Pacific Power (PPL) provides electrical service to the Airport. Discussions with representatives of PPL for this report did not reveal imminent plans for expansion of services beyond the existing overhead and buried circuits servicing the Airport and its surrounding area. As of 2016, one circuit feeds the airport area. A second circuit around the fairground area may be able to be extended to airport, if needed. PPL's position is Airport load growth would drive any expansion. The suggestion is the 2016 level of electrical service in the vicinity of the Airport should suffice for some expansion alternatives, though development beyond the current reach of PPL's circuits would require extension. In the event of development plans proceeding, early coordination with PPL would be required to discuss load growth in a specific location. At that time, PPL would determine whether or not a system impact study is needed, along with a re-evaluation the system.

SEWER

The City of Redmond provides sanitary sewer service to the Airport and its surrounding areas. Redmond's Water Pollution Control Facility is located in the northwest corner of the City. **Figures 1-16 and 1-17** show the gravity mains that serve the areas considered for this report. Mains that follow Airport Way to Veterans Way heading northwest serve the West Business Park, Terminal, and South Side GA areas. A main that runs along Veterans Way and Sisters Avenue serves the North Side GA and abuts the southern edge of both the North Business Park and the North Development Parcel. Another main that originates at the USFS Campus before heading north to intersect Hwy 126 then runs northwest in parallel serves the northern edges of these two development areas. As with the water service at the USFS Campus, additional development adjacent to or requiring use of that area's sewer system would benefit from further analysis.

WATER

The City of Redmond provides water service to the Airport and its surroundings. All of Redmond's water is produced from subsurface wells, stored in reservoirs, and distributed throughout the city through its system of booster pump stations and pipes. The City's Public Works Department monitors, tests, and maintains this water system and stores utility inventory data on the department's Esri-based GIS mapping database. The development areas considered for this report except for the Fairgrounds Industrial Subarea are served by the City's Pressure Zone 2.

Discussion with the Public Works Department indicates that the areas on and around the Airport are adequately served with water for the needs. As depicted in **Figures 1-18** and **1-19**, a water system consisting of pipes ranging in diameter from 12-inches to 18-inches serves the majority of the development areas under consideration. An 18-inch main extends north along Airport Way until SW 6th Street where it extends to the street's terminus. This large-diameter main serves the Airport Way Subarea and the West Business Park.

A 12-inch main follows Airport Way from the intersection of Airport Way and 6th Street through the intersection with Veteran's Way. This 12-inch main and several 10-inch branches along their entire route effectively serve the Terminal area and the South Side GA area, and borders the southern edge of the North Development Parcel and the western edge of the North Side GA. An 18-inch main running parallel to Hwy 126 and angling south along Veterans Way serves the remainder of the North Development Parcel and the North Business Park. All of these areas are anticipated to accommodate development of future water demand.

The USFS Campus and potentially parts of the North Side GA are the exception to sufficiency of the 2016 service capacity for future expansion. An inconsistent series of pipes ranging between eight and 12 inches in diameter serves the USFS Campus. Fire hydrant flow testing performed by the City of Redmond Public Works Department in December 2016 confirmed that flows are approximately 1,100 gallons per minutes (gpm) for hydrants throughout the development areas under consideration. The USFS Campus, however, sees flows of approximately 850 gpm, which is insufficient for expansion of water demand without upgrades to the water infrastructure in this area as of 2016. The Public Works Department recognizes this area as one that most likely would require water infrastructure upgrades prior to any future expansion.

Table 1-19 summarizes the fire flows determined through hydrant testing for this report.

Table 1-19. RDM Fire Hydrant Flow Test Inventory

Hydrant ID	Static Pressure (ft)	Flow (gpm)	Location
FH1212	58	1175	Hwy 126 (300' S of SE 9th St.)
FH0597	50	856	USFS NE of Paraloft (Inside FS fence)
FH1682	55	1162	Les Schwab Hangar (Inside fence)
FH0464	69	1256	1842 SE 1st St.
FH0517*	53	1300	Airport (N end of Terminal)
FH0970	60	1175	2551 SW 6th St. (Innovation Park)
FH1115	56	1138	SW Airport Way & SW 6th St.
FH1122	54	1175	SW Airport Way (400' NE of Mt. Hood Dr.)

***Test data from 2006, all other locations tested December 2016.

TELECOMMUNICATIONS

The Airport is adjacent to the commercial and light industrial operations of the West Business Park, thus the area is well-served by telecommunications and fiber optic providers. CenturyLink, Bend Broadband, and LSNetworks are the primary providers in the Redmond area, though several smaller providers are also available.

NATURAL GAS

Cascade Natural Gas serves the Redmond area. As of 2016, existing pressure mains run adjacent to each of the potential development areas being considered. The existing infrastructure, with extensions as needed, is considered capable of accommodating most future proposed development.

STORM DRAINAGE

Storm drainage on the Airport is contained within the Airport property. The majority of storm drainage, including that of the infield storm system, daylights to an open swale or regional low point, with two notable exceptions. Two large boulder-filled infiltration galleries accommodate storm drainage from the Terminal area and the South Side GA area. One of these is adjacent the north edge of the South Side GA area, and the other is at the southern tip of the Terminal area. These systems are considered to be fixed in their purpose, and not suited for future expansion.

The remaining development areas would likely be subject to the stormwater development requirements of the City of Redmond. These requirements draw largely from the Central Oregon Stormwater Manual (COSM), which outlines Best Management Practices for stormwater management. Given the basaltic subsurface conditions known to define Central Oregon, surface treatment of stormwater, such as swales and drainage basins, is a common management practice. Refer to **Figures 1-16** and **1-17** for locations of stormwater management facilities.

1.4.3 NON-AVIATION FACILITIES

The existing non-aviation developments owned by the Airport and adjacent to airport property are detailed in A**ppendix A.** The information includes known projects in the planning and design stage that may impact the Airport. Airports often own non-aviation parcels as a way to promote development that is compatible with aircraft operations, and to diversify revenue. The non-aviation facilities are divided into the following subareas based on their location:

- ✓ North Development Parcel Subarea
- ✓ North Business Park Subarea
- ✓ South Side GA Subarea
- ✓ West Business Park Subarea
- ✓ Airport Way Subarea
- ✓ Fairgrounds Industrial Subarea

1.4.4 ON-AIRPORT ZONING AND LEASE RESTRICTIONS

Appendix A includes a detailed listing of City of Redmond Zoning designations which occur in the Airport vicinity. The zoning information includes the “zone description” and a listing of permitted uses.

1.5 TERMINAL BUILDING

The terminal building is a modern, well maintained facility built in 2009. With the passenger enplanement growth and the expansion of services since it was built, the terminal will need expansion and alteration for more efficient use and adaptability for future growth. This section describes the terminal facilities that exist in 2016. **Figures 1-20** through **1-25** show the terminal building floor plan by level.

1.5.1 TERMINAL BUILDING

TERMINAL BUILDING FUNCTIONAL COMPONENTS

PARKING / GROUND TRANSPORT

The passengers departing from the Airport have multiple options to access the terminal. They may use the public parking lot for their private vehicles, can be dropped off at the curb by personal vehicles, or be delivered by taxis or shuttles. The employees have a parking area near the terminal separate from the passenger lot, and the Airport vendors also have assigned parking separate from employee parking.

PRE-SECURE AREA

The pre-secure area of the terminal is that portion of the building that precedes the TSA screening. The pre-secure area is comprised of administration offices, airline ticketing and offices, baggage claim, meeter/greeter lounge, food and retail convenience store, rental car agencies, and restrooms.

ADMINISTRATION SPACE

The airport management space is comprised of a reception area, six offices and a conference room.

LAW ENFORCEMENT OFFICERS (LEO) AREAS

RAMS Specialized Security Service, Inc., who provides security for both pre-secure and secure areas, has an office adjacent to the security checkpoint. The City of Redmond Police Department also has an office in the terminal for officers to perform routine duties. While this police office is not staffed full-time, it allows officers to be nearby if needed for an emergency at the Airport.

TICKETING

There are ten ticketing counters, and each airline has dedicated counter(s) with separate queuing lines and ticketing kiosks. Passengers can check in at either the counter or kiosks; however, only the Alaska kiosks allow passengers to tag their own checked baggage. As of 2016, there are three unoccupied counters available. Airline offices and storage spaces serving the airlines are located directly behind the ticketing counters.

MEETER/GREETER LOUNGE

A meeter/greeter lounge immediately follows the inbound passengers' exit from the secure area. It is adjacent to baggage claim and the rental car counters. The waiting area provides seating and a children's play area.

BAGGAGE CLAIM

The baggage claim consists of two baggage carousels and an oversize baggage claim area. A dedicated inbound baggage drop off area on the exterior of the terminal building serves these carousels.

RENTAL CARS

RDM has five counters for six rental car agencies with an office behind each counter. The agencies keep the rental vehicles in a parking lot adjacent to the terminal. Renters access the rental lot via a marked walkway. The rental car agencies are:

- ✓ Alamo
- ✓ Avis
- ✓ Budget
- ✓ Enterprise
- ✓ Hertz
- ✓ National

CONCESSIONS

A single news and gifts concession space is located in the pre-secure area. The plumbing for this space supports beverage service, but no cooking or food preparation takes place as of 2016.

UNFINISHED SPACE

As of 2016, approximately 3,178 square feet of unfinished space is available for future tenant improvement located along the pre-secure central corridor area.

SECURE AREA

The two-story area beyond the TSA checkpoint is referred to as "secure," meaning passengers and employees have gone through TSA screening, or possess required credentials for access. The basement contains baggage screening, the TSA office suite, a maintenance shop, storage, and breakroom. The first floor houses a convenience store and holdroom for passengers, and the second floor contains a bar, restaurant, and

another holdroom. There are restrooms on both the first and second floors. Access to the second floor is provided by two sets of stairs and an elevator.

SECURITY CHECKPOINT

The TSA screening area bridges the pre-secure and secure areas. The TSA operation has two lanes for screening passengers in an area approximately 75 feet long and 40 feet wide. Typically, both lanes are in operation daily during peak screening times – from 7 to 8 a.m. and from 12-1 p.m. As of 2016, TSA does not implement a pre-check lane.

The space for TSA screening may need an expansion due to increasing passenger enplanements. There appears to be sufficient space to accommodate an adding an additional lane by opening the space to the east, but this would require the removal of the existing exit passageway. As modifications of TSA guidelines are updated periodically, any future design will have to be mindful of possible changes to current standards.

TSA ADMINISTRATIVE AREA

The TSA support areas are in need of expansion. The Airport was reclassified to a Category 2 airport by the TSA in March 2016, after surpassing 250,000 annual enplanements for the three previous fiscal years. The enhanced classification increases the budget for staff and equipment. An increase in staff would necessitate improvements in the training areas, locker room space, and offices.

BAGGAGE SCREENING

As of 2016, baggage screening is located in the basement. The baggage handling system takes baggage from behind the airline ticketing counters, through the TSA screening equipment in the basement, and back up to the baggage make-up area, defined in the next paragraph. Alterations or reconfigurations to this area to meet updated TSA guidelines need to be balanced against the available basement area.

BAGGAGE MAKE-UP

Baggage make-up is where the airlines retrieve screened baggage. The baggage make-up system is one, large carousel with tug access to four sides. Some congestion at the baggage make-up has been noted. Adding another belt for outbound baggage screening would reduce congestion, and that addition would necessitate a building expansion.

GATES

The Airport has six gates, Gates A-F, for departing passengers. Gates serviced by the airlines are listed below:

- ✓ A – Alaska
- ✓ B – Alaska
- ✓ C – United
- ✓ D – Delta
- ✓ E – American
- ✓ F – Unassigned

HOLDROOMS

The holdrooms are the areas for passengers waiting to board their flights. The first floor area is a one-story space with a two-story circulation space leading to the second floor. The first floor contains seating with approximately 220 seats. The first floor holdroom area acts as a single space. Gate areas are loosely defined by their proximity to the airline gate kiosk. While this provides efficient use of the overall space, it makes it difficult to consolidate passengers with the airline they are flying.

The second floor holdroom has a high, vaulted ceiling with excellent daylighting and good views. There is ample space with approximately 50 chairs. No gates are directly associated with the second floor area.

PASSENGER BOARDING BRIDGES

All aircraft at the Airport are ground boarded, with no passenger boarding bridges (PBBs). Boarding bridges can facilitate passenger boarding and deplaning especially in conjunction with the anticipated airline fleet expansion. The addition of PBBs could make better use of the underutilized second floor holdroom and should lighten the first floor holdroom congestion. The second floor has the space to accommodate additional gates served by PBBs. Installing the PBBs at this location would require extensive modifications to the building. An exiting path likely containing escalators or additional elevators for deplaning passengers would need to be added to direct traffic to the secure exit.

INTERIOR PASSAGEWAY TO AIRCRAFT RAMP

Boarding passengers move through the holdroom gates to an enclosed passageway. The passageway contains access to eight ramp doors that open to the aircraft ramp. The passengers board the aircraft using movable stairs or ramps. Deplaning passengers enter the passageway from the exterior and proceed to a secure exit that leads to baggage claim, rental car counters and the meeter/greeter lounge.

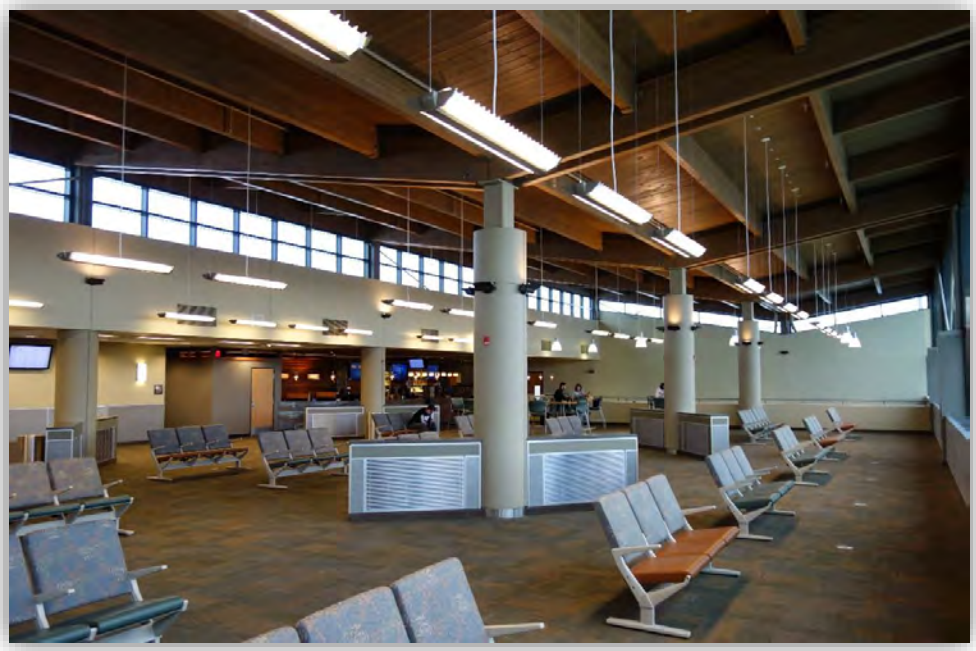
CONCESSIONS

The first floor contains a small convenience store. There is inadequate storage/support space for this area, and the concessionaire has difficulty maintaining stock throughout the day. The second floor has a bar, restaurant and kitchen, with high chair seating at the bar, and table and chair seating near the serving area. As there are no gates on the second floor, the restaurant/bar area is removed from primary holdroom activity.

Existing retail areas could be expanded to provide a broader range of merchandise and facilitate customer movement within the stores, especially when customers enter with luggage. Concessions storage is limited, which leads to shortages and stock shortages during peak periods. There is a lack of cold storage for the food, and getting supplies through TSA screening is time-consuming. There is an opportunity for improved concession revenue with the addition of food service in the pre-secure area of the terminal. A coffee/sandwich shop would serve those waiting for passengers, as well as employees. Electrical and mechanical systems

need improvement to address issues related to the circuit breaker for the restaurant refrigerator, and the availability of hot water in the restaurant.

Figure 1-20. Second Level of Passenger Terminal



AIRLINE TICKETING OFFICES (ATO)

As of 2016, the space for offices and storage behind the ticket counters is at capacity. Some of the ATO space is used for storage. An expansion of this area is needed to ease current constrictions and provide for future growth.

GENERAL TERMINAL SYSTEMS/AREAS

BUILDING STORAGE

The terminal building lacks sufficient space for on-site storage. Maintenance equipment, supplies and other materials used at the terminal have to be held in mechanical rooms or remote locations, which is an inconvenience to terminal personnel.

DEDICATED DELIVERY ENTRY

As of 2016, when deliveries are made to the terminal items must be transported from curbside through the public space of the building to their destination. A dedicated delivery entry and unloading area would be more efficient, with distribution through a back-of-house passageway. This could eliminate congestion in the public spaces and provide a more secure entry for goods.

IMPROVED SIGNAGE

The secure passageway leading to the gates could use clearer gate markings in conjunction with destinations indicated at each ramp exit door. The use of video monitors would aid in providing clear direction and information that could change with each flight. The expanded use of informational display units at the holdroom gates and other strategic locations could provide weather information, flight information, and advertisement space.

PUBLIC ADDRESS SYSTEM

The PA system provides an inconsistent level of performance in the holdroom. It has been reported that announcements are difficult to hear.

POWER ISSUES AT GATE AREA

As of 2016, the gates have no back-up power. The gates doors stay in whatever position they are in when the power fails creating a security issue as well as access disruption. There is a desire to expand electrical power to the seating in the terminal.

REVOLVING DOORS

The revolving doors at secure exiting creates a queue as passengers must wait for the slowdown of traffic created by these doors. It was also noted that finding replacement parts for these doors is difficult.

ELECTRIC GROUND SUPPORT EQUIPMENT

The airlines are moving to the implementation of an all-electric fleet for their Ground Support Equipment. Provisions to locate charging stations and provide power to these units need to be developed.

GROUND SETTLEMENT

Some settlement has been noted at gates 1 and 2. These areas should be monitored to see if the settlement has subsided or presents an ongoing issue..

ENERGY EFFICIENCY

The community has expressed an interest in energy efficiency. Where systems need to be update or replaced, energy efficiency should be a priority. There are currently photovoltaic panels on the terminal roof. There is further interest increasing solar generated power.

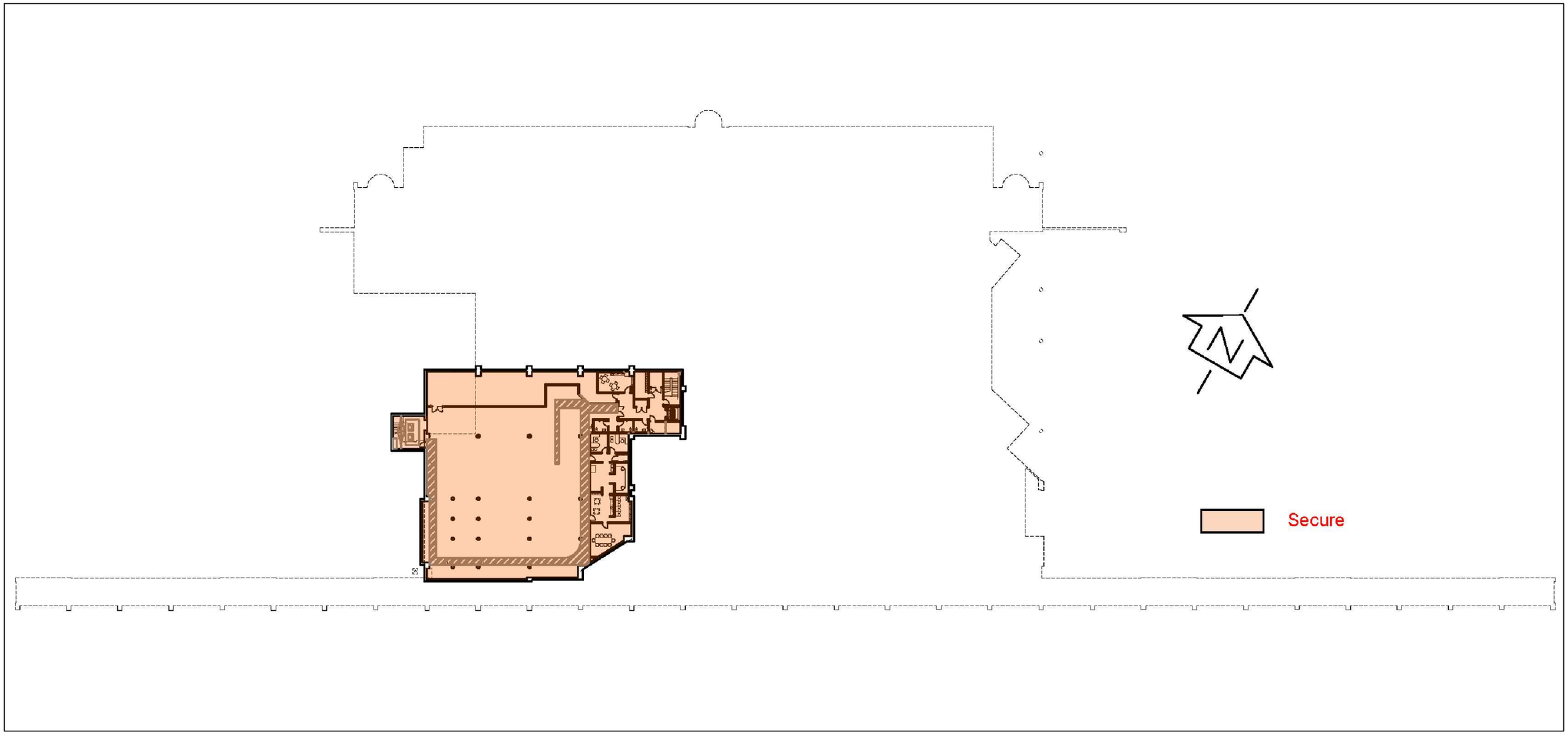


Figure 1-21
BASEMENT FLOOR PLAN

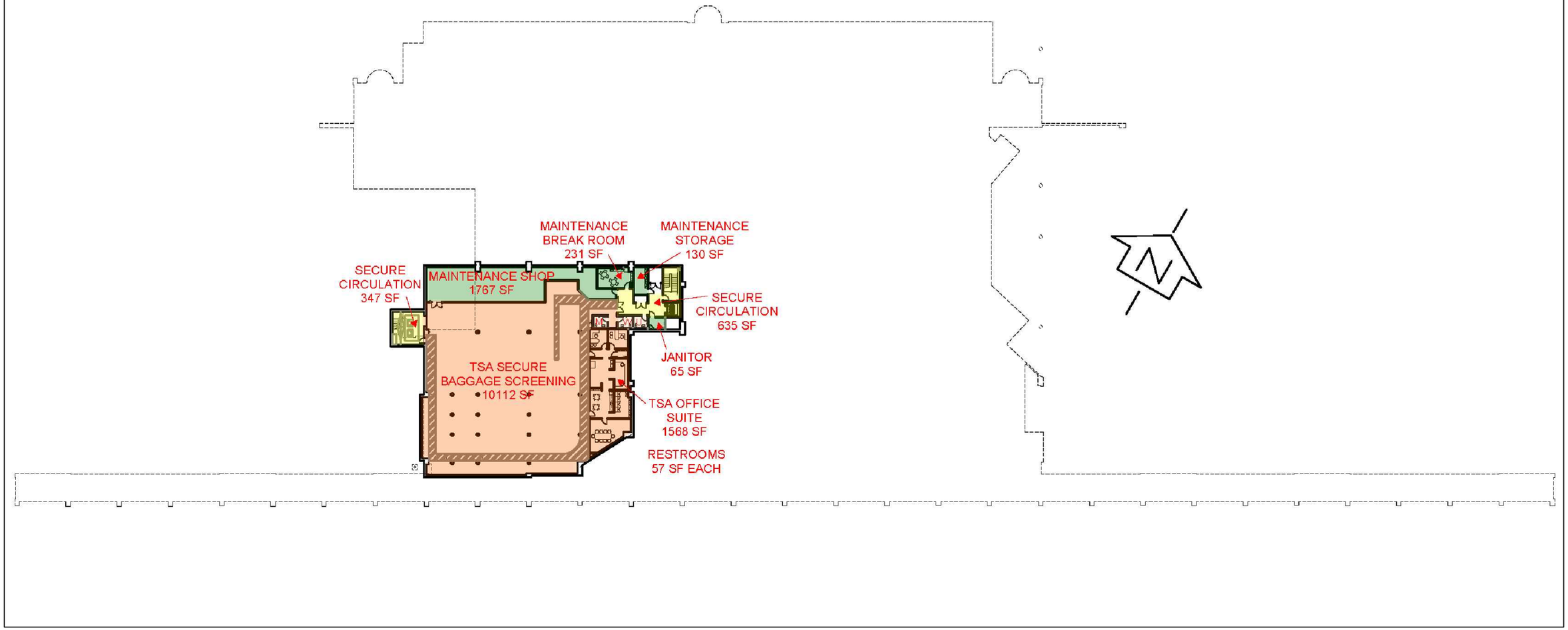


Figure 1-22
BASEMENT FLOOR PLAN

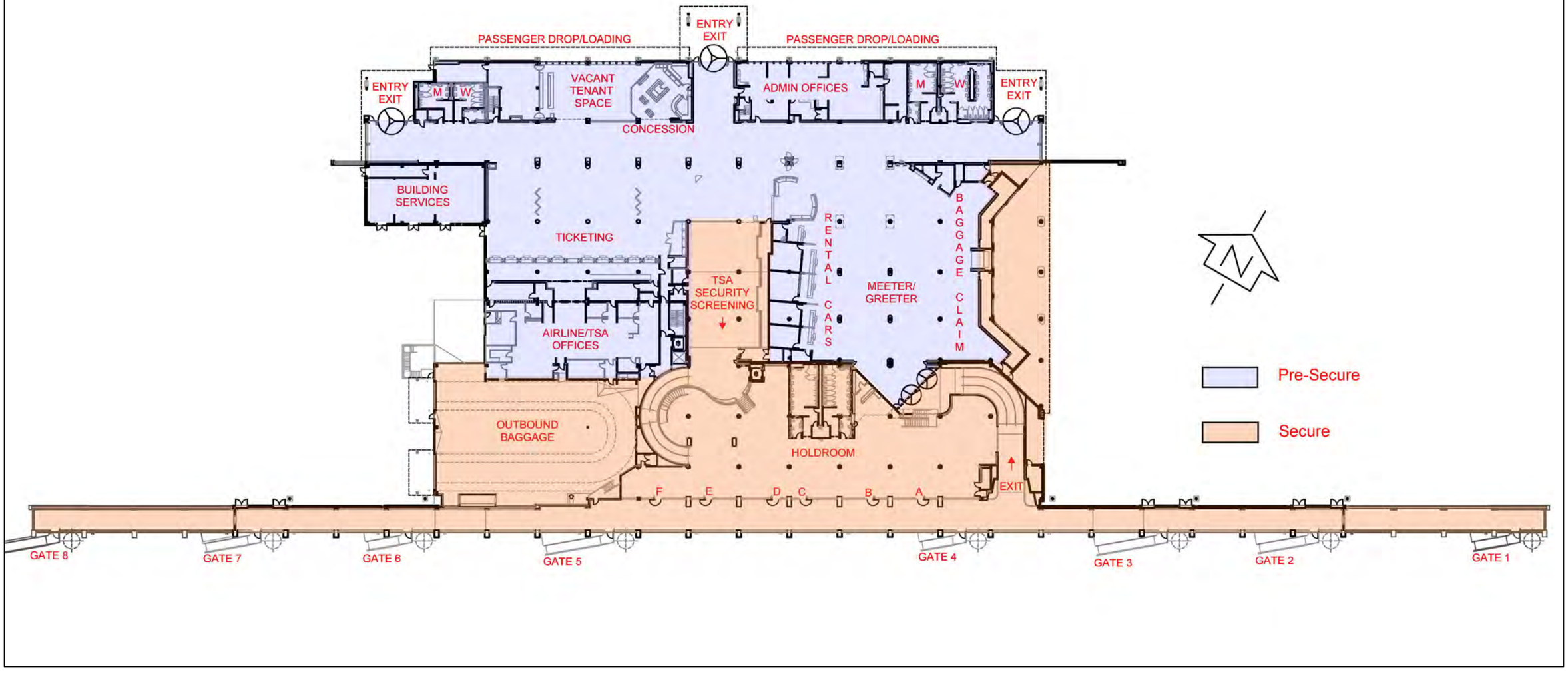


Figure 1-23
GROUND FLOOR PLAN

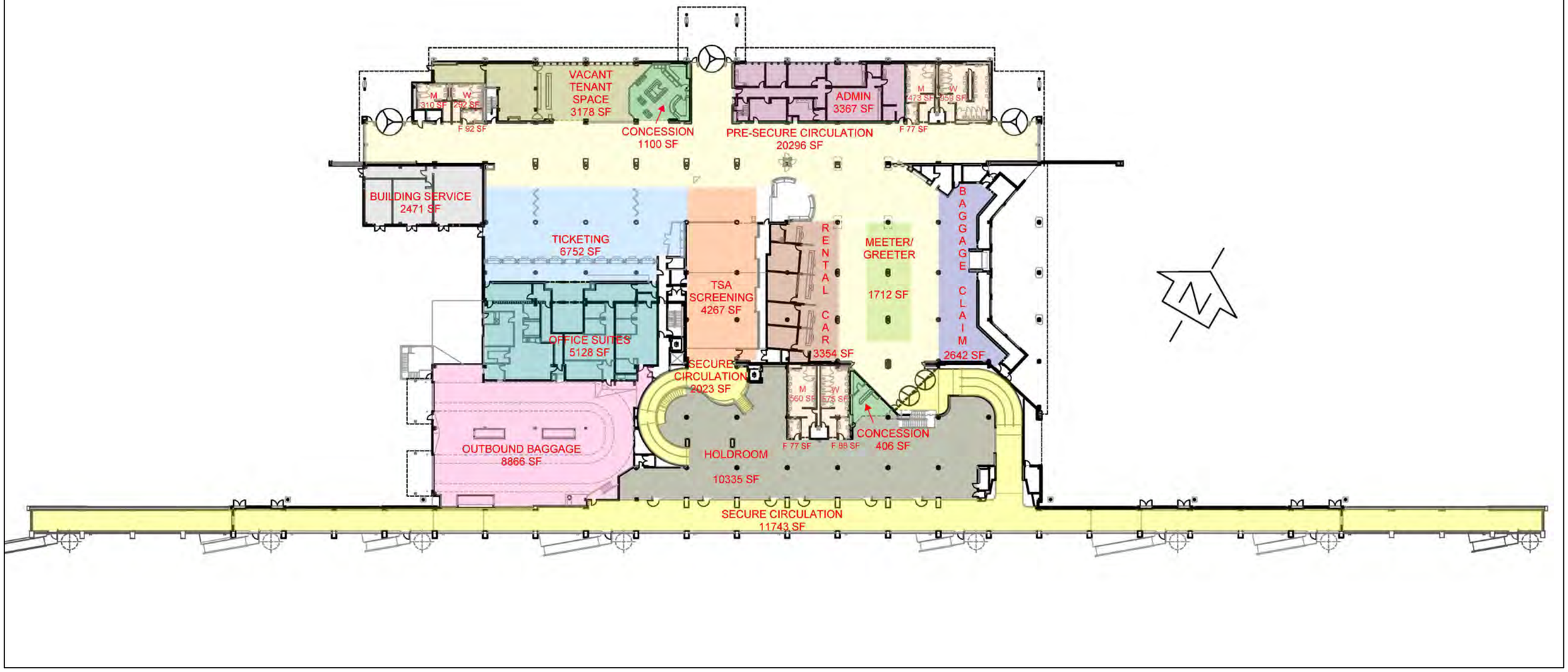


Figure 1-24
GROUND FLOOR PLAN

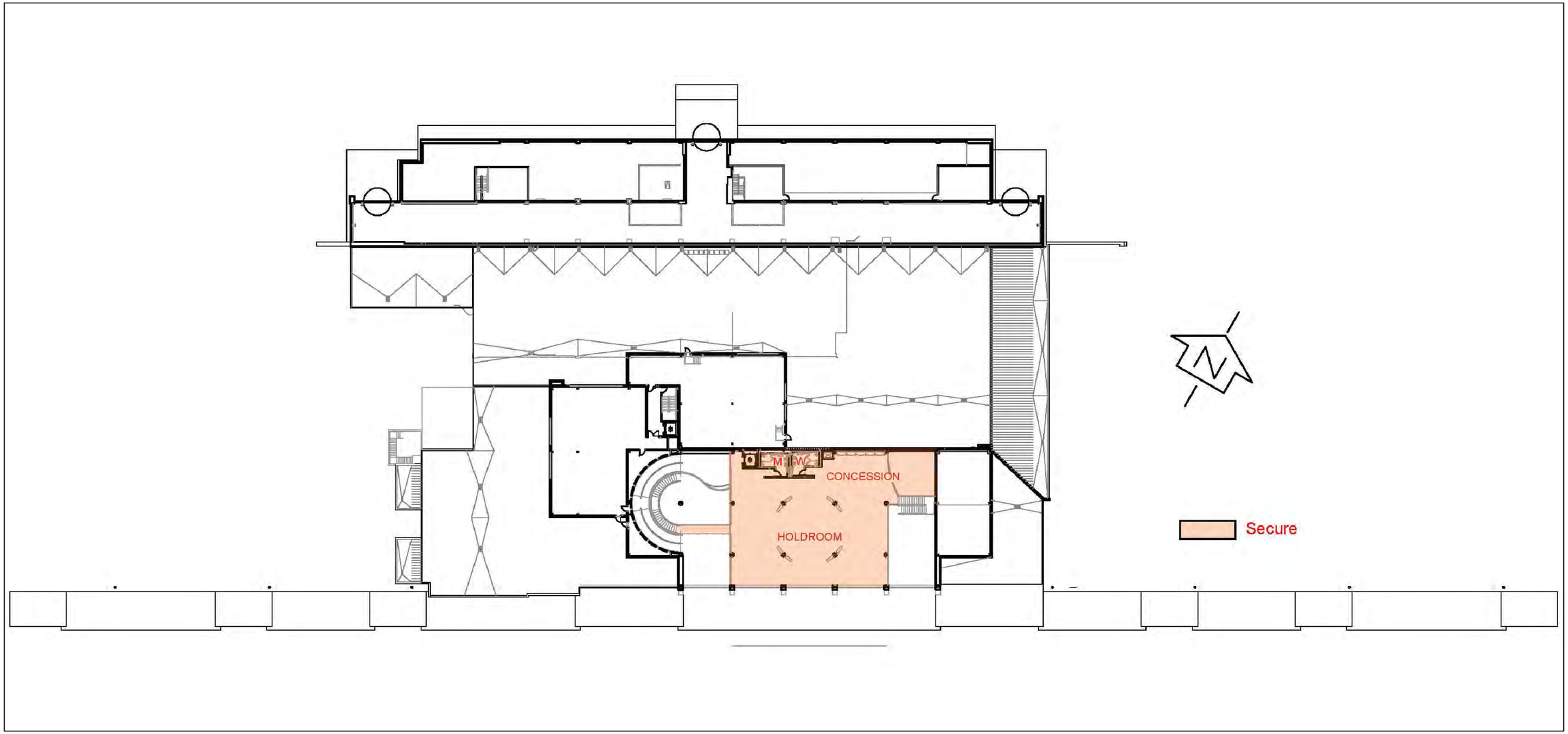


Figure 1-25
SECOND FLOOR PLAN

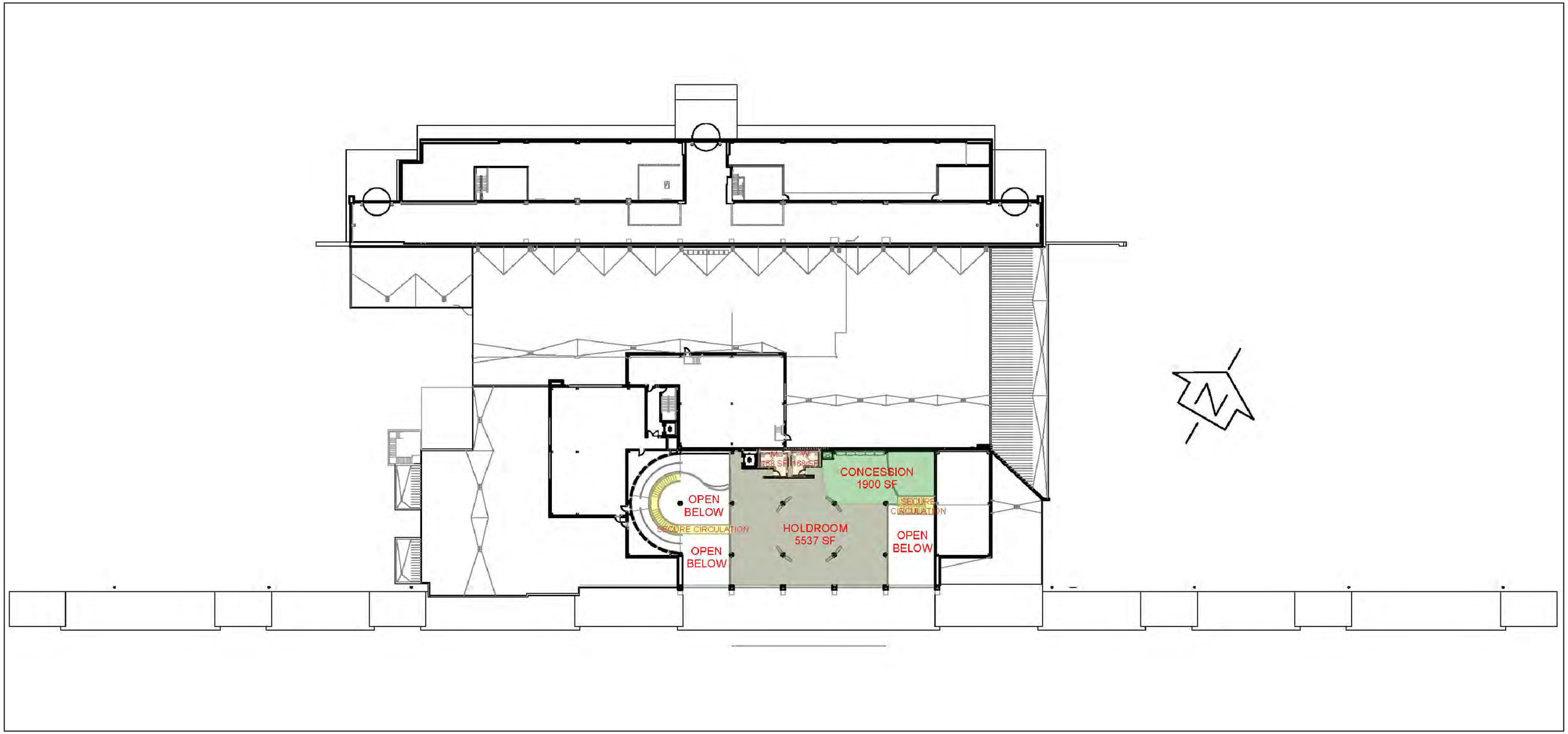


Figure 1-26
SECOND FLOOR PLAN

1.6 AVIATION ACTIVITY

Aviation activity for the Airport is shown below for based aircraft, annual operations (itinerant and local), passenger enplanements, cargo volume (cargo in and cargo out), and flight patterns. This information serves as the baseline for aviation activity forecasts that will help determine the proper facilities needed to serve future aviation activity and demand. Aviation activity is described in detail in **Chapter 2**, **Aviation Activity Forecasts.** A summary of 2016 activity levels is presented in Table **1-20**.

Table 1-20. Aviation Activity for Fiscal Year 2016*	
Activity Measure	**Totals**
Aircraft Operations*	40,162
Air Carrier (Itinerant)	5,127
Air Taxi (Itinerant)	6,340
General Aviation (Itinerant)	10,985
General Aviation (Local)	16,829
Military (Itinerant and Local)	881
Passenger Enplanements**	322,176
Cargo Volume (Tons)**	970.1
Number of Airlines	4
Non-stop Destinations	7
Based Aircraft* **	
Aircraft Type	**Totals**
Single-Engine	64
Multi-Engine	4
Jet	6
Helicopters	6
Other	0
Total Based Aircraft	**80**
The airport was closed for one month in 2016 for runway construction. *Sources: *Terminal Area Forecast 2016, **RDM Monthly Report, RDM Performance Metrics, ***RDM Based Aircraft Survey 2016*	

Annual totals are reported by FAA Fiscal Year, which runs from October 1 to September 30. Aviation activity measures reflect one month of airport closure during the reconstruction of Runway 5-23. The aviation activity forecasts will provide additional historical data and investigate changes in aviation activity over the most recent ten year period.

1.7 AERONAUTICAL SETTING

This section details the aeronautical setting surrounding the Airport, including details about neighboring airports and their facilities.

1.7.1 COMMERCIAL SERVICE AIRPORTS

PORTLAND INTERNATIONAL AIRPORT

Portland International Airport (PDX) is the largest airport in the state, located 150 miles from RDM. PDX offers domestic and international flights, and there are four non-stop flights a day from the Airport to PDX.

OTHERS

Four other airports in the greater region are air carrier airports: Eugene Airport (EUG), Rouge Valley International-Medford Airport (MFR), Eastern Oregon Regional Airport (PDT), and Crater Lake Klamath Regional Airport (LMT). EUG is 135 miles west of the Airport, MFR is 189 miles southwest of the Airport, PDT is 221 miles northeast of the Airport, and LMT is 160 south of the Airport. RDM does not have direct flights to these other Oregon airports.

1.7.2 GENERAL AVIATION AIRPORTS

Five general aviation airports are located within 30 nautical miles of the Airport: Bend Municipal (BDN), Madras Municipal (S33), Prineville (S39), Sunriver Airport (S21), and Sisters Eagle Air Airport (6K5). None of these have commercial service as of 2016 and have no future plans for commercial service. BDN has 203 fixed wing based aircraft and S39 has 122 fixed wing based aircraft. These two airports represent the greatest concentration of based aircraft in Crook, Deschutes, and Jefferson Counties.

BEND MUNICIPAL AIRPORT

BDN is 10 nautical miles south of the Airport, and has one 5,200-foot by 75-foot north-south lighted runway with non-precision instrument approach capability. The airport accommodates the highest volume of general aviation activity among all airports in Central Oregon, including flight training and an active glider community. BDN also has 19 helicopters based at the airport due to an extremely large volume of helicopter training activity. A number of small aviation businesses are located at the airport, including the Epic Aircraft manufacturing facility, which manufactures the Epic E1000 single engine turboprop aircraft. Aviation businesses located at BDN total approximately 300 employees. A future extension of Runway 16-34 to an ultimate length of 6,260 feet is proposed based on the approved Airport Layout Plan for BDN.

MADRAS MUNICIPAL AIRPORT

S33 is 25 nautical miles north of the Airport, and has two runways. Runway 16-34, the primary runway, is 5,089 feet long by 75 feet wide with medium intensity lights and existing visual approach capabilities. Runway 4-22, the crosswind runway, is 2,701 feet long by 50 feet wide. Runway 4-22 is primarily used by small, single-engine general aviation aircraft.

Erickson Aero Tankers, who contracts with the USFS and other entities for aerial firefighting aircraft, uses the S33 as a maintenance base for their fleet. The fleet consists of three DC-7 and seven MD-87 air tankers. In addition, Daimler Corporation is constructing a new truck model testing site at S33. As of 2016, this facility is under construction and will include two new test tracks that simulate road conditions for heavy duty trucks.

PRINEVILLE AIRPORT

S39 is 11 nautical miles east of the Airport with two runways. Runway 10-28, the primary runway, is 5,751 feet long by 75 feet wide with MIRL and non-precision instrument approach capability. Runway 15-33, the crosswind runway is 4,054 feet long with a non-standard, 40-foot width, and is limited to aircraft with a maximum takeoff weight of 5,000 pounds or less. This secondary runway has low intensity runway lighting (LIRL) with only visual approach capability.

S39 accommodates a fairly substantial on-site commercial pilot fixed wing training operation and a joint use Bureau of Land Management (BLM) helibase that is home to the Central Oregon Interagency Helitack Crew. Corporate traffic at S39 has increased as a result of the development of data centers for Facebook and Apple in Prineville. Hillsboro Aviation is a Fixed Base Operation at S39 that supports a growing pilot training operation.

SUNRIVER AIRPORT

S21 is approximately 26 nautical miles south/southwest of the Airport and has a single runway. Runway 16-34 is 5,461 feet long by 75 feet wide with LIRL and non-precision instrument approach capability. This airport is privately-owned by Sunriver Resort, LLC, and is for public use. The airport primarily serves residents and visitors to the 3,300-acre Sunriver Resort, which is a planned, fully-contained private residential and resort community. The resort itself is bordered on the north, east, and west by the Deschutes National Forest and the unincorporated community of Three Rivers on the south.

SISTERS EAGLE AIR AIRPORT

6K5 is approximately 20 nautical miles west of the Airport and has a single runway, 2-20. Runway 2-20 is 3,460 feet long and 60 feet wide with visual approach capability only. The airport is privately-owned by Sisters Eagle Air, Inc., and is for public use. The airport primarily serves residents and general aviation pilots who fly in the vicinity of the airport. The runway surface is made of asphalt and the airport has 100LL fuel.

Table 1-21 lists the nearby airports with a summary of available facilities and activity information. Airport locations are shown in **Figure 1-27**.

Table 1-21. Nearby Airports, Primary Runways, and Activity

Element	Bend Municipal Airport (BDN)	Madras Municipal Airport (S33)	Prineville Airport (S39)	Sunriver Airport (S21)	Sisters Airport (6K5)
Runway Designation	16-34	16-34	10-28	18-36	2-20
Runway Length	5,200’	5,089’	5,751’	5,461’	3,460’
Runway Width	75’	75’	75’	75’	60’
Pavement Strength (000)	30 S	75 S, 120 D, 180 2D	30 S	30 S	4 S
Runway Composition	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt
Runway Lighting	MIRL	MIRL	MIRL	LIRL	N.A
Taxiway Lighting	Reflectors	N.A.	N.A.	Reflectors	N.A
Approach Aids	REIL, PAPI-4L	REIL, VASI-4L	PAPI-4L	VASI-2L	N.A
Weather	AWOS	AWOS	AWOS	N.A.	AWOS
Airport Beacon	Clear/Green	Clear/Green	Clear/Green	Clear/ Green	N.A
Approach Capability					
Existing	Non-Precision	Visual	Non-Precision	Non-Precision	Non-Standard
Future	Non-Precision	Non-Precision	Non-Precision	Non-Precision	Non-Standard
2015 Annual Operations*					
Local	70,030	9,192	29,437	2,518	400
Itinerant	70,044	6,128	17,613	3,671	1000
Total Operations	**140,074**	**15,320**	**47,050**	**6,189**	**1,400**
2015 Based Aircraft**					
Single engine	177	40	115	26	15
Multi-Engine	16	0	5	11	2
Jet	10	0	2	4	0
Fixed Wing	**203**	**40**	**122**	**41**	**17**
Rotor	19	1	1	0	0
Gliders	8	0	0	2	0
Ultra-Light	3	2	2	0	0
Total Based	**233**	**43**	**125**	**43**	**17**

*: Bend = 2015 EA; Madras = 2010 Madras Master Plan Interpolated; Prineville = 2016 Prineville Master Plan Interpolated; Sisters = FAA 5010 Airport Master Record; Sunriver = 2015 FAA Terminal Area Forecast (TAF).

**: BDN, S33, S21, 6K5 = FAA 5010 Airport Master Record, Prineville based aircraft = 2016 Airport Master Plan interpolated.

Figure 1-27
SURROUNDING AIRPORTS

1.8 COMMUNITY SETTING

This section presents socioeconomic data to provide a profile of the airport users and the community served by the Airport. Socioeconomic data is used to guide aviation activity forecasts in **Chapter 2**.

1.8.1 SOCIOECONOMIC DATA

In order to define an area of analysis, socioeconomic data was gathered by using data compiled by Woods & Poole Economics, Inc. Woods & Poole categorizes Deschutes County and the cities located in the county, including Redmond, as the Bend-Redmond Metropolitan Statistical Area (MSA). The Bend-Redmond MSA is the area of analysis because it includes data for all of Deschutes County where the Airport is located. The study comprised these socioeconomic indicators to help determine trends in the Bend-Redmond MSA:

The data range was from 2006 to 2015. A longer period of time, rather than one or two years, is helpful for indicating trends more accurately, which is why a ten-year period was used. The accuracy of trends is critical, since trends are used to help determine future forecasts for airports. The selection of this ten-year period incorporates periods of growth and decline, such as the 2008 recession and the strong growth the Airport has seen since 2012. **Table 1-22** shows the socioeconomic data for the Bend-Redmond MSA during 2006 to 2015.

Table 1-22: Socioeconomic Data for Bend-Redmond MSA

Indicator	Population	Employment	Earnings	Income/Capita	GRP	Retail Sales
2006	143,860	91,910	$4,045	$40,619	$6,876	$3,262
2007	147,240	91,670	$4,004	$40,368	$7,052	$3,282
2008	150,690	91,420	$3,964	$40,118	$7,232	$3,301
2009	154,220	91,180	$3,924	$39,869	$7,417	$3,321
2010	157,840	90,930	$3,885	$39,622	$7,607	$3,341
2011	159,800	92,310	$3,868	$40,532	$7,620	$3,518
2012	161,890	93,940	$3,978	$41,377	$7,847	$3,650
2013	165,950	97,710	$4,195	$41,539	$8,202	$3,816
2014	169,160	99,890	$4,373	$42,257	$8,411	$3,958
2015	172,500	102,090	$4,515	$42,975	$8,622	$4,071

Source: Woods & Poole (2016)
Note: Total Earnings (in millions, adjusted to 2016 dollars), Total Personal Income Per Capita (adjusted to 2016 dollars), GRP (in millions, adjusted to 2016 dollars), Total Retail Sales (in millions, adjusted to 2016 dollars).

1.9 AIRPORT FINANCIAL OVERVIEW & ECONOMIC CONTRIBUTION

Commercial service airports are economic engines in the communities that they serve, facilitating the movement of goods and people to and from the community. Airports serve as employment centers, and as municipal entity that leases property and enters into contracts with private enterprise, their financial structure differs from other municipal departments. This section describes the revenues and expenses associated with airport operation, and the economic contribution that the Airport makes to the community it serves through jobs and wages, and business sales.

1.9.1 HISTORICAL FINANCIAL INFORMATION

The Airport generates revenue to cover its expenses and operates as an airport enterprise fund (AEP), which means that it maintains separate accounting from the City of Redmond general fund. The AEP is primarily funded through revenue from passengers and airlines. Grants from the FAA Airport Improvement Program help offset much of the cost of eligible capital improvements. The AEP is organized into three cost-centers: the Terminal Program, the Airfield Program, and the General Operations program. There are three additional sub-funds for debt service, passenger facility charges, and capital projects that are separated out to keep these capital improvement and financing funds from comingling with operating funds.

The Terminal Program uses a cost-recovery rates and charges basis, where the Airport looks to recover investment in facilities from users and tenants. The scope of this program includes the passenger terminal building. The Airfield Program covers operations and maintenance of the airfield, and rates and charges are set on a cost recovery basis. The General Operations Program includes hangars, parking lots, roadways, and non-aviation development, and uses a market rate basis to set rates and charges. The General Operations program helps the Airport diversify revenue streams to guard against slowdown in the aviation industry. A summary of the AEP is presented in **Table 1-23**.

Table 1-23: Airport Financial Overview				
Year	FY2013/14	FY2014/15	FY2015/16	FY2016/17
Type	Actual	Actual	Budget	Budget
Total Resources	**$15,105,114**	**$18,742,348**	**$37,122,840**	**$24,355,420**
General Operations	$7,757,230	$8,754,158	$9,713,972	$8,570,154
Terminal Operations	$1,565,455	$1,624,505	$1,547,364	$1,853,345
Airfield Operations	$1,282,264	$1,174,730	$1,237,932	$1,349,270
Debt Service Reserve	$2,247,694	$2,350,098	$2,539,651	$2,539,651
Passenger Facility Charge	$1,082,796	$1,138,806	$933,921	$1,100,000
Capital Projects	$1,169,675	$3,700,051	$21,150,000	$8,943,000
Total Expenditures	**$9,542,577**	**$13,124,756**	**$37,122,840**	**$24,355,420**
General Operations	$4,952,535	$5,923,221	$9,665,236	$8,848,222
Terminal Operations	$1,226,044	$1,079,200	$1,536,043	$1,575,277
Airfield Operations	$1,138,805	$1,233,063	$1,297,989	$1,349,270
Debt Service Reserve	$-	$-	$2,539,651	$2,539,651
Passenger Facility Charge	$988,743	$1,036,438	$933,921	$1,100,000
Capital Projects	$1,236,450	$3,852,834	$21,150,000	$8,943,000
Net Program	**$5,562,537**	**$5,617,592**	**$-**	**$-**
General Operations	$2,804,695	$2,830,937	$48,736	$(278,068)
Terminal Operations	$339,411	$545,305	$11,321	$278,068
Airfield Operations	$143,459	$(58,333)	$(60,057)	$-
Debt Service Reserve	$2,247,694	$2,350,098	$-	$-
Passenger Facility Charge	$94,053	$102,368	$-	$-
Capital Projects	$(66,775)	$(152,783)	$-	$-
Source: City of Redmond FY2016/17 Budget				

1.9.2 AIRPORT ECONOMIC IMPACTS

The Airport is included in the 2014 Oregon Department of Aviation (ODA) Economic Impact Statement for NPIAS Airports. This report identifies the economic contributions of airports to the Oregon economy through on and off airport activities, the jobs created due to the airports, and the total payroll of the jobs created. **Table 1-24** represents the economic impact of the Airport on the Oregon economy is 2012 dollars.

Table 1-24. RDM 2014 Economic Impact		
Jobs	**Payroll**	**Business Sales**
810	$24,735,000	$81,561,000
Source: 2014 ODA Economic Impact Statement for NPIAS Airports		

1.10 ENVIRONMENTAL CONDITIONS

The following sections are included to provide a baseline of the existing environmental conditions on and around the Airport. The information presented is a high level overview provided for planning purposes and is not intended to satisfy the requirements of the National Environmental Policy Act (NEPA).

1.10.1 AIR QUALITY

The Airport and surrounding areas are located within a National Ambient Air Quality Standards (NAAQS) Attainment area for the State of Oregon (Oregon Department of Environmental Quality [DEQ], 2016). The EPA established NAAQS for a limited number of pollutants in response to enactment of the Clean Air Act of 1970 and the Amendments of 1975 and 1977. The pollutants of most concern in an arid environment such as Redmond are particulates. The primary impacts to local air quality created by aircraft occur when planes are at or close to ground level during takeoff, landing, and taxiing. Airports have numerous other sources of pollutants including automobile traffic, service trucks, fuel trucks, and auxiliary equipment such as emergency generators. Aircraft engines emit carbon monoxide, carbon dioxide, particulate matter, volatile organic compounds, and oxides of nitrogen and sulfur. Fossil-fuel engines that combust diesel, aviation fuel, and gasoline fuels emit a variety of toxic compounds, which are primarily formaldehyde, benzene, and heavy metals.

Changes in aircraft operations or development at the Airport would require air quality modeling to evaluate the emission of priority pollutants to see if they will approach or exceed the NAAQS. Air quality impacts will be modeled in conjunction with aircraft noise. The FAA Aviation Environmental Design Tool (AEDT) is the required model for aviation noise and air quality modeling and will be used to quantify those impacts for the Airport.

1.10.2 COMPATIBLE LAND USE

Several factors can go into the analyses of whether or not a proposed land use is compatible with an airport. For Redmond Airport, the factors the City has to measure against are provided through the following three avenues:

Noise contours will be created for the Airport in a subsequent chapter of this Master Plan in conjunction with the forthcoming forecasted aviation activity. Once created, the noise contours will provide one factor for reviewing proposed land uses against. The FAA considers the DNL 65 dB an acceptable level at which residential land uses are compatible. Oregon Administrative Rule 340-035-0045 contains State of Oregon criteria for airport noise. The State of Oregon uses the 55 DNL contour to represent the “airport noise criterion.” The airport noise criterion does not indicate liability or legal obligation on the part of the airport; instead it defines the “airport noise impact boundary,” which is used to identify noise sensitive properties near the airport that may experience regular aircraft noise exposure. Local jurisdictions may also implement tighter restrictions.

Airport airspace surfaces as defined in FAR Part 77 *Safe, Efficient Use, and Preservation of the Navigable Airspace* will be depicted in the Airspace Plan, a component of the Airport Layout Plan set. These airspace surfaces should be used by the City of Redmond as a basis for protecting the Airport against incompatible development on the basis of height.

The FAA's Memorandum *Interim Guidance on Land Uses Within a Runway Protection Zone* should serve as a guidance document for allowable land uses within a RPZ.

1.10.3 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

APPLICABLE REGULATIONS

The following state laws protect archaeological sites and cultural resources in Oregon: Indian Graves and Protected Objects (ORS 97.740-97.760) and Archaeological Objects and Sites (ORS 358.905-358.961). In order to conduct a survey for archaeological sites, the Oregon State Historic Preservation Office (SHPO) requires an archaeological permit (ORS 390.235). If an archaeological site is recorded on public land, an archaeological permit is required to conduct ground disturbing activities within site boundaries.

Under ORS 358.653 the City is required to consult with the SHPO to avoid inadvertent impacts to historic properties for which they are responsible; this relates primarily to buildings and structures which are listed on the National Register of Historic Places or eligible for listing. Generally, eligible historic properties are at least 50 years old, retain their historic appearance, and meet one of four National Register significance criteria. Airport buildings and structures may also be subject to the City of Redmond Historic Preservation Ordinance.

BACKGROUND RESEARCH METHODS

This effort consisted of a literature review of all areas within one mile of the Airport to identify cultural resources within the study area. The purpose of the review was to identify any cultural resources including Traditional Cultural Properties within the Study Area. The study area has already experienced 36 previous cultural resources studies in support of infrastructure and utility improvements (highway, road, trail, gas, and fiber optic and transmission lines), land exchanges, testing at training centers, and the Redmond Caves. One archaeological survey previously conducted within the Airport boundaries used pedestrian survey methods and did not identify any archaeological resources, as documented in *Redmond Municipal Airport Taxiway "B" Rehabilitation Project - Phase I Field Survey and Section 106*, prepared by Scott E. in 2016 for Morrison Maierle. Reviewed information included recorded cultural resources, historic register-listed properties, ethnographic studies, historical maps, government landowner records, aerial photographs, regional histories, geological maps, soils surveys, and environmental reports. Relevant documents were examined at the Oregon SHPO via the GIS System for Archaeological Records Data and online research library. This literature review did not include fieldwork.

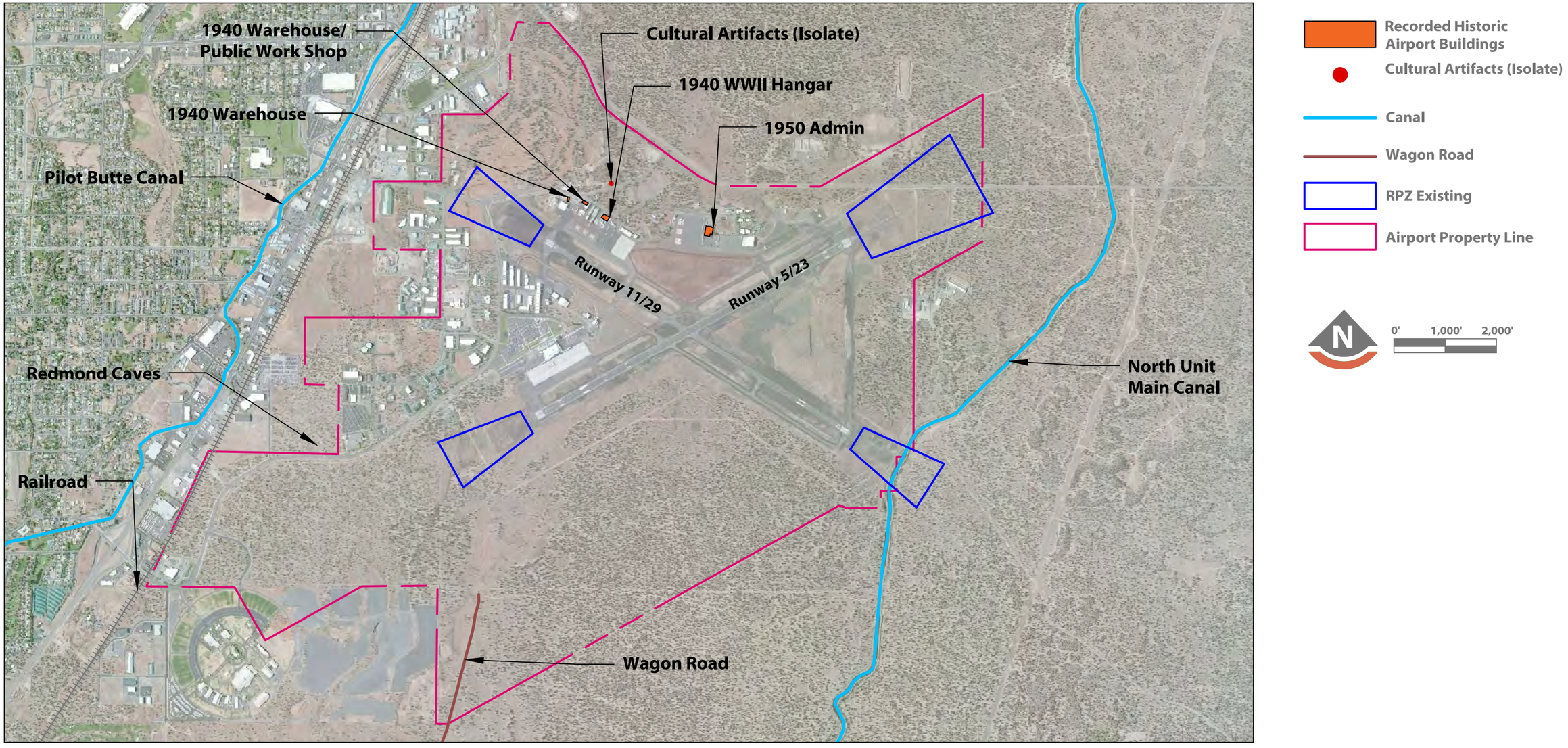


Figure 1-28
Environmental Conditions

CULTURAL SETTING

The type of soils at the Airport have the potential to contain buried cultural remains that were present prior to the eruption of Mount Mazama over 7,500 years ago leaving what is now Crater Lake.

Non-Native explorers arrived in central Oregon in the 1820s under contract with the Hudson's Bay Company. Migration to Oregon began in the 1840s and followed the Oregon Trail. Frank and Josephine Redmond, who arrived in the area in 1904, founded the City of Redmond. Settlers constructed irrigation canals soon after and the town incorporated in 1910. Records of the Greater Redmond Historical Society accessed in 2013 state that, the following year, the Oregon Trunk Railroad was completed and provided improved economic and passenger transportation opportunities for city residents.

Efforts to build an airport began in 1928 and the first runways were constructed in 1929. The Works Progress Administration carried out improvements to the Airport during the 1930s, and during World War II, the US Army Air Corps used the Airport for training activities. The first commercial flight at the Airport was in 1946, as shown in **Figure 1-29**.

Figure 1-29 First Commercial Flight at the Redmond Airport 1946

Source City of Redmond 2016.

United States Geological Survey data from 1962a, 1962b, and 1975 indicates development in the vicinity of the Airport after 1950 has been minor, with some new construction on the northern boundary of the Airport.

PREVIOUS INVESTIGATIONS

A 2016 records search of SHPO's online GIS System for Archaeological Records Data was performed to identify any previously recorded historic or cultural resources surveys within the study area. A review of the Oregon Historic Sites Database was conducted to identify any recorded historic buildings within or directly adjacent to the study area.

RECORDED CULTURAL RESOURCES IN THE STUDY AREA

There are 48 recorded archaeological sites within the study area. They include isolated archeological artifacts, rockshelters (caves), rock alignments; and a historic-era homestead, wagon road, canals, and railway. In addition to these recorded sites, more than 20 isolated precontact-era and historic-era sites are mapped in the SHPO database that do not have Smithsonian site numbers. One, a single obsidian flake, was identified within the Airport boundaries near the intersection of SE Veterans Way and SE Sisters Ave. Sixteen other isolated finds are adjacent to the Airport boundaries. There is the potential for additional precontact archaeological sites to be discovered through an archeological survey of the Airport. An archaeological survey was not part of this study.

The sites listed below are protected under the National Historic Preservation Act. These sites could be affected by changes in airport operations or development. Projects that could affect these sites will require consultation with the SHPO to determine the potential project effects.

REDMOND CAVES SITE (35DS173)

The Redmond Caves Site is immediately adjacent to the Airport's western boundary, along SE Airport Way between SW 13th St and SW 6th St. During investigations in 1941, a sage bark sandal and projectile points were collected. Radiocarbon dating placed the sandal from approximately 1700 to 1900 years old, as noted on the US Bureau of Land Management website, accessed in December 2016. The site integrity has been impacted by looting and recreational use, as recorded by Lee R. Lyman on the form entitled, *Oregon Archaeological Survey, Site 35DS173 – Redmond Caves,* filed in 1983.

REDMOND MUNICIPAL AIRPORT

The Airport itself has been determined eligible for listing in the NRHP. Inventory and recording of buildings on the Airport property in 1997 led to five structures on the property being recommended as contributing to the Airport's historical significance: the Administration Building (1950), Warehouse #1 (1940), Warehouse #2/City of Redmond Public Works Shop (1940), the World War II Hangar (1940), and a storage shed (no construction date provided).

HUNTINGTON WAGON ROAD

East of the County Fairgrounds and south of the Airport boundary is an intact segment of the Huntington Wagon Road (c.1845), which is recorded as archaeological site 35DS2579. This resource extends northward through the airport property in a gentle southwest-northeast trajectory, extending between in sections 33, 27, 22, 15, and 10, recorded on the 1872 map accessed through the US Surveyor General website. The Huntington Wagon Road was part of the section of Oregon Trail (c.1845) between Bend and The Dalles (Cunninghame 1976). In 1864 J.P. Huntington, Oregon Superintendent of Indian Affairs, used the route to travel between Fort Dalles and Fort Klamath.

IRRIGATION CANALS

The North Unit Main Canal (1938), which has been determined eligible for listing in the NRHP, is immediately east of the Airport's eastern boundary. This resource is within a future RPZ.

HISTORIC PROPERTIES ON AIRPORT

Based on a review of an Airport property schedule and a 1997 historic inventory, there are at least five historic buildings within the Project Area as of 2016. **Table 1-25** summarizes the information on the Airport property schedule.

Table 1-25. Airport Buildings 50 years or older

Description	Construction Year
Old Administration	1950
World War II Hangar	1940
Warehouse #1	1940
Warehouse #2	1940
Storage Shed	Unlisted

1.10.4 SECTION 4(f) PROPERTY

Section 4(f) of the U.S. Department of Transportation Act of 1966 protects significant publicly-owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Under Section 4(f), the Secretary of Transportation may approve a transportation program or project requiring the use of such sites only if there is no feasible and prudent alternative to using that land, and the program or project includes all possible planning to minimize harm resulting from the use.

Section 4(f) properties include:

- ✓ Parks and recreational areas of national, state, or local significance that are both publicly-owned and open to the public;
- ✓ Publicly-owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public; and
- ✓ Historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public.

PARKS AND RECREATIONAL AREAS

The Redmond Caves are a group of five caves formed by volcanic flows of molten lava from the Newberry Caldera. They are immediately adjacent to the western boundary of the Airport, along SE Airport Way between SW 13th St and SW 6th St, and the caves are located inside the Redmond city limits. The Bureau of Land Management (BLM) in partnership with the City of Redmond manages the caves, which are open to the public.

The collapse of a single lava tube created these five caves. The largest opening, Cave 1, enters a fairly deep and expansive cave, while Cave 3 has two openings joined by a narrow but easily passable connection. Caves 1, 3, and 4 are accessible and have deep, sandy soils, with scattered boulders and ceiling blocks.

Native Americans used the caves, at least periodically, over the past 6,000 years. Today, the Redmond Caves are managed as a unique site where visitors can learn about geology, wildlife, and past human use. A Section 4(f) analysis may be needed to assess the potential effects to users of the caves as a result from changes to airport operations.

WILDLIFE AND WATERFOWL REFUGES

There are no publicly-owned wildlife or waterfowl refuges within the study area.

HISTORIC SITES

A literature review of all areas within one mile of the Airport indicates significant historic resources in the study area, as listed below, that would be considered Section 4(f) properties in or near the study area:

- ✓ Five structures on airport property may contribute to the Airport's historical significance: the Administration Building (1950); Warehouse #1 (1940); Warehouse #2/City of Redmond Public Works Shop (1940); the World War II Hangar (1940); and a storage shed (no construction date provided).
- ✓ Huntington Wagon Road
- ✓ Two irrigation Canals: the North Unit Main Canal, which has been determined eligible for listing in the NRHP and is on airport property, and the Pilot Butte Canal, which has also been determined eligible for listing in the NRHP but is not on airport property.
- ✓ Redmond Caves, which are near, but not on, airport property.
- ✓ Oregon Trunk Railroad

A Section 4(f) analysis may be needed to assess the potential effects to these resources as a result from changes to airport operations or development.

1.10.5 THREATENED AND ENDANGERED SPECIES

An official species list was obtained from the U.S. Fish and Wildlife Service (USFWS) website (2016). The only species listed under the Endangered Species Act with the potential to occur in the study area is the gray wolf. The Oregon Biodiversity Information Center (ORBIC) database also was queried to obtain records of known sensitive, threatened and endangered plant and animal species within a two-mile radius of the Airport (ORBIC 2016). There are no documented records of species listed as endangered or threatened, proposed for listing, or candidate for listing as occurring within a two-mile radius of the Airport. There is no designated Critical Habitat for any species within the study area.

According to the USFWS website accessed in 2016, the Airport is in the East Wolf Management Zone where wolves are listed as Endangered. As of USFWS data in 2015, there are no recorded areas of wolf activity in the Redmond area, but given the 2016 population according to the USFWS website and the dispersal capabilities of wolves, at this point it is possible for a wolf to show up in almost any part of the state.

Contact with the USFWS again prior to future development at the Airport is recommended to ensure no species listed under the Endangered Species Act are in the development area.

1.10.6 WATER QUALITY

The City of Redmond has an Underground Injection Control (UIC) Management Plan that documents the City's stormwater management program. The plan also explains how the City protects groundwater quality from stormwater impacts of UIC facilities in compliance with their UIC Water Pollution Control Facility (WPCF) Permit (No. 103050). The City has no naturally occurring surface water within the Urban Growth Boundary, where the highest density development is, so the City's stormwater outfall systems uses drywells, drill holes, injection galleries, and outfalls to vegetated swales and infiltration basins.

WETLANDS AND OTHER WATERS

The following sections provide an overview of known wetlands and other waters on and surrounding the Airport property.

APPLICABLE LAWS AND REGULATIONS

Wetlands are protected under the State of Oregon Removal Fill Law and Section 404 of the Clean Water Act. Wetlands are under the jurisdiction of both Oregon Department of State Lands (DSL) and the US Army Corps of Engineers (Corps). Both agencies use the 1987 *Corps of Engineers Wetlands Delineation Manual* and the 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* to determine what a wetland is and its extent. An area is determined to be a wetland if it has a dominance of plants that grow in wet conditions (called hydrophytic vegetation), hydric soils, and positive wetland hydrology.

BACKGROUND RESEARCH

A literature review covered areas extending one mile in every direction from the study area. Reviewed information included the US Department of Agriculture Natural Resources Conservation Service (NRCS) Soil Survey, the USFWS National Wetlands Inventory, the Department of State Lands Local Wetlands Inventory, and Deschutes County online property database. A site reconnaissance was performed on October 24, 2016.

The National Wetlands Inventory shows the following wetlands within the study area:

- ✓ Two wetlands on the former Juniper Golf Course;
- ✓ Lateral E Canal and North Unit Main Canal; and
- ✓ Two wetlands on the Forest Service Rappel Base Helipad.

The two wetlands indicated on the former golf course are man-made water features and are not drained. These areas no longer meet the criteria of a wetland because the hydrology is no longer met. Both irrigation canals are not waterbodies under the jurisdiction of either DSL or the Corps because the canals are used for irrigation water conveyance and are turned on and off seasonally. The two wetlands indicated at the Forest Service Rappel Base are paved areas.

The Project Area is situated within the semi-arid shrub-steppe province (Franklin and Dyrness 1988). Vegetation is dominantly western juniper (*Juniperus occidentalis*) and big sagebrush (*Artemisia tridentata*), but also includes rabbitbrush (*Chrysothamus* and *Ericameria* spp.), bitterbrush (*Purshia tridentata*), low sagebrushes (*Artemisia* spp.), and grasses, such as Idaho fescue (*Festuca idahoensis*), needlegrass (*Achnatherum* spp.), squirreltail (*Sitanion hystrix*), and Sandberg bluegrass (*Poa secunda*).

The NRCS maps soils as Deschutes-Stukel complex, dry and Stukel-Rock outcrop-Deschutes complex, dry. Neither of these soils series are classified as nor considered hydric soils. This further indicates that wetlands are unlikely to occur in the study area.

A site reconnaissance performed on October 24, 2016, identified no wetlands or waters of the State/US within the study area. The undeveloped areas of the Airport support an upland plant community of western juniper/gray rabbitbrush/cheatgrass. During this same site reconnaissance, neither primary nor secondary indicators of wetland hydrology were observed.

1.10.7 FARMLAND

Review of the 2016 NRCS Soil Survey of Deschutes County helped evaluate the presence of prime, unique, state or locally important farmland in the project area. The survey indicated the Airport property and study area do not contain soil types classified as “prime farmland.” As of 2016, no property within the study area is being used or was recently used or zoned for farming purposes.

1.10.8 CRITICAL AREAS

Local jurisdictions may have critical areas that relate to Oregon's State-wide Land Use Goals. There are no Critical Areas in the City of Redmond's Comprehensive Plan or Development Code.

1.10.9 FLOODPLAINS

FEMA maps floodplains all across the U.S. Specifically, the FEMA Flood Map Service Center collects data from Flood Insurance Rate Maps (FIRMs) and incorporates all the data into a national flood hazard layer to map where floodplains are. There are no floodplains on airport property.

1.10.10 RECYCLING PLAN

The FAA Modernization and Reform Act of 2012 (FRMA) expanded the definition of airport planning to include "developing a plan for recycling and minimizing the generation of airport solid waste" and added a provision requiring airports that prepare a master plan to address issues related to solid waste recycling.

A site visit and staff interviews took place on December 15, 2016, to collect information about recycling at the Airport. The study team toured the passenger terminal, airport offices, airline and other tenant spaces, SRE and ARFF facilities, and other airport buildings. Interviews of the staff from airport management and the facilities department clarified details about the recycling program in place in 2016.

The Airport has an active recycling program; the Airport does not have a written recycling plan. Under this master plan project, a recycling plan document will be developed that describes the existing program and recommends strategies to improve recycling and waste management at the facility. The recycling plan will be an appendix to this master plan report.

1.11 CONCLUSION AND SUMMARY

The facilities and conditions described in this chapter form the baseline of the Airport Master Plan. The research put into preparing this document will support further analysis and recommendations that will occur in subsequent chapters. A summary of key facilities is presented in **Table 1-26**.

Table 1-26. Inventory Chapter Summary

Runways

- Runway 5-23: 7,038 ft. x 150 ft.
- Runway 11-29: 7,006 ft. x 100 ft

Runways and Navigational Aids

- Runway 5-23
  - Good Pavement Condition
  - High Intensity Runway Lights (HIRL)
  - Precision Runway Markings
- Runway End 5
  - Runway End Identifier Lights (REIL)
  - Visual Approach Slope Indicator (VASI)
- Runway End 23
  - Precision Approach Path Indicator (PAPI)
- Runway 11-29
  - Good Pavement Condition
  - Medium Intensity Runway Lights (MIRL)
  - Non-precision Runway Markings
- Runway End 11
  - VASI
- Runway End 29
  - PAPI

Airport Navigational Aids

- VHF Omni-directional Range with Distance Measuring Equipment (VOR/DME)
- Non-Directional Beacon (NDB)
- Automated Surface Observing System (ASOS)
- Two Wind Socks

Emergency

- ARFF Index B

FAA Certification

- Part 139

Instrument Procedures

- Runway 5
  - RNAV (RNP)
  - RNAV (GPS)
  - REDMOND THREE
- Runway 23
  - ILS
  - VOR/DME
  - VOR-A
  - NDB
  - RNAV (RNP)
  - RNAV (GPS)
  - REDMOND THREE
  - Visual
- Runway 11
  - VOR A (Category A)
  - GPS
  - REDMOND THREE
- Runway 29
  - GPS
  - RNAV (GPS)
  - REDMOND THREE

Building Area

- Passenger Terminal and TSA
- Airport Traffic Control Tower
- Aircraft Maintenance
- Aircraft Fuel (Full Service & Self Service FBOs)
- Hangars and Tie-downs
- Snow Removal Equipment and Maintenance
- Aircraft Rescue and fire Fighting (ARFF)
- United States Forest Service (USFS)
- Business Park

2.0 FORECAST SUMMARY

Central Oregon is growing across all indicators. In the ten years between 2006 and 2016, the population of Deschutes County has grown by 23 percent, gross regional product has grown by 20 percent, and employment has recovered to pre-recession levels. Permanent migrants are drawn by the quality of life and comparatively lower cost of living when compared to Western Oregon and California, and tourists come throughout the year to partake in the tax-free shopping and outdoor activities.

This regional growth has been reflected in the strong uptick in aviation activity. Passenger enplanements have grown at an annual average of 2.1 percent per year, and 2016 enplanements are 66 percent above 2006 levels. Deschutes County has some of the fastest growing communities in the country, and RDM is one of the nation's fastest growing Airports. Historical and FAA-projected growth exceed the levels for Oregon and the U.S.

Air cargo volume has declined by 40 percent over the last ten years. This decline is largely because of a global movement towards electronic substitutes for mail, and high fuel prices, and increased air cargo screening pushing cargo on to trucks. General aviation has spread to other airports in the region, and much flight training relocated from Redmond to Bend. Redmond, with its airport traffic control tower (ATCT), instrument landing system, and two fixed base operators, remains the primary regional airport for jet traffic. A summary of the demand forecasts is presented in **Table 2-1**.

Table 2-1: Forecast Summary

Category	2006	2016	2036	CAGR 2016-2036
Enplanements	**197,223**	**298,322**	**680,750**	**4.2%**
Air Cargo (Tons)	**1,612.8**	**970.1**	**1,000**	**0.2%**
Aircraft Operations	**68,388**	**40,162**	**47,740**	**0.9%**
Itinerant Operations				
Air Carrier	1,433	5,127	13,140	4.8%
Commuter / Air Taxi	16,803	6,340	2,100	-5.4%
General Aviation	22,170	10,985	14,000	1.2%
Military	366	341	300	-0.6%
Local Operations				
General Aviation	27,376	16,829	18,900	0.6%
Military	240	540	500	-0.4%
Based Aircraft	**129**	**80**	**127**	**2.3%**
Single-Engine Piston	92	64	78	1.0%
Multi-Engine Piston	31	6	2	-5.3%
Jet & Turbo-Prop	3	4	30	10.6%
Helicopter	3	6	12	3.5%
Other	0	0	5	N/A

Year corresponds to FAA Fiscal Year, October to September. Airport was closed for three weeks in 2016 for construction.
2016: Enplanements and Air Cargo – RDM Monthly Report and RDM Performance Metrics, Aircraft Operations – Terminal Area Forecast 2016, Based Aircraft – Airport Management Records 2016, CAGR: Compound Annual Growth Rate

2.1 INTRODUCTION TO FORECASTS

Aviation activity forecasts evaluate the future demand at the Airport. This chapter forecasts the following:

- ✓ Passenger Enplanements
- ✓ Cargo Volume
- ✓ Based Aircraft
- ✓ Aircraft Operations (Itinerant and Local)

Forecasts have a base year of 2016, and use the Federal Aviation Administration (FAA) fiscal year (October to September). The forecast period is 20 years with reporting intervals of every five years. Multiple forecasting methodologies are used with each activity, and are compared with the FAA Terminal Area Forecast (TAF).

Forecasts help determine if existing airport facilities are sufficient to handle future demand (passengers, cargo, operations, and based aircraft), or if facilities need to be modified to meet future demand. The FAA Seattle Airports District Office will review forecasts for rationality and comparison to the FAA TAF.

The chapter is organized in the following sections:

- ✓ Community Profile
- ✓ Aviation Activity Profile
- ✓ Scheduled Service Forecasts
- ✓ General Aviation Forecasts
- ✓ Peaking and Critical Aircraft
- ✓ Forecast Summary

TERMINOLOGY

Aircraft Operation: A count of a takeoff, landing, or touch-and-go. Each time an aircraft touches the runway to takeoff or land, it counts as an operation.

Aircraft Approach Category (AAC): Classification of an aircraft by approach speed, with "A" being the slowest and "E" being the fastest.

Airplane Design Group (ADG): Classification of an aircraft by its size (wingspan and tail height) with "I" being the smallest and "VI" being the largest.

Airport Reference Code (ARC): Used to determine facility size and setback requirements. The airport reference code is a composite of the approach category and design group of the critical aircraft.

Based Aircraft: Aircraft that are stored at RDM. These aircraft may be stored full-time or seasonally.

Critical Aircraft: The most demanding aircraft (in terms of size and/or speed) to use an airport more than 500 times a year or to have scheduled operations at an airport.

Enplanement: The act of a passenger boarding a scheduled or charter aircraft operated by a passenger airline.

General Aviation (general aviation): Aviation activities conducted by recreational, business, and charter users not operating as airlines under FAR Part 121, Part 135, or military regulations.

Itinerant Operation: An operation that originates and terminates at different airports. An example is an aircraft flying from RDM to another airport.

Local Operation: An operation that originates and terminates at the same airport. An example is an aircraft taking off from RDM, remaining near the airport to practice flight maneuvers, and then landing at RDM.

Touch-and-Go: A maneuver where an aircraft lands and takes off without leaving the runway. A touch-and-go counts as two aircraft operations.

Table 2-2 describes the data sources used in this chapter.

Table 2-2: Description of Data Sources

Source	Description
FAA TAF	The FAA TAF, published in January 2017, provides historical records and forecasts for passenger enplanements, aircraft operations and based aircraft at RDM. These forecasts serve as a comparison for forecasts prepared as part of this planning effort, and provide historical information on aircraft activity. The TAF is included in **Appendix B** as **Attachment 1**.
FAA Aerospace Forecast	The Aerospace Forecast 2016-2036 is a national-level forecast of aviation activity. The Aerospace Forecast helps guide local forecasts by serving as a point of comparison between local trends and national trends.
FAA Traffic Flow Management System Counts Data (TFMSC)	The TFMSC includes data collected from flight plans. These operations are categorized by aircraft type, and used to identify trends in the RDM fleet mix. The advantage of the TFMSC data is its degree of detail and its insights into the itinerant users of RDM. A disadvantage of TFMSC data is it does not include local operations or operations that did not file a flight plan. As such, the utility of TFMSC data is limited to larger aircraft, including scheduled commercial passenger, cargo, and charter operators, and private business jets.
U.S. Department of Transportation (USDOT) T-100 Database	Scheduled, charter passenger, and air cargo airlines fill out the T-100 form monthly. The T-100 database is an online repository of the data recorded on the forms, such as number of seats sold, number of seats available, freight transported, aircraft used, and departures performed. The T-100 provides a detailed look at the operations of passenger and cargo airlines.
U.S. Census Bureau	U.S. Census Bureau data was used to compare growth in Deschutes County to other communities across the country. Highlights from the Census Bureau are included in **Appendix B** as **Attachment 2**.
Airline Ticket Data	Airline ticket data was used to identify the catchment area and fare trends at RDM. Two sources were used: The Airline Reporting Corporation (ARC) and Market Information Data Tapes. These sources provide insight on the zip codes (based on billing information) that RDM travelers came from, which defines the catchment area. This information was then used to see where else travelers in the catchment area fly from, and determine how many potential RDM passengers chose to fly from other airports.

---- Continued on Next Page ----

Table 2-2: Description of Data Sources – Continued

Source	Description
Socioeconomic Data	Socioeconomic data is provided by data vendor Woods & Poole, Inc. (W&P), and the Portland State University College of Urban & Public Affairs: Population Research Center (PRC). The local municipalities use PRC data for population projections. The City of Redmond Comprehensive Plan was consulted; however, it is dated and does not reflect the best available information. The City of Redmond's Comprehensive Plan was last completed in 2001 (with updates through 2015), and will be fully updated in 2017/2018. The Deschutes County Comprehensive Plan was adopted in 2012. W&P provides data for gap years in the U.S. Census. The W&P dataset considers the Bend-Redmond Metropolitan Statistical Area (MSA), and provides 124 data categories with records from 1970 to 2016, and forecast through 2040. Data categories considered include population, employment, earnings and income, and gross regional product.
Local Economic Development Data	Economic development data helps tell the story behind the community's recent growth and shows where the community is focusing its efforts in terms of business recruitment. Data was provided by the Central Oregon Visitors Association (COVA), Redmond Economic Development, Inc. (REDI), and the Central Oregon Association of Realtors (COAR). Presentations prepared by these groups are included in **Appendix B** as **Attachment 3.**
State Plans	The Oregon Aviation System Plan (OASP) was last prepared in 2007, and projects aviation activity through 2025. The forecast base year was 2005. The OASP projected that RDM would grow from 174,008 enplanements to 537,400 enplanements, based aircraft were expected to grow from 117 to 197, and total operations were going to grow from 62,708 to 95,330. In 2015, OASP enplanement projections were 19 percent higher than actual enplanements, operations projections were 21 percent higher, and based aircraft projections were 14 percent higher .
Stakeholder Interviews	The aviation forecasting team collected data firsthand from airport stakeholders and community members during a series of interviews conducted October 24 and 25, 2016. Interviews were performed with representatives from the following groups • Airport Management • Airport Security • United States Forest Service • American Airlines • Delta Air Lines • Alaska Airlines • Redmond Police • SERCO (Air Traffic Control) • Leading Edge Jet Center • Butler Aircraft Services • Transportation Security Administration

Part of the master planning process includes getting the best available data for development of forecasts, and evaluating the quality of this data to address anomalies. Common forecast methods, such as regression analysis and time-series evaluation can be thrown off by anomalies in historical data. One such anomaly is the three-week airport closure that occurred in May for runway construction. The closure interrupted normal operations and reduced enplanement totals and operations counts. Extended closures are not part of normal operations for the Airport; therefore, it is important to understand how many operations might have occurred had the Airport not been closed for three weeks. The calculation for the effect of this closure is shown in **Table 2-3**.

Table 2-3: Data Adjustment for Three Week Airport Closure

Category	May Count	Adjust Method	May Adjust
Enplanements	**7,113**	**Load Factor**	**20,274**
Operations	**1,910**	**Sum**	**3,826**
Air Carrier	166	Same as April	520
Air Taxi	154	Same as April	352
Itinerant GA	440	% of Year	881
Local GA	1,107	% of Year	1,874
Military	43	N/A	43

Passenger Enplanements: Alaska: 157 additional departures at 78 percent load factor. American: 20 additional departures at 75 percent load factor, Delta: 38 additional departures at an 84 percent load factor. United: 84 additional departures at an 87 percent load factor.
May operations: Averaged 8.84 percent of annual operations from 2006-2015.
Air Taxi Operations: Include passenger and air cargo.
Military operations: Not adjusted.
Sources: Airport management records from airlines and ATCT, FAA OPSNET database, FAA Terminal Area Forecast.

Passenger enplanements were calculated based on the number of scheduled operations that were canceled during the closure, using the average annual load factor to estimate number of passengers that would have been on the flights. Air carrier and air taxi operations were based on the prior month's schedule. Air taxi operations include both scheduled passenger and air cargo operations.

General aviation operations were estimated through a multi-step process.

1. May 2016 operations were calculated by based on the percent of operations that occurred in May from 2006 to 2015. Records from the ATCT show that an average of 8.8 percent of annual operations occur in May. This means that 3,826 operations were likely to occur in May 2016.
2. Subtracting the air carrier, air taxi, and military operations leaves 2,755 general aviation operations.
3. The FAA Operations Network (OPSNET) database shows that there were 440 itinerant operations and 1,107 local operations classified as general aviation in May 2016. This ratio was applied to the 2,755 expected general aviation operations, producing 881 itinerant operations and 1,874 local operations.

The adjusted enplanement and operations totals were used in forecast models to project future activity. Data reported in the chapter for 2016 matches FAA TAF values. Airport management did not report that based aircraft totals were impacted by the closure. Some tenants relocated their aircraft temporarily; however, overall based aircraft did not change before and after the closure.

2.2 COMMUNITY PROFILE

Community profile describes the location of the Airport, and the community it serves. The Airport is located within Bend-Redmond Metropolitan Statistical Area (MSA) and serves the Central Oregon region. There are five other general aviation (general aviation) airports within 30 nautical miles of the Airport: Bend Municipal Airport (BDN), Madras Municipal Airport (S33), Prineville Airport (S39), Sunriver Airport (S21), and Sisters Eagle Air Airport (6K5). RDM is the only commercial service airport in Central Oregon. This section describes the community population, employment and economic development, gross regional product (GRP), the activities of the US Forest Service (USFS), tourism, the regional airports already mentioned, and the catchment areas and competition. These characteristics comprehensively form RDM's community profile.

2.2.1 POPULATION

Table 2-4 shows the population records from 2006 to 2016 and the Portland State University Population Research Center (PRC) forecast through 2036. The PRC gathers population data on and collaborates with the state of Oregon, the counties, and cities within the state to create the forecast. The MSA grew at a compound annual growth rate (CAGR) of two percent from 2006 and 2015, increasing the total population by more than 33,000. The MSA population is forecasted to grow at a CAGR of 1.8 percent, reaching more than 252,000 by 2036.

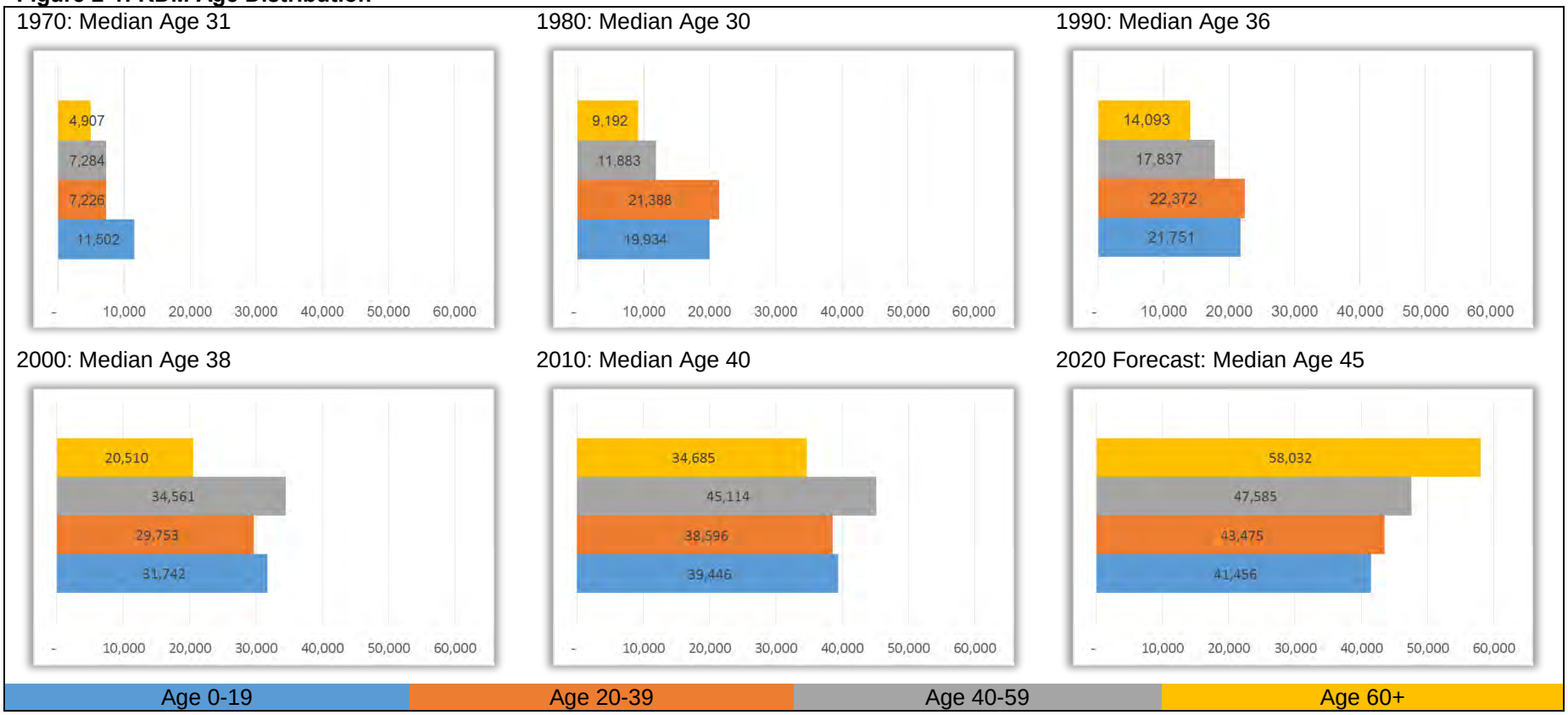
Table 2-4: Bend-Redmond MSA Population

Calendar Year	Population	Percent Change
2006	143,316	-
2011	158,875	10.9%
2016	**176,635**	**11.2%**
2021	194,593	10.2%
2026	214,606	10.3%
2031	234,022	9.0%
2036	252,681	8.0%
CAGR (2006-2016)	2.0%	N/A
CAGR (2016-2036)	1.8%	N/A

CAGR = Compound Annual Growth Rate
Source: Portland State University Population Research Center

The U.S. Census Bureau ranked the Bend-Redmond MSA as the seventh fastest growing metro area in the U.S. in 2014, and the 3rd fastest growing metro area in the U.S. in 2016 (**Appendix B, Attachment 2 – Census Data**). Population growth is driven by two primary factors: job availability attracting workers and their families, and quality-of-life factors attracting retirees. **Figure 2-1** shows the population distribution of the MSA from 1970 through to the forecast for 2020. From 1970 to 2020, the median age increases from 31 to 45, and the percent of population over the age of 60 grows from 16 percent to 30 percent. Working age population, particularly the more experienced workers between the ages of 40 and 59, have grown by a total of 40,301 during the same period.

Figure 2-1: RDM Age Distribution

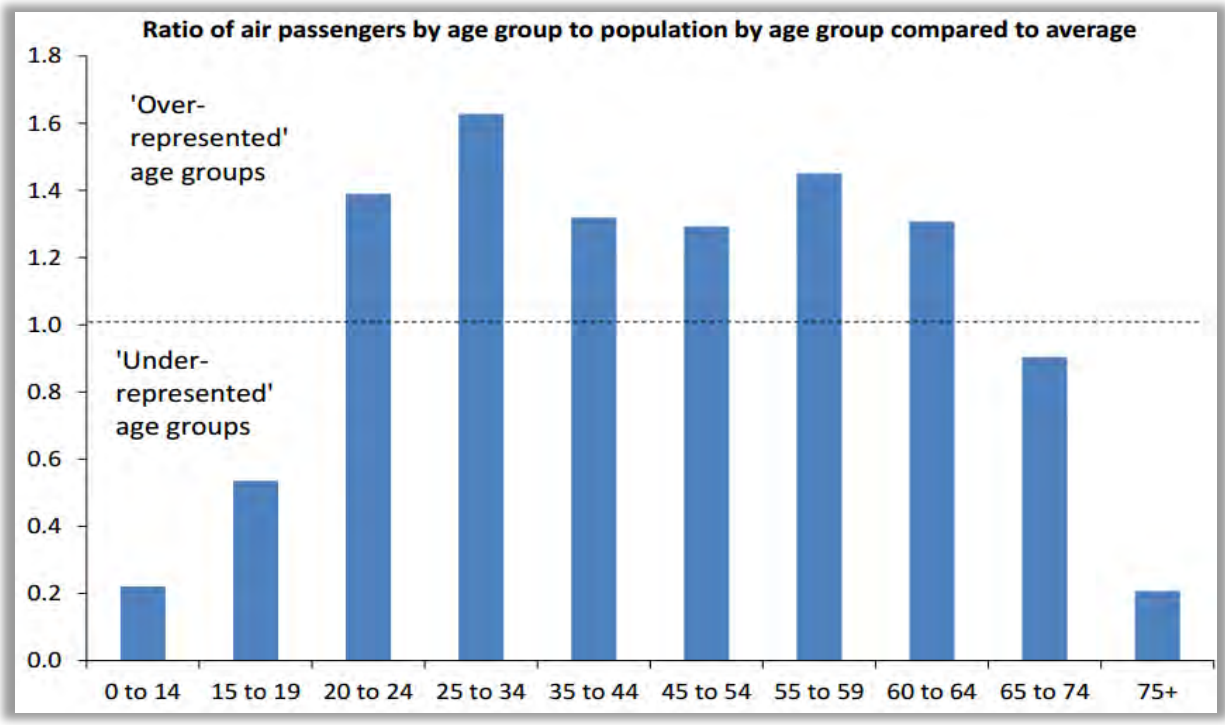


Source: Woods & Poole, 2014

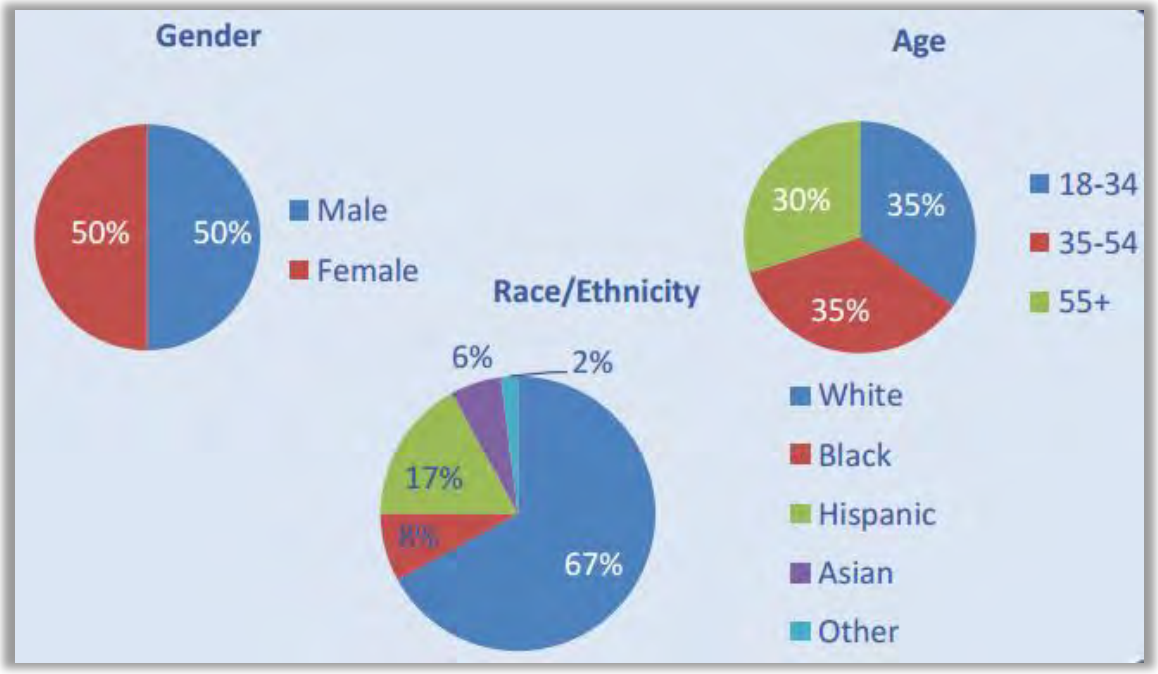
The changing demographics have significance for the incidence of air travel within the community. The 2014 *Shape of Air Travel Markets Over the Next 20 Years* report by the International Air Transportation Association (IATA) shows that working age travelers tend to fly more frequently than the population under the age of 19 and over the age of 65. Population growth, partially spurred by job growth and economic diversification discussed in **Section 3.2**, helps drive up the number of average trips per capita in RDM.

A 2015 survey by Airlines for America (A4A), presented in the 2016 report *Status of Air Travel in the USA*, conforms that working-age U.S. travelers (age 18-54) make up 70 percent of adult travelers. A point of distinction between the IATA and A4A reports is that the A4A report does not address trip frequency amongst the population directly, and does not include children. Travel by age group from the IATA and A4A reports are presented in **Figure 2-2**

Figure 2-2: Air Passenger Trips per Capita by Age



U.S. Air Traveler Composition



Source: IATA, 2014, Airlines for America, 2016

2.2.2 EMPLOYMENT AND ECONOMIC DEVELOPMENT

Per Woods and Poole data, the economy of the Redmond MSA has exhibited recovery since the end of 2007-2009 recession with total employment growing at an annual average rate of one percent from 2009 to 2016. Because of the recession, the MSA employment dropped by a total of 41 percent between 2006 and 2011. Industries that saw the greatest decline in employment were construction with a 14 percent decline, manufacturing with a 7.5 percent decline, and mining with a four percent decline. Professional services, such as finance, insurance, real estate, and professional and technical services were more resilient and posted employment growth between 2006 and 2011.

Economic recovery and diversification have been occurring since the end of the recession. Top industries by total employment in 2006 were construction (13 percent of jobs), retail (12 percent of jobs), and healthcare (10 percent of jobs). By 2016, top industries were healthcare (12 percent of jobs) and retail (12 percent of jobs), while construction dropped to sixth place with seven percent of jobs. MSA employment fluctuates by 6,000 jobs over the course of the year due to the seasonal nature of the ski season. Employment has kept pace with population growth, and the employment per capita ratio was 0.59 in 2016. The decline from 2006 to 2011 is indicative of population growth, coupled by a decline in labor intensive industries (construction and mining) and growth in more automated industries like healthcare and professional services. Total employment and employment per capita are presented in **Table 2-5**. Top industries by employment and sales are presented in **Table 2-6**.

Table 2-5: Bend-Redmond MSA Employment			
Calendar Year	**Total Employment**	**Percent Change**	**Employment/Capita**
2006	98,159		0.68
2011	92,312	-6.0%	0.58
2016	**104,289**	**13.0%**	**0.59**
2021	115,293	10.6%	0.59
2026	126,746	9.9%	0.59
2031	138,395	9.2%	0.59
2036	151,019	9.1%	0.60
Compound Annual Growth Rates			
'06 - '16	0.6%	N/A	-1.5%
'16 - '36	1.9%	N/A	0.1%

Jobs Per Capita = Total Employment / Total Population.
MSA Population included in **Table 2-3**.
Sources: Employment: Woods & Poole, Population: Portland State University

Job diversity has seen growth as the population and number of people employed has increased. Growing job sectors include aviation, engineering, health, technology, and social media. Below are examples of companies in the MSA that have shown recent growth:

- RDD – Provider of major systems and components for experimental aircraft.
- Stratos Aircraft – Located on Airport, Stratos designs, manufactures, and maintains the Stratos 714,
  a very light jet.
- Bend Research – Medical and pharmaceutical research company.
- Patheon – A supply-chain oriented pharmaceutical and biopharmaceutical company.
- Facebook – A social network that houses a server hub in nearby Prineville.
- Les Schwab Tires – A tire retail chain with a hangar on the Airport and headquarters in Redmond.
- PCC Structurals, Inc. – Global manufacturer of components are used in aircraft engines, airframes, power generation equipment, armaments, and commercial and medical needs.
- Nanometrics – Provider of advanced, high performance process control metrology and inspection systems used in the fabrication of products like semiconductors and solid-state devices.

Table 2-6: Bend-Redmond MSA Top 5 Industries by Employment and Sales 2006 – 2016

Top Industries by Employment

Rank	2006		2011			2016		
	Industry	Jobs	Industry	Jobs	Δ	Industry	Jobs	Δ
1	Construction	12,492	Retail Trade	11,382	(6.3%)	Health Care	13,035	18.0%
2	Retail Trade	12,145	Health Care	11,043	16.5%	Retail Trade	12,939	13.7%
3	Health Care	9,476	Accom. + Food Serv.	8,369	0.2%	Accom. + Food Serv.	9,476	13.2%
4	Accom. + Food Serv.	8,352	State and Local Gov.	7,355	11.1%	State and Local Gov.	7,935	7.9%
5	Manufacturing	6,940	Real Estate	7,212	15.2%	Real Estate	7,924	9.9%

Top Industries by Retail Sales

Rank	2006		2011			2016		
	Industry	Sales ($M)	Industry	Sales ($M)	Δ	Industry	Sales($M)	Δ
1	Motor Vehicles	$786.5	Gen. Merchandise	$703.9	7.6%	Motor Vehicles	$950.4	35.1%
2	Gen. Merchandise	$654.1	Motor Vehicles	$703.5	(10.6%)	Gen. Merchandise	$772.9	9.8%
3	F&B Retail	$419.1	F&B Retail	$474.9	13.3%	F&B Retail	$533.7	12.4%
4	Building Materials	$353.6	Restaurants	$339.2	12.9%	Restaurants	$407.0	20.0%
5	Restaurants	$300.5	Gasoline Stations	$271.1	34.1%	Building Materials	$327.1	35.9%

Bend-Redmond MSA Top 5 Industries by Employment and Sales 2016 – 2036

Top Industries by Employment

Rank	2016		2026			2036		
	Industry	Jobs	Industry	Jobs	Δ	Industry	Jobs	Δ
1	Health Care	13,035	Health Care	17,981	37.9%	Health Care	23,629	31.4%
2	Retail Trade	12,939	Retail Trade	15,289	18.2%	Retail Trade	17,475	14.3%
3	Accom. + Food Serv.	9,476	Accom. + Food Serv.	11,375	20.0%	Accom. + Food Serv.	12,883	13.3%
4	State and Local Gov.	7,935	Real Estate	9,561	20.7%	Real Estate	11,310	18.3%
5	Real Estate	7,924	State and Local Gov.	9,344	17.8%	Prof. and Tech Serv.	10,994	22.0%

Top Industries by Retail Sales

Rank	2016		2026			2036		
	Industry	Sales ($M)	Industry	Sales ($M)	Δ	Industry	Sales($M)	Δ
1	Motor Vehicles	$950.4	Motor Vehicles	$1,222.4	28.6%	Motor Vehicles	$1,462.2	19.6%
2	Gen. Merchandise	$772.9	Gen. Merchandise	$1,025.4	32.7%	Gen. Merchandise	$1,338.4	30.5%
3	F&B Retail	$533.7	F&B Retail	$634.7	18.9%	Restaurants	$745.3	35.1%
4	Restaurants	$407.0	Restaurants	$551.9	35.6%	F&B Retail	$744.3	17.3%
5	Building Materials	$327.1	Building Materials	$412.5	26.1%	Building Materials	$522.3	26.6%

Δ = Total percent change from period before (10 years). Retail sales presented in millions of inflation-adjusted 2016 dollars. Accom. + Food Serv. = Accommodation and Food Services (e.g. hotels). Prof. and Tech Serv. = Professional and Tech Services F&B Retail = Food and Beverage Retail (e.g. grocery stores). Gen. Merchandise: = General Merchandise is a wide array of retail with the exception of food and beverage (e.g. clothing, hardware, etc.). Source: Woods & Poole

2.2.3 GROSS REGIONAL PRODUCT

Gross regional product (GRP) is the value of goods and services produced in the MSA. GRP serves as an index for the health of the overall economy. As the economy increases production– both by producing more goods and producing more valuable goods, GRP increases. GRP per Capita shows the impact of the recession on 2011 GRP, which was down compared to 2006 GRP per Capita despite overall GRP being higher. Woods and Poole projections for GRP show that it will increase slightly faster than the MSA population. This is due to increases in efficiency and growth in the healthcare, professional service, and technical manufacturing industries, which produce higher value goods per person than traditional MSA industries that focus on raw material extraction (agriculture, mining, and forestry). **Table 2-7** shows the GRP of the MSA from 2006 to 2036.

Table 2-7: Bend-Redmond Gross Regional Product

Calendar Year	GRP ($M)	Percent Change	GRP ($M) per Capita
2006	$7,356		$0.051
2011	$7,552	2.7%	$0.048
2016	$8,755	**15.9%**	$0.050
2021	$9,812	12.1%	$0.050
2026	$10,924	11.3%	$0.051
2031	$12,103	10.8%	$0.052
2036	$13,302	9.9%	$0.053
Compound Annual Growth Rates			
’06 - ‘16	6.1%	N/A	0.3%
‘’16 - ‘36	2.1%	N/A	0.3%

GRP per Capita = GRP / Total Population.
GRP is inflation-adjusted 2016 dollars
Sources: GRP: Woods & Poole, Population: Portland State University

2.2.4 UNITED STATES FOREST SERVICE

The United States Forest Service (USFS) Redmond Air Center (RAC) plays a major role in supporting firefighting efforts in the region. USFS aviation activities contribute an average of 500 annual operations, which includes flights by helicopters, tankers, and single-engine spotter aircraft., USFS operations are concentrated during the fire season from May to October. Total operations depend on the severity of the fire season, and the Airport has seen as many as 1,000 tanker flights and as few as 300. The RAC expects to see Lockheed C-130 air tankers following the reconstruction of former Taxiway B (now Taxiway D) in 2017.

In addition to aerial response, the RAC hosts firefighting and emergency response training, and acts as a depot for firefighters headed out to events across the northwest. USFS and contract employees generally fly on scheduled commercial flights; however, charter flights have occurred when demand is sufficient.

Governmental organizations, such as national law enforcement and elected officials, use the RAC when in town.

The USFS classifies the RAC as a hub of operations, incident support base, and critical asset for the Federal Emergency Management Agency (FEMA) and related emergency efforts. FEMA and other disaster response agencies will use the RAC for large scale natural disasters in the Pacific Northwest, such as an earthquake in the Cascadia subduction zone.

2.2.5 TOURISM

The Airport receives tourists throughout the year due to the multitude of activities and attractions in the Central Oregon area. The Central Oregon Visitors Association lists golf courses, ski resorts, hiking trails, and the natural beauty of Oregon as tourist attractions. The Central Oregon Golf Trail features more than two dozen golf courses, three of which are ranked by *Golf Digest* and *GOLF Magazine* in the top 100 public courses in the nation. These top golf courses are a strong attraction for visitors to fly to Central Oregon.

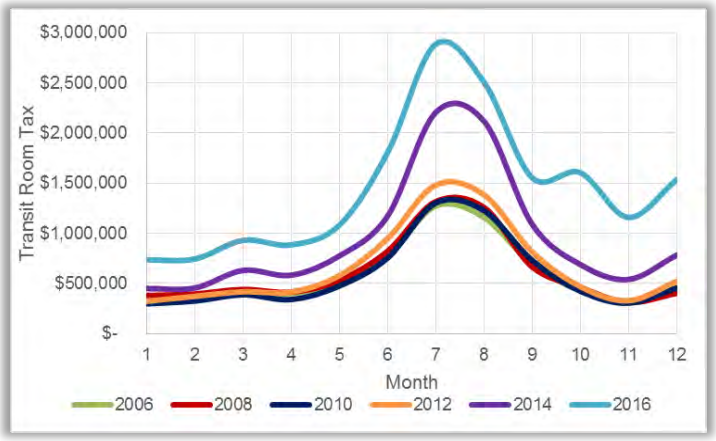
Central Oregon is home to two ski resorts, Mt. Bachelor and Hoodoo where visitors can participate in winter outdoor activities between November and May. Both resorts are also open from June to October for hiking and biking, and complement the trails elsewhere in the community.

Tourism activity is gauged by transit room tax (TRT) collection, which is provided by the Central Oregon Visitors Association (COVA). TRT is a percentage tax charged on hotel rooms. Growth in TRT shows two changes: an increase in average room price, an increase in hotel occupancy, and an increase in the number of rooms available. **Table 2-8** shows that TRT declined during the recession in 2008 and 2009 due to decreased travel, and has grown since. Strong growth from 2013 to 2016 is indicative of new lodging that has been built in response to the demand. Tourism peaks in the summer.

Table 2-8: MSA Transit Room Tax

Fiscal Year	TRT	% Change
2006	$7,159,430	
2007	$7,634,226	6.6%
2008	$7,535,010	-1.3%
2009	$6,560,361	-12.9%
2010	$6,952,963	6.0%
2011	$7,414,547	6.6%
2012	$7,930,881	7.0%
2013	$9,008,940	13.6%
2014	$11,061,570	22.8%
2015	$13,789,892	24.7%
2016	$15,513,984	12.5%
Compound Annual Growth Rate		
'06-'16	8.0%	N/A

TRT Collection by Month



TRT =- Transit Room Tax. TRT adjusted to match FAA fiscal year.
TRT is sum of amount collected by City of Bend, City of Redmond, City of Sisters, and Deschutes County
Months: 1= January, 12 = December
Source: Central Oregon Visitors Association

TRT growth exhibits strong correlation (0.91) with passenger enplanement growth from 2006 to 2016. This is to be expected as both indicators have common drivers. Growth in business and leisure visitors to the community help drive up TRT and passenger enplanement numbers. This, combined with population and employment growth (**Section 3.1** and **3.2**), explain the overall increase in passenger enplanements at RDM.

2.2.6 REGIONAL AIRPORTS

RDM is the only commercial service airport within 100 miles of the main population centers in Central Oregon; however, there are five general aviation airports nearby (Bend (BDN), Madras (S33), Prineville (S39), Sunriver (S21), and Sisters (6K5)). These airports are within 30 miles of RDM and provide general aviation users with choices for aircraft storage and services. A detailed description of the facilities offered at these airports are described in **Chapter 1**. Markets served by each airport are described in **Table 2-9**.

Table 2-9: Regional General Aviation Airports

Airport	Characteristics			Markets Served			
	Runway Length	Instrument Procedure	Jet A & FBO	Large Jets	Small Jets	Turbo-Props	Piston
Redmond	7,038 feet	Precision	Yes	Yes	Yes	Yes	Yes
Bend	5,200 feet	Non-Precision	Yes	No	Yes	Yes	Yes
Madras	5,089 feet	Non-Precision	Yes	No	Yes	Yes	Yes
Prineville	5,751 feet	Non-Precision	Yes	Yes	Yes	Yes	Yes
Sunriver	5,461feet	Non-Precision	Yes	No	Yes	Yes	Yes
Sisters	5,460 feet	Visual	No	No	No	No	Yes

Sources: Airport Facilities: FAA Airport Facilities Directory; Primary Market: Consultant assessment derived from based aircraft records and available facilities (runway length, fuel, instrument procedure)

Determination of market does not indicate the most common aircraft type at an airport, or suggest that a market that is not served will never use an airport. Rather, it reflects the presence of facilities at an airport that cater to the needs of a certain market. For example, piston aircraft are versatile in that they do not need Jet A fuel or a long runway, and due to their susceptibility to strong winds and turbulence, they tend not to be operated when visibility is particularly low due to stormy weather. For this reason, piston aircraft owners have fewer requirements for the airport where they based their aircraft than the owner of a business jet.

Large jets need a long runway to operate at their full potential, and owners generally need the aircraft available to fly regardless of the weather so airport instrumentation is more important. While large jets can use any of the regional airports under the right conditions, owners requiring year-round availability would be unlikely to base their large jet at an airport without the necessary facilities.

2.2.7 CATCHMENT AREAS AND COMPETITION

An airport's "catchment area" is the geographic boundary from which it draws its users, and airport activity is primarily influenced by the movement of people and products to and from the catchment area. Catchment areas are defined by the types of services offered at an airport, proximity of competitor airports, and the tendency of the local population to use the airport. The catchment area for RDM was split up into three different areas: air carrier, business jet, and general aviation. A map of the catchment areas is shown in **Figure 2-3.**

The air carrier catchment area is the largest of the three areas for RDM. The air carrier catchment area includes Central Oregon due to the Airport's location and the distance from other airports. The catchment area boundary is defined by assessing ticket purchases in the area surrounding the Airport, and looking at the zip codes of the passengers that traveled from RDM. The catchment area shows where RDM passengers are likely to come from; however, it should not be misinterpreted to mean that all air travelers in this area use RDM. Some fly from other airport, shown in the next section.

TERMINOLOGY

Air Carrier Catchment Area: Defined by the zip codes passengers live in when they purchase a ticket for an originating flight from the Airport.

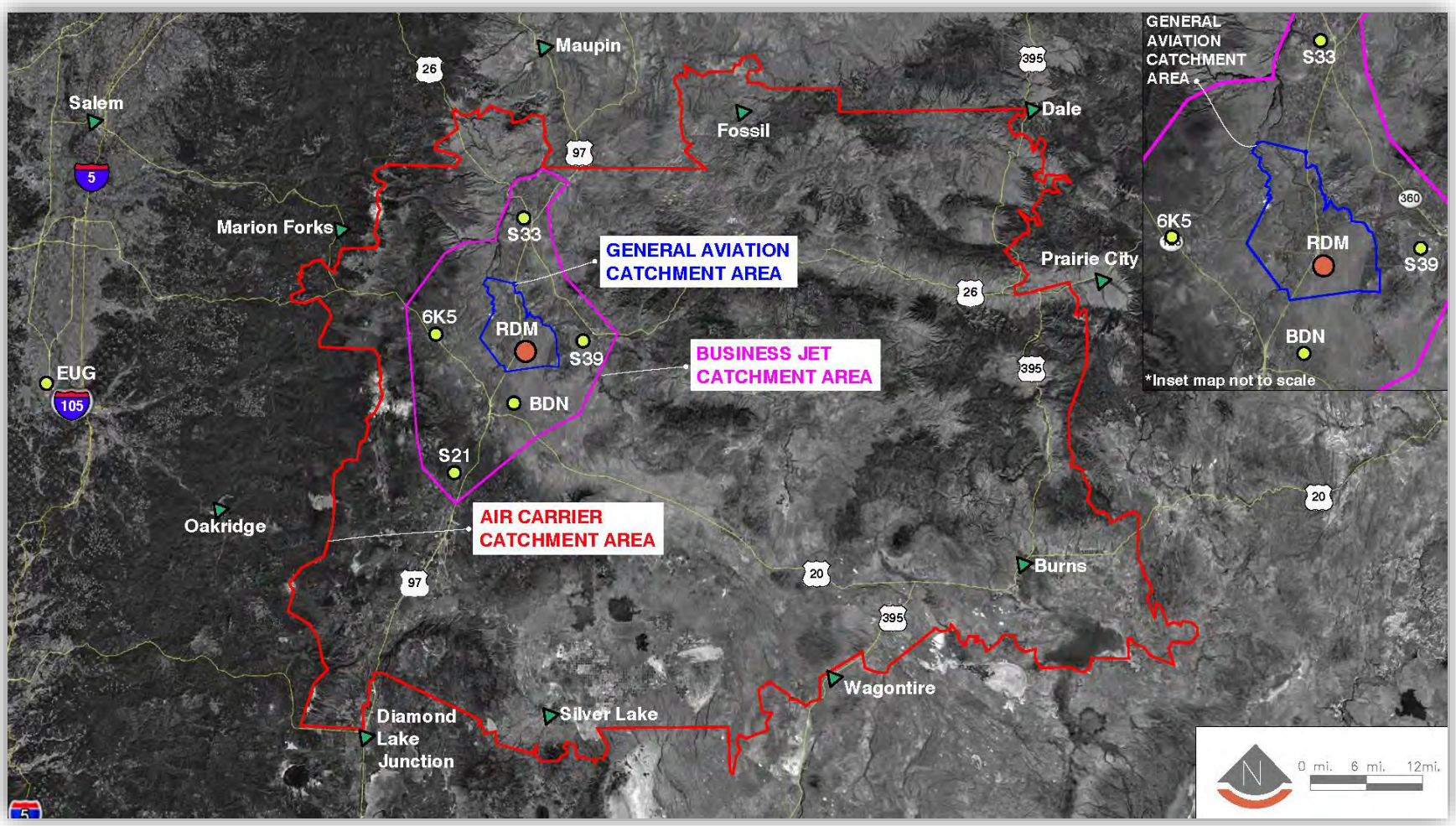
Business Jet Catchment Area: Defined by proximity to other airports capable of handling business jets.

General Aviation Catchment Area: Defined by the towns near the Airport who base general aviation aircraft at RDM.

The business jet catchment area is the second largest of the three areas and extends just past the city limits of Bend, Prineville, Madras, Sisters and Sunriver. This catchment area is based on the primary markets defined in **Table 2-9**. Surrounding airports do not have adequate facilities to serve large business jets throughout the year, which drives the size of the business jet catchment area.

The general aviation catchment area, which is the smallest, includes the City of Redmond and the areas halfway between the airports in Madras, Bend, Sisters, and Prineville. As shown in **Table 2-9**, the nearby airports in these communities have facilities that cater to small jets, turbo props, and piston aircraft. It is expected that aircraft operators will use the facility closest to their home or business provided space is available.

Figure 2-3: Catchment Areas



AIR CARRIER CATCHMENT AREA

The air carrier catchment area was determined based on a sample of passenger tickets issued between June 30th 2015 and June 30th 2016. This sample includes 24,457 tickets out of an estimated 747,325 tickets issued to travelers in the area over this period, meaning that the results are statistically valid at the 95 percent confidence level. *True market* for RDM is 747,325 tickets, which is the total number of tickets sold to the population of the catchment area. The true market includes travelers that used RDM, and travelers that live near RDM and used other airports.

Ticket sales data indicate that 75 percent of the true market used RDM for air travel, 24 percent used Portland (PDX), and the remaining one percent diverted to Eugene (EUG). When assessed based on international and domestic trips, RDM captured 76 percent (527,747) of domestic travelers and 59 percent (32,881) of international travelers. **Table 2-10** shows airport use by communities near the Airport.

Table 2-10: Airport Use by Community[1]

Community	Distance from RDM (Miles)	Year Ending June 30th, 2016 % Airport Use			True Market
		RDM	PDX	EUG	
Bend	17	80	19	1	524,628
Redmond	2	73	26	1	84,581
Sisters	21	69	31	0	33,032
Prineville	20	77	23	1	29,396
Terrebonne	8	72	28	0	17,876
Madras	28	50	49	0	17,448
La Pine	46	74	24	3	11,245
Powell Butte	9	82	17	1	7,486
Culver	21	73	27	0	5,684
Burns	144	56	44	0	2,170
Hines	142	59	41	0	1,711
Silver Lake	95	84	16	0	1,344
Christmas Valley	111	55	45	0	1,283
John Day	135	37	63	0	1,253
Crescent	64	67	28	5	1,192
Mount Vernon	127	48	52	0	947
Camp Sherman	36	75	21	4	856
Warm Springs	52	26	74	0	825
Kimberly	116	57	43	0	703
Canyon City	137	43	52	5	642
Total	**N/A**	**75**	**24**	**1**	**747,325**

1: Does not include markets with fewer than 100 passengers.
Sources: Airline Reporting Corporation, Market Information Data Tapes, and U.S. Department of Transportation

Travelers typically divert to other airports for non-stop flights, lower airfares, and more convenient flight times. Distance from RDM is another factor. **Table 2-10** shows that the Airport retains 72 percent of the true market within 30 miles of the Airport, 58 percent of the true market between 31 and 60 miles, 67 percent of the true market between 61 and 90 miles, and 55 percent of the true market over 91 miles away.

Table 2-10 shows the top 25 destinations true market estimates for passengers daily each way (PDEW) from RDM. PDEW numbers do not justify route existence on their own as many passengers flying from RDM connect in the airline hubs to other destinations. A passenger flying from RDM to Anchorage via Portland is part of the RDM-Anchorage PDEW total, and not part of the RDM-Portland PDEW total. RDM has non-stop service to each of the top five markets, and six of the top ten markets. The Airport uses the information contained in **Table 2-11** to advocate for new routes when meeting with the airlines.

Table 2-11: Top 25 Destinations True Market Estimate And PDEW					
Rank	**Destination**	**RDM Reported PAX**	**Diverted PAX**	**True Market**	**PDEW**
1	Seattle, WA[1]	61,199	4,442	65,641	89.9
2	Los Angeles, CA[1]	39,780	15,751	55,531	76.1
3	San Francisco, CA[1]	39,417	4,626	44,042	60.3
4	Portland, OR[1]	33,032	0	33,032	45.2
5	Phoenix, AZ (PHX)[1]	25,316	7,136	32,452	44.5
6	Las Vegas, NV	19,226	7,076	26,302	36.0
7	San Diego, CA	19,117	6,765	25,883	35.5
8	Denver, CO[1]	20,496	3,219	23,715	32.5
9	Orange County, CA	16,165	4,163	20,328	27.8
10	Chicago, IL (ORD)	10,465	3,357	13,822	18.9
11	Dallas, TX (DFW)	8,887	4,860	13,748	18.8
12	Anchorage, AK	8,642	4,723	13,364	18.3
13	Salt Lake City, UT[1]	10,010	2,624	12,633	17.3
14	San Jose, CA	6,801	5,096	11,896	16.3
15	Kahului, HI	5,947	5,947	11,893	16.3
16	Boston, MA	8,199	3,160	11,358	15.6
17	Minneapolis, MN	7,729	2,540	10,268	14.1
18	Oakland, CA	5,092	3,907	8,999	12.3
19	Sacramento, CA	5,320	3,587	8,907	12.2
20	Ontario, CA	6,293	1,981	8,274	11.3
21	Newark, NJ	6,778	1,450	8,228	11.3
22	Honolulu, HI	4,483	3,665	8,148	11.2
23	Orlando, FL (MCO)	5,169	2,613	7,783	10.7
24	Spokane, WA	5,710	1,404	7,114	9.7
25	Atlanta, general aviation	4,948	1,693	6,640	9.1
Top 25 destinations		**384,217**	**105,784**	**490,002**	**671.2**
Total domestic		**527,747**	**164,405**	**692,152**	**948.2**
Total international		**32,881**	**22,292**	**55,173**	**75.6**
All markets		**560,628**	**186,697**	**747,325**	**1,023.7**

1: Indicates routes with non-stop service.
PDEW: Passengers Daily Each Way
Airport codes used to identify specific airport used in cities with multiple commercial airports.
Sources: Airline Reporting Corporation, Market Information Data Tapes, and U.S. Department of Transportation

2.3 AVIATION ACTIVITY PROFILE

The aviation activity profile is the baseline of the forecasts. The profile shows trends in activity at the Airport and provides context that explains what, how, and why changes in aviation activity have occurred. Sources that have provided information include the FAA, Airport Management, ATCT staff; and airport tenants. This section is organized in the following order:

- ✓ Airline Service (Passenger and Cargo)
- ✓ General Aviation
- ✓ Military
- ✓ Terminal Area Forecast

The ATCT operates and tracks flights from 5 a.m. to 7 p.m. Arrivals and departures that occur outside of these hours are not included in operations records submitted to the FAA. Commercial airline operations are also reported to the U.S. Department of Transportation (USDOT) and operations that occur when the ATCT is closed are captured using USDOT records.

General aviation operations do not have such records; however, flight records captured by FlightAware.com show only 327 general aviation operations occurring outside of ATCT hours. FlightAware records do not capture all operations, only those that file flight plans. However, given the low number of recorded operations, it is expected that total GA operations that occur when ATCT is closed make up a small percentage of overall operations. The absence of a more definite count is not expected to materially impact the forecast. GA operations when the ATCT is closed are shown in **Table 2-12.**

Table 2-12: GA Operations During ATCT Closure

Category	Arrivals	Departures	Total	% of Total Operations
Single Engine Piston	17	8	**25**	**0.06%**
Multi Engine Piston	7	3	**10**	**0.02%**
Jet	110	70	**180**	**0.45%**
Single Engine Turboprop	51	23	**74**	**0.18%**
Multi Engine Turboprop	18	20	**38**	**0.09%**
Total	**203**	**124**	**327**	**0.81%**

Source: FlightAware Fiscal Year 2016 data. ATCT records show **40,162 operations in 2016**

2.3.1 AIRLINE SERVICE

Airline service includes scheduled passenger and cargo flights, and non-scheduled charter flights that operate charters for casinos and the U.S. Forest Service. The sections that follow describe the airline profile, opportunities for new airlines to come to RDM, passenger enplanements, commercial operations, and air cargo service at the Airport.

AIRLINE PROFILE

The Airport has four scheduled passenger airlines: Alaska, United, Delta, and American. In 2017, all flights were operated by regional airlines on behalf of the mainline carriers. Each provides service to their hubs with Alaska flying to Portland and Seattle; America flying to Phoenix and Los Angeles; Delta flying to Salt Lake City and Seattle; and United flying to Denver and San Francisco. Non-stop service to the seven hub airports puts RDM within one stop of many major cities in the world. The 2016 market share for airlines in terms of passengers carried was not evenly divided amongst the airlines: 57 percent of passenger traveled on Alaska, 24 percent on United, 12 percent on Delta, and seven percent on American.

Scheduled cargo service is operated by Ameriflight on behalf of United Postal Service (UPS), and Empire on behalf of Federal Express (FedEx). Alaska Airlines carries cargo on their scheduled passenger flights. The 2016 market share for scheduled cargo carriers in terms of pounds of cargo carried was 51 percent for Ameriflight, 45 percent for Empire, and four percent for Alaska.

The growth in passenger activity at RDM has corresponded with increasing seat capacity on the scheduled carriers. Average seats per departure was 39 in 2006, 70 in 2011 (when Allegiant was operating with 166 seat aircraft), and 64 in 2016 (after Allegiant left the market). Nationally, the FAA Aerospace Forecast 2017-2037 reports that the average seats per departure for regional airlines has grown from 50 in 2006 to 61 in 2016, and is projected to grow to 73 by 2037. The trend of larger aircraft is expected to continue at RDM based on the following fleet decisions made by the major airlines.

Major changes in seat capacity for aircraft operating at RDM are described below.

- ✓ Alaska Airlines replaced the 37-seat Q200 with the 76-seat Q400 in 2008. As a result, flight frequencies in RDM and other markets served by Alaska declined. Passenger numbers also declined at this time; however, this was primarily due to the recession that occurred in 2008-2009.Alaska Airline's passenger numbers returned to growth in 2010 and exceeded 2008 levels in 2014.
- ✓ SkyWest (operating for United and Delta) has been replacing the 50-seat CRJ-200 with the 65 to 70-seat CRJ-700 and the 76 seat CRJ-900 during peak months. In conversations with airport management, United has indicated that the CRJ-200 will leave the RDM market and be replaced by the CRJ-700 and CRJ-900 in 2017, and Delta has indicated that they intend to phase out the CRJ-200 from the RDM market as soon as the CRJ-700 and CRJ-900 become available throughout the year. Delta did not specify a date when this would occur.

Regional airlines are capped at a maximum of 76 seats per the terms of labor agreements between mainline pilot's unions and the airlines. Aircraft operated by regional airlines typically have fewer seats than they are capable of accommodating because of these agreements. For example, the Bombardier CRJ-900 can accommodate 90 seats in an all economy configuration. Airline purchases known as of April 2017 show that interest is focused on aircraft with greater seating capacity. Alaska, American, Delta, and United have indicated in the fiscal year investor filings with the U.S. Securities and Exchange Commission that they are updating their fleets with more fuel efficient narrow body aircraft as described below. This list does not include conventional narrow body aircraft (e.g. A321ceo), and wide body aircraft (e.g. 787-10) that the airlines have on order.

- Alaska: 30 Embraer 175 aircraft (up to 88 seats), 30 A320neo aircraft (up to 186 seats), and 32 Boeing 737 MAX aircraft (up to 200 seats);
- American: 12 Embraer 175 aircraft, 100 Airbus A321neo aircraft (up to 240 seats) and 100 Boeing 737 MAX aircraft;
- Delta: 75 Bombardier CS100 aircraft (up to 135 seats),
- Skywest: 18 Embraer 175 aircraft, 200 Mitsubishi MRJ-90 aircraft (up to 90 seats),
- United: 24 Embraer 175 aircraft, 99 Boeing 737 MAX aircraft

While it is not known how the airlines will deploy these aircraft in their system, it is evident that there are no orders placed for aircraft with fewer than 60 seats. This means that as these smaller aircraft are retired, they will be replaced by larger aircraft. As seen through the retirement of the 37-seat Bombardier Q200 in 2008, communities that cannot fill the larger aircraft will face a reduction in frequency, and potentially lose service all together. The effect that this may have on RDM is discussed in **Section 4.1.3**.

NEW AIR SERVICE OPPORTUNITIES

The most likely new candidate to service the Airport is Allegiant Airlines. As shown in **Table 2-11**, Las Vegas is the market without non-stop service from the Airport. Passengers either connect on flights from RDM, or drive to another airport to fly direct. Allegiant provided service between RDM and Las Vegas between 2007 and 2012, with load factors (number of passengers divided by the number of seats) ranging from 63 percent in 2007 to 81 percent in 2011. Allegiant used the MD-80 aircraft with 166 seats on the Las Vegas route. Allegiant ceased service in 2012 citing rising airport costs as the reason for leaving; however, the Airport and Allegiant are investigating reinstating the service as demand has remained strong.

Allegiant is transitioning from their Boeing MD-80 fleet to a more modern Airbus narrow body fleet. The Airbus aircraft have comparable seating capacity to the MD-80; however, the Airbus are more fuel efficient and can operate on shorter runways at a given takeoff weight than the MD-80. The new aircraft would allow Allegiant to serve RDM throughout the year with a lower weight restriction on hot days, enabling the airline to carry more passengers.

Allegiant is a niche market low-cost carrier that caters to leisure travelers and typically does not offer flights every day of the week, helping keep load factors high. Mainline carriers like Alaska, America, Delta, and United cater to business and leisure travelers and tend to offer multiple daily flight frequencies that coincide with connecting flights at their hubs. The Airport has non-stop service to every mainline airline hub within 1,000 miles. Regional jets that serve the Airport begin to become uneconomical beyond 1,000 miles because they need to remove passengers to take on more fuel. It is not expected that the Airport will see non-stop service to Midwest hubs until airlines begin serving the Airport with larger aircraft such as the Boeing 737 and Airbus A320 series. Entry of these aircraft into the RDM market will depend on the local demand proving that they can fill these larger aircraft reliably.

PASSENGER ENPLANEMENTS AND AIRLINE OPERATIONS

A passenger enplanement is any passenger who boards any aircraft that is considered scheduled commercial and charter aircraft with more than nine seats for turboprops (or any number of seats for jet aircraft). The aircraft must be operating under Title 14 Code of Federal Regulations (CFR) Part 121, which pertains to passenger airlines. Passengers are not counted toward enplanements if they board aircraft that operate under 14 CFR 91, which pertains to general aviation, and 14 CFR 135, which pertains to on-demand air taxis (not airlines). Passenger enplanements include both revenue and non-revenue passengers who paid taxes and passenger facility charges (PFC) for their carriage. Passenger enplanements do not include the flight crew, flight attendants, and any other members of the airline crew.

Passenger enplanements are classified by either *air carrier* or *air taxi/commuter*. Air carrier enplanements are any enplanements that occur on a mainline carrier, such as Delta, United, and American. Air taxi/commuter enplanements are those that occur on a feeder carrier, such as SkyWest Airlines, Mesa Airlines, and Horizon Airlines.

RDM passenger enplanements have increased by 100,000 between 2006 and 2016, which is a CAGR of 4.2 percent. This includes years of decline in 2009, 2012, and 2013. The 2009 decline was caused by the economic recession, and the decline in 2011 and 2012 was caused by Allegiant exiting the market, shown by the drop of air carrier enplanements while Air Taxi/Commuter enplanements grew. RDM enplanements from 2006 to 2016 are shown in **Table 2-13**.

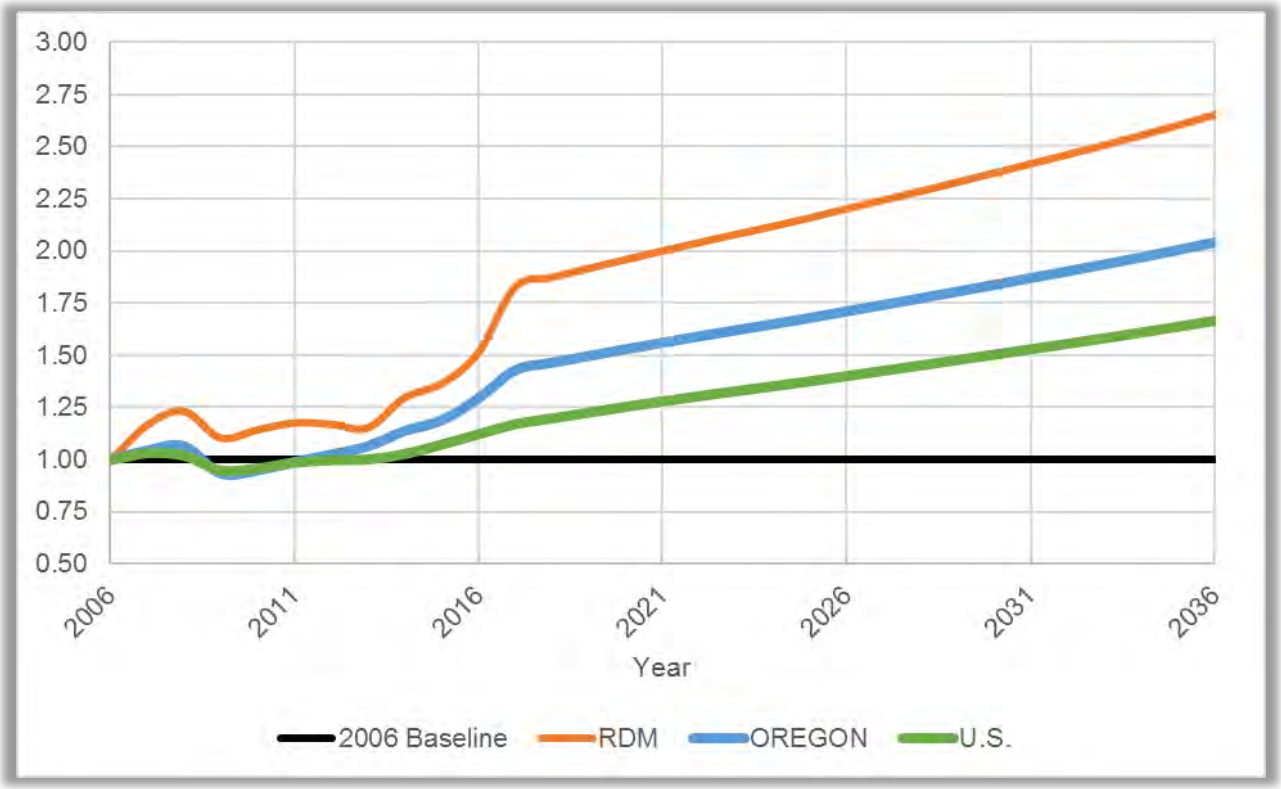
Table 2-13: Passenger Enplanements				
Fiscal Year	Air Carrier	Air Taxi/Commuter	Total	Percent Change
2006	1,427	195,796	197,223	
2007	9,262	220,711	230,033	16.6%
2008	13,886	229,311	243,197	5.7%
2009	26,618	191,208	217,826	-10.4%
2010	28,031	197,530	225,561	3.6%
2011	26,259	205,719	231,978	2.8%
2012	16,660	214,173	230,833	-0.5%
2013	430	226,980	227,410	-1.5%
2014	305	255,560	255,865	12.5%
2015	303	268,829	269,132	5.2%
2016	536	297,786	298,322	19.7%
CAGR	-9.3%	4.2%	4.2%	N/A

CAGR = Compound Annual Growth Rate.
Source: 2016 TAF. 2016 total is impacted by Airport closure in May.

As shown in **Figure 2-4**, growth at RDM exceeded growth experienced by the State of Oregon and the U.S. from 2006 to 2016. The State and the U.S. saw steeper declined during the recession than RDM. Growth at RDM since 2013 has been more pronounced. One reason for the periods of slower decline and more rapid growth over the past ten years is that the local economy has been adding jobs faster than the State and the nation, and the population of the MSA has been growing more quickly.

Forecasts, which come from the FAA TAF published January 2017, project that RDM will grow more quickly than the State and the U.S. through 2036. A key reason behind the higher growth rate is that RDM is an emerging market, whereas the State and the U.S. are mature markets, driven by the medium and large hub airports. PDX made up 88 percent of Oregon passenger enplanements, and medium and large hub airports made up 89 percent of U.S. enplanements in 2016. Hub airports tend to remain more stable than non-hubs, hence the lower historical and projected volatility. The RDM TAF is discussed in **Section 4.4**.

Figure 2-4: Passenger Enplanement Growth



Source: 2017 TAF

Airline operations are categorized as either *air carrier* or *air taxi*. Categorization is based on the seating capacity of an aircraft, regardless of which carrier is operating the aircraft. A seating capacity of 60 seats is the determining factor on how an aircraft is categorized. Aircraft such as 50-seat CRJ-200 with are considered air taxi, and aircraft such as the 76-seat Q400 are considered air carrier.

Total passenger airline operations at RDM have declined by an annual average of 2.2 percent from 2006 to 2016. The largest drop in operations was during the recession; however, total operations numbers have declined every year since except 2010, 2014 and 2016. The primary reason behind the decline in operations is the airline's transition of from *air taxi* aircraft to air carrier aircraft. The greater seating capacity offered by the air carrier aircraft has allowed the airlines to reduce flight frequencies while maintaining or increasing the number of available seats in the market. For example, Alaska cut their operations by a little less than half when they retired the 37-seat Bombardier Q200 in 2008; but they replaced these aircraft with 76-seat Bombardier Q400s, thereby offsetting the decline in operations and maintaining the number of seats available in the market.

Other airlines – American, Delta, and United, have been phasing out the 50-seat CRJ-200, an *air taxi* aircraft, in favor of larger regional jets, which are considered *air carrier* aircraft. These lager jets increase the number of seats available in the market, which has accommodated the growth in passenger enplanements. Passenger airline operations and average seats per departure are shown in **Table 2-14**.

Table 2-14: Passenger Airline Operations

Fiscal Year	Air Carrier	Air Taxi	Total	% Change	Avg. Seats per Departure
2006	360	14,368	14,728		39
2007	2,484	13,792	16,276	10.5%	46
2008	4,782	10,414	15,196	-6.6%	54
2009	5,204	6,360	11,564	-23.9%	67
2010	5,568	6,234	11,802	2.1%	70
2011	4,484	6,248	10,732	-9.1%	70
2012	4,376	6,344	10,720	-0.1%	79
2013	4,276	6,106	10,382	-3.2%	56
2014	5,138	6,440	11,578	11.5%	57
2015	5,292	4,428	9,720	-16.0%	64
2016	6,946	4,796	11,742	20.8%	64
CAGR	34.4%	-10.4%	-2.2%	N/A	N/A

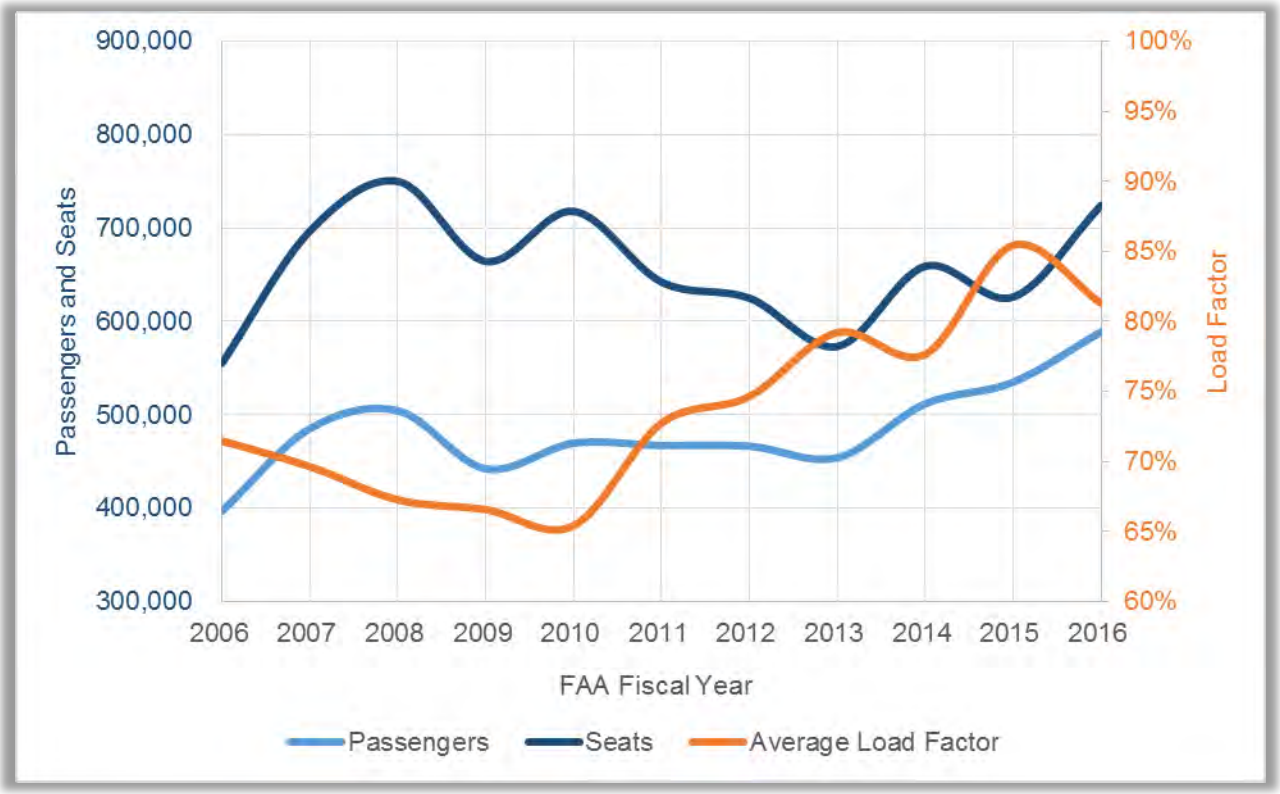
CAGR = Compound Annual Growth Rate.
Sources: 2006-2016 USDOT T-100 Database
Note: TAF and FAA OPSNET counts include Charter, Air Cargo and Forest Service Tanker. Numbers above are for scheduled passenger flights only.

SCHEDULED PASSENGER AIRLINE LOAD FACTOR

Load factor is one metric used by the airlines to assess route performance, and is calculated by dividing the number of passengers by the number of seats available. Available seats represent the supply, and passengers represent the demand. Load factor grows as demand and supply move closer together, and load factor declines when supply grows faster than demand. Airline capacity discipline, which is where airlines reduce seats to a market to increase load factor is evident at RDM from 2010 to 2013, as shown in **Figure 2-5**. The airlines reduced supply by 150,000 seats between 2010 and 2013. Passenger numbers declined by a tenth of this amount during the same period, and average load factor grew from 65 percent to 79 percent. The airlines have added capacity since 2013 and average load factor has remained high. A reason for this is that there is strong demand for air travel in the community, and available seats are being purchased.

The 2017 FAA Aerospace Forecast reports that the average domestic load factor for U.S. regional carriers was 80.1 percent in 2016 and RDM had a load factor of 80.1 percent. Performing at or above industry average helps the Airport market itself to the airlines. As shown in **Table 2-9**, the Airport retains 75 percent of local passengers, and the population and economy of the Redmond MSA are expected to grow. These factors suggest that if RDM is successful in attracting additional air service in the future, the demand will exist to sustain the routes at industry-average load factors.

Figure 2-5: RDM Passengers, Seats, and Average Load



Source: USDOT T-100. Data presented included passengers, seats, and load factors for both inbound and outbound travel.

SCHEDULED PASSENGER AIRLINE AVERAGE FARE AND AVERAGE YIELD

Airfares play an important role in traveler airport selection. Airfares affect an airport's ability to retain passengers, and an airline's desire to increase service to a market. One-way airfares (excluding taxes and PFC) paid by travelers are used to measure the relative fare competitiveness between the Airport and competing airports. **Table 2-15** shows the average airfares of RDM and competing airports for the top 25 destination from RDM.

Multiple factors dictate the price of average airfares: availability of seats, stage length, number of flights, and airline competition. The average one-way airfare for the Airport was $197, which is $32 higher than Portland ($165), and $19 higher than Eugene ($178). Part of Eugene's lower average airfare is due to the presence of Allegiant Airlines, which flies to Los Angeles, Las Vegas, Oakland, and Phoenix. Excluding Allegiant's impact in a few select markets at Eugene, the average one-way fare at RDM was lower than Eugene by $5. The Airport's fare was higher than Portland in every market compared in the analysis. The largest difference was to and from Denver, Chicago-O'Hare and Orlando at more than $70 one-way. When compared to Eugene, the Airport had lower airfares in six markets, including Seattle, San Francisco, Denver, Anchorage, Honolulu, and Atlanta.

Table 2-15 Average Domestic One-Way Fares

Rank	Destination	Average one-way fare			RDM Max Δ
		RDM	PDX	EUG	
1	Seattle, WA	$123	$109	$127	$14
2	Los Angeles, CA	$149	$109	$115	$40
3	San Francisco, CA	$178	$126	$200	$52
4	Portland, OR	$93	-	$81	$12
5	Phoenix, AZ (PHX)	$143	$141	$141	$2
6	Las Vegas, NV	$141	$104	$89	$52
7	San Diego, CA	$158	$122	$152	$36
8	Denver, CO	$208	$128	$211	$80
9	Orange County, CA	$143	$111	$133	$32
10	Chicago, IL (ORD)	$257	$180	$250	$77
11	Dallas, TX (DFW)	$226	$161	$212	$65
12	Anchorage, AK	$206	$167	$212	$39
13	Salt Lake City, UT	$195	$129	$176	$66
14	San Jose, CA	$144	$118	$119	$26
15	Kahului, HI	$272	$259	$270	$13
16	Boston, MA	$262	$228	$239	$34
17	Minneapolis, MN	$235	$202	$234	$33
18	Oakland, CA	$148	$117	$63	$85
19	Sacramento, CA	$168	$111	$161	$57
20	Ontario, CA	$157	$129	$145	$28
21	Newark, NJ	$310	$252	$271	$58
22	Honolulu, HI	$289	$232	$305	$57
23	Orlando, FL (MCO)	$274	$201	$259	$73
24	Spokane, WA	$134	$106	$131	$28
25	Atlanta, general aviation	$294	$253	$296	$41
Average domestic fare		**$197**	**$165**	**$178**	**$32**

Note: YE 2Q 2016; Fares do not include taxes or PFC.
Source: Diio Mi

The average yield, which is measured as revenue per mile flown, is 18.2 cents for RDM. This is 26 percent higher than the national average of 14.5 cents. When comparing the Airport to others in the FAA Northwest Mountain region, the Airport was 31 percent higher than the average of 13.9 cents. Airlines are for-profit businesses and look to add service to markets that produce high yields. Average yields for the airlines that service the Airport are below:

- ✓ Alaska Airlines: 19.2 cents, 44 percent higher than their U.S. average of 13.3 cents.
- ✓ American Airlines: 17.3 cents, 11 percent higher than their U.S. average of 15.6 cents.
- ✓ Delta Airlines: 18.1 cents, 9 percent higher than their U.S. average of 16.6 cents.
- ✓ United Airlines: 17.9 cents, 19 percent higher than their U.S. average of 15.0 cents.

SCHEDULED AIR CARGO

RDM scheduled air cargo volume (expressed in tons) has been highly volatile over the past ten years, with a five percent average annual decline from 2006 to 2016. Operations by dedicated cargo aircraft have declined proportionally, showing a general decline of 4.7 percent per year since 2006. The U.S. domestic cargo market has experienced an average decline of 0.5 percent per year during the same period. The 2017 FAA Aerospace Forecast states that U.S. air cargo has been in decline due to economic uncertainty, high fuel prices, additional security screening requirements, and "a shift from air to other modes (especially truck) […]." Looking forward, the FAA projects that national cargo decline has bottomed out, and will grow slowly into the future. The 2017 Aerospace Forecast states that "the shift from air to ground transportation has occurred."

The FAA Aerospace Forecast indicates that air cargo is strongly linked to grow of gross regional and domestic product. As shown in **Table 2-7**, The MSA GRP has grown by an average of 2.1 percent over the past ten years. The mismatch between local GRP growth and air cargo decline is likely explained by the proximity of RDM to Oregon's cargo hub in Portland. While 75 percent of passengers avoid the three-hour drive to Portland, packages can easily be trucked over the Cascade Mountains. USDOT T-100 data shows that air cargo volumes at PDX have grown by an average of 1.6 percent per year from 2011 to 2016, while RDM air cargo volumes fell by 0.1 percent per year over the same period. Air cargo operations and volumes are shown in **Table 2-16**.

Table 2-16 Cargo Airline Operations and Activity

Fiscal Year	Redmond			U.S. Domestic Market	
	Operations	Total Cargo (Tons)	% Change	Revenue Ton Miles (Millions)	% Change
2006	3,259	1,612.8		12,481	
2007	3,440	1,633.9	1.3%	12,940	3.7%
2008	3,026	1,269.9	-22.3%	12,261	-5.3%
2009	3,340	1,145.1	-9.8%	10,275	-16.2%
2010	3,633	1,087.8	-5.0%	11,243	9.4%
2011	3,252	976.4	-10.2%	10,601	-5.7%
2012	2,815	918.7	-5.9%	10,886	2.7%
2013	3,057	1,003.4	9.2%	10,996	1.0%
2014	1,949	1,035.2	3.2%	11,226	2.1%
2015	1,896	924.5	-10.7%	11,636	3.7%
2016	2,014	970.1	4.9%	11,851	1.8%
CAGR	-4.7%	-5.0%	N/A	-0.5%	N/A

CAGR = Compound Annual Growth Rate.
Sources: RDM: Airport Management and 2006-2016 USDOT T-100 Database; U.S.: FAA Aerospace Forecast 2017-2037

2.3.2 GENERAL AVIATION

General aviation describes flight activities that are not performed by passenger and cargo airlines, and the military. General aviation is broad in scope – activities include, but are not limited to, flight training, recreational flying, private and corporate air transportation, emergency response, and flight testing of new aircraft. This section describes general aviation businesses and activities at RDM.

GENERAL AVIATION BUSINESSES

General aviation businesses include those that offer services to the flying public (e.g. fixed base operators), those that design and construct aircraft, and companies that use aircraft as part of their business (e.g. aerial photography, sightseeing, and employee transport). Key general aviation businesses at RDM are described below.

- There are two fixed base operators at RDM. These businesses sell 100 Low-Lead (LL) and Jet A fuel, and offer aircraft maintenance, de-icing, aircraft detailing and cleaning, an avionics shop, covered aircraft storage, and a pilot's lounge.
- There are two aircraft manufacturers based at RDM: Evolution and Stratos. The Evolution facility specializes in final assembly and maintenance of single engine piston aircraft. Stratos is in the process of building and certifying a very light jet. Evolution is a spin-off company of aircraft manufacturer Lancair.
- There are corporate tenants, such as Les Schwab, that base their business jets at RDM. The aircraft are an integral part of business operations, allowing the companies to move employees around the country
- Flight training occurs at RDM, but the flight school formerly located at the Airport moved to the Bend Airport in 2008. Features of the Airport, such as the airport traffic control tower and the instrument landing system, are attractive to student pilots preparing to become professional pilots. Students from nearby airports fly to RDM to practice from time to time.

ITINERANT GENERAL AVIATION OPERATIONS

Itinerant operations originate and terminate at different airports. Operators include business travelers to the community, student pilots performing cross country training flights, and recreational pilots. Itinerant operations made up 39 percent of overall general aviation operations in 2016, and have been declining at an annual average rate of 6.8 percent since 2006. This decline is more pronounced at RDM than the national decline of two percent per year. Itinerant general aviation operations are shown in **Table 2-17**.

Table 2-17: Itinerant General Aviation Operations				
Year	RDM Operations	% Change	National Operations	% Change
2006	22,170		18,707,000	-0.7%
2007	26,174	18.1%	18,575,000	-5.8%
2008	20,221	-22.7%	17,493,000	-11.0%
2009	16,014	-20.8%	15,571,000	-4.5%
2010	14,767	-7.8%	14,864,000	-2.3%
2011	13,610	-7.8%	14,528,000	0.0%
2012	14,709	8.1%	14,522,000	-2.8%
2013	13,414	-8.8%	14,117,000	-1.0%
2014	12,372	-7.8%	13,979,000	-0.7%
2015	11,551	-6.6%	13,887,000	0.1%
2016	10,985	-1.1%	13,903,000	-0.7%
CAGR	-6.8%	N/A	-2.9%	N/A

CAGR = Compound Annual Growth Rate. Source: FAA Terminal Area Forecast

The decline in itinerant operations is indicative of an industry that is adjusting to modern realities, rather than one that is declining across the board. The 2017 FAA Aerospace Forecast shows that in 2016, aircraft with piston engines made up 72 percent of the national general aviation fleet, and turbine aircraft made up the remaining 18 percent. Hours flown by piston aircraft have declined by an annual average of 1.4 percent since 2010, while hours flown by turbine (jet and turboprop) aircraft have grown by 1.9 percent per year. Similarly, the overall number of active piston aircraft has declined by an annual average of 1.7 percent while total turbine aircraft have grown by an annual average of 1.9 percent.

The general aviation market is readjusting to one with a more even distribution of piston and turbine aircraft, albeit slowly. With the dominant piston market in decline, overall operations will continue to drop; however, there is a growing segment within the itinerant general aviation market.

LOCAL GENERAL AVIATION OPERATIONS

Local general aviation operations originate and terminate at the Airport, and are generally performed by pilots (both student and licensed) that are practicing landings. Local operations are highly sensitive to the level of flight training at an Airport. Touch-and-go landings, which is where the aircraft lands, slows, then accelerates and takes off without leaving the runway, count as two operations. An aircraft practicing touch and goes can perform upwards of six operations in an hour, depending on how busy the traffic pattern is. The flight school, located at RDM from 2007 to 2009 increased local aircraft operations by 79 percent in the first year. Local general aviation operations at RDM and nationally are shown in **Table 2-18**.

The largest decline in local general aviation operations was caused by the departure of the flight school in 2009. Despite the relocation of the school, the Airport still sees student pilots who come from flight schools in Prineville and Bend to practice touch-and-goes in controlled airspace, and to practice using the instrument landing system. The region is attractive for student pilots in the Pacific Northwest because it has more sunshine than areas to the west of the Cascades mountain range.

Nationally, local general aviation operations declined after the recession and have remained essentially flat since 2010. A 2016 Current Market Outlook, produced by aircraft manufacturer Boeing, projects that North America will need 112,000 new pilots between 2016 and 2035. The 2017 FAA Aerospace Forecast projects that student pilots will grow steadily at 0.4 percent per year through 2037, and those entering flight training will primarily do so to earn a sport pilot license (for recreational purposes), or an airline transport pilot (ATP) license (for professional purposes). FAA projections through 2037 have sport pilot license holders growing at 4.1 percent per year and ATP license holders growing at 0.5 percent per year.

Table 2-18: Local General Aviation Operations				
Year	RDM Operations	% Change	National Operations	% Change
2006	27,376		14,365,000	
2007	48,990	79.0%	14,557,000	1.3%
2008	42,519	-13.2%	14,081,000	-3.3%
2009	25,261	-40.6%	12,448,000	-11.6%
2010	22,416	-11.3%	11,716,000	-5.9%
2011	19,554	-12.8%	11,437,000	-2.4%
2012	18,565	-5.1%	11,608,000	1.5%
2013	16,124	-13.1%	11,688,000	0.7%
2014	17,213	6.8%	11,675,000	-0.1%
2015	22,854	32.8%	11,691,000	0.1%
2016	16,829	-23.0%	11,776,000	0.7%
CAGR	-4.7%	N/A	-2.0%	N/A

CAGR = Compound Annual Growth Rate. *Source: FAA Terminal Area Forecast, FAA Aerospace Forecast*

BASED AIRCRAFT

TERMINOLOGY

Single-Engine Piston (SEP): SEP have one piston-powered engine. These aircraft are generally smaller and are often used for flight training and recreational flying. SEP may be used for regional business trips. Depending on weight and operator certification, these aircraft generally require only one pilot.

Multi-Engine Piston (MEP): MEP have two or more engines and are typically larger than SEP. Multiple engines make the aircraft more capable, and require additional flight instruction beyond what is needed to operate an SEP. MEP are primarily used for flight training and business aviation. MEP may require two pilots, but many variants can be operated with one.

Jet: Jet aircraft are characterized for having a turbine engine instead of a piston engine. These aircraft may have turbojets, or a turboprop. Jet aircraft range in size from small four-passenger business jets to the largest airliners. They can generally fly faster and at higher altitudes than SEP and MEP, making them better suited for business travel and emergency response. It is less common, but not unheard of, to see a jet used for recreational flying and flight instruction. Some smaller civilian jets can operate with a single pilot; however, most civilian jet aircraft require two.

Helicopter: Helicopters are characterized by having a rotor mounted above the cabin for lift and propulsion. Helicopters are commonly used for flight training, by law enforcement and emergency response, and by aerial businesses such as pipeline inspection, forestry, and aerial agriculture. Helicopters can be piston or turbine powered, and depending on the complexity of the model, can be operated by one pilot or two.

Other: The category of "Other" includes experimental, sport, glider, and ultralight aircraft. These aircraft are used for recreational flying.

- ✓ Experimental aircraft refer to kit airplanes that are built by users, or third-parties besides the original manufacturer. Experimental aircraft share many characteristics with SEP – the key differentiator is how and where the aircraft is assembled.
- ✓ Sport aircraft are airplanes that have a specific weight and maximum speed in level flight. Sport aircraft require less training and a less strict medical certificate to pilot the aircraft.
- ✓ Gliders are unpowered aircraft that are towed into flight, and use thermal uplift to sustain altitude.
- ✓ Ultralight aircraft weigh less than 155 and do not require the pilot operating the aircraft to have a private pilot's license or medical certificate.

Based aircraft are those that use a hangar and are stored at the Airport. Based aircraft do not include visiting, or itinerant aircraft. The FAA breaks down based aircraft into different categories based on an aircraft's propulsion system, engine configuration, and weight. As of 2016, there are 64 SEP aircraft at the Airport, making up 80 percent of the total based fleet. There are six jets, four MEP aircraft, and six helicopters. There were no "Other" aircraft are based at the Airport from 2006 to 2016. **Table 2-19** shows based aircraft records from 2006 to 2026. The airport's counts for 2016 differ than TAF records for the same year. It is expected that the TAF will be updated with the most recent available information following FAA approval of the forecasts.

Table 2-19: Based Aircraft Fleet

Year	SEP	MEP	Jet	Helicopter	Other	Total	% Change
2006	92	31	3	3	0	129	
2007	92	31	3	3	0	129	0.0%
2008	93	44	4	5	0	146	13.2%
2009	96	23	3	3	0	125	-14.4%
2010	93	14	5	6	0	118	-5.6%
2011	61	5	4	5	0	75	-36.4%
2012	61	5	4	5	0	75	0.0%
2013	64	14	5	8	0	91	21.3%
2014	62	9	3	9	0	83	-8.8%
2015	63	9	3	9	0	83	1.2%
2016	64	4	6	6	0	80	-4.8%
CAGR	-3.6%	-18.5%	7.2%	7.2%	N/A	-4.7%	

CAGR = Compound Annual Growth Rate. *Source: FAA Terminal Area Forecast, FAA Aerospace Forecast*

Based aircraft at RDM have been decreasing since 2006. Factors contributing to declining numbers include the 2009 Recession, rising oil prices, the departure of the flight school, competition from area general aviation airports, growing costs associated with earning a private pilot's license, and growing cost of aircraft ownership. The 2008-2009 recession saw the largest drop in based aircraft, and there was a brief recovery in 2013. RDM hangars are currently at capacity and the Airport has a waiting list for aircraft storage. Uncovered apron space is available, but not desirable due to winter snow and ice.

The 2017 FAA Aerospace Forecast shows SEP and MEP aircraft have been retired and have not been replaced, with the combined fleet declining by 1.7 percent a year from 2010 to 2016. The national turbine fleet has grown by 1.3 percent per year, and the helicopter fleet has grown by one percent per year during this time.

2.3.3 MILITARY

There are no based military aircraft at RDM; however, military units occasionally visit to train and refuel. These operations are typically itinerant; however, some military aircraft perform touch-and-goes while in the area. Military aircraft are generally serviced by the FBO, although they occasionally park on the USFS apron. Unlike other aspects of aviation, military activity is driven by the needs of the U.S. Department of Defense, and does not fluctuate in line with market forces. The Department of Defense does not provide projections of future activity or airport use; therefore, military activity is forecasted to grow or decline like other variables in the forecast. For planning purposes, military activity is considered to remain constant throughout the forecast period. Historic military operations are shown in **Table 2-20**.

Figure 2-20: Military Operations

Fiscal Year	Itinerant	Local	Total	% Change
2006	366	240	606	
2007	306	336	642	5.9%
2008	312	303	615	-4.2%
2009	173	134	307	-50.1%
2010	221	300	521	69.7%
2011	224	96	320	-38.6%
2012	212	371	583	82.2%
2013	323	812	1,135	94.7%
2014	383	406	789	-30.5%
2015	241	214	455	-42.3%
2016	341	540	881	93.6%
CAGR	-0.7%	8.4%	3.8%	

Source: 2017 TAF

2.3.4 FAA TAF

The FAA TAF is the official FAA forecast for airports, and is prepared annually by FAA Headquarters for each airport in the FAA National Plan of Integrated Airport Systems. The TAF uses the FAA fiscal year (October to September). TAF data comes from the USDOT T-100 database, airport traffic control tower records, and FAA Form 5010, which airports submit annually to the FAA.

In *Forecast Process for the 2016 TAF*, the FAA states that passenger enplanement forecasts at airports like RDM are developed by looking at a 10 percent sample of passenger activity per quarter, and performing a "regression analysis using fares, regional demographics, and regional economic factors." Commercial operations are based on USDOT T-100 data for city-pairs (e.g. routes airlines serve from RDM). General aviation activity is based on time-series analysis of past trends.

The FAA reviews forecasts prepared for the Master Plan by comparing them to the TAF. Forecasts that are within 10 percent of the TAF over the five-year period, and 15 percent within the ten-year period can be approved by the Airports District offices. Forecasts outside of these tolerances go to FAA Headquarters for review.

The TAF forecasts passenger enplanements, operations, and based aircraft. The TAF does not forecast operations by aircraft type, peak activity levels, critical aircraft, or air cargo. The TAF used for this forecast was published in January 2017. **Table 2-21** summarizes the TAF for the Airport.

Table 2-21: FAA TAF

Fiscal Year	2016	2021	2026	2031	2036	CAGR
Enplanements	**298,322**	**394,570**	**434,335**	**476,868**	**523,125**	2.8%
Operations	**40,162**	**41,531**	**43,004**	**44,644**	**46,398**	0.7%
Air Carrier	5,127	10,139	11,691	12,835	14,080	5.2%
Air Taxi	6,340	3,699	3,333	3,539	3,758	-2.6%
Itinerant GA	10,985	10,807	10,932	11,057	11,182	0.1%
Itinerant Military	341	341	341	341	341	0.0%
Local GA	16,829	16,005	16,167	16,332	16,497	-0.1%
Local Military	540	540	540	540	540	0.0%
Based Aircraft	**86**	**96**	**109**	**124**	**139**	2.4%
Single Engine Piston	65	75	88	103	118	3.0%
Jet	3	3	3	3	3	0.0%
Multi Engine Piston	9	9	9	9	9	0.0%
Helicopter	9	9	9	9	9	0.0%
Other	0	0	0	0	0	N/A

Other. – Light sport aircraft, gliders, experimental aircraft, ultralights
Source: 2017 TAF

While the TAF is generally a reliable source of information, most recent data tends to lag a year behind airport records. FAA fiscal year 2016 data is marked with an asterisk, meaning that it has not been finalized yet. The 2016 TAF data does not match airport management records in certain areas, shown in **Table 2-22**. Given that Airport Management has the best available data, this information is used to model future scenarios and not the TAF. TAF discrepancies for the main categories (Enplanements, Operations, and Based Aircraft) are within the 10 percent FAA tolerances.

Table 2-22: 2016 Airport Management Records and TAF Differences

Category	Airport Records	TAF	Difference	% Difference
Enplanements	**304,588**	**298,322**	**24,390**	**2.1%**
Operations	**44,015**	**40,162**	**3,853**	**9.6%**
Air Carrier	7,302	5,127	2,175	42.4%
Air Taxi	6,810	6,340	470	7.4%
Itinerant GA	11,426	10,985	440	4.0%
Local GA	17,596	16,829	767	4.6%
Based Aircraft	**80**	**86**	**-6**	**-7.0%**
SEP	64	65	-1	-1.5%
MEP	4	9	-5	-55.6%
Jet	6	3	3	100.0%
Helicopter	6	9	-3	-33.3%

Military operations and "other" based aircraft match TAF records. Sources: Airport records, TAF issued January 2017.

The TAF has exhibited a consistent underreporting of passenger enplanements when compared to Airport records.

Airport records for passengers and commercial operations are presented and compared to the TAF in **Appendix B, Attachment 4**.

2.4 SCHEDULED SERVICE FORECASTS

This section discusses the passenger enplanement forecasts, air cargo volume, and commercial operations. Each sub-section explains the methods used during analysis. Risk and uncertainty are addressed, and comparisons made with the FAA TAF.

2.4.1 PASSENGER ENPLANEMENTS

Use of passenger enplanement forecasts determines the facility requirements for the passenger terminal building and airport parking and street access. The TAF classifies passenger enplanements as Air Carrier and Air Taxi, depending on the role of the airline transporting them. This distinction is more important for keeping records rather than planning facilities; therefore, passenger enplanements are presented in aggregate. The types of aircraft used to transport the passengers are presented in **Section 7**.

METHODS

The passenger demand forecasts employed trend analysis, single-variable regression, and multi-variable regression methods to project passenger enplanements. Regression models used variables that displayed a high level of correlation (greater than 0.8) with passenger enplanements over the past ten years: MSA Population U.S. Gross Domestic Product (GDP), and MSA GRP.

The three variables were checked against passenger enplanements from 2006 to 2016 using regression analysis. The validity of each equation was measured using the R-squared technique, which describes how well the regression equation explains variability in the model. The closer the R-square value is to 1.00, the more confidence can be placed in the equation explaining the historical variability, and it not occurring by chance. **Table 2-23** shows the results of the correlation and regression analyses.

Table 2-23: Enplanement Correlation and Regression Analyses

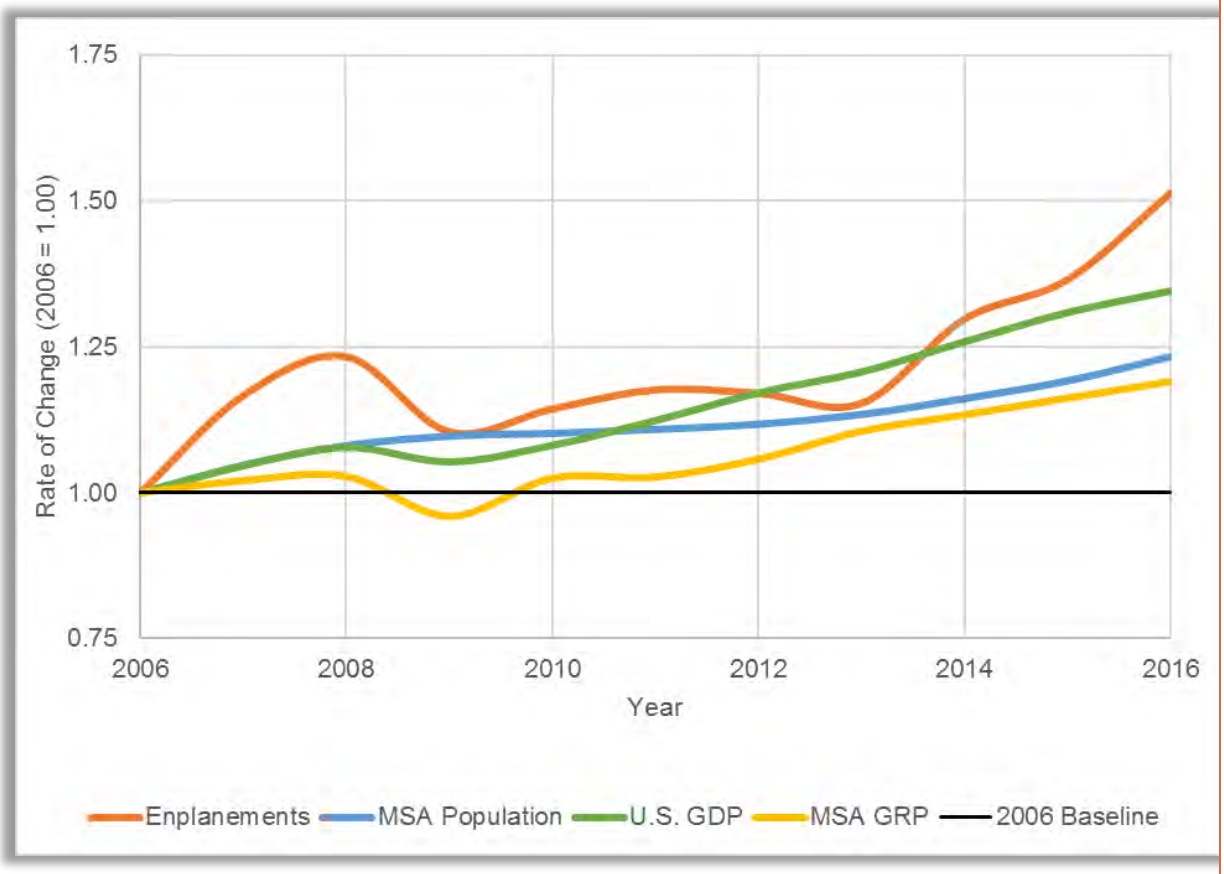
Variable	Correlation Coefficient	Regression R-Square
MSA Population[1]	0.87	0.75
U.S. Gross Domestic Product[2]	0.84	0.71
MSA Gross Regional Product[3]	0.83	0.69

Sources: 1) Portland State University, 2) U.S. Bureau of Economic Analysis, 3) Woods & Poole

The three variables were also arranged into multi-variable equations and run through a regression analysis. This time, the adjusted R-square statistic was used to assess the models as the adjusted R-square considers how many variables are being used. Unadjusted R-squared does not consider multiple variables and can produce misleading results. The results of the multi-variable regression analyses are shown in **Table 2-24.**

Table 2-24: Multi-Variable Regression Analyses

Variables	Adjusted R-Square
Population[1], GRP[3], GDP[2]	0.78
Population[1], GRP[3]	0.72
Population[1], GDP[2]	0.69
GRP[3], GDP[2]	0.65



GRP: MSA Gross Regional Product, GDP: U.S. Gross Domestic Product
Sources: 1) Portland State University, 2) U.S. Bureau of Economic Analysis, 3) Woods & Poole

Based on the results of the regression analyses, the equation accounting for population, GRP, and GDP was selected to prepare passenger enplanement forecasts. The equation is displayed below.

Passenger Enplanement Regression Equation: $y=m_1(x_1)+m_2(x_2)+m_3(x_3)+b$

y = Passenger Enplanements, b = Intercept from Regression Analysis

(4.52 x MSA Population) + (94.49 x MSA Gross Regional Product) + (-46.58 x U.S. Gross Domestic Product) - 730,835.51

Forecasts exist for the three variables considered throughout the forecast period. The MSA Population forecast comes from Portland State University, and is used by the City of Redmond for their long-range planning. The MSA Gross Regional Product Forecast comes from Woods & Poole, and the U.S. Gross Domestic Product Forecast comes from the Organization for Economic Cooperation and Development (OECD). The forecasts for each variable are plugged into the regression equation to produce a passenger enplanement forecast for the next 20 years.

The regression-based method of forecasting incorporates a statistical analysis to give confidence that the variables chosen for forecasting have exhibited a degree of correlation with passenger enplanements in the past. The risk to this method is that future forecasts are ultimately based on one set of external projections. Forecasting, particularly over 20 years, will undoubtedly miss future events that will impact aviation activity at RDM. For this reason, the passenger enplanement regression equation goes through one more level of processing to account for future uncertainty.

ADDRESSING RISK AND UNCERTAINTY

The forecasts developed in **Section 5.1.2** rely on a fixed set of future variables. There is only one projected value for U.S. GDP in 2021 that is considered. The risk to this approach is that if the GDP is different than the forecast in the coming years, then the regression equation developed based on the old forecast is likely no longer useful.

One way to mitigate for this uncertainty about the future value of variables that the passenger enplanement forecast is based on is to incorporate a range of uncertainty into the forecast for each variable. This is accomplished by reviewing the historical volatility of the three variables, and then assuming the future values may deviate from the forecast accordingly.

As an example, the U.S. GDP in 2021 will be $21 trillion dollars based on the OECD forecasts. Historical volatility shows that U.S. GDP could sway by plus or minus $3 trillion dollars, which means that the actual value for 2021 could be as low as $18 trillion (in an economic recession), or as high as $24 trillion (in a period of strong growth). Since the value of U.S. GDP is one of the drivers of the enplanement forecasts, it makes sense to account for this volatility in the future and not assume that the U.S. GDP is guaranteed to grow as it has exhibited contraction in the past. The method chosen to account for this volatility is known as Monte Carlo simulation.

Monte Carlo considers the range of future values for each of the three variables in each forecast year using the process described above for GDP. Historical volatility is applied to the forecast value, which produces a range that the forecast value is likely to be within. Once this range has been established for each variable, thousands of trials are run for each of the forecast years. The three variables are permitted to independently and randomly fluctuate within the defined range for each trial. In some trials the variables all grow, in some they all decline, and in some there's a mix between growth and decline.

Monte Carlo partially mitigates subjectivity when it comes to setting up forecast scenarios. The range that the variables can fluctuate within must be defined, but after this range is established, the model will randomly pick the value of the variables. The Monte Carlo simulation can be run as many times as desired to reduce the impact of outliers (e.g. scenarios where all variables are at their maximums or minimums), and the results are interpreted using percentiles. Percentiles indicate what probability a value has of being higher or lower than the given value. For example, if the 50th percentile value for passenger enplanements in 2021 is 400,000, then this means that, of the thousands of trials run for 2021, 50 percent of the results were below 400,000, and 50 percent were above. Another way of expressing this is that there's a 50 percent probability that 2021 passenger enplanements will be 400,000 or below.

PASSENGER AND TAF COMPARISON

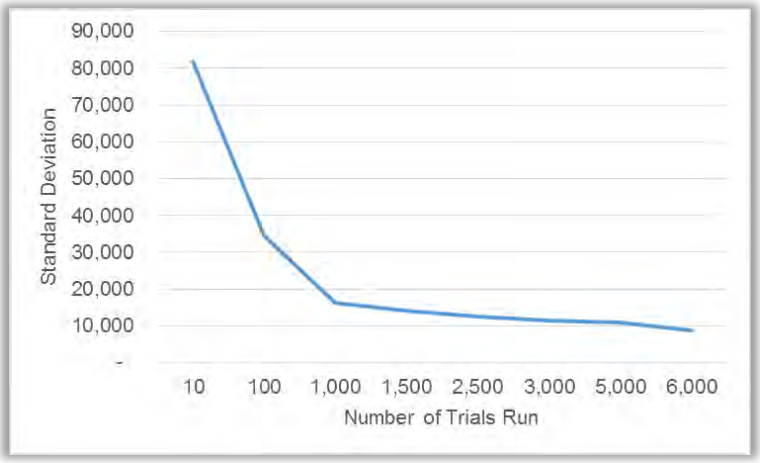
The passenger demand forecasts use the Monte Carlo simulation and the multi-variable regression model based on MSA population, MSA GRP, and U.S. GDP. The three variables are given a range based on historical volatility over the past ten years, which means they consider periods of economic recession and economic growth. The inclusion of local and national variables means that the model includes demand drivers, such as the population and economy driving the need for travel at RDM, and supply drivers, such as the national economy causing people to travel across the country and world.

The Monte Carlo simulation was run 5,000 times to reduce the effect of outliers. Multiple trial runs produce a smoothing effect as the results coalesce around the mean. The law of diminishing returns applies in this situation, and the results differ less and less beyond 1,000 trials. An example of this effect is shown in **Table 2-25**.

The average range of the Monte Carlo trial runs remains near 600,000 after 1,000 trials, and incremental growth slows as more trials are performed. Using this example, it is expected that fewer than 5,000 trials could be run and similar results would be produced; however, running 5,000 trials does not skew the results.

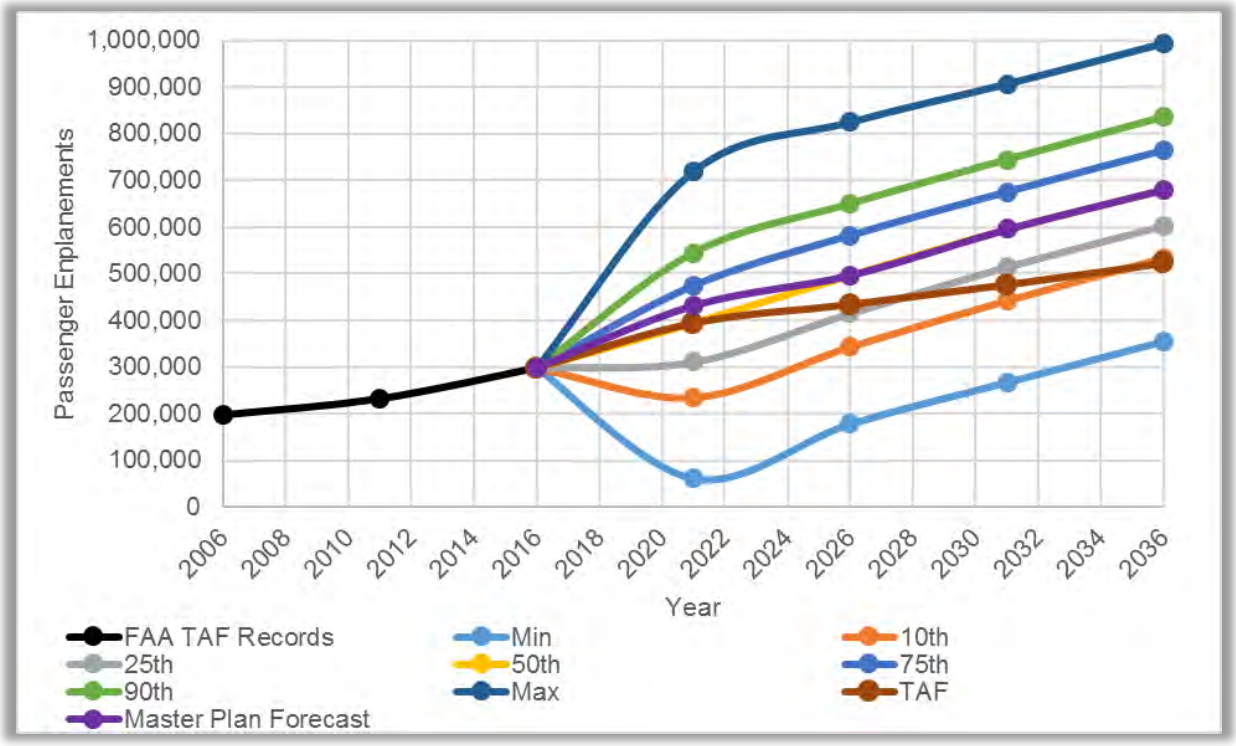
Table 2-25: Effect of Multiple Trials on Monte Carlo Range

Trials	Average Range	Standard Deviation
10	322,000	81,898
100	495,000	34,558
1,000	576,000	16,163
1,500	582,000	14,248
2,500	590,000	12,636
3,000	593,000	11,366
5,000	600,000	11,012
6,000	602,000	8,718



The 5,000 trials are presented using percentiles, minimums, and maximums. A percentile can be any number greater than zero and less than 100; however, presentation becomes less useful if too many percentiles are used. The RDM Enplanement Forecasts are presented for the minimum, 10th, 25th, 50th, 75th, 90th, and maximum percentiles. The results are plotted along with the 2017 TAF for purposes of comparison, and shown in **Figure 2-5**.

Figure 2-5: Passenger Enplanement Forecasts



As stated in **Section 5.1.2**, a key element in addressing risk and uncertainty in demand forecasting is acknowledging that the variable being forecast may decline. Traditional forecasting methods, such as trend analysis and time-series extrapolation, will not decline unless they are building on a model that has been in historical decline. Airport master plan forecasts tend to be more optimistic and project growth. The Monte Carlo analysis provides planners with a "decline" scenario, shown by the minimum, 10th, and 25th percentile results. There are also high-growth scenarios, represented by the maximum, 75th, and 90th percentile results.

The TAF for RDM has a CAGR of 2.8 percent and projects 523,125 enplanements by 2036. This growth rate exceeds the TAF for Oregon, which has a 2.3 percent CAGR, and the 2017 FAA Aerospace Forecast, which has a 1.7 percent CAGR. The higher than average growth rate for RDM reflects strong growth that has occurred over the past ten years, and shows that FAA expects this growth to continue. The passenger enplanement forecast growth rates range between 0.9 percent for the minimum forecast to 6.2 percent for the maximum forecast.

While Monte Carlo helps remove some elements of subjectivity from preparation of forecast scenarios, a decision must still be made on which percentile outputs to use for planning purposes. This decision is made by assembling relevant data that support picking one percentile over the others. TAF and FAA Aerospace Forecast growth rates are in line with the 2.9 percent CAGR of the 25th percentile forecast, while historical growth rates at RDM are between the 50th and 75th percentile forecasts.

Airlines have indicated that they will continue to add seats to the RDM market. Calendar year 2017 schedules from Alaska, American, Delta, and United show that larger aircraft will serve RDM, such as United's transition from the 50-seat CRJ-200 to the 76-seat Embraer 175. Flight frequencies and destinations are planned to increase in 2017, such as Delta's new Seattle service on the 50-seat CRJ-200 and 65-seat CRJ-700.

The True Market assessment, described in **Section 3.7**, shows that RDM retains 75 percent of its true market due to the distance between it and other airports in Oregon. Leakage is primarily to PDX, at 24 percent, and primarily on routes where RDM has limited or non-existent direct air service. These include Los Angeles (28 percent leakage) where RDM has one daily flight, Las Vegas (26 percent leakage) where RDM has no daily flights, and San Diego (27 percent) where RDM has no daily flights. As air service develops and airlines add frequencies and new service, it is expected that market retention will improve. Socioeconomic indicators for the MSA suggest that population and industry (measured by GRP) are expected to grow; therefore, the demand for air travel will continue to increase as these variables have been highly correlated in the past. The Airport actively markets to the airlines to attract additional air service, and has a track record of success with this marketing (new service on American Airlines to LAX and PHX and United adding larger aircraft and more frequencies to DEN and SFO).

Based on available information, historical performance, and known changes for the airlines operating at RDM, the 50th percentile forecast is preferred for long-range (5-20 years) passenger enplanement planning purposes. Due to recent passenger growth at the Airport, the short-range (1-5 year) forecast is expected to be between the 50th and 75th percentiles. The 4.2 percent CAGR is lower than the Airport has historically seen over the past ten years, which hints towards market maturation, but is higher than the national Aerospace Forecast and TAF for the state, which are driven by mature markets. The preferred enplanement forecast is compared to the 2017 TAF in **Table 2-26**.

Table 2-26: Passenger Enplanement Forecasts

Year	TAF	Forecast	Difference	
2016	298,322	298,322	0	0.0%
2021	394,570	431,978	37,408	9.5%
2026	434,335	496,750	62,415	14.4%
2031	476,868	595,800	118,932	24.9%
2036	523,125	680,750	157,625	30.1%
CAGR (16-36)	2.5%	3.7%		

CAGR = Compound Average Growth Rate
1) 2016 value for 2017 TAF updated to reflect airport records.

The passenger enplanement forecasts are reasonable and justified because they are based on variables (MSA population, MSA GRP, and U.S. GDP) that have exhibited a high degree of historical correlation with passenger enplanements. The population forecasts are the same as those used in local planning, meaning that stakeholders making municipal investment decisions at the cities in Deschutes County find them to be reasonable. While airlines are generally reluctant to share much of their long-range plans, what is known about future routes and fleet decisions support the growth in these forecasts. The use of Monte Carlo simulation in the forecasts allows for a sensitivity analysis of the forecasts should the MSA grow more quickly or less quickly than expected. The preferred passenger enplanement forecast is used to derive the scheduled commercial operations in **Section 5.3** and the peak enplanement numbers in **Section 7**.

2.4.2 AIR CARGO

Air cargo volume has declined at a CAGR five percent since 2006, which is a steeper decline than the national CAGR of -0.5 percent over the same period. The FAA Aerospace Forecast suggests that the decline in air cargo volume can be attributed to changing security requirements, use of truck carriers, and the advent of digital substitutes to documents and media that used to be shipped. Air cargo will remain critical for certain items and particularly important for communities like those in the MSA that are separated from other urban areas by great distances.

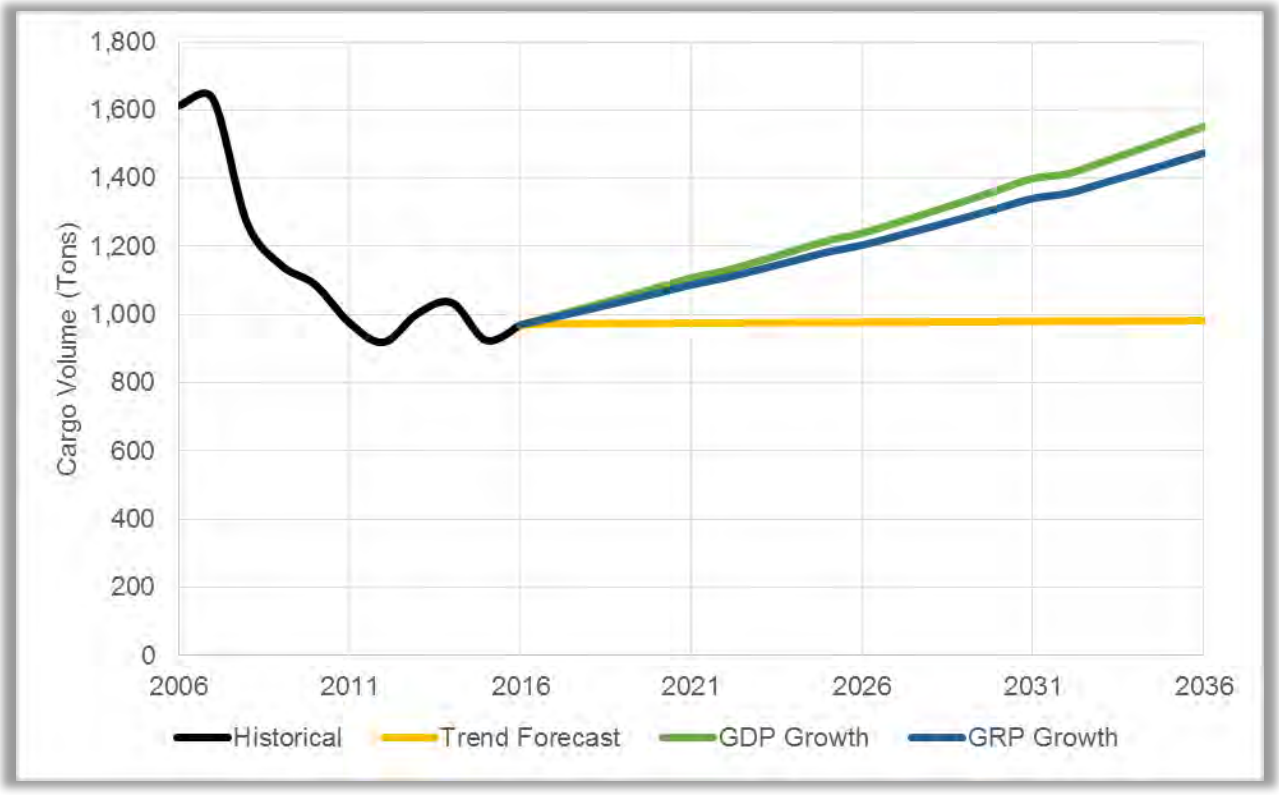
METHODS, FORECAST, AND PREFERRED METHOD

Air cargo at RDM did not exhibit strong historical correlation with any of the variables considered. In the absence of correlated data, the analysis considers variables typically used to forecast cargo volume. The FAA Aerospace Forecast is based on a model that links air cargo to U.S. GDP; therefore, GDP growth is included. MSA GRP is considered as it better reflects the local economy.

Regression analysis for both variables produces forecasts that continue the downward trend experienced since 2006. The FAA Aerospace Forecast suggests that "the shift from air to ground transportation has occurred;" therefore, the decline due to substitution of other methods has likely bottomed out. The decline in cargo volume at RDM was more pronounced from 2006 to 2011 at a CAGR of -9.5 percent than from 2011 to 2016, when the CAGR was -0.1 percent. It is expected that decline in air cargo at RDM has also stabilized.

The three methods considered for air cargo forecast are a trend analysis using 2011 to 2016 data, a time-series analysis using U.S. GDP growth, and a time-series analysis using MSA GRP growth. These methods are presented in **Exhibit 2-6.**

Figure 2-6: Air Cargo Forecasts



The trend methodology has a CAGR of 0.3 percent and projects that air cargo volumes will remain flat, growing from 970 tons to 1,000 tons annually. The GRP growth methodology has a CAGR of 2.1 percent and projects that air cargo volumes will grow from 970 tons to 1,474 tons annually. The GDP growth methodology has a CAGR of 2.4 percent and projects that air cargo volumes will grow from 970 tons to 1,552 tons annually.

As stated in **Section 3.2**, the economy of the MSA is changing and manufacturing is not as prevalent as it once was; however, there are several specialized manufacturers in town, including RDD, Stratos Aircraft, and PCC Structurals. It is expected that these businesses, and those like them, will continue to rely on air cargo for part of their supply chain in addition to rail and truck transport. The growing professional services industry will further support air cargo; however, many items traditionally shipped by lawyers, accountants, and engineers can now be transmitted digitally. It is expected that the volume of air cargo at RDM will remain flat unless the area attracts new manufacturers that are more reliant on just-in-time supply chains, and industries that specialize in logistics and storage outside of those that use truck and rail.

The trend methodology is the preferred air cargo forecast. It is expected that cargo volumes have bottomed out and will remain stable at around 1,000 tons per year into the future. Air cargo operations are expected to remain consistent throughout the forecast period, and will primarily be performed by single- and twin-engine piston and turbo-prop aircraft.

2.4.3 COMMERCIAL OPERATIONS

Commercial operations are those performed by scheduled and charter passenger airlines and cargo aircraft. Operations by business jets that use the FBO and private hangars are not counted towards the commercial operations total, and are instead part of general aviation discussed in **Section 6**.

METHODS

Scheduled passenger and air cargo operations made up 97 percent of the 13,248 commercial operations in 2016, and the remaining three percent were performed by on-demand charter airlines and tankers working for the U.S. Forest Service. Scheduled operations are based on passenger enplanement forecasts in **Section 5.1** and cargo forecasts in **Section 5.2**. Tanker and on-demand operations are expected to remain at their existing levels and growth is expected to be flat into the future. The USFS Redmond Air Center manager indicated that the level of operations will depend on the severity of the fire season, and airport landing records show that there were an average of 550 operations per year from 2006 to 2016.

Scheduled operations are organized based on TAF classifications. The two categories are air carrier, where the aircraft has 60 or more seats, and air taxi/commuter, where the aircraft has less than 60 seats. Forecasts are based on the following assumptions:

- ✓ Scheduled airlines will add service to meet the level of demand expected in the passenger enplanement forecasts.
- ✓ The 50-seat regional jets will be retired by 2026, in line with the FAA Aerospace Forecast projection that "Carriers remove 50 seat regional jets [...] while adding 70-90 seat jets, especially the E-2 family after 2020."
- ✓ As smaller jets are replaced with larger aircraft, average seats per departure will grow. Airlines will adjust flight frequencies and routes to keep load factors at levels similar to what has been experienced in the last five years, more than 80 percent.

The scheduled commercial operations forecasts are presented in **Section 5.3.2**.

SUMMARY AND TAF COMPARISON

Commercial operations are presented in three tables. **Table 2-27** presents scheduled passenger operations only, and does not include air cargo, non-scheduled passenger, and air tanker operations. **Table 2-28** presents total commercial operations, and the **Table 2-29** compares commercial operations to the TAF.

Table 2-27: Scheduled Passenger Operations

Year	Enplanements	Air Carrier			Air Taxi / Commuter			Total Scheduled
			Average			Average		
		Operations	Load Factor	Seats	Operations	Load Factor	Seats	Operations
2006	197,223	360	58%	82	14,368	70%	38	14,728
2011	231,978	4,464	56%	104	6,248	72%	45	10,732
2016	298,322	6,946	84%	74	4,796	90%	50	11,742
2021	391,450	10,000	85%	80	2,000	90%	50	12,000
2026	484,300	11,600	88%	90	1,000	91%	50	12,600
2031	575,350	12,400	86%	108	0	N/A	N/A	12,400
2036	661,600	12,600	84%	125	0	N/A	N/A	12,600
CAGR[1]	4.2%	3.3%	N/A	N/A	-100%	N/A	N/A	0.7%

NOTE – Numbers presented in this table will not match TAF as they contain scheduled passenger operations only, and not charter or air cargo.
1) CAGR from 2016 to 2036 CAGR = Compound Average Growth Rate
Source: USDOT T-100 Database and Airport Records

Table 2-28: Commercial Operations Forecasts

Year	Air Carrier				Air Taxi / Commuter			
	Scheduled Passenger	Non-Scheduled Passenger	Tanker	Sub-Total	Scheduled Passenger	Air Cargo	Sub-Total	Total
2006	209	52	626	887	14,455	3,313	17,768	18,655
2011	4,542	8	514	5,064	6,283	3,333	9,616	14,680
2016	6,254	21	422	6,697	4,522	1,929	6,451	13,148
2021	10,000	40	500	10,540	2,000	2,100	4,100	14,640
2026	11,600	40	500	12,140	1,000	2,100	3,100	15,240
2031	12,400	40	500	12,940	0	2,100	2,100	15,040
2036	12,600	40	500	13,140	0	2,100	2,100	15,240
CAGR[1]	3.6%	3.3%	0.9%	3.4%	-100%	0.4%	-5.5%	0.7%

1) CAGR from 2016 to 2036
CAGR = Compound Average Growth Rate
Source: Historical data comes from airport records, included in **Appendix B** as **Attachment 4**.

Table 2-29: Commercial Operations Forecasts – TAF Comparison

Year	2017 TAF	Forecast	Difference	
2021	13,838	14,640	802	5.8%
2026	15,024	15,240	216	1.4%
2031	16,374	15,040	-1,334	-8.1%
2036	17,838	15,240	-2,598	-14.6%
CAGR[1]	2.2%	0.4%	N/A	N/A

CAGR = Compound Average Growth Rate 1) CAGR for 2016 to 2036
Source: TAF issued January 2017

As with passenger enplanements, the TAF underreports commercial operations. One reason for this is that the ATCT is closed for the earliest and latest operations; therefore, they are not added to FAA OPSNET. Airport records and T-100 data are a more accurate count of operations than the TAF.

2.5 GENERAL AVIATION FORECASTS

General aviation forecasts consider itinerant and local operations, and based aircraft. General aviation covers the aspects of terrestrial flight that are not commercial or military, such as recreational flying, business aviation, flight instruction, and emergency services. General aviation forecasts address itinerant and local aircraft operations, and the number of based aircraft at RDM.

2.5.1 ITINERANT GENERAL AVIATION OPERATION

Itinerant operations are those that begin and end flights at different airports. Itinerant operations are conducted by a wide array of aircraft, from single engine pistons to large private jets.

METHODS

Trends in itinerant general aviation are described in **Section 4.2.2**. Itinerant general aviation operations have exhibited a strong historical correlation with national itinerant general aviation operations (0.97), national local general aviation operations (0.94), and the national single engine fleet (0.86). Strong positive correlation is likely the result of the decline that these indicators have experienced over the past ten years.

RDM and national itinerant general aviation operations have been in decline over the past ten years; however, much of the decline occurred immediately following the 2008-2009 recession. The average annual decline for RDM was -6.4 percent from 2006 to 2016 and -3.4 percent from 2011 to 2016. That national decline slowed from -2.9 percent from 2006 to 2016 to -0.9 percent from 2011 to 2016. The 2017 FAA Aerospace Forecast projects that national itinerant general aviation operations will grow at an average annual rate of 0.3 percent over the next 20 years.

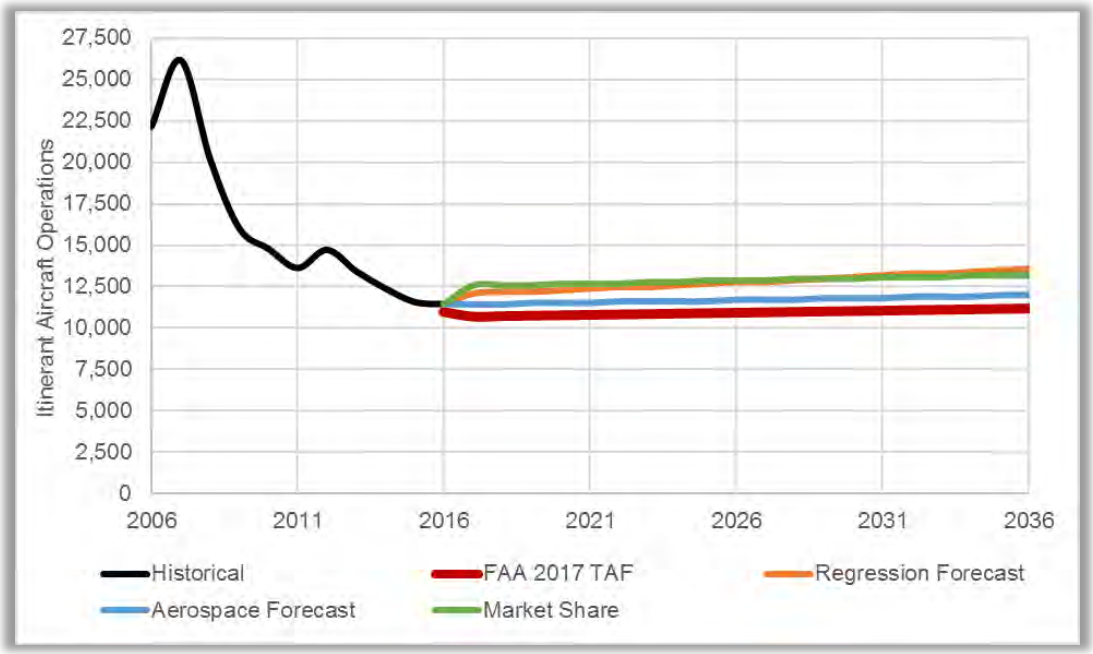
Statistical analysis is only part of the considerations taken into account when establishing a forecast. Local demand drivers, such as those listed below, influence itinerant general aviation traffic at RDM.

- ✓ General aviation businesses, such as those described in **Section 4.2.1**, perform itinerant operations as they move employees and products on their aircraft.
- ✓ Local aircraft manufacturers Stratos and Evolution Aircraft drive itinerant operations through testing and delivery of their aircraft.
- ✓ RDM is a destination market for outdoor recreation, such as golf, winter sports, and hiking. FBO staff indicate that some travelers fly general aviation when visitng the area. The FBO does not keep records on their passengers purposes for visiting the community.
- ✓ The Central Oregon Visitors Association reports that local ski resports have invested $800 million in development over past 10 years to compete with popular areas in other western states. FBO staff indicate that some winter visitors use GA to access the community; however, they do not keep records of who or how many.

Forecasts for itinerant general aviation operations use the following methods: applying the national growth rate from the 2017 Aerospace Forecast and a regression analysis using the top three correlated variables (national itinerant operations, national local operations, and national single engine fleet), using a market share analysis, ansd applying the FAA Aerospace Forecast growth rate. These forecasts are presented along side the 2017 TAF for purposes of comparison in **Table 2-30**.

Table 2-30: Itinerant General Aviation Operations Forecast

Year	Regression	Market Share	Aerospace	TAF
2016	11,426	11,426	11,426	10,985
2021	12,400	12,700	11,600	10,807
2026	12,800	12,900	11,700	10,932
2031	13,200	13,100	11,900	11,057
2036	13,600	13,200	12,100	11,182
CAGR	0.9%	0.7%	0.3%	0.1%



CAGR = Compound Annual Growth Rate. Source for Historical Data: FAA Terminal Area Forecast

PREFERRED AND TAF COMPARISON

There are two reasons that support itinerant operations retuning to growth at RDM: restructuring of the general aviation segments, and regional growth. Itinerant general aviation operations have experienced a period of restructuring following the 2008-2009 recession. As discussed in **Section 4.2.2**, the largest market within general aviation, single engine piston, is in a state of decline. Smaller markets, including turbine, experimental, and light sport are growing. RDM has the longest runway length in the region, which is necessary to accommodate larger jet aircraft, particularly on hot days. The FBO provides the services and facilities needed by these growing markets.

Despite the decline in itinerant operations at RDM over the past ten years, itinerant operations are growing in the Central Oregon region. Data from the TAF for the other airports in the region (Bend (BDN), Sunriver (S21), Madras (S33), and Prineville (S39)), show that the region experienced a six percent annual average growth in itinerant general aviation operations over the past ten years. Itinerant operations declined at RDM, S21, and S39 were offset by growth at BDN and S33. Total itinerant operations within the region more than doubled over the last ten years, as shown in **Table 2-31**.

Table 2-31: Regional Itinerant Operations

Fiscal Year	Bend (BDN)	Redmond (RDM)	Sunriver (S21)	Madras (S33)	Prineville (S39)	Total
2006	27,026	22,170	10,089	2,436	8,450	43,145
2011	49,041	13,610	3,000	4,669	7,000	77,320
2016	71,447	10,985	3,022	4,138	7,142	96,734
2021	80,626	10,807	3,132	4,693	7,847	107,105
2026	90,918	10,932	3,247	5,325	8,555	118,977
2031	102,526	11,057	3,363	6,034	9,314	132,294
2036	115,615	11,182	3,481	6,839	10,133	147,250
CAGR 06-16	6.1%	-4.8%	-11.4%	6.7%	-1.9%	6.0%
CAGR 16-36	2.4%	-0.1%	0.7%	2.5%	1.8%	2.1%

NOTE: Sisters (6K5) is part of RDM's catchment area, but is not part of the TAF. Operations numbers for 6K5 are unknown.
2016 numbers for RDM are adjusted to compensate for the Airport closure in May.
Source: FAA TAF.

Airport location and tenants are key drivers behind the regional growth. U.S. Census records for the City of Bend, where BDN is located, show that the population has grown by six percent from 2010 to 2015. The City is closer to the ski resorts than RDM is, and has facilities capable of serving piston and jet itinerant aircraft in all but the worst weather. The other key factor is tenants – both BDN and S39 have flight schools and the other airports do not. Student pilots perform itinerant operations as part of their training, which is helping drive the overall operations numbers.

Forecasts shown BDN operations continuing to grow, and total airport operations (including local) could reach 230,000 in the next 20 years. BDN has one runway which means that it will be near capacity in 20 years, based on guidance in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*. As BDN approaches capacity, delays will increase, and the mix of quicker business jets and turbo props with slower fixed wing and helicopter flight training traffic will compound the congestion and delays. This can make BDN a less desirable for some users, and with RDM is 16 miles away, some traffic may choose to avoid the congestion.

The forecast methods considered produce similar results. The range between the lowest and the highest forecast in 2036 is 1,900. Key factors that influence selecting the higher forecast as preferred are described below.

- ✓ The MSA continues to grow, and development pressure in the City of Bend is pushing development in Deschutes County to other communities, such as RDM. As stated in Section 3.6, general aviation users tend to use facilities near their home or business when possible.
- ✓ The City of Redmond has more vacant industrial land with readily available infrastructure than other communities in the region. It is expected that there will be an increase in general aviation traffic from developers and prospective clients inspecting sites, and future tenants as this land develops.
- ✓ Aircraft manufacturer Stratos completed the first flight of its very light jet in November 2016. As the flight testing continues, additional traffic is expected.
- ✓ The FBO is planning to add additional hangars to grow their business, and to be able to accommodate more aircraft. RDM is attractive during the winter because of the instrument landing system; however, more covered aircraft storage is needed. If the FBO can develop more covered storage online, then itinerant operations will grow.

The preferred itinerant operations forecast is the one variable regression forecast, which is based on RDM performing in line with national itinerant general aviation operations. These two variables have exhibited strong historical correlation, and local demand inducing factors, described above, are expected to drive future itinerant general aviation operations. As shown in **Table 2-32**, the preferred itinerant general aviation operations forecast is within seven percent of the TAF in the five- and ten-year reporting periods.

Table 2-32: Itinerant General Aviation Operations Forecasts – TAF Comparison

Year	TAF	Forecast	Difference	
2016	10,985	10,985	0	0.0%
2021	10,807	12,600	1,793	7.3%
2026	10,932	13,000	2,068	7.0%
2031	11,057	13,500	2,443	7.6%
2036	11,182	14,000	2,818	8.2%
CAGR	0.1%	1.2%	N/A	N/A

CAGR = Compound Average Growth Rate
Source: TAF issued January 2017

2.5.2 LOCAL OPERATIONS

Local operations are those that remain in an airport's traffic pattern. These operations are generally by smaller aircraft such as single engine pistons, light sport, and experimental. Local operations are commonly performed by student pilots, recreational pilots, and pilots maintaining proficiency. Pilots flying in the traffic pattern generally land multiple times per hour, which causes high local operations numbers compared to itinerant operations.

METHODS

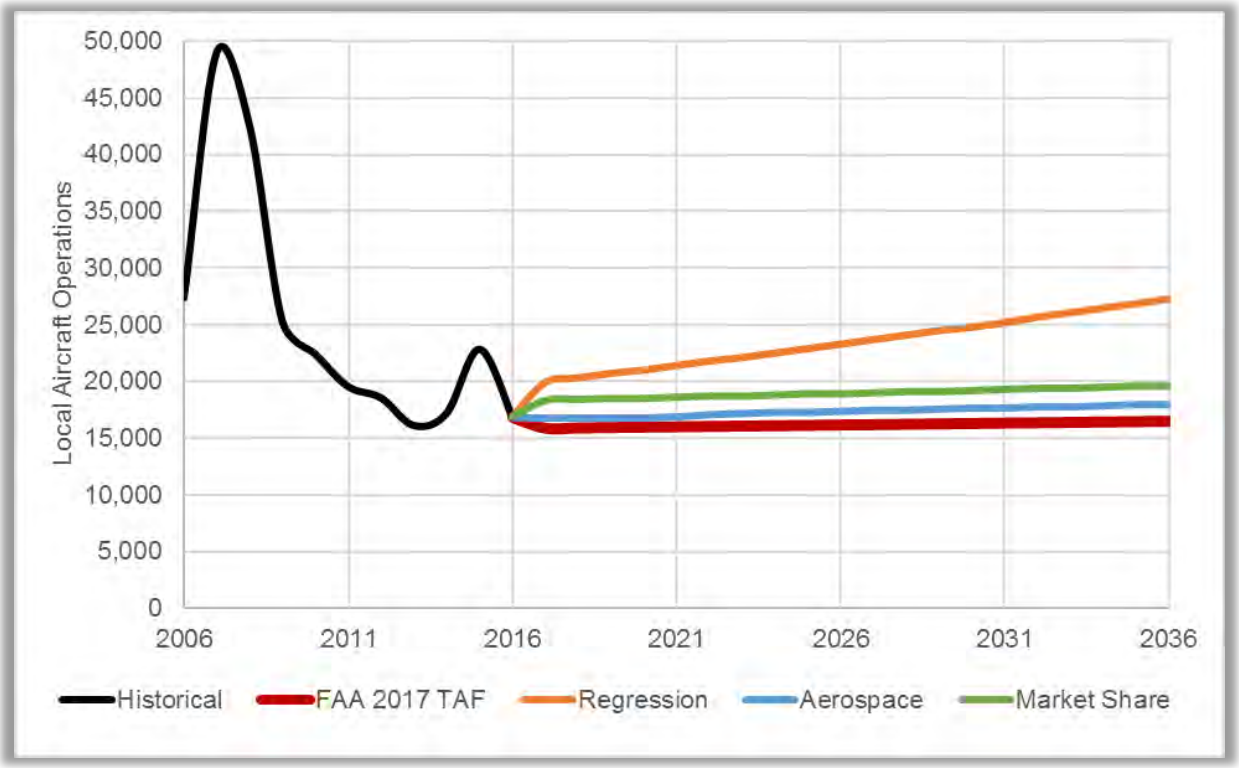
Local general aviation operations saw their peak in 2007 when there was a flight school at RDM. Operations declined substantially in the years that followed due to the recession, airline hiring freezes, and the relocation of the flight school to BDN. Historical factors that have influenced local general aviation operations are described in **Section 4.2.3**.

Local general aviation forecasts employ market share analysis, growth rate analysis, and regression analysis methods. The market share analysis takes the percent of national local operations that have occurred at RDM over the past five years (0.16 percent), and forecasts that future local operations will maintain this ratio to national operations based on the 2017 FAA Aerospace Forecast projections. The growth rate analysis takes the variable that showed the highest degree of historical correlation (national local general aviation operations), and used the growth rates in the 2017 FAA Aerospace forecasts to project future activity. Despite the similar independent variables in the market share and growth rate methods, the outcomes are different.

The regression analysis began with a correlation assessment, which found that local general aviation operations exhibited strong correlation with national local general aviation operations (0.87), national itinerant general aviation operations (0.83), and the national single-engine fleet (0.79). Other indicators did not have a strong enough correlation to be considered for analysis.

Local general aviation operations forecasts are shown in **Table 2-33**.

Table 2-33: Local General Aviation Operations Forecast				
Year	Regression	Market Share	Aerospace	TAF
2016	16,829	16,829	16,829	16,829
2021	21,400	18,600	17,600	16,005
2026	23,300	18,900	18,200	16,167
2031	25,200	19,300	18,500	16,332
2036	27,300	19,600	18,900	16,497
CAGR	2.4%	0.9%	0.3%	-0.1%



CAGR = Compound Annual Growth Rate. *Source: FAA Terminal Area Forecast*

PREFERRED AND TAF COMPARISON

The TAF is forecasting a slight decline in local operations with a CAGR of -0.1 percent over the next 20 years. Given the historically higher levels of local operations activity and the demand for flight training over the next 20 years, it is unlikely that local general aviation operations will remain flat at RDM. The presence of flight schools in Prineville and Bend attract student pilots to the region, and the instrument landing system and airport traffic control tower at RDM are parts of the student's curriculum that are not found at other area airports. As noted in **Section 6.2.1**, the TAF for BDN suggests that the airport's single runway will near capacity over the next 20 years, which will displace some operations to other area airports. Regional local operations and expected growth at two percent per year, and are shown in **Table 2-34**.

Table 2-34: Regional Local General Aviation Operations

Fiscal Year	Bend (BDN)	Redmond (RDM)	Sunriver (S21)	Madras (S33)	Prineville (S39)	Total
2006	40,000	27,376	6,799	7,754	2,112	84,041
2011	50,144	19,554	2,500	8,189	3,000	83,387
2016	72,040	16,829	2,518	6,144	3,062	100,593
2021	81,172	16,005	2,613	6,910	3,371	110,071
2026	91,396	16,167	2,712	7,777	3,681	121,733
2031	102,908	16,332	2,813	8,749	4,013	134,815
2036	115,868	16,497	2,916	9,846	4,371	149,498
CAGR 06-16	2.3%	-4.7%	-9.5%	0.5%	3.6%	-0.1%
CAGR 16-36	2.4%	-0.2%	0.7%	2.4%	1.8%	2.0%

NOTE: Sisters (6K5) is part of RDM's catchment area, but is not part of the TAF. Operations numbers for 6K5 are unknown.
Source: FAA TAF.

Regional local operations growth will be led by BDN and S33 at 2.4 percent per year, then S39 and S21. As stated in the FAA document *Forecast Process for the 2016 TAF,* GA operations are assessed based on past trends. The TAF for RDM is likely so low because of the -3.3 percent average annual drop in local operations that the Airport has seen over the past ten years. Given that the regional market is projecting a two percent average annual growth and BDN is nearing capacity, it is expected that RDM local general aviation operations will grow faster than TAF projections.

The preferred local operations forecast is the one based on the 2017 FAA Aerospace Forecast growth rate. This methodology projects that RDM will see growth in line with national demand. As flight training increases across the country, RDM will see local operations grow in kind. One point for consideration when projecting future local general aviation operations is the location of regional flight schools. Schools have expressed interest in moving to RDM; however, the Airport does not have space to accommodate them. Should the Airport attract a flight school by developing a site for aircraft storage and classrooms, then growth could occur in line with the regression forecast. As shown in **Table 2-35**, the preferred local general aviation operations forecast is within ten percent of the TAF at the five-year reporting period, and within fifteen percent of the TAF at the ten-year reporting period.

Table 2-35: Local General Aviation Operations Forecasts – TAF Comparison

Year	2017 TAF	Forecast	Difference	
2016	16,829	16,829	0	0.0%
2021	16,005	17,600	1,595	10.0%
2026	16,167	18,200	2,033	12.6%
2031	16,332	18,500	2,168	13.3%
2036	16,497	18,900	2,403	14.6%
CAGR	-0.1%	0.4%	N/A	N/A

CAGR = Compound Average Growth Rate
Source: TAF issued January 2017

2.5.3 BASED AIRCRAFT

Based aircraft are those that are stored at the Airport, either in hangars or tie-downs. Scheduled commercial aircraft that visit the Airport routinely and U.S. Forest Service aircraft that are temporarily stored at the Airport during fire season do not count as based. Based aircraft forecasts are primarily used to define aircraft parking and storage needs.

METHODS

Historical trends and the composition of the based aircraft fleet at RDM are discussed in **Section 4.2.4**. Three methods are used to project the size and composition of the based aircraft fleet. The first is a growth rate analysis based on the change by aircraft category (e.g. SEP, MEP, and Jet) from 2011 to 2016. The second is a market share forecast that compares the number of based aircraft at RDM, by category, with the national fleet from 2011 to 2016. The third uses the growth rates for each category of aircraft in the 2017 FAA Aerospace Forecast to project future growth.

PREFERRED AND TAF COMPARISON

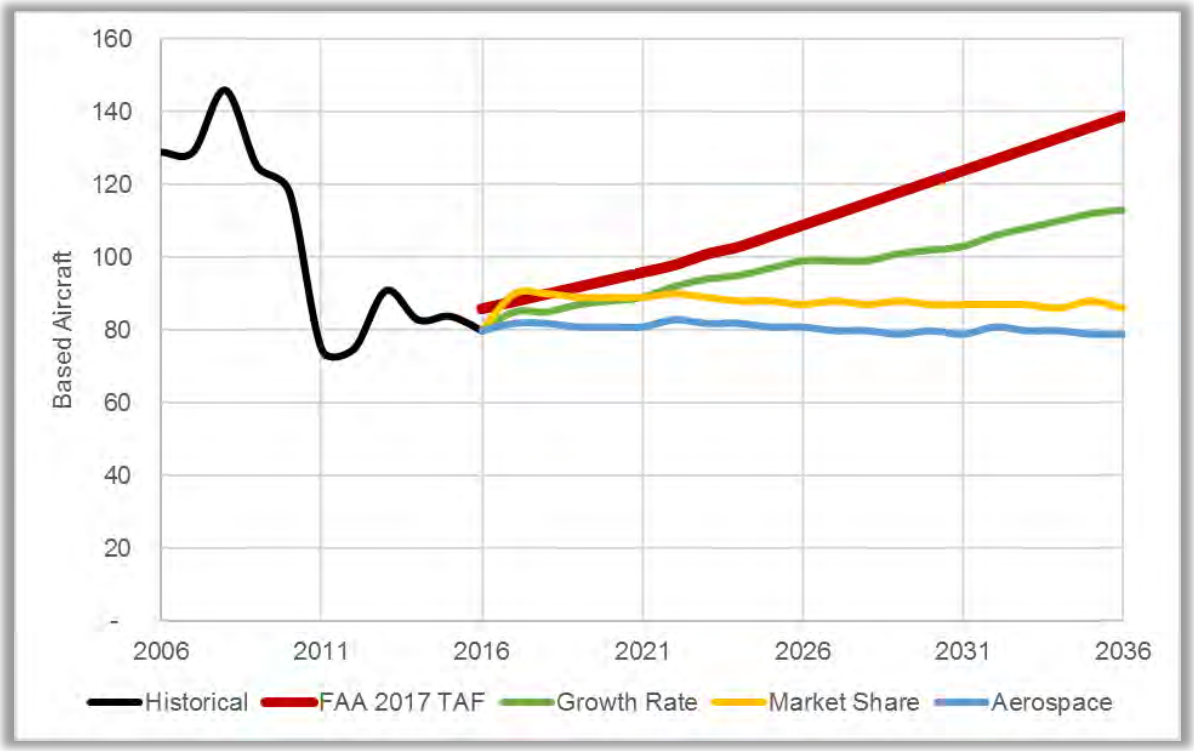
Based aircraft forecasts are done at the aircraft category level of detail – SEP growth rates are applied to SEP based aircraft, and jet growth rates are applied to jet aircraft. The 2017 FAA Aerospace Forecast shows that piston aircraft, the most common type at RDM, is expected to decline at -0.8 percent per year into the future. Growth markets include turbine, which are expected to grow at 1.9 percent per year, and helicopters, which are expected to grow at 1.6 percent per year, and Other, which are expected to grow at 1.2 percent per year. Each of the three forecast methods considers the impending change in general aviation fleet composition, and future projections expect that turbine, helicopter, and other aircraft will grow while piston aircraft decline.

The Growth Rate forecast methodology projects 2.3 percent growth per year. In this methodology, MEP continue to decline, SEP remain stable, and other categories grow. The high growth markets of light sport and experimental aircraft, which were not based at RDM in 2016, are expected to arrive over the next 20 years as the types become more common and replace some of the retired SEP aircraft.

The market share forecast expects that SEP will decline, jet will remain level, and MEP, helicopter, and Other categories will grow. The MEP projection is likely thrown off because RDM had as many as 14 based MEP over the past five years. Since the market share forecast is based on an average market share over the last five years, it may be projecting higher MEP than appropriate.

The 2017 TAF for based aircraft at RDM is uncharacteristically high when compared to the TAF for local and itinerant general aviation operations. While the TAF expects that operations will largely remain flat, the number of aircraft is expected to grow by 2.4 percent per year. As stated in **Section 2**, the TAF based aircraft counts do not match airport management records. The TAF has 86 based aircraft at RDM in 2016 while airport management reports 80. Based aircraft forecasts are shown in **Table 2-36**.

Table 2-36: Based Aircraft Forecasts				
Year	Growth Rate	Market Share	Aerospace	TAF
2016	80	80	80	86
2021	89	89	81	96
2026	99	87	81	109
2031	103	87	79	124
2036	113	86	79	139
CAGR	1.7%	0.4%	-0.1%	2.4%



CAGR = Compound Annual Growth Rate. *Source: FAA Terminal Area Forecast*

Based aircraft forecasts are ultimately determined by the amount of space available to park and store new planes. RDM hangars were full in 2016 and the Airport has a waiting list for new space. Although the Airport has held over 140 based aircraft in the past, many of these were parked outside and exposed to the elements. New aircraft have sensitive avionics and are more expensive than their older counterparts were. Aircraft owners prefer covered storage, particularly in climates like RDM where the summer sun and winter rain and snow can damage aircraft.

Airport management and tenants have expressed interest in expanding property for general aviation parking and storage. Location and scale of these improvements will be discussed in **Chapter 4**, Improvement Alternatives. Given that future aircraft storage will not always be constrained by a lack of hangars, that the Airport is in a growing community, and that there are growth markets within general aviation the local growth rate forecast is preferred. A breakdown of the local growth rate forecast by aircraft type is shown in **Table 2-37**.

Table 2-37: Preferred Based Aircraft Forecast

Year	SEP	MEP	Jet	Helicopter	Other	Total
2016	64	4	6	6	-	80
2021	67	3	9	7	3	89
2026	69	3	14	9	4	99
2031	67	2	20	10	4	103
2036	64	2	30	12	5	113
CAGR	0.0%	-3.4%	8.4%	3.5%	N/A	1.7%

SEP: Single Engine Piston
MEP: Multi Engine Piston

The preferred forecast projects strong growth in the number of jets, helicopters, and Other aircraft. The jet category includes both jet and turbo-prop aircraft. The market assessment in **Section 3.6** shows that RDM is the only airport in the region capable of handling large jets on a routine basis. It has the longest runway and only precision approach with a light land in the region, meaning that it offers year-round reliability. **Table 2-38** shows that the preferred forecast is within ten percent of the TAF in five years, and 15 percent of the TAF within ten years.

Table 2-38: Based Aircraft Forecasts – TAF Comparison

Year	2017 TAF	Forecast	Difference	
2016	86	80	-6	-7.0%
2021	96	89	-7	-7.3%
2026	109	99	-10	-9.2%
2031	124	103	-21	-16.9%
2036	139	113	-26	-18.7%
CAGR	2.4%	1.7%	N/A	N/A

CAGR = Compound Average Growth Rate
Source: TAF issued January 2017

2.6 PEAK FORECASTS AND CRITICAL AIRCRAFT

2.6.1 PEAK PERIOD FORECASTS

Peak forecasts estimate when certain airport facilities will be at their busiest. Peak forecasts are used to assess level of service of airfield and terminal facilities and to right-size improvement projects. Improvement projects are not typically designed for the busiest hour of the busiest day of the year because such a design would lead to over-building. Instead, peak forecasts look at a typical busy period throughout the year. Forecasts use historical records to project future peaking; therefore, it is essential that peak forecasts be reevaluated if a change in user or aircraft type occurs. **Table 2-39** presents the peak forecasts.

Table 2-39: Peak Period Forecasts

Category	Period	Factor	2016	2021	2026	2031	2036
Enplanements and Deplanements	Annual	100.0%	298,322	394,500	496,750	595,800	680,750
	Peak Month	10.1%	30,131	39,667	49,948	59,908	68,450
	Peak Day	3.6%	1,085	1,423	1,791	2,148	2,455
	Peak Hour – Enpl.[1]	17.9%	194	219	275	326	388
	Peak Hour – Depl.[1]	15.0%	163	175	252	345	472
Passengers	Annual	100.0%	596,644	789,000	993,500	1,191,600	1,361,500
	Peak Month	10.1%	60,261	79,334	99,897	119,816	136,899
	Peak Day	3.6%	2,169	2,845	3,583	4,297	4,910
	Peak Hour[1]	12.8%	278	393	525	703	940
Aircraft Operations	Annual	100%	40,162	45,540	47,240	47,840	48,940
	Peak Month	10.9%	4,378	4,982	5,168	5,234	5,354
	Peak Day	4.7%	206	233	242	245	251
	Peak Hour	10.0%	21	23	24	25	25

1) Peak hour forecasts adjusted to reflect average load factor, depicted in **Table 2-26**.
Peak Enplanements / Deplanements / Passengers: Month: FAA T-100 Database. Day and Hour: Airline Schedules
Peak Aircraft Operations: Peak Month and Day: FAA OPSNET, Peak Hour: ATCT Staff

2.6.2 CRITICAL AIRCRAFT

The critical aircraft is the most demanding type, or group of aircraft with similar characteristics, to operate more than 500 times per year at an airport. Operations by aircraft type come from Traffic Flow Management System Counts (TFMSC), and the data shows that scheduled commercial and freight aircraft are the critical aircraft at RDM. TFMSC only captures aircraft that file flight plans; therefore, flight training aircraft that operate more frequently than those listed below are not represented. Because flight training aircraft are smaller and slower than the critical aircraft shown, their absence from the TFMSC rankings has no bearing on the critical aircraft selection.

Critical aircraft are categorized by airport reference code (ARC), which is made up of the aircraft approach category (AAC) and airplane design group (ADG), as defined in **Chapter 1** and in the **Terminology** defined in **Section 2.0** of this chapter. The critical aircraft will be used to design and scale improvement projects and setbacks in **Chapter 3**, **Facility Requirements** and **Chapter 4, Improvement Alternatives. Table 2-40** identifies the critical aircraft.

Table 2-40: Existing Critical Aircraft

Rank	Aircraft	Role	Operations	Reference Code
1	Bombardier Q400	Passenger Airline	5,688	B-III
2	Bombardier CRJ-200	Passenger Airline	4,556	C-II
3	Beech Airliner 99	Cargo Airline	914	TBD
4	Cessna 208 Caravan	Cargo Airline	858	B-II
5	Bombardier CRJ-700	Passenger Airline	506	C-II

The existing critical aircraft is the Bombardier Q400, operated by Alaska Airlines. Alaska has announced that it will supplement its fleet of Q400 aircraft with the Embraer 175 regional jet (E175) (reference code C-III), which operates in the same 76-seat configuration as the Q400. Alaska route planning staff and the airport station manager expect that the Q400 will remain in the fleet for at least the next decade and will continue to connect RDM to Alaska hubs in Seattle and Portland. The California market is expected to transition to the E175 in the next five years, and if RDM sees new Alaska routes to California, they may be served by the E175.

As shown in **Table 2-26** in **Section 5.3**, the average seat capacity for air carrier aircraft at RDM is expected to grow from 74 seats in 2016 to 125 seats in 2036. The average will grow if larger narrow-body aircraft, such as the Boeing 737 and Airbus A320 lines, begin service at RDM. These aircraft are typically C-III aircraft apart from the Boeing 737-900, which is a D-III. Exact composition of the future fleet is unknown. What is known is that new Boeing 737 Max and Airbus A320-NEO aircraft will eventually replace existing narrow-bodies. These new aircraft are designed to be more fuel efficient and technologically advanced than their existing counterparts, and have similar physical characteristics. In terms of regional jets, SkyWest (which flies for Alaska, American, Delta, and United) has placed an order for the Mitsubishi Regional Jet (reference code C-III), which can have up to 90 seats. The Bombardier C-Series and second generation of Embraer E-Jets (reference code C-III) are also in early stages of production.

The future air carrier fleet mix will drive the critical aircraft for RDM in the future. Estimates are developed based on enplanement and commercial operations forecasts, aircraft seating capacity, and expected load factor. This estimate does not use aircraft classified as air taxi (less than 60 seats) as these aircraft are expected to be phased out by 2026. The future critical aircraft for Runway 5-23 will be the 737 and A319 (ARC of C-III), and the future critical aircraft for Runway 11-29 will be the Q400 (ARC of B-III). **Table 2-41** shows the projections for the future fleet mix.

Table 2-41: Future Air Carrier Operations by Aircraft Type						
Typical Aircraft	**Seats**	**ARC**	**2021**	**2026**	**2031**	**2036**
CRJ-200	<70	C-II	2,260	0	0	0
Q400/E175/CRJ-900	70-90	B-III/C-II/C-III	8,430	8,200	6,000	3,000
MRJ-90	90-110	C-II	56	1,600	2,000	2,400
737-700	110-130	C-III	286	500	2,000	1,800
A319 (Mainline)	130-150	C-III	204	600	1,000	3,600
A319 (Low Cost), 737-800	150-170	C-III	204	500	1,000	1,500
737-900	>170	D-III	40	200	400	300
Parameters: Based on airline order books and aircraft manufacturer production plans current as of April 2017. Operations growth provides sufficient seats to meet passenger enplanement forecasts at load factors >80%.						

2.7 FORECAST SUMMARY

The forecast summary is presented in **Figure 2-7** and **Figure 2-8**. Highlights of the forecast are below.

- RDM has experienced strong growth in scheduled airline service because of the migration to Central Oregon and growing tourism demand.
- RDM is the only commercial service airport in central Oregon and retains 75 percent of passengers in its catchment area. The Airport is equipped with an airport traffic control tower, an instrument landing system, two fixed base operators, and two runways that are both over 7,000 feet long. It is the best equipped airport in Central Oregon to handle commercial and business aviation.
- Population is expected to grow at 1.8 percent annually. Median age will increase as retirees and job seekers move the community. Working age population is more likely to travel by air than other population segments.
- The local economy is diversifying, adding jobs in healthcare, technical manufacturing and professional service industries. Tourism and hospitality will remain large employers.
- Passenger enplanement growth is expected to remain strong, driven by population growth and economic development in Deschutes County. Airlines achieve load factors near and above industry averages at RDM, which helps the Airport market the airlines to attract additional routes and frequencies.
- Airlines will continue to increase the average number of seats per departure. This will hold commercial operations steady, which the total number of seats offered increases. Air taxi aircraft (less than 60 seats) will exit the market within 10 years.
- Air cargo will remain level at 1,000 tons a year. Trucks, security screening requirements, and electronic mail substitutes hamper the need for more air cargo.
- Local and itinerant general aviation operations will remain flat; however, if nearby Bend Airport continues to approach capacity on its single runway, RDM may see an increase in general aviation operations.

- Flight schools have expressed interest in locating at RDM as they did in the past. If the Airport develops property to accommodate a flight school, general aviation activity will increase.
- Single-engine and multi-engine piston aircraft will be retired faster than they are replaced. Jet, turbo-prop, helicopter, light sport, and experimental aircraft are growing segments. Growth in based aircraft is largely dependent on the Airport or a private developer preparing a site for new hangars. Existing hangars are at capacity.
- The future ARCs for Runways 5-23 and 11-29 will remain the same. The critical aircraft for Runway 5-23 will be the Boeing 737 and Airbus A319 with ARCs of C-III. The critical aircraft for Runway 11-29 will be the Bombardier Q400 with an ARC of B-III.

Figure 2-7: Forecast / TAF Comparison

AIRPORT NAME: REDMOND MUNICIPAL AIRPORT

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2016	298,322	298,322	0.0%
Base yr. + 5yrs.	2021	431,978	394,570	9.5%
Base yr. + 10yrs.	2026	496,750	434,335	14.4%
Base yr. + 15yrs.	2031	595,800	476,868	24.9%
Commercial Operations				
Base yr.	2016	11,467	11,467	0.0%
Base yr. + 5yrs.	2021	14,640	13,838	5.8%
Base yr. + 10yrs.	2026	14,240	15,024	-5.2%
Base yr. + 15yrs.	2031	15,040	16,374	-8.1%
Total Operations				
Base yr.	2016	40,162	40,162	0.0%
Base yr. + 5yrs.	2021	44,840	41,531	8.0%
Base yr. + 10yrs.	2026	45,440	43,004	5.7%
Base yr. + 15yrs.	2031	47,040	44,644	5.4%

NOTES: TAF data is on a U.S. Government fiscal year basis (October through September).

Figure 2-7: TAF Forecast Worksheet

AIRPORT NAME: REDMOND MUNICIPAL AIRPORT **Specify base year:** 2016

						Average Annual Compound Growth Rates			
	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.	Base yr. to +1	Base yr. to +5	Base yr. to +10	Base yr. to +15
Passenger Enplanements									
Air Carrier	536	22,200	27,600	77,100	211,400	4041.8%	120.0%	64.4%	49.0%
Commuter	297,786	324,200	404,378	419,650	384,400	8.9%	6.3%	3.5%	1.7%
TOTAL	298,322	346,400	431,978	496,750	595,800	16.1%	7.7%	5.2%	4.7%
Operations									
Itinerant									
Air carrier	5,127	8,940	10,540	12,140	12,940	74.4%	15.5%	9.0%	6.4%
Commuter/air taxi	6,340	5,700	4,100	2,100	2,100	-10.1%	-8.3%	-10.5%	-7.1%
Total Commercial Operations	11,467	14,640	14,640	14,240	15,040	27.7%	5.0%	2.2%	1.8%
General aviation	10,985	12,100	12,500	13,000	13,500	10.2%	2.6%	1.7%	1.4%
Military	341	300	300	300	300	-12.0%	-2.5%	-1.3%	-0.9%
Local									
General aviation	16,829	16,800	16,900	17,400	17,700	-0.2%	0.1%	0.3%	0.3%
Military	540	500	500	500	500	-7.4%	-1.5%	-0.8%	-0.5%
TOTAL OPERATIONS	40,162	44,340	44,840	45,440	47,040	10.4%	2.2%	1.2%	1.1%
Instrument Operations	14,197	17,621	17,741	17,491	18,410	24.1%	4.6%	2.1%	1.7%
Peak Hour Operations	21	21	23	23	24	0.0%	1.8%	1.0%	0.9%
Cargo/mail (enplaned+deplaned tons)	970	1,000	1,000	1,000	1,000	3.1%	0.6%	0.3%	0.2%
Based Aircraft									
Single Engine (Nonjet)	64	65	67	69	67	1.6%	0.9%	0.8%	0.3%
Multi Engine (Nonjet)	4	4	3	3	2	0.0%	-5.6%	-2.8%	-4.5%
Jet Engine	6	7	9	14	20	16.7%	8.4%	8.8%	8.4%
Helicopter	6	6	7	9	10	0.0%	3.1%	4.1%	3.5%
Other	0	3	3	4	4	0.0%	0.0%	0.0%	0.0%
TOTAL	80	85	89	99	103	6.3%	2.2%	2.2%	1.7%

B. Operational Factors

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.
Average aircraft size (seats)					
Air carrier	74	76	85	102	110
Commuter	50	50	50	N/A	N/A
Average enplaning load factor					
Air carrier	80.5%	85.0%	91.0%	84.0%	87.5%
Commuter	86.3%	83.0%	90.0%	N/A	N/A
GA operations per based aircraft	348	340	330	307	303

3.0 FACILITY REQUIREMENTS

This Facility Requirements Chapter considers the availability and capability of facilities at the Redmond Municipal Airport (RDM or the Airport) to accommodate existing and projected aviation demand over the next 20 years.

3.1 INTRODUCTION TO FACILITY REQUIREMENTS

This chapter compares current and forecasted activity levels (presented in **Chapter 2 Aviation Forecasts**) to the Airport's operational capacity, design requirements, and facility needs. Options for meeting the identified facility needs will be analyzed in **Chapter 4 Alternatives Analysis**.

Facility requirements are presented in the following organizational structure:

- ✓ Airside Facility Requirements
  - Airfield Capacity
  - Airfield Design
  - Runway System
  - Taxiway System
  - General Aviation Facilities
- ✓ Landside Facility Requirements
  - Passenger Terminal Roadway
  - Passenger Terminal Parking Area
  - Rental Car Facilities
  - Non-aviation Revenue Development
- ✓ Terminal Area Facilities
  - Airport Activity
  - Passenger Terminal Building
  - Gate Capacity Requirements
  - Terminal Building Development
  - Conclusions and Recommendations
- ✓ Support Facilities
  - Fixed Base Operators
  - United States Forest Service

Airside Facilities:
Facilities that are accessible to aircraft, such as runways and taxiways.

Landside Facilities:
Facilities that support airside facilities, but are not part of the aircraft movement area, such as terminal buildings, hangars, aprons, access roads, and parking facilities.

Support Facilities:
Facilities that can be either airside or landside facilities that aid in the operation of the airport.

- Cargo Facilities
- Airport Support and Maintenance Facilities
- Conclusions and Recommendations

3.2 AIRSIDE FACILITY REQUIREMENTS

An early step in reviewing an airport's long-term needs is to assess capacity and delay issues because these concerns will influence the direction of airfield planning. An airport's annual capacity, known as the Annual Service Volume (ASV), is the number of flight operations an airfield can accommodate during a year. Existing and forecast annual demand is compared with the ASV to determine the percentage capacity at which the airport is operating and to gauge the timing of future airfield capacity improvements. As annual demand approaches ASV, average delays increase. A typical goal is to construct a new runway prior to time delays averaging 10 to 15 minutes per operation, and this requires the completion of planning, environmental, and design work before delays reach this threshold.

Airfield Capacity:
The maximum number of aircraft operations that a specific airfield configuration can accommodate within a specific time interval of continuous demand.

Annual Service Volume (ASV):
Used by the FAA as an indicator of relative operating capacity, ASV is an estimate of an airport's annual capacity that accounts for differences in runway use, aircraft mix, weather conditions, etc. encountered over a year's time. ASV assumes an acceptable level of aircraft delay as described in FAA Advisory Circular (AC) 150/5060-5, Airport Capacity and Delay.

3.2.1 AIRFIELD CAPACITY

The Airport's ASV and hourly capacity are calculated using the methodology the Federal Aviation Administration (FAA) documented in AC 150/5060-5 *Airport Capacity and Delay*. Calculation in this method requires the mix index and runway-use configuration. The mix index is an equation (C+3D) that determines the percentage of aircraft operations that have a Maximum Takeoff Weight (MTOW) over 12,500 pounds. C represents the percent of aircraft over 12,500 but under 300,000 pounds. D represents the percent of aircraft over 300,000 pounds. Finally, the runway-use configuration for RDM is number 9 for crossing runways, shown in **Figure 3-1**. **Table 3-1** shows the mix index for RDM.

Table 3-1: Mix Index

Landings*	6,079
Operations (> 12.5k lbs.)**	13,148
General Aviation Operations (>12.5k lbs.)***	975
Total RDM 2016 Operations	40,162
C	35.2
D	0.00
Mix Index	35.2

Source: AC 150/5060-5
**Includes air carrier/air taxi/commuter/air tanker/air cargo for aircraft over 12,500 pounds*
***Operations = Landings x 2*
****GA Ops includes Flight Aware data for aircraft over 12,500 pounds.*

Figure 3-1 RUNWAY CONFIGURATION – CAPACITY AND DELAY AC 150/5060-5

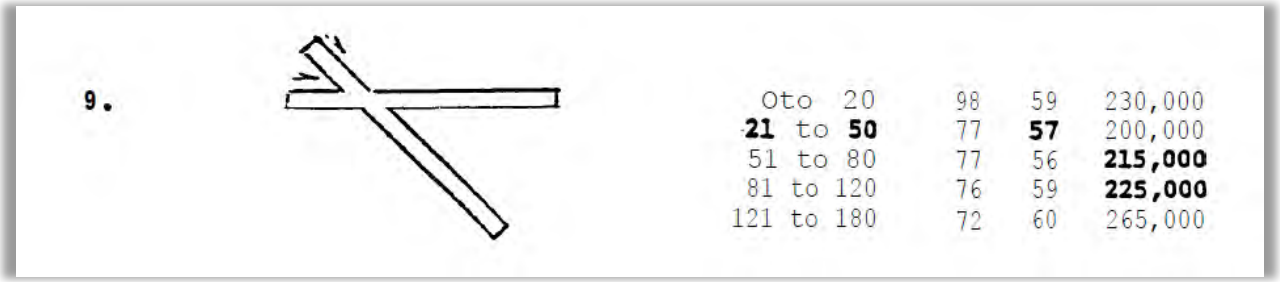


Table 3-2: ASV and Hourly Capacity

Runway Use Configuration	Mix Index (C+3D)	Capacity (Operations/Hour)		Annual Service Volume (Operations/Year)
		VFR	IFR	
#9	0 to 20	98	59	230,000
	21 to 50	**77**	**57**	**200,000**
	51 to 80	77	56	215,000
	81 to 120	76	59	225,000
	121 to 180	72	60	265,000

Source: AC 150/5060-5

Hourly capacity is split into visual flight rules (VFR) and instrument flight rules (IFR) capacity. **Table 3-2** above shows the hourly capacity and ASV for RDM.

Instrument Flight Rules (IFR) Operations:
Aircraft operations conducted by pilots with reference to instruments in the flight deck, with navigation accomplished by reference to electronic signals.

Visual Flight Rules (VFR) Operations:
Operations conducted by pilots with only visual reference to the ground, obstructions, and other aircraft.

AIRFIELD CAPACITY CONCLUSIONS AND RECOMMENDATIONS

The Airport is currently operating at 20 percent of its annual capacity, 27 percent of its VFR hourly capacity, and 36 percent of its IFR hourly capacity. As shown in **Chapter 2 Aviation Activity Forecasts**, the Airport is forecasted to handle 47,740 annual operations by 2036. The associated increases will not significantly change the capacity percentages. No major airfield changes will be required for airport capacity and delay purposes.

3.2.2 AIRFIELD DESIGN

The FAA's design standards, presented in a series of ACs, heavily influence design and construction of airside facilities. The primary AC that addresses airfield design is AC 150/5300-13A, Change 1, *Airport Design* (AC-13A). This section covers the specific design standards that apply to RDM. Additional information related to design standards can be found in **Chapter 1 Introduction**.

DESIGN STANDARDS CONCEPTS AND TERMINOLOGY

The FAA is responsible for the overall safety of civil aviation in the United States; therefore, FAA design standards are primarily driven by safety, with secondary goals including efficiency and utility also reflected in FAA standards and policy. Changes to improve safety and efficiency are constantly evolving as the aviation industry continues to develop, and the expectation is that design standards will continue to evolve alongside technologies and procedures.

CRITICAL AIRCRAFT

The initial step in airside facility planning is to identify the critical aircraft. According to FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, paragraph 3-4, the critical aircraft is the most demanding aircraft that operates at the airport more than 500 times per year or an aircraft used for scheduled passenger service. The characteristics used in facility planning include approach speed, wingspan, tail height, main gear width, cockpit to main gear length, aircraft weight, and takeoff and landing distances.

Critical Aircraft:
This is an aircraft with characteristics that determine the application of airport design standards for a specific runway, taxiway, taxilane, apron, or other facility. This can be a specific aircraft model or a composite of several aircraft currently using, expected to use, or intended to use the airport or part of the airport. This is also called the "design aircraft" or "critical design aircraft."

The existing critical aircraft are based on historical operations records and current airline schedules. The future critical aircraft is determined based on projections from **Chapter 2 Aviation Activity Forecasts**.

CURRENT CRITICAL AIRCRAFT

The most demanding aircraft currently using the airport is the Bombardier Q400 and Bombardier CRJ-900. Together, these two aircraft are the critical aircraft for Runway 5-23. The Q400 is also the critical aircraft for Runway 11-29.

FORECAST CRITICAL AIRCRAFT

At RDM, critical air carrier aircraft are expected to follow the general trend in airline operations nationwide, leading to a likely shift in aircraft types over the next 20 years. Routes into and out of RDM will likely shift toward increased aircraft size and reduced frequency. For RDM, this means the potential for a transition to narrow body aircraft. As addressed in the **Chapter 2 Aviation Activity Forecasts**, future critical air carrier aircraft are expected to be a combination of narrow-body jet and turboprop aircraft as shown in **Table 3-3** below.

Table 3-3: Future RDM Air Carrier Operations by Aircraft Type						
Typical Aircraft	**Seats**	**ARC**	**2021**	**2026**	**2031**	**2036**
CRJ-200	<70	C-II	2,260	0	0	0
Q400/E175/CRJ-900	70-90	B-III/C-III/C-III	8,430	8,200	6,000	3,000
MRJ-90	90-110	C-II	56	1,600	2,000	2,400
B737-700	110-130	C-III	286	500	2,000	1,800
A319 (Mainline)	130-150	C-III	204	600	1,000	3,600
A319 (Low Cost), B737-800	150-170	C-III	204	500	1,000	1,500
B737-900	>170	D-III	40	200	400	300
Parameters: Based on airline order books and aircraft manufacturer production plans current as of April 2017. Operations growth provides sufficient seats to meet passenger enplanement forecasts at load factors >80%.						

AIRPORT REFERENCE CODE (ARC)

The FAA AC-13A uses a coding system to determine design standards for an airport. The coding system is shorthand for the physical and operational characteristics of the most demanding aircraft that routinely use the airport.

Airport Reference Code (ARC):
An airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely on the airport. Aircraft in parenthesis are representative of the ARC category.

EXISTING ARC

The existing ARC is designated as C-III (E175).

FUTURE ARC

A change in fleet mix associated with the airlines will occur and the A319 will dictate the future ARC. The future ARC will remain C-III.

RUNWAY DESIGN CODE (RDC)

The RDC is a three-component code that defines the design standards applicable to a specific runway. A letter, A-E, depicts the first component and stands for the Aircraft Approach Category (AAC). The AAC relates to the approach speed of the critical aircraft. A Roman numeral, I-VI, depicts the second component, which is the Airplane Design Group (ADG). The ADG relates to the greatest wingspan or tail height of the critical aircraft. The third component relates to runway approach visibility minimums as expressed in Runway Visual Range (RVR) equipment measurements. **Table 3-4** summarizes the RDC classifications. The critical aircraft and RDC determine the scale and setbacks of airfield facilities.

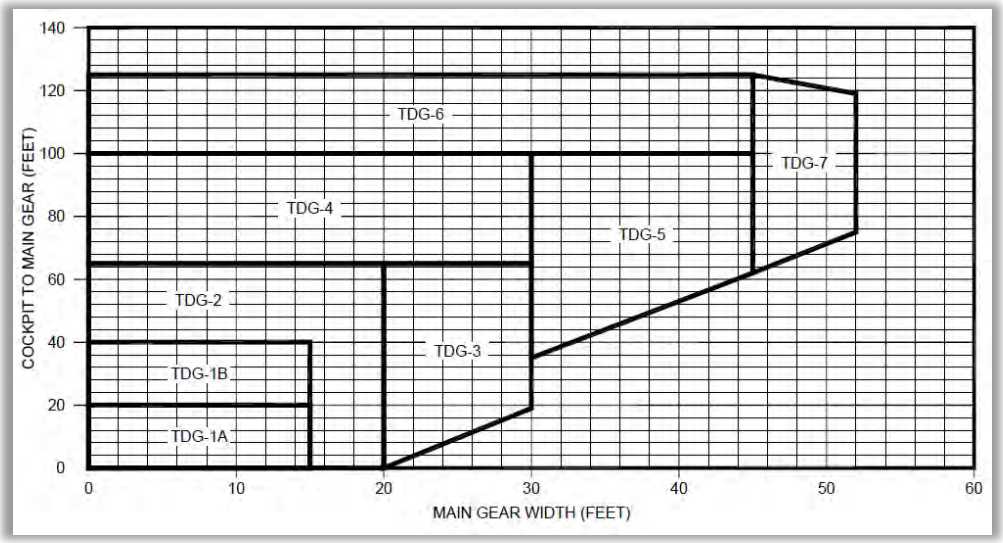
Runway Visual Range (RVR):
The range on the centerline of a runway over which the pilot of an aircraft can see the runway surface markings or lights delineating the runway, reported in hundreds of feet. For example, 2400 RVR is equal to one-half mile.

Table 3-4: Runway Design Code					
Runway		AAC	ADG	Approach Visibility Minimums	Design Aircraft
11-29	Existing	B	III	7/8 mile (2,400')	Q400
	Future	No Change	No Change	No Change	No Change
5-23	Existing	C	III	½ mile (2,500')	E175
	Future	No Change	No Change	No Change	A319

TAXIWAY DESIGN GROUP (TDG)

The TDG criteria are a new design standard incorporated into AC-13A. The previous RDM Airport Layout Plan (ALP) and Master Plan did not address this standard. The TDG takes into account the dimensions of the aircraft landing gear to determine taxiway widths and pavement fillets to be provided at taxiway intersections. Fillet pavement accommodates the inner wheel of the airplane as it turns. There are seven (1-7) TDG classifications distinguished by width of the main gear and wheel base (the distance from nose gear to main gear). TDG classifications are presented in **Figure 3-2.**

Figure 3-2 TAXIWAY DESIGN GROUPS



Source: Figure 3-2 from AC 5300-13a, Change1

EXISTING TDG

The Bombardier Q400 is the existing critical aircraft for all taxiways serving the runways. Due to its wide main landing gear, it is a TDG-5 aircraft. No other aircraft now operating at the Airport is above TDG-3.

FUTURE TDG

The aviation activity forecasts indicate the Airbus A319 will become the future critical aircraft if the Q400 is no longer in the fleet. These future aircraft have a narrower main landing gear width, and are both in TDG-3. As of 2017, Alaska has announced it will supplement its fleet of Q400 aircraft with the Embraer 175 regional jet (E175), which operates in the same 76-seat configuration as the Q400. Alaska route planning staff and the airport station manager expect that the Q400 will remain in the fleet for at least the next decade. Alaska Airlines will likely still operate a limited number of Q400s for short haul routes (e.g. RDM-Portland International Airport [PDX]) beyond the next decade. Exactly when the Q400 will be retired from Alaska's fleet is unknown.

There is currently a taxiway construction project for fiscal year 2018 to change the connector taxiways of Runway 11/29 to TDG 4. TDG 4 has the minimum fillet dimensions that will allow the Q400 to taxi at RDM. This allows the Q400 to continue operating at RDM until it retires from service and allows the future critical aircraft (A319) to dictate the future TDG. Therefore, it is recommended that TDG-3 be used for planning, and that standards for TDG-3 should be applied to both runways and all taxiways serving the runways once the Q400 no longer operates at RDM.

WIND COVERAGE

The primary factor influencing runway orientation is wind. The preferred design for runways is to align them so that airplanes take-off and land into a headwind. This minimizes the challenges associated with crosswinds, and provides for more efficient aircraft performance. Small, light aircraft are more affected by crosswinds than larger, heavier ones. FAA runway design criteria state that runway orientation must satisfy 95 percent wind coverage based on annual wind conditions. A crosswind runway may be justified to satisfy the 95 percent wind coverage requirement for the combined runways.

Observations for wind coverage are categorized into all weather, instrument meteorological conditions (IMC), and visual meteorological conditions (VMC). Depending upon the RDC, runways must meet the allowable crosswind component of 10.5, 13, 16, or 20 knots. Runways 5-23 and 11-29 have RDCs of C-III and B-III respectively, and both must meet an allowable crosswind component of 16 knots.

Table 3-5: Wind Coverage				
All Weather				
Runway	**10.5 Knots (12 M.P.H)**	**13 Knots (15 M.P.H.)**	**16 Knots (18.5 M.P.H.)**	**20 Knots (28 M.P.H.)**
11-29	89.63%	94.34%	98.83%	99.87%
5-23	94.85%	97.17%	99.06%	99.79%
Combined	97.65%	99.39%	99.88%	99.99%
Calm Wind Percentage (0-3 knots)			37.40%	
Number of Observations			86,755	
IMC				
Runway	**10.5 Knots (12 M.P.H)**	**13 Knots (15 M.P.H.)**	**16 Knots (18.5 M.P.H.)**	**20 Knots (28 M.P.H.)**
11-29	98.18%	99.12%	99.77%	99.95%
5-23	94.67%	96.94%	99.36%	99.91%
Combined	99.32%	99.83%	99.97%	100.00%
Calm Wind Percentage (0-3 knots)			49.70%	
Number of Observations			7,457	
VMC				
Runway	**10.5 Knots (12 M.P.H)**	**13 Knots (15 M.P.H.)**	**16 Knots (18.5 M.P.H.)**	**20 Knots (28 M.P.H.)**
11-29	94.55%	96.99%	99.00%	99.78%
5-23	89.17%	94.10%	98.78%	99.87%
Combined	97.49%	99.35%	99.88%	99.99%
Calm Wind Percentage (0-3 knots)			36.30%	
Number of Observations			79,413	

Table 3-5 shows annual average wind coverage for each runway direction during three weather conditions: all weather, VMC, and IMC. When calculated individually, neither runway alignment provides 95 percent coverage for operations during 10.5 knots under the three weather conditions. The alignment of Runway 11-29 does not provide the required coverage during 13-knot all weather conditions and Runway 5-23's alignment does not provide the required coverage during 13-knot VMC weather conditions. However, the combined alignment of the two runways provides over 97 percent coverage during each weather condition, justifying the need for continued FAA investment in secondary Runway 11-29 to maintain the required wind coverage.

According to current FAA design standards, the historical wind data reported above does not justify a B-III RDC on the crosswind runway (11-29), however, the Airport has the intention of maintaining the B-III designation throughout the planning period covered under this Master Plan.

OTHER DESIGN CONSIDERATIONS

- ✓ Airspace (approach and departure protection, terrain, and obstructions): Instrument flight procedure minimum descent altitudes, glide paths, and climb gradients are determined by obstacle clearances. Obstacle clearance surfaces extend along the extended runway centerline. Runways are typically aligned to avoid terrain and tall structures that existed at the time of design; however, tall objects and terrain can impose restrictions on aircraft operations if they inhibit the ability for aircraft to safely arrive and depart. Ideally, airports work with nearby communities to adopt land use planning techniques to minimize incompatible development.
- ✓ Independent versus dependent operating streams: Runways that intersect or that have intersecting approach and departure corridors are dependent on each other. During high levels of activity, these dependencies cause delay. As delays increase, establishment of an independent operating stream may be necessary. This can be accomplished by providing a new parallel runway with sufficient lateral separation from existing runways. Airplane wake turbulence and instrument landing capabilities are considerations when determining the amount of space needed between parallel runways.
- ✓ ATCT Line of Sight: Air traffic controllers require an uninterrupted line of sight between the air traffic control tower (ATCT) and approach and departure corridors, runways, taxiways, and aprons. Protection of controller line of sight is considered in airport development.
- ✓ NAVAID critical areas: Electronic equipment used for navigation, communication, security, and surveillance are commonly found throughout airport property. In order to function properly, most of these items require clear and graded areas, setbacks from certain objects and construction materials, and a clear corridor between transmitters and receivers. Development and most activities are restricted in these areas.
- ✓ Visual aids to navigation: Certain visual aids, including the airport beacon, runway approach lighting, and runway glide path indicator lights require unobstructed line of sight from aircraft in flight. This line of sight is considered in the planning and design of airport facilities.

3.2.3 RUNWAY SYSTEM

RUNWAY DESIGN STANDARDS

FAA AC-13A stipulates the design criteria, surfaces, and dimensions for each runway. Dimensions for the design surfaces are based upon the critical aircraft and reference code plus the type of approach instrumentation available. A brief explanation of each design surface is presented below. All runway design surfaces and instrument landing system critical areas are illustrated on **Figure 3-3.** Summary matrices (**Tables 3-7** and **3-8**) are included following the explanations.

RUNWAY SAFETY AREA (RSA)

The RSA provides a graded, clear area for aircraft in case of a runway excursion, and provides greater accessibility for firefighting and rescue equipment during such incidents. The RSA must be clear of all objects and capable of supporting aircraft, maintenance vehicles, and rescue vehicles. The FAA does not grant modifications to RSA standards, meaning that non-standard RSAs must be corrected as soon as possible. RSAs are illustrated with a red line in **Figure 3-3**.

Runway Safety Area (RSA):
A rectangular area surrounding a runway suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway.

Object Free Area (OFA):
A rectangular area centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by remaining clear of objects.

The RSA for each runway meets FAA design standards for the existing configuration. Impacts to the RSA from a potential runway extension will be explored in the **Chapter 4 Alternatives Analysis**. The Airport is required to continue to maintain a clear and graded area for each RSA lateral to, and beyond the runway end. Response to inspections by the FAA Runway Safety Action Team, who conducts inspections on a regular basis, will help maintain required grading. Runway 5-23 has published declared distances of 7,031 feet for the accelerate stop distance available (ASDA) and landing distance available (LDA). Declared distances that do not equal the full length of a runway mean the RSA has a penetration. The object identified as penetrating the RSA was the localizer on Runway End 5. Survey data collected for this master plan shows no objects penetrating any design surfaces of Runway 5-23. The latitude and longitude for the localizer and Runway End 5 were used in the inverse computation provided by the National Geodetic Survey website to determine the distance between the survey points. The distance between both points was greater than 1,000 feet, meaning the localizer did not penetrate the RSA. It is recommended that the declared distances change to the full length of Runway 5-23, 7,038 feet, due to the RSA being clear of objects.

RUNWAY OBJECT FREE AREA (ROFA)

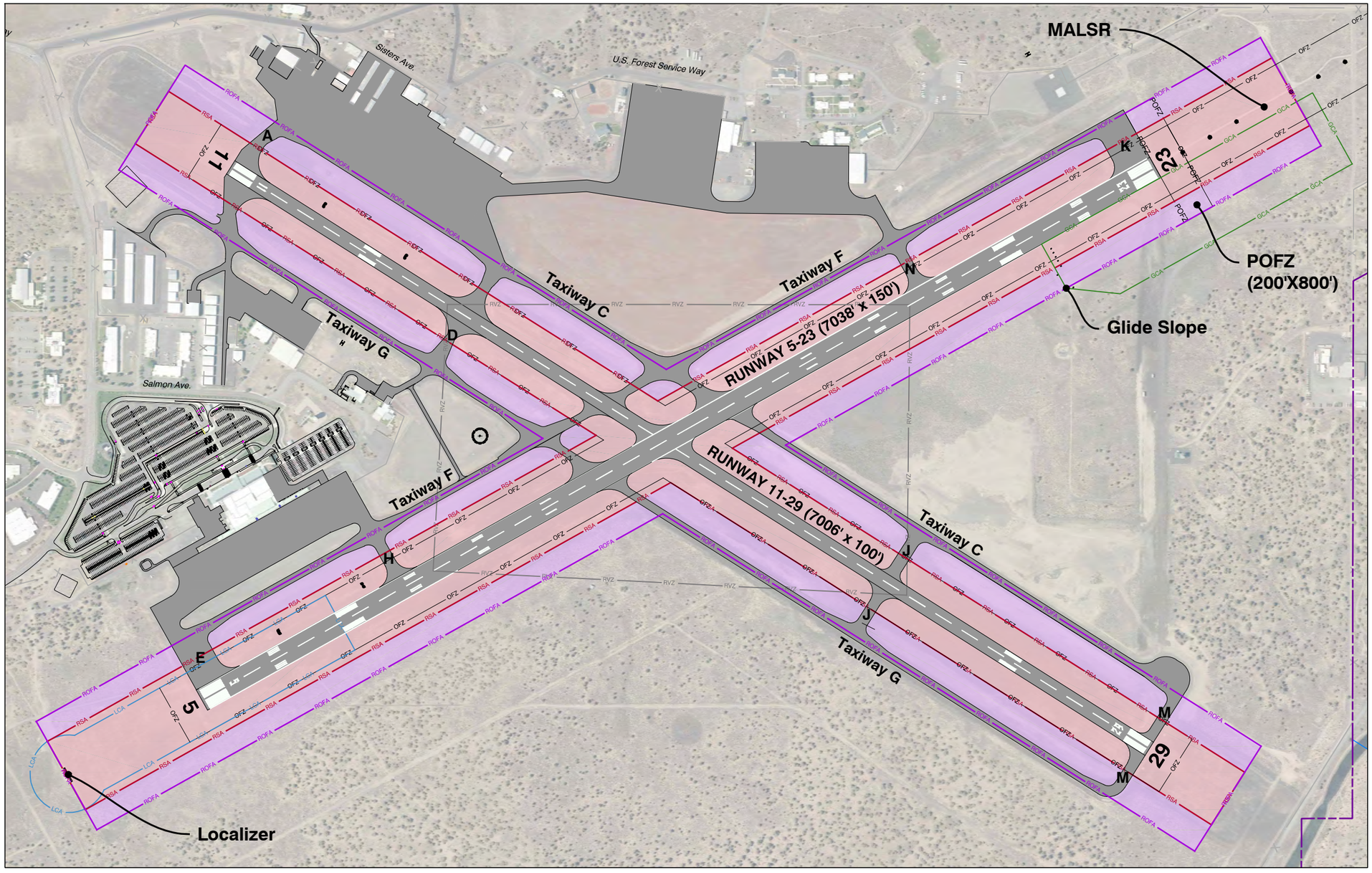
ROFA standards require clearing of above-ground objects protruding above the nearest point of the RSA. Objects non-essential for air navigation must not be placed in the ROFA. Except where precluded by other standards, objects that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes are allowed to penetrate the ROFA. The ROFAs at RDM are illustrated with a purple line in **Figure 3-3**. The ROFAs for both runways currently meet standards.

RUNWAY OBSTACLE FREE ZONE (ROFZ)

ROFZs are defined three-dimensional volumes of airspace centered above the runway centerline that must be kept clear during aircraft operations. The shape and size of the ROFZ is dependent on the size of aircraft using the runway and the approach minimums for a specific runway end. The ROFZ extends 200 feet beyond each end of each runway. The width of the ROFZs for both runways at RDM is 400 feet. The ROFZs at RDM are illustrated with a black line in **Figure 3-3**. The ROFZs for both runways at RDM meet FAA standards.

INNER-APPROACH OBSTACLE FREE ZONE (IAOFZ)

The IAOFZ only applies to the ends of runways that have an approach lighting system. Therefore, at RDM an IAOFZ only exists in the area before the threshold for Runway 23. IAOFZs begin 200 feet beyond the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit in the approach lighting system. The width is the same as the ROFZ (400 feet) and rises at a slope of 50 (horizontal) to 1 (vertical). The IAOFZ is shown with a black line in **Figure 3-3**. The IAOFZ for Runway 23 at RDM meets FAA standards.



LEGEND

- RDM Property Boundary
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (OFZ)
- Precision Obstacle Free Zone (POFZ)
- Glide Slope Critical Area (GCA)
- Localizer Critical Area (LCA)
- Runway Visibility Zone (RVZ)

N

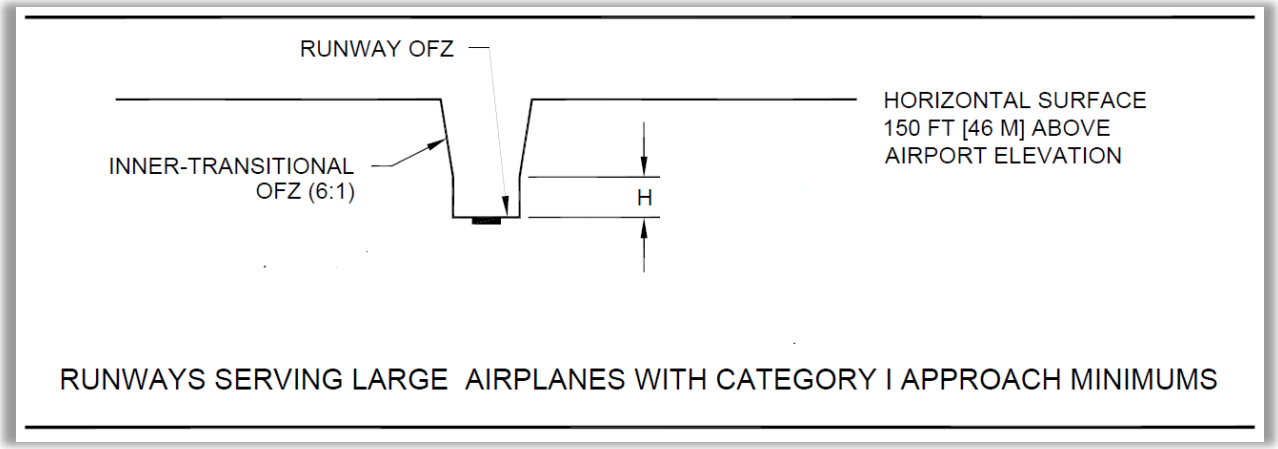
0' 350' 700'

Figure 3-3
RUNWAY DESIGN SURFACES

INNER-TRANSITIONAL OBSTACLE FREE ZONE (ITOFZ)

An ITOFZ exists only for runways with instrument approach visibility minimums of less than ¾ mile. Therefore, at RDM an IAOFZ only applies to Runway 5-23. The ITOFZ is a defined volume of airspace along the sides of the ROFZ and IAOFZ. **Figure 3-4** illustrates the shape of the ITOFZ. The ITOFZ will be shown and analyzed on the Airspace Plan sheets of the ALP, after the alternatives analysis. The ITOFZ meets FAA standards.

Figure 3-4 INNER-TRANSITIONAL OFZ



PRECISION OBSTACLE FREE ZONE (POFZ)

The POFZ is defined as a volume of airspace above an area beginning at the landing threshold, at the elevation of the landing threshold, and centered on the extended runway centerline (200 feet long by 800 feet wide), illustrated on **Figure 3-3** in black. The POFZ is in effect when all three of the following criteria are met:

- ✓ The approach includes vertical guidance;
- ✓ The reported ceiling is below 250 feet or visibility is less than 3/4 statute miles (or RVR is below 4,000 feet); and
- ✓ An aircraft is on final approach within two miles of the runway threshold.

When the POFZ is in effect, the wing of an aircraft on a taxiway waiting for runway clearance may penetrate the POFZ, but the fuselage and tail may not. Runway 23 is the only runway end with a POFZ. It meets FAA standards.

RUNWAY PROTECTION ZONES (RPZ)

Runway Protection Zone (RPZ):
The RPZ is a trapezoidal area with the intention of enhancing the protection of people and property on the ground.

The RPZ is a trapezoidal area at the end of the runway, the purpose of which is to enhance safety for aircraft operations and for people and objects on the ground. The FAA requests that incompatible land uses, objects, and activities be located outside of the RPZ. The FAA also requests that an airport operator maintain full control of an RPZ, ideally through fee simple property acquisition. If this is not feasible, land use control may be achieved through the use easements.

Total acres for the existing RPZs located on and off RDM property are called out in **Figure 3-5**, and documented in summary **Tables 3-7** and **3-8** at the end of this section. The RPZs within the existing airport property and under Airport control are shaded green, and those outside Airport property boundaries are shaded orange.

The FAA provides guidance on RPZ land use compatibility in AC-13A and more extensive guidance in the 2012 memorandum *Interim Guidance on Land Uses within a Runway Protection Zone*. Land uses and structures that are not inherently compatible in the RPZ include: buildings, especially habitable structures or structures of assembly; fuel facilities; hazardous material storage; recreational land uses; and transportation facilities and roads.

The City of Redmond is currently in the design process for a realignment of the intersection of SE Veterans Way and SE Airport Way. This intersection is currently located in the central *controlled access* portion of the Runway 11 approach RPZ (see **Figure 3-6**). FAA standards discourage intersections located in this portion of an RPZ. The design for the proposed realignment shifts the intersection to outside of the controlled access portion of the RPZ and replaces a three-way stop intersection with a roundabout.

The FAA does not have the authority to regulate local land use, so it relies on the airport sponsor to work with local jurisdictions to promote compatible development within the RPZ. Airport actions that introduce incompatible land uses into the RPZ, either by moving a runway end or increasing the size of the RPZ, require coordination with FAA headquarters. This coordination is not needed for existing incompatible land uses if the RPZ does not move or change size. The analysis of runway extension alternatives presented in **Chapter 4** addresses property acquisition that would be required to support each alternative.

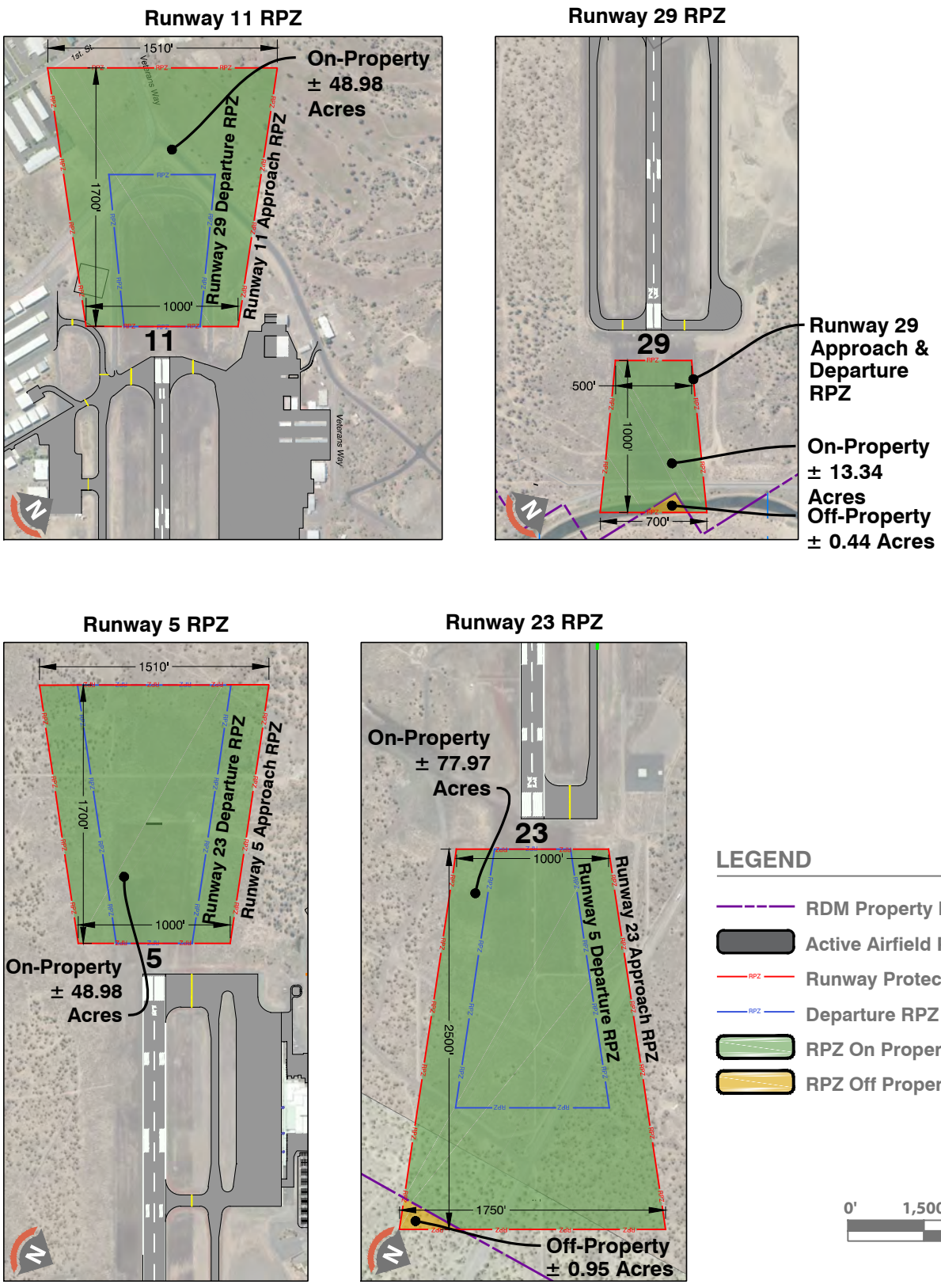
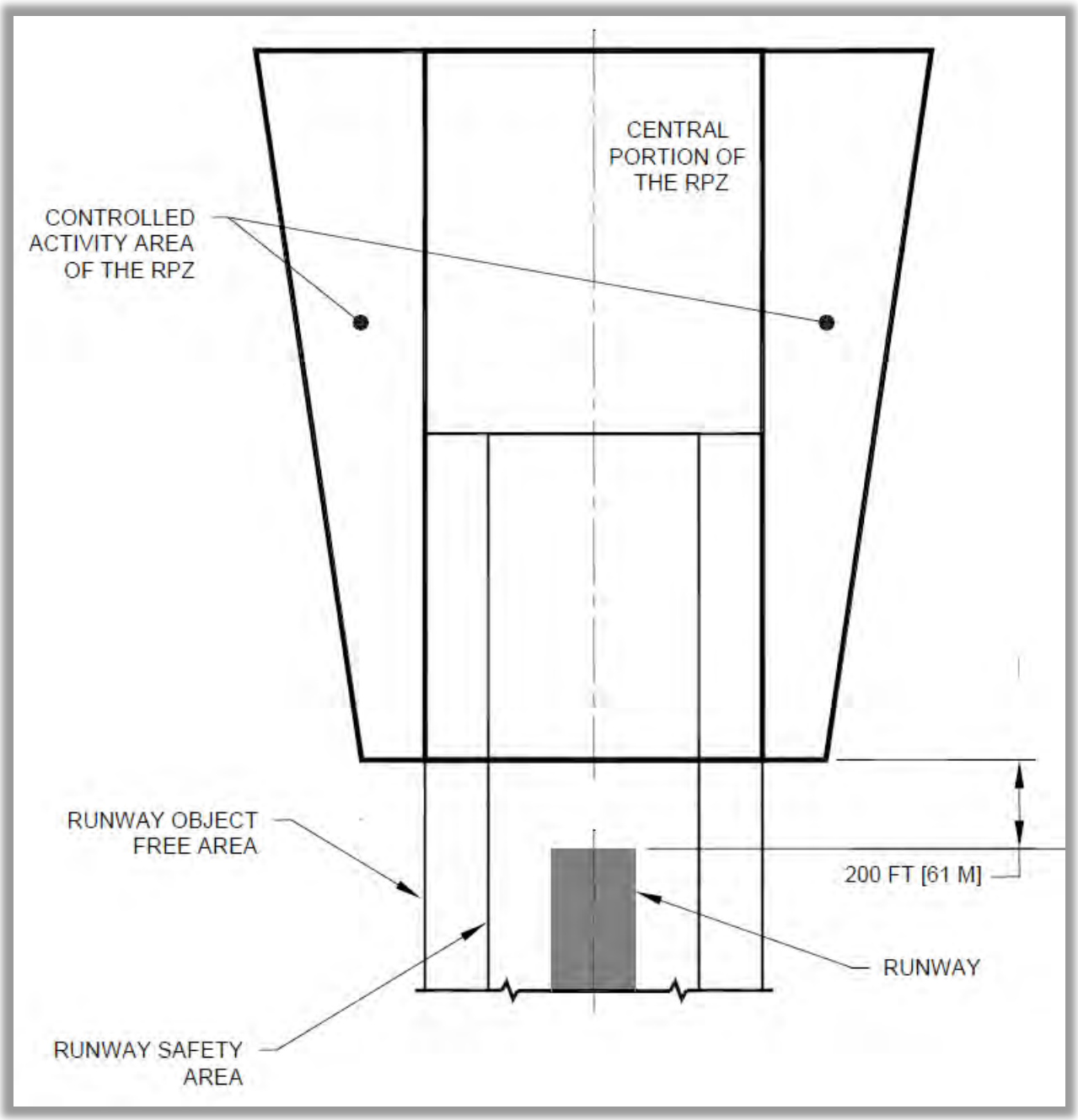


Figure 3-5
RUNWAY PROTECTION ZONES

Figure 3-6 RUNWAY PROTECTION ZONE SUBAREAS



RUNWAY VISIBILITY ZONE (RVZ)

Runway line-of-sight standards indicate intersecting runways must maintain an unobstructed line of sight from any point five feet above the runway centerline to any other point five feet above the intersecting runway centerline within the runway visibility zone (RVZ). The RVZ at RDM is established by points located equidistant from the intersection and the runway ends. The RVZ precludes any fixed or movable objects that may limit line of sight between the runways, and is shown as a blue line in **Figure 3-3**. The RVZ line-of-sight at RDM is unobstructed. It is recommended that RDM continue to limit any permanent structures with the RVZ.

HOLD POSITIONS

RDC determines the holding position distance on each connector taxiway from the runway centerline. AC-13A shows that, for RDC C-III runways such as Runway 5-23, the holding position is 250 feet from the runway centerline. In addition, the distance is increased 1 foot for each 100 feet the airport is above sea level. Using this formula, at 3,080 feet mean sea level (MSL), the required distance for hold positions from the runway centerline is 281 feet on taxiways connecting to Runway 5-23. Currently, the hold lines for Runway 5-23 are located at 200 feet from centerline and do not meet the 281-foot requirement.

As Runway 11-29 is designated as RDC B-III, the elevation factor does not apply and the hold positions should be located 200 feet from the runway centerline. For Runway 11-29, the hold lines are currently located at 206 feet from runway centerline, slightly exceeding the requirement AC-13A.

NAVAID CRITICAL AREAS

Runway 23 is equipped with a glide slope and localizer as part of the instrument landing system (ILS) to the approach end of Runway 23. The FAA requires a critical area at each runway end to remain clear of objects to ensure aircraft using the equipment receive undistorted signals. The critical areas for Runway 23 are the localizer critical area (LCA) and the glide slope critical area (GCA). Dimensions of the GCA are for the "null reference" facility type glide slope. **Table 3-6** shows the dimensions for the LCA and GCA for an ILS category I defined by FAA Order 6750.16D, *Siting Criteria for ILS*. There are no known penetrations to the GCA and LCA (additional information will be provided in the AGIS survey). The FAA requires vegetation not exceed twelve inches in height in the ILS critical areas.

BLAST PADS

Paved runway blast pads provide blast erosion protection beyond runway ends during jet aircraft operations. AC-13A recommends runways serving ADG-III have full-length paved shoulders. In effect, blast pads are an extension of the full-length paved shoulders beyond the runway end.

Table 3-6. Critical Area Dimensions

Area	Length	Width
Localizer Critical Area	2,000 feet	400 feet
Glideslope Critical Area	2,000 feet	200 feet

Source: Order 6750.16D, Siting Criteria for ILS

RDM does not currently have blast pads. Should the Airport determine blast pads to be beneficial in the future, for runways supporting ADG C-III aircraft, blast pads should be 200 feet by 200 feet. For runways supporting ADG B-III aircraft, blast pads should be 140 feet wide and 200 feet long.

The tables below summarize design standards, existing conditions, and any proposed disposition.

Table 3-7. Runway 11-29 Design Standards Matrix

	Runway 11-29 RDC:		B-III			
Item	**Existing Conditions**		**FAA Design Standards[1]**		**Meets Standards?**	**Disposition**
Runway Design						
Width	100 ft.		100 ft.		Yes	No Action
Shoulder Width	20 ft.		20 ft.		Yes	No Action
Blast Pad Width	N/A		140 ft.		No	Add to ALP
Blast Pad Length	N/A		200 ft.		No	Add to ALP
Crosswind Component (all weather)	99.13% @ 16 knots		95% @ 16 knots		Yes	No Action
Gradient (maximum)	0.51%		1.5%		Yes	No Action
Runway Protection						
Runway Safety Area (RSA)						
Length beyond departure end	600 ft.		600 ft.		Yes	No Action
Length prior to threshold	600 ft.		600 ft.		Yes	No Action
Width	300 ft.		300 ft.		Yes	No Action
Runway Object Free Area (ROFA)						
Length beyond departure end	600 ft.		600 ft.		Yes	No Action
Length prior to threshold	600 ft.		600 ft.		Yes	No Action
Width	800 ft.		800 ft.		Yes	No Action
Runway Obstacle Free Zone (OFZ)						
Length prior to threshold	200 ft.		200 ft.		Yes	No Action
Width	400 ft.		400 ft.		Yes	No Action
Inner Approach OFZ	N/A		N/A		N/A	N/A
Inner Transitional OFZ	N/A		N/A		N/A	N/A
Precision Obstacle Free Zone (POFZ)	N/A		N/A		N/A	N/A
Approach Runway Protection Zone (RPZ)						
Length	11: 1700 ft.	29: 1000	11: 1700 ft.	29: 1000	Yes	N/A
Inner Width	11: 1000 ft.	29: 500	11 :1000 ft.	29: 500		
Outer Width	11: 1510 ft.	29: 700	11: 1510 ft.	29: 700		
Departure Runway Protection Zone (RPZ)						
Length	1000 ft.		1000 ft.		Yes	No Action
Inner Width	500 ft.		500 ft.		Yes	No Action
Outer Width	700 ft.		700 ft.		Yes	No Action
Runway Separation						
From Runway Centerline to:						
Parallel Runway Centerline	N/A		700 ft.		Yes	No Parallel RWY
Hold Line[2]	200 ft.		200 ft.		Yes	No Action
Parallel Taxiway Centerline	400 ft.		300 ft.		Yes	No Action
Aircraft Parking Area	425 ft.		400 ft.		Yes	No Action

Source: FAA Advisory Circular 150/5300-13A, Change 1 Airport Design (February 2014)

Table 3-8. Runway 5-23 Design Standards Matrix						
Runway 5-23 RDC:			**C-III**			
Item	**Existing Conditions**		**FAA Design Standards[1]**		**Meets Standards?**	**Disposition**
Runway Design						
Width	150 ft.		150 ft.		Yes	No Action
Shoulder Width	25 ft.		25 ft.		Yes	No Action
Blast Pad Width	N/A		200 ft.		No	Add to ALP
Blast Pad Length	N/A		200 ft.		No	Add to ALP
Crosswind Component (all weather)	99.07% @ 16 knots		95% @ 16 knots		Yes	No Action
Gradient (maximum)	0.29%		1.5%		Yes	No Action
Runway Protection						
Runway Safety Area (RSA)						
Length beyond departure end	1000 ft.		1000 ft.		Yes	No Action
Length prior to threshold	600 ft.		600 ft.		Yes	No Action
Width	500 ft.		500 ft.		Yes	No Action
Runway Object Free Area (ROFA)						
Length beyond departure end	1000 ft.		1000 ft.		Yes	No Action
Length prior to threshold	600 ft.		600 ft.		Yes	No Action
Width	800 ft.		800 ft.		Yes	No Action
Runway Obstacle Free Zone (OFZ)						
Length prior to threshold	200 ft.		200 ft.		Yes	No Action
Width	400 ft.		400 ft.		Yes	No Action
Inner Approach OFZ	23: 2500 ft. x 400 ft.		N/A		N/A	N/A
Inner Transitional OFZ	23: 1991 ft		N/A		N/A	N/A
Precision Obstacle Free Zone (POFZ) (Runway 23 only)						
Length	200 ft.		200 ft.		Yes	No Action
Width	800 ft.		800 ft.		Yes	No Action
Approach Runway Protection Zone (RPZ)						
Length	5: 1700 ft.	23: 2500	5: 1700 ft.	23: 2500 ft.	Yes	N/A
Inner Width	5: 1000 ft.	23: 1000	5 :1000 ft.	23: 1000 ft.		
Outer Width	5: 1510 ft.	23: 1750	5: 1510 ft.	23: 1750 ft.		
Departure Runway Protection Zone (RPZ)						
Length	1,700 ft.		1700 ft.		Yes	No Action
Inner Width	500 ft.		500 ft.		Yes	No Action
Outer Width	1,010 ft.		1010 ft.		Yes	No Action
Runway Separation						
From Runway Centerline to:						
Parallel Runway Centerline	N/A		700 ft.		No	No Parallel RWY
Hold Line[2]	250 ft.		250 ft.		Yes	No Action
Parallel Taxiway Centerline	400 ft.		400 ft.		Yes	No Action
Aircraft Parking Area	540 ft.		500 ft.		Yes	No Action
Source: FAA Advisory Circular 150/5300-13A, Change 1 Airport Design (February 2014)						

RUNWAY LENGTH

The performance requirements of the critical aircraft designated for a runway determine an airport's recommended runway length. Performance capabilities of individual aircraft are, in turn, affected by factors including the aircraft payload and fuel load, the runway elevation, wind conditions, and air temperature.

Currently, Runway 5-23 is 7,038 feet long and Runway 11-29 is 7,006 feet long. At these lengths, the runways adequately serve the range of piston and jet aircraft now operating at the Airport. RDM has direct flights to seven airline hubs, all under 1,000 nautical miles (nm) from the Airport. With a few aircraft and time of year exceptions, the runway length is generally sufficient[1] for current aircraft and current destinations. However, as new airlines begin serving RDM, and existing airlines change fleets and add new destinations, a wide range of aircraft could serve the Airport in the future. As noted in the discussion of critical aircraft earlier in this chapter, specific fleet mix changes anticipated at the Airport include:

- ✓ Replacement of Q4002 with ERJ-175
- ✓ Regional jet (CRJ-200, 700 and 900) replacement with narrow body aircraft (A319 and B737)

This section examines whether the available runway length meets the needs not only of existing users, but also those of future critical aircraft serving future destinations. To analyze the runway requirements for these new aircraft types, an understanding of the factors that impact aircraft performance is necessary. The following paragraphs explain the terminology and variables used in the runway length assessment.

ELEVATION

RDM has four runway ends from which aircraft can operate, ranging from 3,044 feet above mean sea level (AMSL) to 3,080 feet AMSL, which is the official airport elevation.

INTERNATIONAL STANDARD ATMOSPHERE (ISA)

This mathematical model describes how the earth's atmosphere, or air pressure and density, change depending on altitude. The atmosphere is less dense at higher elevations. ISA is frequently used in aircraft performance calculations because deviation from ISA will change how an aircraft performs. ISA at sea level occurs when the temperature is 59°F. ISA at RDM's 3,080 feet AMSL occurs when the temperature is 48°F.

[1] CRJ-200 operations to certain destinations during summer months are occasionally weight restricted on departure from RDM.
[2] Some Q400 operations associated with short haul routes such as RDM-PDX will remain into the future.

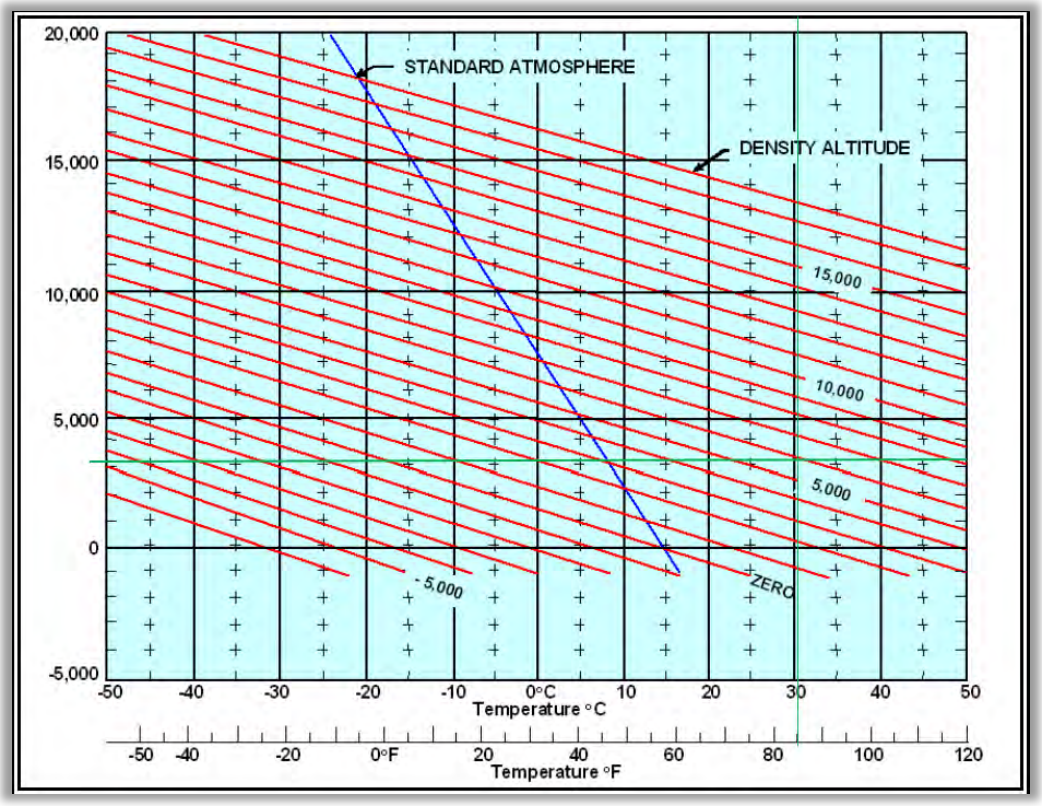
DENSITY ALTITUDE (DA)

This measurement comparing air density at a point in time and specific location to ISA is a critical component of aircraft performance calculations. DA is used to understand how aircraft performance differs than the performance that would be expected under ISA. DA is primarily influenced by elevation and air temperature. To examine the effect of changes to either variable, this calculation holds the other variable constant.

- ✓ When elevation is constant: When air temperature increases, DA increases. When air temperature decreases, DA decreases. This comparison is often used when analyzing aircraft performance at an airport during different times of the day and different days of the year.
- ✓ When temperature is constant: When elevation increases, DA increases. When elevation decreases, DA decreases. This comparison, which is not often used, can be employed to compare aircraft performance at different airports under identical climate conditions.

Figure 3-7 illustrates how DA is impacted when factoring in the average maximum temperature (85.5°F) for Redmond. The result is a density altitude increased to approximately 5,800 feet MSL.

Figure 3-7 DENSITY ALTITUDE FOR RDM AVERAGE MAXIMUM TEMPERATURE



For year-round planning purposes, density altitude of 5,800 feet MSL is assumed for the aircraft performance-based runway length analysis here.

FUTURE FLEET AND DESTINATIONS

DA, aircraft takeoff weight, and aircraft performance are the three primary factors to be considered when determining runway length requirements. Aircraft takeoff weight is directly related to the distance of the flight. For shorter distances, aircraft may be able to depart with a full passenger cabin and less than full fuel tanks. In those instances, the aircraft will typically be departing below MTOW and experience better takeoff performance. Aircraft will typically require a full load of fuel for longer trips. A full passenger cabin and full load of fuel will be close to the aircraft's MTOW.

This runway length analysis looks at the future fleet changes as discussed in **Chapter 2** in conjunction with destinations likely to be served from RDM in the future. Destination distance is a critical factor in this analysis. RDM currently sees non-stop service to the airline hubs within 1,000 nm distance (Seattle-Tacoma International Airport, Portland International Airport, Salt Lake City International Airport, San Francisco International Airport, Los Angeles International Airport, Phoenix Sky Harbor International Airport). The next step beyond those hubs would be direct flights to Midwest or midcontinent hubs such as Minneapolis-Saint Paul, Minnesota; Denver, Colorado; and Houston and Dallas/Fort Worth, Texas. Those cities are all within 1,500 nm, which is a reasonable range for the forecast airline fleet, and likely destinations within the 20-year planning window.

The following analysis documents calculated takeoff weights for each of the air carrier aircraft types to reach a 1,500 nm destination. Those takeoff weights are then used with the aircraft manufacturer's performance tables contained in their respective airport planning manuals to determine a runway length requirement for the future.

RUNWAY LENGTH RECOMMENDATION

Using the 1,500 nm destination, as mentioned above, results in varying takeoff length requirements for the different aircraft types, as shown in **Table 3-9**. The CRJ-200 is not capable of flying for 1,500 nm. For the CRJ-700, 1,500 nm is near the range limits of the aircraft, and it must be weight restricted in order to carry enough fuel for the trip.

The B737-700 and A319 can make the trip with a full passenger load, but not with the current RDM runway length. The CRJ-900, B737-800, and EMB-175 would require some weight adjustments (e.g., blocked seats) in order to make the 1,500 nm trip.

The 1,500 nm destination is near the range limit of the EMB-175. No additional runway length would improve the passenger carrying capacity for the EMB-175 at RDM when adjusted for DA.

Table 3-9. Runway Length Requirements	
Aircraft Type	**Takeoff Length Required for 1,500 NM Trip**
Existing Fleet[1]	
CRJ-200	Out of Range
CRJ-700	9,100 feet[2]
Future Fleet	
CRJ-900	11,000 feet
EMB-175	10,000 feet[3]
B737-700	8,500 feet
B737-800	12,000 feet
A319	9,800 feet

[1] The Q400 has been excluded from this analysis since they will be eliminated from service except for very short haul flights (RDM-PDX).
[2] Weight restricted with a reduction of 10 passengers.
[3] Weight restricted with a reduction of 13 passengers.

Figures 3-8, 3-9, and **3-10** show three options to be considered in preliminary discussions for locating a runway extension: a split extension, northeast extension, and southwest extension. Variations of a 10,000-foot runway are explored in further detail in the **Chapter 4 Alternatives Analysis**.

RUNWAY WIDTH

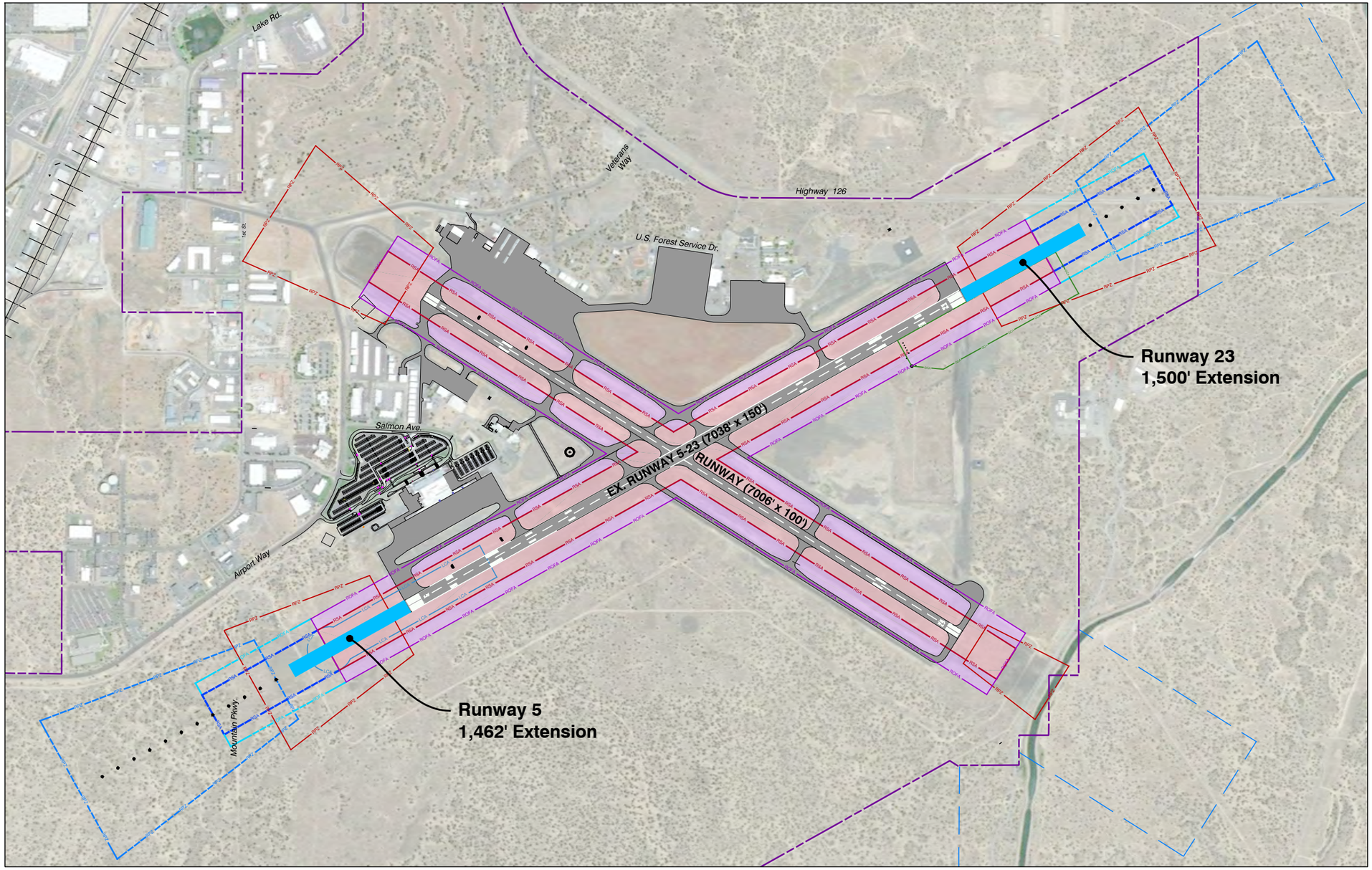
Table 3-10 summarizes the runway width requirements according to RDC compared with the current runway widths.

Table 3-10. Runway Width Requirements					
Runway 11-29			**Runway 5-23**		
B-III Design Width	Existing Width	Meets Standards?	C-III Design Width	Existing Width	Meets Standards?
100’	100’	Yes	150’	150’	Yes

As no changes in RDC code are anticipated within the 20-year planning period, no changes in runway width are required.

RUNWAY PAVEMENT STRENGTH

The FAA provides guidance for classifying and reporting pavement strength in AC 150/5335-5C, *Standardized Method of Reporting Airport Pavement Strength – PCN*. The pavement strength is represented by a value called the Pavement Classification Number (PCN). The PCN is calculated based upon the pavement section, total aircraft operations, and operations by the most demanding aircraft anticipated to utilize the pavement.



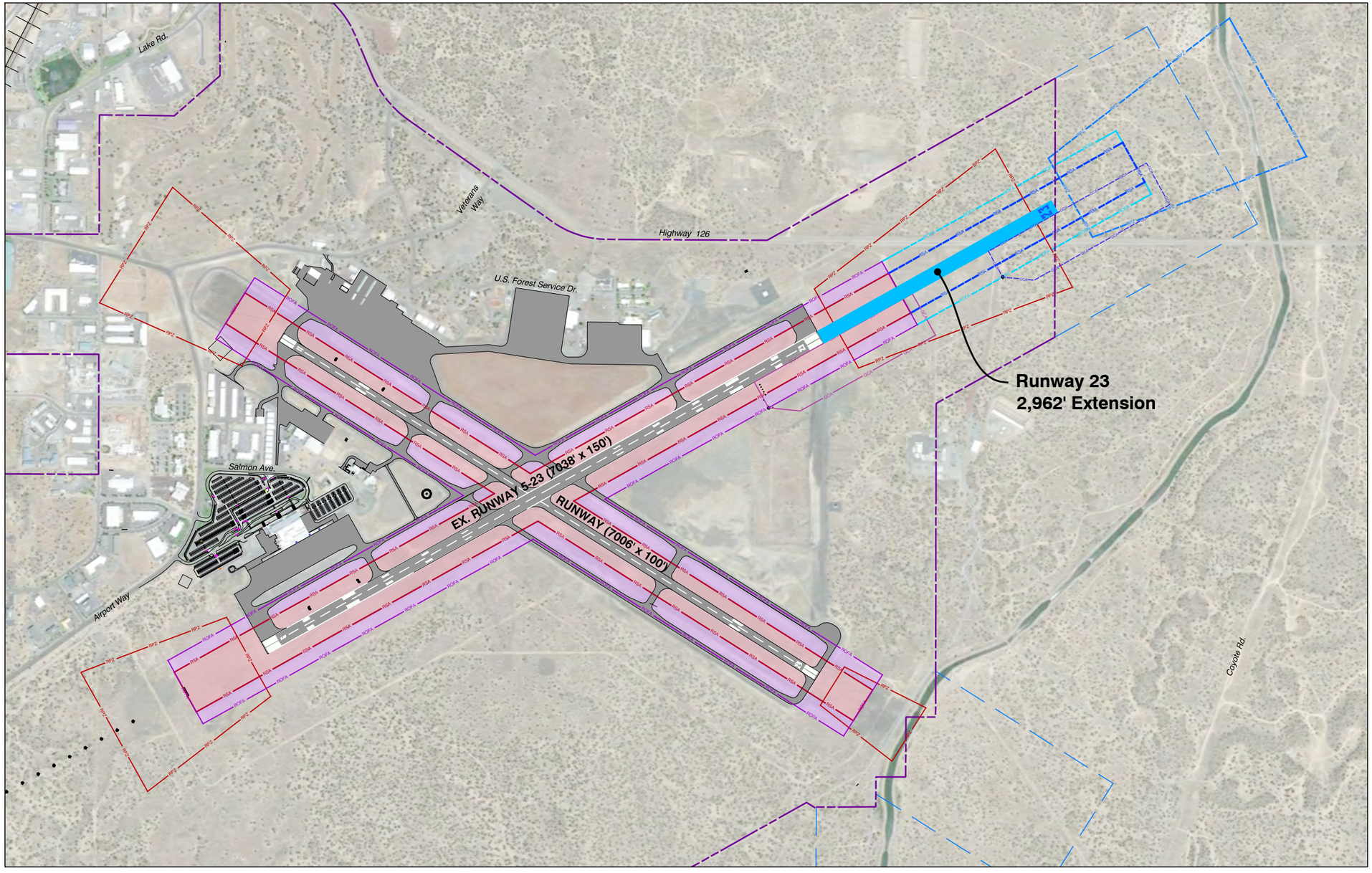
LEGEND

- RDM Property Boundary
- Avigation Easement
- Future Runway Extension
- Runway Safety Area (RSA)
- Future RSA
- Runway Object Free Area (ROFA)
- Future ROFA
- Runway Obstacle Free Zone (OFZ)
- Glide Slope Critical Area (GCA)
- Localizer Critical Area (LCA)
- Runway Protection Zone (RPZ)
- Future RPZ
- Runway Visibility Zone (RVZ)

N

0' 600' 1,200'

Figure 3-8
RUNWAY EXTENSION - SPLIT



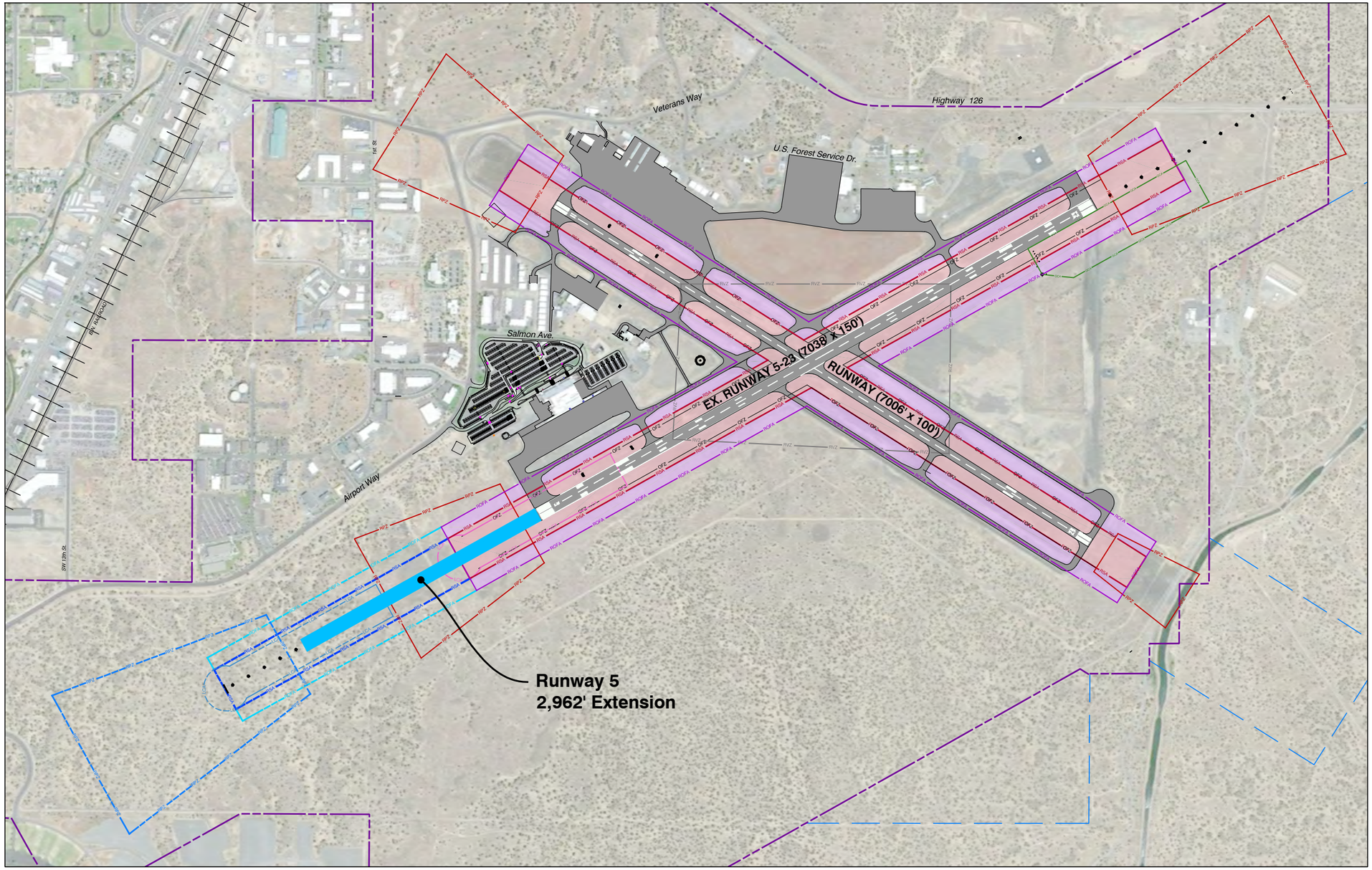
LEGEND

- RDM Property Boundary
- Avigation Easement
- Future Runway Extension
- Runway Safety Area (RSA)
- Future RSA
- Runway Object Free Area (ROFA)
- Future ROFA
- Glide Slope Critical Area (GCA)
- Future GCA
- Localizer Critical Area (LCA)
- Runway Protection Zone (RPZ)
- Future RPZ

N

0' 600' 1,200'

Figure 3-9
RUNWAY EXTENSION - EAST



LEGEND

- RDM Property Boundary
- Avigation Easement
- Future Runway Extension
- Runway Safety Area (RSA)
- Future RSA
- Runway Object Free Area (ROFA)
- Future ROFA
- Glide Slope Critical Area (GCA)
- Localizer Critical Area (LCA)
- Future LCA
- Runway Protection Zone (RPZ)
- Future RPZ

N

0' 600' 1,200'

Figure 3-10
RUNWAY EXTENSION - WEST

Airfield pavements strengths are detailed in **Chapter 1 Airport Inventory**. The aircraft types that currently operate at the airport are under the pavement strength limits for their respective areas on the airfield. However, as the airline fleet transitions away from regional jets to narrow body aircraft (B737 and A319), the pavement ratings will be exceeded. Pavement strength ratings are not necessarily a limit, but rather a design rating. That means aircraft weighing over the design rating will not cause the pavement to immediately fail, but with continued use, the life cycle of the pavement will be reduced. When the Airport does see these larger narrow body airline aircraft increasing in frequency at the airport, pavement strengthening projects should be studied.

INSTRUMENT APPROACHES AND DESIGN SURFACES

Instrument approaches in effect at RDM are described in the **Chapter 1 Airport Inventory**. A summary of the lowest minimum approach procedures are included in **Table 3-11**. The glide slope antenna, localizer antenna and medium intensity approach lighting systems (MALSRs) facilities make up the ILS. This system supports precision instrument approaches to Runway 23. More discussion on these facilities is provided in the Airside Facilities Section of **Chapter 1**.

Table 3-11. Lowest Minimums – Instrument Approach Procedures

Approach Procedures	Visibility (NM)	Descent Minimums (Feet)
ILS OR LOC RWY 23	½	200
RNAV (GPS) RWY 11	7/8	250
RNAV (GPS) Y RWY 05	¾	250
RNAV (GPS) Z RWY 29	1	286

There are three principal standards used to protect the flight corridors to and from runways:

- ✓ Title 14 of the Code of Federal Regulation, Part 77, *Safe, Efficient Use, and Preservation of Navigable Airspace* (Part 77)
- ✓ FAA Order 8260.3C, United States Standard for Terminal Instrument Procedures (TERPS)
- ✓ Threshold siting surfaces (TSS) described in AC-13A

Part 77 and TSS deal with runway threshold location and compatible land use and are used in airport planning. TERPS surfaces deal with instrument procedure development and are not commonly used in airport planning. The TERPS instrument departure surface is cross-referenced as a TSS in AC-13A.

Part 77 imaginary airspace surfaces are determined by the runway type and the type of instrument approach procedure (e.g. visual, non-precision, and precision). Part 77 surfaces are notification surfaces designed to identify and determine obstructions to air navigation. They are advisory, not regulatory; however, Oregon State Code (ORS) 836.530 provides regulatory authority for the State to enforce the standards. Penetrations to Part 77 surfaces can make it difficult for airports to extend or relocate runways, or to add new instrument procedures.

TERPS surfaces are determined by the type of instrument approach procedure (e.g. ILS, global positioning system [GPS], VHF Omnidirectional Range [VOR]). TERPS surfaces are regulatory, and penetrations to TERPS surfaces will result in the modification or cancelation of an instrument approach procedure.

TSS, also known as obstacle clearance surfaces, are determined by the type of instrument procedure and critical aircraft on each runway, and the visibility minimums of the lowest instrument approach. TSS apply to both approach and departure ends of the runway, and determine the location of the runway thresholds. Penetration of TSS will require modification of departure climb gradient for penetrations to departure TSS, and/or relocation of landing thresholds or reduction in approach procedure capability for penetrations to approach TSS. Airspace surfaces are drawn and analyzed as part of the ALP set development.

At this time, an upgraded approach to runway end 5 that supports LPV approach capabilities, similar to the localizer and glideslope of an instrument landing system (ILS) approach into runway end 23, is under consideration.

RUNWAY LIGHTING AND MARKING

Runway 5-23 is equipped with high-intensity runway edge lighting, runway end identifier lights, and a MALSR to the approach end of Runway 23.

Runway 11-29 is equipped with medium-intensity runway edge lighting and runway end identifier lights. No approach lighting system serves either end of Runway 11-29.

Runway 11-29 is marked with non-precision markings and Runway 5-23 is marked with precision markings in accordance with FAA AC 150/5340-1L, *Standards for Airport Markings*.

No major changes, other than periodic maintenance and updates, to the runway markings or lighting systems are recommended within the 20-year planning period.

RUNWAY SYSTEM CONCLUSION AND RECOMMENDATIONS

Runway 5-23 will need an extension to a length of about 10,000 feet to accommodate the future airlines passenger fleet. Alternative means of serving this fleet are explored in the next chapter.

3.2.4 TAXIWAY SYSTEM

Taxiways enable circulation of aircraft from the runways to terminal area facilities and between facilities within the terminal area. FAA design standards and guidelines intended to enhance safety and pilot situational awareness serve as the basis for this review of the adequacy of the RDM taxiway system.

RDM already has full-length parallel taxiways and regularly spaced exit taxiways serving both runways. Therefore, the focus in this master plan has been on refining the layout to meet current FAA design standards and address hot spots (defined below).

TAXIWAY DESIGN STANDARDS

As with runways, taxiways standards are based upon the critical aircraft expected to use each taxiway. The existing critical aircraft are the E175 for Runway 5-23 and the Q400 for Runway 11-29. The E175 is in TDG 3 and the Q400 in TDG 5. Due to the higher TDG of the Q400 and the Q400 operating on both runways, TDG 5 is the existing design standard. As mentioned in section **3.2.2 Airfield Design,** a taxiway construction project for Fiscal Year 2018 will change the connector taxiways of Runway 11-29 to TDG 4 to allow the Q400 to continue operating at RDM until the Q400 is no longer in service and while the future critical aircraft changes to the A319. The A319 is in TDG 3 and will dictate future taxiway design standards. Once the Q400 is no longer in service, the parallel taxiways serving both runways (Taxiway F, G, and C) and all connector/exit taxiways should be designed to accommodate TDG 3. Taxiway standards are shown in **Table 3-11**.

Table 3-11. Taxiway Standards

Taxiway Design Group	Width	Taxiway Edge Safety Margin	Shoulder Width
TDG 5	75	15	30
TDG 4*	50	10	20
TDG 3*	50	10	20
**: Please see AC 150/5300-13A for differences in taxiway fillet dimensions.*			

TAXIWAY GEOMETRY ANALYSIS

AC-13A includes taxiway design recommendations for reducing the potential for runway incursions. The section that follows provides a review of those design standards relevant to the current airfield configuration.

Runway Incursions:
Runway incursions are events when an aircraft or vehicle inadvertently proceeds onto an active runway without air traffic control clearance.

DIRECT ACCESS TO RUNWAYS

One of the ways to reduce runway incursions is to require pilots taxiing aircraft to make distinct, purposeful turns between leaving an apron area and accessing a runway. That is to say, there should not be direct straight-line taxiways leading from an apron to a runway and taxiway turns should be right-angle connectors An example of the direct access issue and resolution is shown below in **Figure 3-11**. An example of a right-angle connector is shown in Figure 3-12. There are several areas on the Airport where direct access currently occurs. These areas are listed below and identified on **Figure 3-13.**

- ✓ Taxiway A (north side): a taxiway centerline stripe leads directly from a tiedown apron across Taxiway C to the threshold for Runway 11

- ✓ Taxiway A (south side): a taxiway centerline stripe leads directly from a row of box hangars across Taxiway G to the threshold for Runway 11
- ✓ Taxiway E: a taxiway centerline stripe leads directly from the commercial apron to the threshold for Runway 5
- ✓ Taxiway H: a taxiway centerline stripe leads directly from the commercial apron to Runway 5-23

Figure 3-11. Example of Direct Access Issue and Resolution

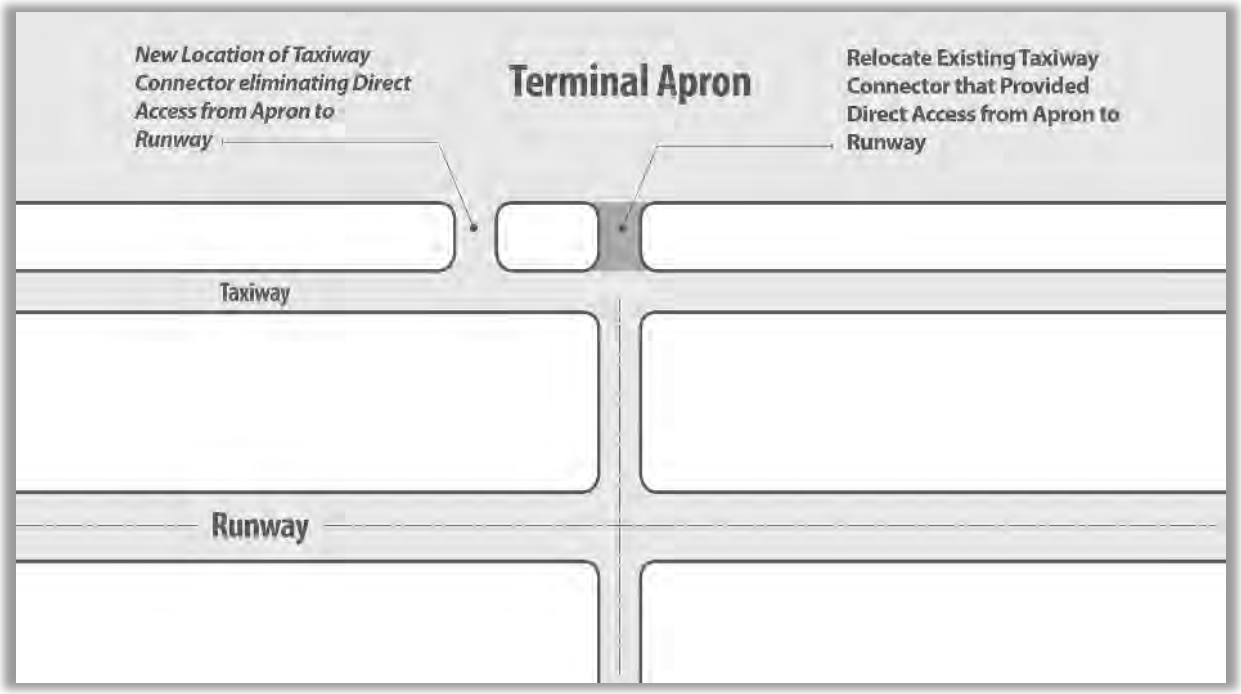
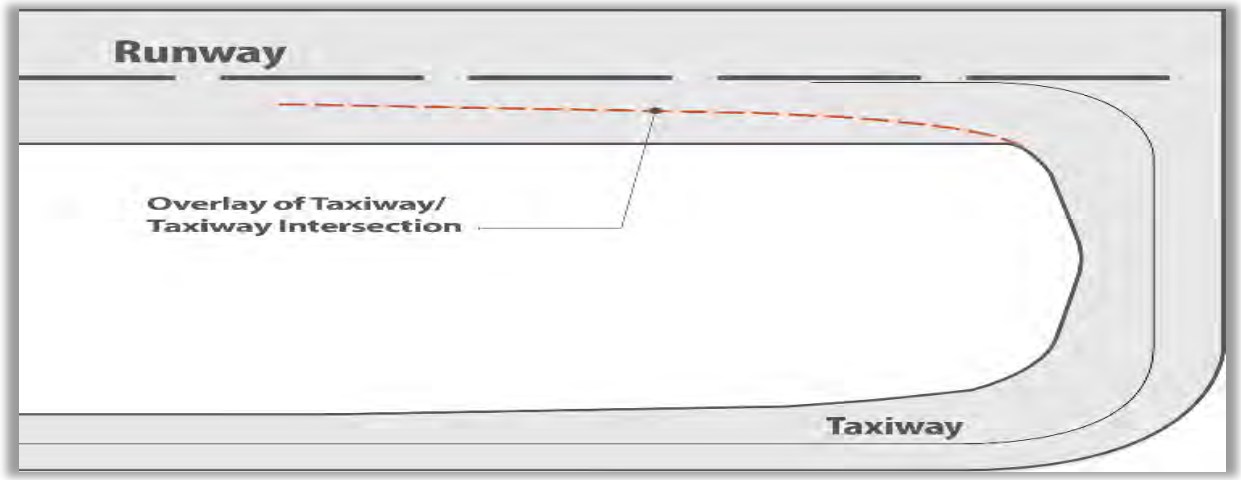


Figure 3-12 Example of Right-Angle Connector



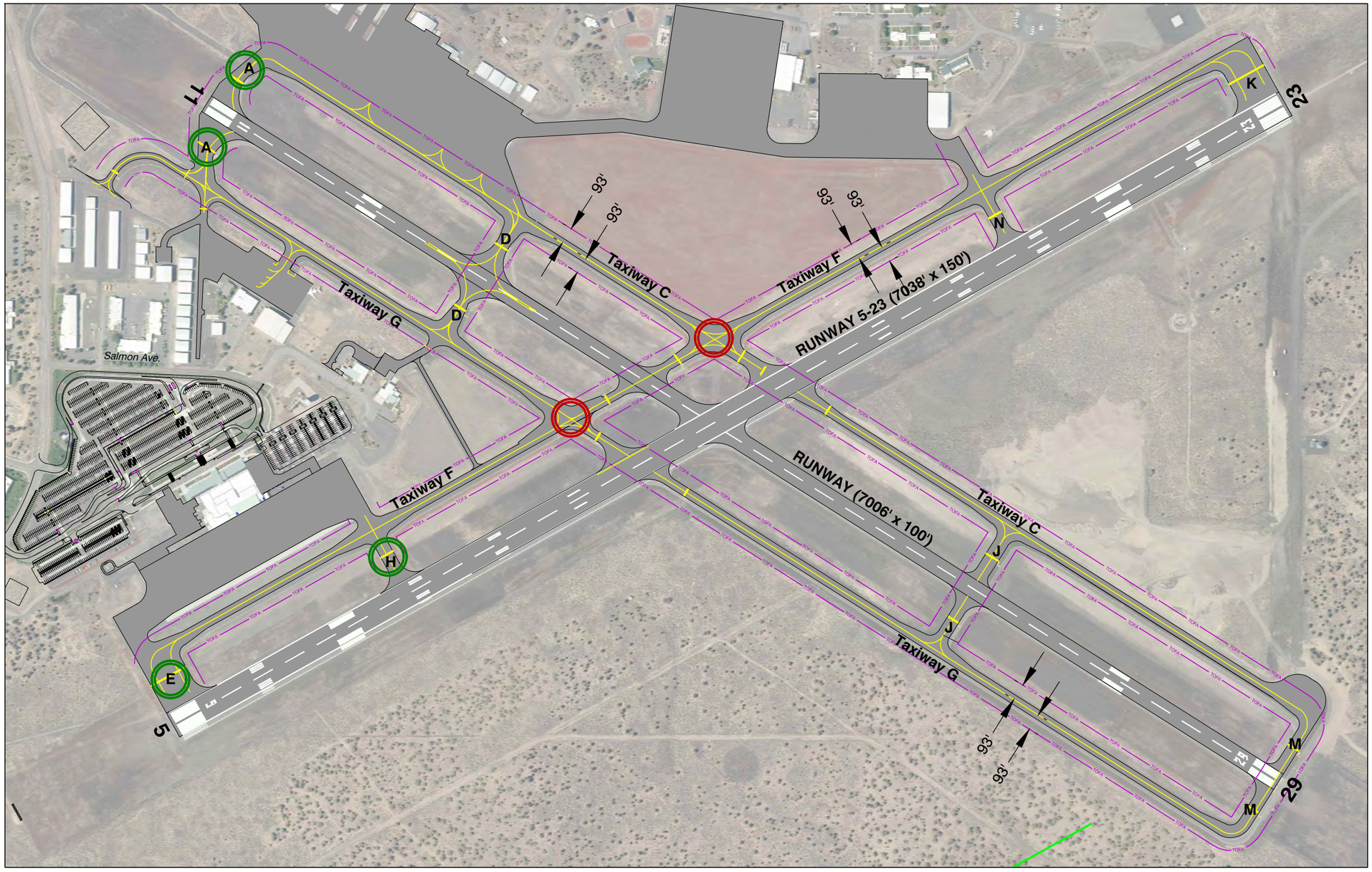


Figure 3-13
TAXIWAY DESIGN

COMPLEX INTERSECTIONS

The AC-13A also recommends simplifying complex taxiway intersections. The AC defines complex taxiway intersections as those with more than three nodes (more than three possible directions of travel). No taxiway junctions on the RDM airfield are complex intersections. No changes are required.

HOT SPOT ANALYSIS

Two areas of the airfield have been designated by the FAA as Hot Spots: the Taxiway C intersection with Taxiway F, and the Taxiway F intersection with Taxiway G. Ultimately the FAA will likely require proposed resolutions to these two areas to reduce the risk of runway incursions. **Chapter 4 Alternatives Analysis** will include analysis of potential designs.

Hot Spot:
A hot spot is defined as a location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary.

RUNWAY END CONNECTORS

Another design standard introduced in AC-13A was intended to reduce or eliminate wide expanses of pavement, especially at runway crossing locations. Until recently Taxiway E and K had dual entrance taxiways without “no taxi” islands painted on the pavement. This nonstandard condition was corrected in 2017.

RIGHT-ANGLE TAXIWAY CONNECTORS

The AC recommends that all taxiway connections to runways be 90-degree angles, except for high speed exit taxiways and parallel taxiways associated with one runway crossing another runway. The north and south segments of Taxiway A are both oblique-angled taxiways that do not fall into either of the exception categories just discussed. The modifications to these two segments described above under the ***Direct Access to Runways*** section will provide the recommended right-angle taxiways. An example of a right-angle taxiway connector is shown in **Figure 3-12**.

EXIT TAXIWAY ANALYSIS

The location of exit taxiways can impact a runway’s capacity. The quicker an aircraft can slow to a safe speed and exit the runway, the sooner another can land or takeoff. AC-13A states that, in general, each 100-foot reduction of the distance from the threshold to the exit taxiway reduces the runway occupancy time by approximately 0.75 second for each aircraft using the exit. Conversely, the opposite is true as well, each every 100-foot increase in the distance from the threshold to the exit taxiway increases the runway occupancy time by approximately 0.75 second for each aircraft using the exit. **Table 3-12** below contains the exit taxiway distance from landing threshold for each of the four runways and the corresponding percentage able to use each exit taxiway. The information below is for dry runways only. When wet, the percent of aircraft able to use each taxiway will be reduced as the landing lengths will be increased. Since RDM does not currently and is not forecast to experience a capacity or delay problem, there is no need to adjust the current locations of these exit taxiways.

3-12. Taxiway Exit Utilization (Dry)					
Runway 23					
		Percent Able			
Taxiway	**Distance**	**Small Single Engine**	**Small Twin Engine**	**Large**	**Heavy**
N	1,660'	40%	0%	0%	0%
C	3,085'	100%	39%	0%	0%
G	4,070'	100%	98%	8%	0%
H	5476'	100%	100%	75%	24%
E	6850'	100%	100%	95%	90%
Runway 5					
		Percent Able			
Taxiway	**Distance**	**Small Single Engine**	**Small Twin Engine**	**Large**	**Heavy**
H	1,450'	39%	0%	0%	0%
G	2,800'	95%	35%	0%	0%
C	3,750'	100%	89%	5%	0%
N	5,275'	100%	100%	40%	5%
K	6,850'	100%	100%	95%	90%
Runway 11					
		Percent Able			
Taxiway	**Distance**	**Small Single Engine**	**Small Twin Engine**	**Large**	**Heavy**
D	1,700'	80%	1%	0%	0%
F	2,750'	100%	35%	0%	0%
J	5,000'	100%	100%	49%	9%
M	6,850'	100%	100%	95%	90%
Runway 11					
		Percent Able			
Taxiway	**Distance**	**Small Single Engine**	**Small Twin Engine**	**Large**	**Heavy**
J	1,950'	84%	1%	0%	0%
F	4,050'	100%	98%	8%	0%
D	5,100'	100%	100%	49%	9%
A	6,850'	100%	100%	95%	90%
**Small Single Engine = 12,000 lbs or less* *Small Twin Engine = 12,500 lbs or less* *Large = 12,500 lbs to 300,000 lbs* *Heavy = Greater than 300,000 lbs*					

TAXIWAY PAVEMENT STRENGTH

As discussed under the **Runway Pavement Strength** section above, the forecast airline fleet transitions to narrow body aircraft will exceed the existing pavement strength ratings. When the Airport does see these larger narrow body airline aircraft increasing in frequency at the airport, pavement strengthening projects should be studied.

TAXIWAY SYSTEM CONCLUSION AND RECOMMENDATIONS

The existing taxiway system serves the RDM Airport users well. No major inadequacies exist for the current airfield configuration or activity levels. Some areas are identified below that do not comply with the latest geometry guidance from the FAA. Those areas are analyzed in **Chapter 4** and depicted with solutions on the ALP.

- ✓ Taxiway A (north side): add pavement and restripe to provide a right-angle taxiway

- ✓ Taxiway A (south side): add pavement and restripe to provide a right-angle taxiway
- ✓ Taxiway E: replace existing taxiway segment between the apron and Taxiway F with a new connector taxiway located about 400 feet east of the existing taxiway
- ✓ Taxiway H: replace the existing taxiway segment between the apron and Taxiway F with a new connector taxiway located about 175 feet east of the existing taxiway
- ✓ Taxiway C hot spot: shift segment that crosses Runway 5-23 to the east
- ✓ Taxiway G hot spot: shift segment that crosses Runway 5-23 to the west
- ✓ Runway exit taxiways: retain current locations
- ✓ Pavement strength: evaluate pavement strength requirements when narrow body airline aircraft begin regularly scheduled operations at the Airport

As presented below in the **General Aviation Facilities** section, if the Airport moves forward with developing a new east field GA complex, the airport could ultimately benefit from a full-length parallel taxiway to the east of Runway 5-23. The existing GA facilities at RDM are constrained and a full-length parallel taxiway east of Runway 5-23 will provide access to the airfield for a new GA complex and allow for future airport development on property that is adjacent to the parallel taxiway.

Figure 3-13 (above) highlights non-compliant areas of the airfield.

3.2.5 GENERAL AVIATION FACILITIES

Growth in GA based aircraft at the Airport is contingent upon adequate facilities and easy developable areas. Currently, the general aviation facilities at the airport are somewhat constrained. With a few exceptions, the easily developable areas with access to the airfield are occupied. The remaining areas available can be used for infill hangar development in an effort to accommodate some of the projected 33 new based aircraft at the Airport, which are forecast within the 20-year planning period.
Figure 3-14 depicts conceptual hangar infill sites and one new development area on the north side of the airfield.

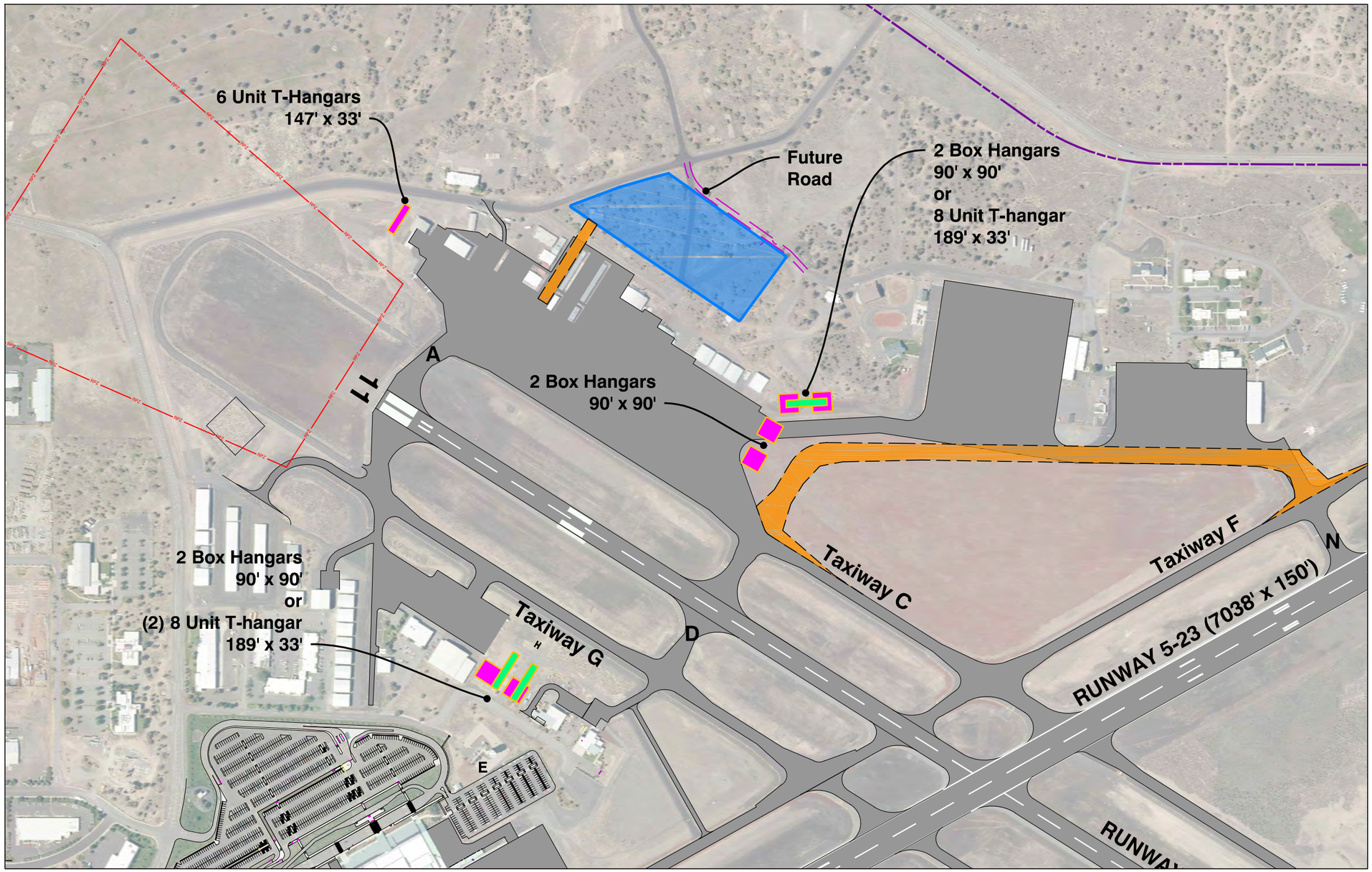
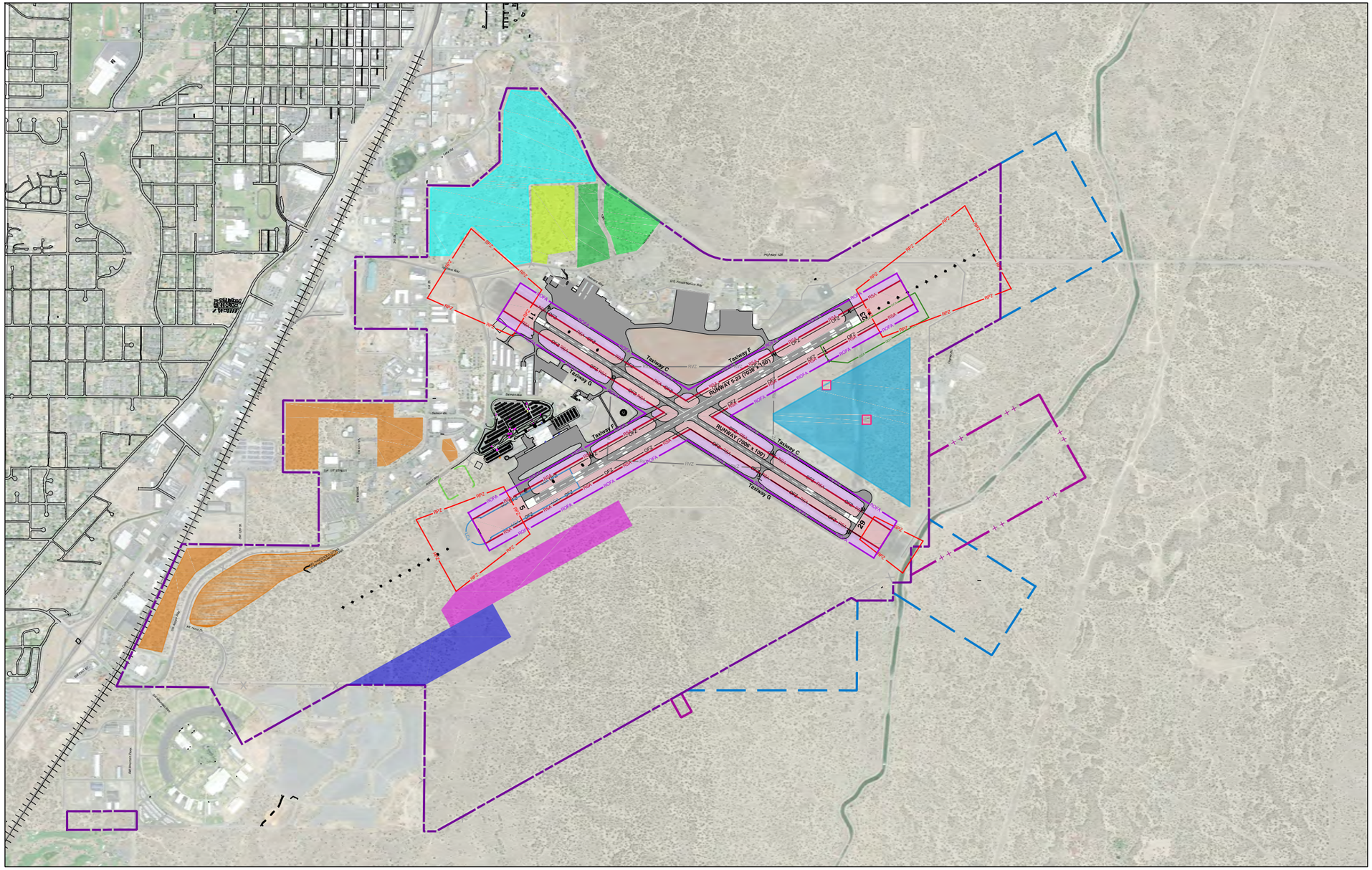


Figure 3-14
HANGARS



LEGEND

- RDM Property Boundary
- Future Property Acquisition
- Avigation Easement
- Aviation Related Development
- Nonaviation Related Development
- Emergency Planning Reserve
- Rental Car Facilities
- Long Term Parking Phase 1
- Long Term Parking Phase 2
- Remote Parking
- Government Facilities
- Runway Obstacle Free Zone (OFZ)
- Glide Slope Critical Area (GCA)
- Localizer Critical Area (LCA)
- Runway Visibility Zone (RVZ)

N

0’ 1,000’ 2,000’

Figure 3-15
DEVELOPMENT AREAS

Chapter 2 Aviation Activity Forecast identifies an increase of 5 single-engine aircraft, 24 jet aircraft, 6 helicopters, and 5 other type aircraft relocating to the Airport within the 20-year planning period. Some of these aircraft could be located in the infill sites as shown in **Figure 3-14**, however, in order to accommodate all 33 aircraft, at least one new GA development area should be planned.

To protect for GA development beyond the 20-year planning period or growth exceeding this plan's forecast, an aviation reserve area is proposed in the east quadrant of the airport between the two runways. **Figure 3-15** shows this location. If another Fixed Base Operator (FBO) is looking to serve the Airport, this would be a suitable location. However, development in this area will be costly due to the lack of infrastructure and the high cost of site preparation.

Variations and alternative configurations of the hangar infill sites and GA development area will be further explored in the **Chapter 4 Alternatives Analysis**.

Itinerant operations are also relevant to this master plan. The Airport is forecast to experience an increase of approximately 3,000 itinerant general aviation operations within the 20-year planning period. The 3,000 annual operations equate to approximately 8 operations per day, or 4 aircraft visiting the airport. The existing FBO can accommodate the increase as currently configured.

Additional support facilities are discussed later in this chapter.

CONCLUSIONS AND RECOMMENDATIONS

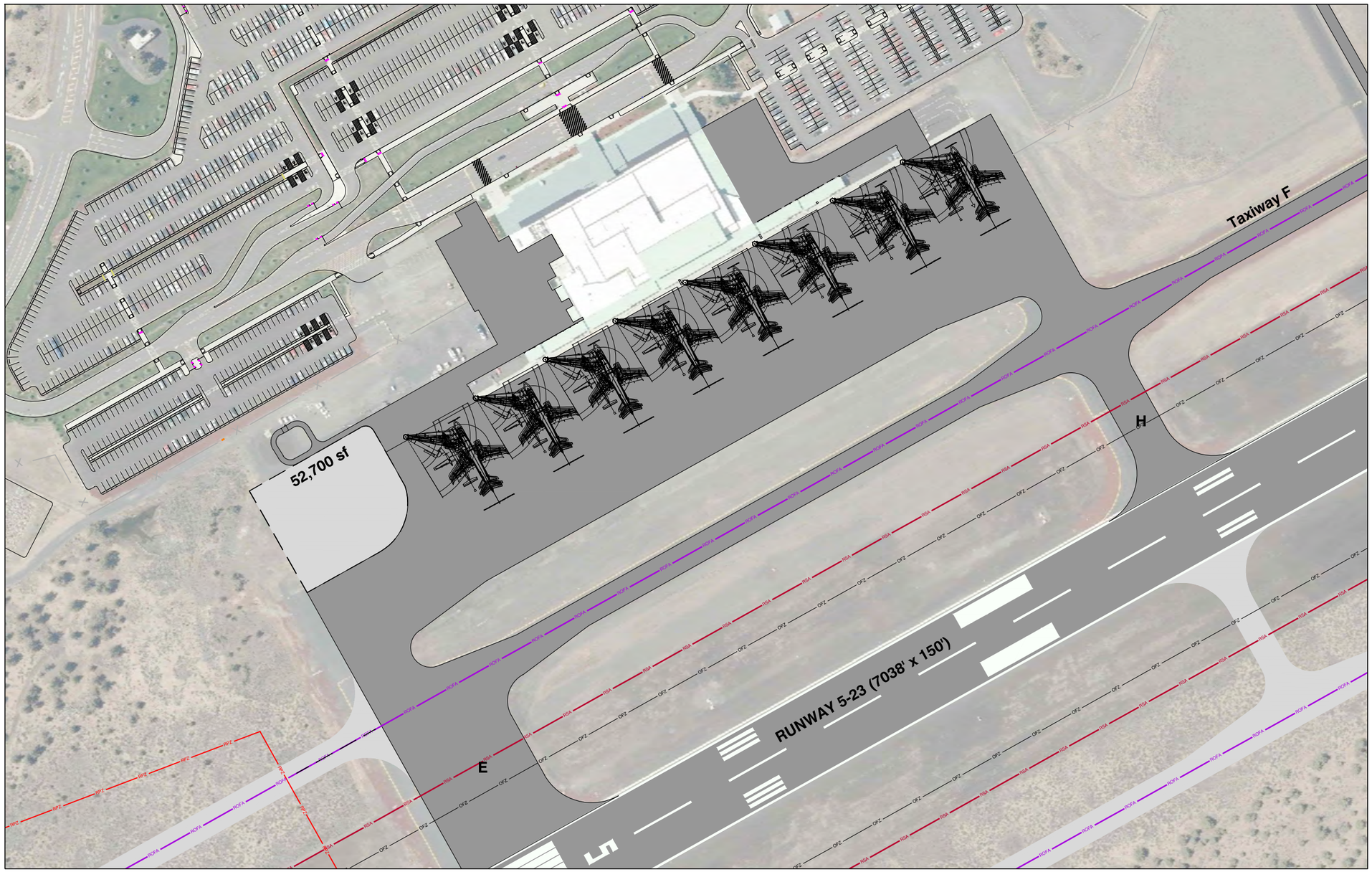
To accommodate the forecast increase in general aviation based aircraft, the following facility improvements should be made:

- ✓ Identification of hangar site alternatives
- ✓ Locate long-term general aviation development area

PASSENGER TERMINAL APRON

The passenger terminal apron is approximately 1,528 feet wide and 297 feet deep (453,816 square feet). Taxiway connectors H and E provide access to parallel taxiway F and Runway 5-23.

The apron accommodates seven aircraft parked at terminal gate positions and one additional parking position. Based on current airline schedules, up to eight aircraft each day are scheduled to remain overnight (RON). As airline operations increase and schedules change this number may increase to 10 RON aircraft. Given that the passenger terminal apron is currently at capacity for RON aircraft, the airport should plan for an apron expansion as soon as practical. **Figure 3-16** illustrates a conceptual apron expansion to accommodate the projected RON demand. Specific locations and alternatives will be explored in the following **Chapter 4 Alternatives Analysis**.



LEGEND

- RDM Property Boundary
- Active Airfield Pavement
- Future Airfield Pavement
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (OFZ)

N

0' 100' 200'

Figure 3-16
TERMINAL AND AIRLINE APRON EXPANSION

3.3 LANDSIDE FACILITY REQUIREMENTS

3.3.1 PASSENGER TERMINAL ROADWAY

With the advent of Transportation Network Companies (TNC) such as Uber and Lyft, the Airport has identified a need for a separate curbside area to consolidate TNC vehicles dropping off and picking up passengers. **Chapter 4 Alternatives Analysis** will include various locations and options for this service.

3.3.2 PASSENGER TERMINAL PARKING AREA – PUBLIC PARKING

At RDM public parking is a single-level uncovered parking lot that accommodates both short- and long-term parking. As of 2017, the terminal parking lot accommodates 1,083 vehicles. This analysis compares parking spaces against enplaned passengers for forecast scenarios to determine whether the parking facilities will require expansion.

ACRP Report No. 25: Airport Passenger Terminal and Design recommends that public parking supply should range from 900 to 1,400 spaces per million enplaned passengers. Based on this guidance, total public parking spaces at RDM exceed the recommended range for current enplanement levels and fall within the recommended range through 2036. However, based on first-hand information supplied by the Airport, the parking lot has exceeded capacity several times in the last year. Given this information, it appears the suggested ratio of 900 to 1,400 spaces per million enplaned passengers is not appropriate for RDM.

Airports Cooperative Research Program (ACRP):
An industry-driven, applied research program managed by the Transportation Research Board (TRB) that develops near-term, practical solutions to problems faced by airport operators.

The Airport has reached parking capacity with current enplaned passenger levels of 322,176. A ratio of 330 parking positions for every 100,000 enplaned passengers is based on capacity being reached in 2016 plus a 10 percent buffer. The Airport's parking lot requires expansion as soon as practical to meet existing demand, as well as projected future growth. Based on the airport-specific ratio of 330:100,000 enplanements, RDM should plan to accommodate an additional 1,100 parking spaces to accommodate demand through the 20-year planning period, shown in **Table 3-13**. The parking expansion can be accomplished with phased development, allowing the Airport to develop smaller portions of the parking expansion as needed. Auto parking areas are shown on **Figure 3-17**. Specific locations and alternatives will be explored in the following **Chapter 4 Alternatives Analysis**.

LEGEND

- RDM Property Boundary
- Area 1 - Hourly & Premium Long-Term Parking
- Area 2 - Original Employee Parking Reduced
- Area 3 - Expanded Vendor Parking as Necessary
- Area 4 - Alternative Employee Parking Expansion

Note: Layout assumes additional off-site long term parking lot. Employee parking would move to off-site parking lot as necessary.

N

0’ 100’ 200’

Figure 3-17
AUTO PARKING AREAS

Table 3-13. Recommended Parking Improvements					
	2016	2021	2026	2031	2036
Enplanements	322,176	391,450	484,300	575,350	661,600
Parking Required[3]	1,083	1,292	1,598	1,899	2,183
Capacity (Deficiency)	0	(209)	(515)	(816)	(1,100)

ACRP recommends 1,000 feet as the maximum walking distance from a parking space to the terminal building before shuttle service should be offered. The farthest point at the northwest end of the parking lot is approximately 1,000 feet, while the farthest point at the southwest end is 1,250 feet. The far limits of the existing parking area are within the limits of pedestrian travel; however, the long walk from the southwest end of the parking lot is farther than desirable.

EMPLOYEE/TENANT PARKING

The employee and tenant parking lot is immediately adjacent to the terminal building on the southwest side and accommodates 195 vehicles. Currently the airport has issued 277 employee and tenant parking passes. If conditions dictate all employees must be present on the same day, the parking lot will be over capacity. As the Airport continues to experience record growth in enplaned passengers, employee and tenant numbers will grow. Additional parking for employees and tenants should be identified. For reference, the current ratio of parking passes allocated is 85.9 passes per 100,000 enplanements. Projecting this ratio out with the forecast enplanements results in a requirement of approximately 500 employee and tenant parking spaces in 20 years. Specific locations and alternatives for employee parking will be explored in the following **Chapter 4 Alternatives Analysis**.

3.3.3 RENTAL CAR FACILITIES

Alamo, Avis, Budget, Enterprise, Hertz, and National car rental agencies offer rental vehicles at the Redmond Airport. Vehicles are picked-up and dropped-off in a 224-space parking lot located immediately northwest of the terminal building. The Airport has near-term development plans for an offsite rental car facility that will include cleaning, storage, and a fueling station. The rental car agencies plan to continue using the 224 parking spaces next to the terminal building for the pick-up and return location. Long-term storage and support services will be accomplished at the future offsite location. Specific locations and alternatives will be explored in the following **Chapter 4 Alternatives Analysis**.

[3] Ratio of parking spots to enplanements is 330 parking positions for every 100,000 enplanements and based off of 2016 enplanements and assumption of a full parking lot with a 10% buffer. Ratio was then applied to forecast enplanement numbers.

3.3.4 NON-AVIATION REVENUE DEVELOPMENT

The consultant conducted an analysis to identify the facility requirements for non-aviation businesses that complement the airport operations and are appropriate for the Redmond market, given local economic conditions. The analysis in its entirety is contained in the Appendix J. A summary of recommended infrastructure upgrades to help facilitate the revenue development are described below.

Non-Aviation Development Target Industries:

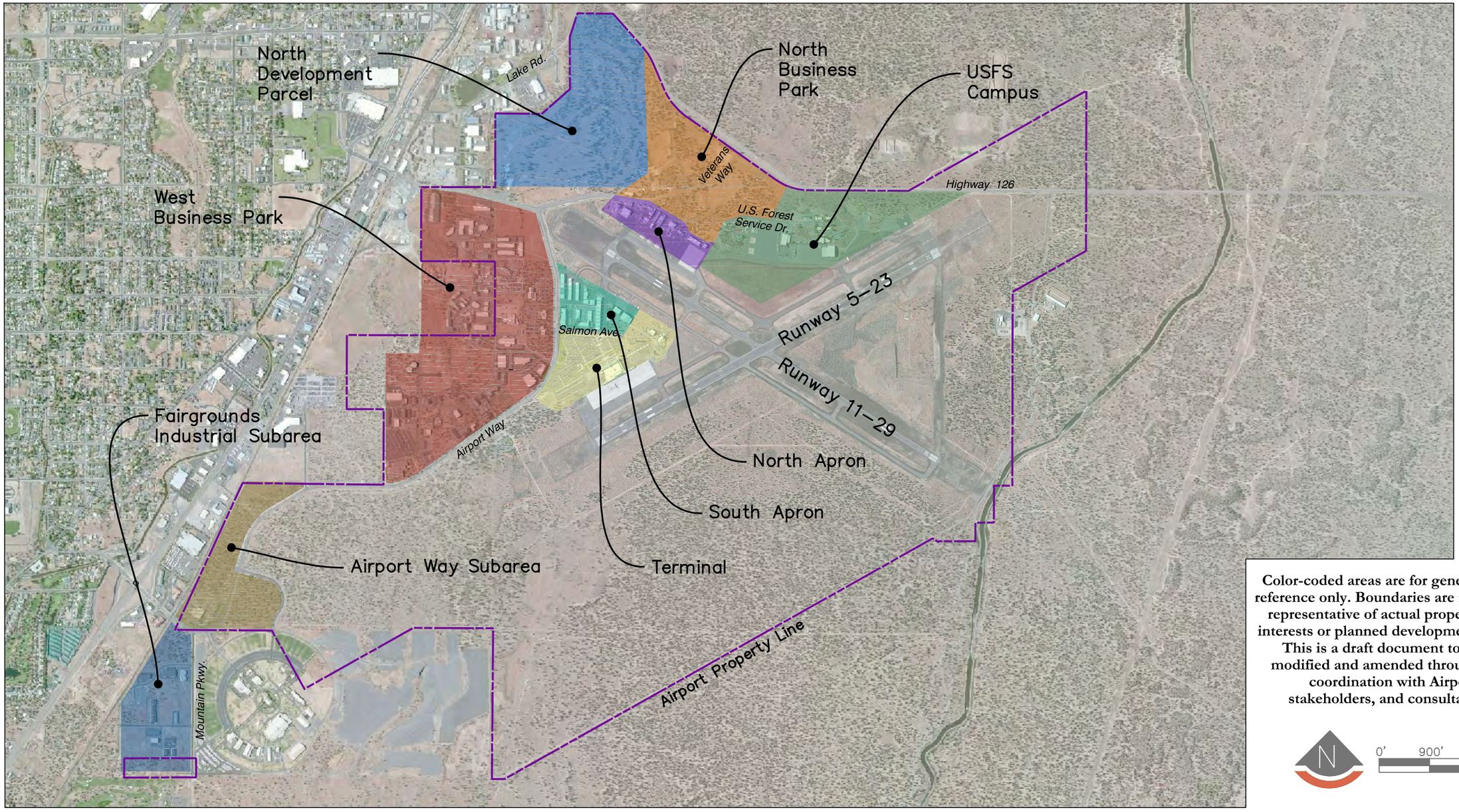
- ✓ Accommodation and Food Services
- ✓ Speculative Light Industrial Buildings
- ✓ Construction
- ✓ Manufacturing
- ✓ Wholesalers and Warehousing
- ✓ Public Administration

RECOMMENDED UPGRADES

The following recommendations are offered based on a comparison of the existing utility and transportation facilities and the corresponding demands of the target industries. **Figure 3-18** depicts the nine subareas that are the focus of this section. In all subareas, sewer lines would need to be extended from nearby mains and storm water management facilities would need to be constructed in conjunction with site development. Local streets should be constructed to the local industrial street standard (40-foot paved width with sidewalks) to accommodate necessary truck access for most of the target industry sectors. Improved access to Oregon Route 126 will eventually be required to accommodate future growth with any of the target industry sectors and will likely include added turn lanes and traffic signals. Turn lanes at major intersections may also be needed to serve future development. Necessary improvements would be identified with the preparation of traffic impact studies for specific development proposals.

Specific upgrade requirements for each subarea are noted below.

- ✓ North Development Parcel Subarea: The existing water lines between Lake Road and Veterans Way are not well-connected. A loop system is recommended throughout the subarea to maintain necessary flows for high-demand industrial users. This subarea currently has no existing transportation infrastructure and will need to rely on the construction of new streets. Transportation improvements associated with the Airport Runway Extension will eventually provide access through the subarea. Local streets that provide direct site access will need to be constructed to local industrial standard (40-foot paved width with sidewalks).
- ✓ North Business Park Subarea: The existing water lines between Veterans Way and OR 126 are not well-connected. A loop system is recommended to supply necessary flows for high-demand users. The local streets (10th Street, Sisters Avenue, Ochoco Way) need to be upgraded to current local industrial standard (40-foot paved width with sidewalks). Veterans Way needs to be upgraded to meet the major collector standard (36-foot paved width with sidewalks). At the Veterans Way intersection with OR 126, an eastbound right-turn deceleration lane on OR 126 may be necessary as volumes increase, and separate left- and right-turn lanes may be necessary on the Veterans Way approach. Left-turn lanes on Veterans Way at other intersecting roadways may also be needed.



Color-coded areas are for general reference only. Boundaries are not representative of actual property interests or planned development. This is a draft document to be modified and amended through coordination with Airport, stakeholders, and consultant.

Figure 3-18
Development Areas

- South Apron Subarea: Salmon Avenue needs sidewalks on the north side of the street.
- West Business Park Subarea: Airport Way and Veterans Way need sidewalk infill, primarily along undeveloped property.
- Airport Way Subarea: Airport Way needs sidewalk infill on both sides of the street. Mt. Hood Drive needs sidewalks along both sides of the street. Wickiup Avenue needs to be constructed or upgraded to current local industrial standard (40-foot paved width with sidewalks).
- Fairgrounds Industrial Subarea: Airport Way needs sidewalks on the south side of the street.

3.4 TERMINAL AREA FACILITIES

The existing terminal is a relatively new facility constructed in 2010 to meet the requirements of the community in support of a modernization program that would both attract travelers from the region, including Redmond, and provide a better operating environment for the airlines.

3.4.1 AIRPORT ACTIVITY

The focus of the terminal area facility master plan is to develop additional capacity to meet current trends in airline operations reflected in the activity forecast. A migration to larger aircraft over the planning period is the primary trend. Airlines have been in the process of retiring smaller aircraft, the 35- to 50-seat jet aircraft that have served commuter operations since the mid-1990s, and replacing them with larger 65- to 90-seat aircraft. This trend has also included larger narrow-body aircraft that serve small hub destination airports on specific high demand and seasonal flights.

This section addresses terminal area facility improvements over the next 20 years. Level of service modifications and upgrades to these facilities areas can be built as a series of projects that meet specific needs during the period. **Table 3-14** provides the basis of design for this development, a summary of major airline peaking activity for 2016 and 2036 derived from the aviation forecasts. These peaking characteristics define the operation and are used to calculate operations-based program requirements.

Table 3-14. Airline Operations Peaking Characteristics – 2016 – 2036 Forecast		
Airline Activity Component	**Existing (2016)**	**Forecast (2036)**
Aircraft		
Aircraft	CRJ-700	B737/A319
Average Aircraft Seat Size	69	119
Load Factor	84%	84%
Passengers		
Total Passengers [Enplaned + Deplaned]	644,352	1,323,200
Peak Month Passengers - Enplaned	32,395	66,524
Peak Month Passengers - Enplaned - Percent	10.10%	10.10%
Peak Month Passengers - Deplaned	32,395	66,524
Peak Month Passengers - Deplaned - Percent	10.10%	10.10%
Total Average Day Passengers [Enplaned + Deplaned]	1,765	3,625
Total Peak Day Passengers [Enplaned + Deplaned]	2,324	7,122
Total Peak Hour Passengers	289	1,060
Peak Hour Enplaned Passengers [PHEP]	208	580
Peak Hour Deplaned Passengers [PHDP]	144	560
Enplanements Per Departure [E/D] - Average Annual Day	58	105
Enplanements Per Departure [E/D] - Average Day of Peak Month	60	115
Aircraft Operations		
Total Annual Airline Operations	11,200	12,600
Peak Week Air Carrier Operations	290	414
Total Daily Operations	42	60
Total Daily Flight Departures	21	30
Source: Mead & Hunt Airline Activity Forecasts		

3.4.2 PASSENGER TERMINAL BUILDING

Airlines embarked on a program of consolidation and capacity constraint during and after the 2007–2009 recession. Capacity constraint served to move fuel-inefficient aircraft out of airline fleets, replacing them with aircraft that would provide both fuel savings and increased seating capacity. As the industry recovered and then began to grow, airlines have replaced commuter aircraft with larger narrow-body aircraft. Airport terminal facilities have been straining to meet the demands generated by the new aircraft for landside, terminal building, and ramp apron capacity.

The Redmond terminal building was designed for smaller commuter aircraft, those operating in the 50- to 70-seat range of seat capacity. It was also designed in a more traditional layout, in which a main departures hall serves as a waiting area, similar to a train station, where passengers await a boarding call and then proceed to their designated platform. In the airport terminal, tickets are lifted prior to entering the boarding corridor, which serves as the platform from which passengers are boarded onto the aircraft. These design elements place more limitations on capacity for passenger departures lounges than on other terminal components. One disadvantage to the current layout is that expansion requires moving other components. Expansion of the upper level concourse departures lounge is possible, and would have less impact on functional components, but that expansion is limited to either side, as moving into the ramp apron would reduce space required for larger aircraft.

While this layout has merit in a smaller terminal, it can be counterintuitive to travelers who prefer to be as close to their transport as possible prior to boarding. Proximity provides a sense of calm, as passengers can see their scheduled departure posted at the gate and be readily aware of any airline operations interruption that would require their response. It is more than information, though, as passengers in close physical proximity to their transport often believe they will have some control over responding to any disruption in their schedules.

The present terminal layout might have served the operation longer had the airline industry not evolved so quickly, creating additional demand on terminal buildings throughout the country as well as at Redmond. Terminal expansion in 2010 provided much needed space, which has allowed the facility to absorb an increase in demand at almost all functional components. Future growth forecast for Redmond will require more terminal space to meet passenger demand. Terminal area ramp apron space can be reconfigured to accommodate larger aircraft at more gates than the present six commuter gate hardstands. A summary of the building improvements identified for the planning period are listed by functional component in **Table 3-15**. The recommended areas, when complete, represent a program for the year 2036. Some components will take priority over others in phased development and are listed from higher to lower priority based on passenger demand and available capacity.

Table 3-15. Program Requirements Summary	
Second floor concourse and passenger departures lounges	An eight-gate reconfiguration of the second level concourse level including vertical circulation and relocated concessions and toilets. This development will be phased in smaller projects. Vertical circulation for the eight-gate development will be built in the first phase, requiring reconfiguration of the lower level departures lounge and concessions areas.
Ramp apron gate hardstands and passenger boarding bridges	A total of eight ramp apron gate hardstand positions, with corresponding passenger boarding bridges. The ramp apron area contains 243,205 square feet. Each hardstand position will accommodate the largest narrow body aircraft. The boarding bridges will be capable of handling EMB-145/CRJ-200 aircraft, larger commuter jets and up to B737-900Max/A321neo aircraft. These component areas and equipment will be phased in smaller projects over the 20-year period to 2036.
Concessions	Car rental, retail and gifts, food and beverage, goods, stock and cold storage on the non-secure and secure sides of the terminal. Concessions will also include a small, dedicated receiving and security screening area for all concessions stores delivered to the terminal building, plus a small office break room for the concessionaire.

Continued on the next page.

Table 3-15 - continued. Program Requirements Summary	
Departures/Ticket Hall	Ticket hall expansion will involve both ticketing facility and main concourse expansion; the former to meet current and near-term demand in airline ticket office space and greater ticket counter capacity to meet growth in demand, and the latter to meet increases in queueing and gathering of passengers in the main departures hall during seasonal peak travel. Given limits at the terminal curb and roadway, this space could initially be met by relocating some of the functions from the front of the departures hall. Toward the end of the planning period, this requirement can be met through ticket hall expansion and roadway relocation.
Outbound Baggage Make-up	The outbound baggage make-up facility will become constrained as more flights are added to the schedule, requiring more cart staging at the baggage make-up device. Expansion of this area will include an additional make-up device adjacent to the existing device.

Terminal programmatic requirements were identified and calculated for functional components only. **Table 3-16** lists program requirements based on the major components. Administration and ancillary area requirements are included as a percentage of the total programmed space. This includes facilities maintenance and services, workrooms, storage, and janitor closets. Mechanical and electrical support has been programmed as a percentage of the total additional programmed space above the 140,000-square-foot existing building. Other equipment space such as vertical circulation elevators, escalators, and stairs have been identified and included as line items in the program, as their footprints are quantifiable.

Table 3-16. Terminal Building Program Functional Components

Functional Component	Basis of Analysis	Capacity	Demand	Additional Requirements	Number of Processors
Entrance Hall	25 SF/Passenger	420	638	6,000 SF	N/A
Ticket Hall	Queue, Counter, ATO	10	15	5	15
Checked Baggage Screening	Screening Capacity	600 BPH	465 BPH	None	N/A
Outbound Baggage Make-Up	NB EQVFlights	3	8	5	2
Passenger Security Screening	150 Passengers/Hour	300	550	2	2
Passenger Departures Lounge	Peak Hour Seats	220	656	436	N/A
Second Level Concourse Corridor	Peak Hour Passengers	N/A	760	19,000	N/A
Second Level Concourse Toilets	Arriving Passengers	3 Fixt/Gate/Gender	48	48	N/A
Concessions	Individual Airport	N/A	12,800 SF	9,300 SF	N/A
Baggage Claim & Inbound Drop	Checked Baggage	2 NB EQA	4 NB EQA	2 NB EQA	2
Vertical Circulation	2 Esc/Elev/Direction	1 Elevator	2 / Direction	2 Esc/Elev/Direction	N/A

3.4.3 GATE CAPACITY REQUIREMENTS

The airport terminal currently has six commuter aircraft gate hardstand positions, of which five are assigned to air carriers. Future gate requirements have been determined through formulas for growth based on historical measures of annual enplanements and operations per gate. For destination airports such as Redmond, a practical gate capacity can be set based on precedent, geography, markets served, and airline hub operations. Geography marks the distance from major hub markets, which affect the number of flights that can reasonably be scheduled into the airport. Airline hubs operate arrivals and departures banks throughout the day, and flights to and from Redmond are coordinated with these operations. Historical precedent represents airlines' preferences for scheduling at Redmond to take best advantage of hub operations. Adding flights into other periods of the day should follow precedent and can be achieved through limited and/or seasonal scheduling to test markets.

Determining a practical gate capacity provides a framework to indicate a need for additional gates so airlines can schedule into preferred periods of the day. Large hub airports will typically schedule eight to ten turns per gate or more, depending upon airlines' minimum objective ground time and aircraft size. With longer periods of no activity at small hub destination airports, an achievable number of operations per gate may be indicated with as few as five or six before additional gates may be required.

Enplanements and operations per gate show there is more than sufficient capacity through the operating day to add flights. Forecast activity builds on the schedule carriers operate today. Using six aircraft as the current gate requirement, enplanements per gate calculations show that six will serve into the future. With the early morning departures bank activity, a higher number of gates would be supported.

Table 3-17. Airline Gate Demand Forecast - Enplanements Per Gate

Year	Annual Enplaned Passengers	Annual Departures	No. of Gates	Enplanements Per Gate	Enplanements Per Departure
2014	255,654	5,789	6	42,600	44
2015	280,823	4,860	6	46,800	58
2016	322,176	5,600	6	53,700	58
Future Years					
2021	391,450	5,740	6	63,700	68
2026	484,300	5,800	6	78,000	84
2031	575,350	6,200	7	86,700	93
2036	661,600	6,300	7	98,100	105

Source: Mead & Hunt Airline Activity Forecasts & Analysis

Table 3-17 shows a requirement of seven gates based on a measure of enplanements per gate. Using forecasts for the four planning horizons within the period, six gates to represent current airline schedule activity, and enplanements per gate yields a total requirement of seven gates, which supports a close range of variance to meet airline schedule preference. Operations per gate yields a smaller total number of gates based on a higher efficiency in gate use. This method does not take into consideration multiple departures within a short window.

The use of historical precedent is a primary factor in forecasting future operations growth. Current airline schedules serve as records of how airlines prefer to operate based on hub schedules. Airlines may change schedules to manage seasonal time changes, adjusting flight departures and arrivals to meet operational requirements, but their core schedules remain relatively steady over time.

From the airline activity schedule for current operations, early morning comprises the largest block of outbound activity, with seven departures over two hours and eight total during the period. Six of these departures occur within one hour. Overnight there are eight aircraft on the ground. This is anticipated to increase to nine aircraft by the end of the planning period. The terminal building has six gates, five of which are used by the carriers to manage eight aircraft operations in the first departures bank. Based on this schedule precedent and an increase in aircraft size, eight gates would be supported through the planning period. The airlines can manage this activity by towing aircraft from hardstand positions to contact gate positions; however, because there would be closely spaced departures within a limited operations area, a safer option would be to provide additional contact gates. **Table 3-18** shows the design day forecast early morning departures bank.

Table 3-18. Future Schedule Forecast - Early Morning Departures – 2036

RDM	Equipment	Destination	Airline	Aircraft Seat Capacity (Average Number of Seats)	Aircraft Seat Configuration
0510	EMBRAER-175	PDX	ALASKA	70-90	76
0530	AIRBUS-319	SFO	UNITED	130-150	138
0550	MITSUBISHI-90	DEN	UNTED	90-110	100
0555	BOEING-737	SEA	ALASKA	110-130	130
0600	BOEING-737	LAX	AMERICAN	150-170	150
0600	AIRBUS-319	SEA	DELTA	130-170	138
0625	AIRBUS-319	SLC	DELTA	130-170	138
0700	AIRBUS-319	SJC	ALASKA	130-150	138
0722	EMBRAER-175	PDX	ALASKA	70-90	76

Source: Mead & Hunt Airline Activity Forecasts & Analysis

In meeting demand for future activity, eight contact gates with building departures lounges and passenger boarding bridges are supported. This development can be built in phases, with the first phase comprised of building expansion and reconfiguration of existing space and layouts to prepare for a transition to second-level departures lounges. A full complement of gates, departures lounges, and passenger boarding bridges would be supported by the end of the planning period.

The airlines may be forced to operate larger aircraft into their major hub airports sooner in the period due to limited gate resources at these airports. This will likely be evident in the early morning and late afternoon arrivals and departures banks, eventually migrating to midday periods. During this transition, there will still be a need for ground boarding commuter aircraft at hardstand positions, particularly with Alaska/Horizon operating the Q400 aircraft well into the future. Balancing the needs of the air carriers through gate resource planning will be key to meeting growth demands on the terminal building over time.

3.4.4 TERMINAL BUILDING DEVELOPMENT

Figures 3-19 and 3-20 show development of first and second level building improvements to meet demand, including eight gate plans with corresponding departures lounge and aircraft hardstands. **Figures 3-21 and 3-22** show potential phase one improvements.

Figure 3-19 FIRST LEVEL TERMINAL BUILDING MASTER PLAN EXPANSION

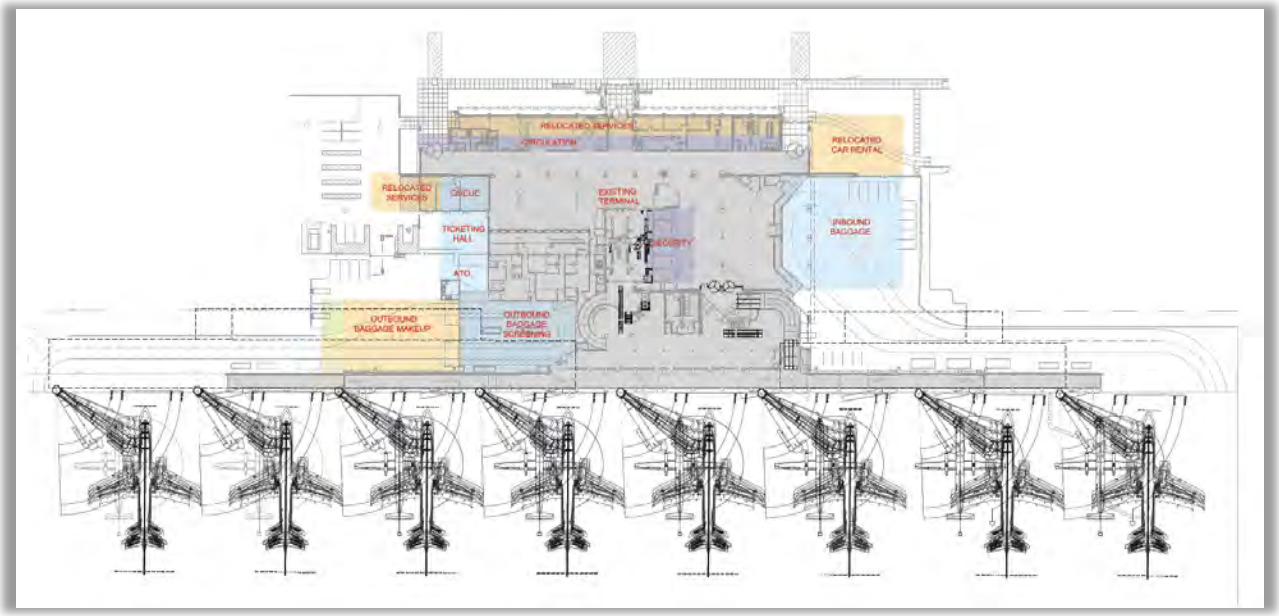


Figure 3-20 SECOND LEVEL TERMINAL BUILDING MASTER PLAN EXPANSION

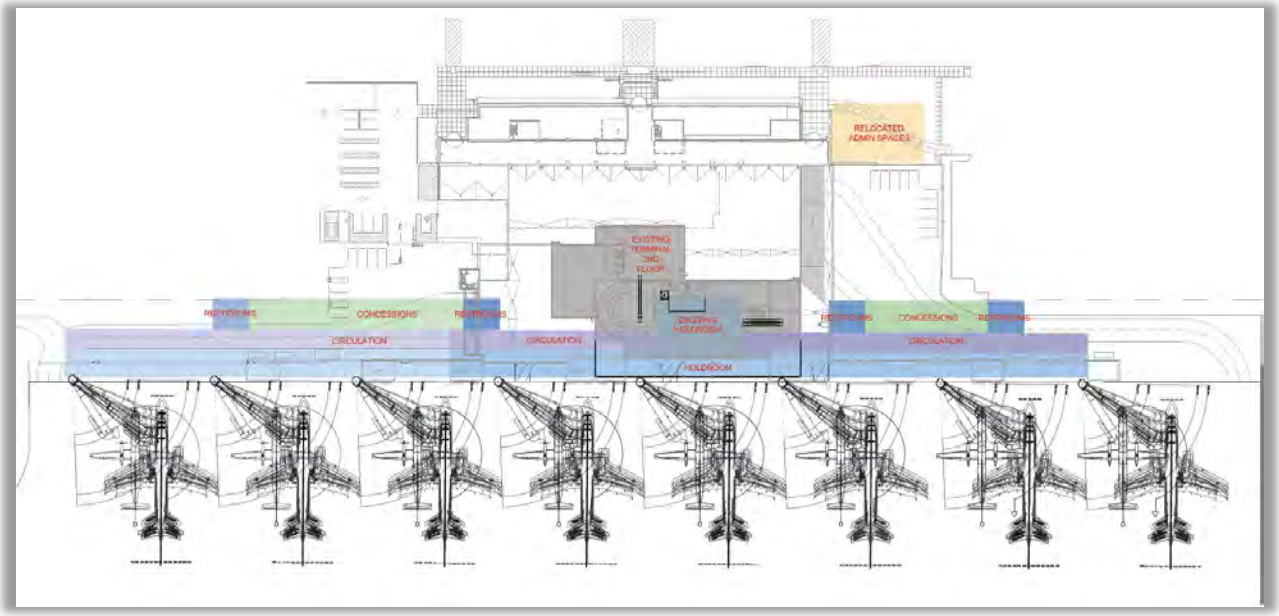


Figure 3-21 FIRST LEVEL TERMINAL BUILDING MASTER PLAN EXPANSION – PHASE ONE

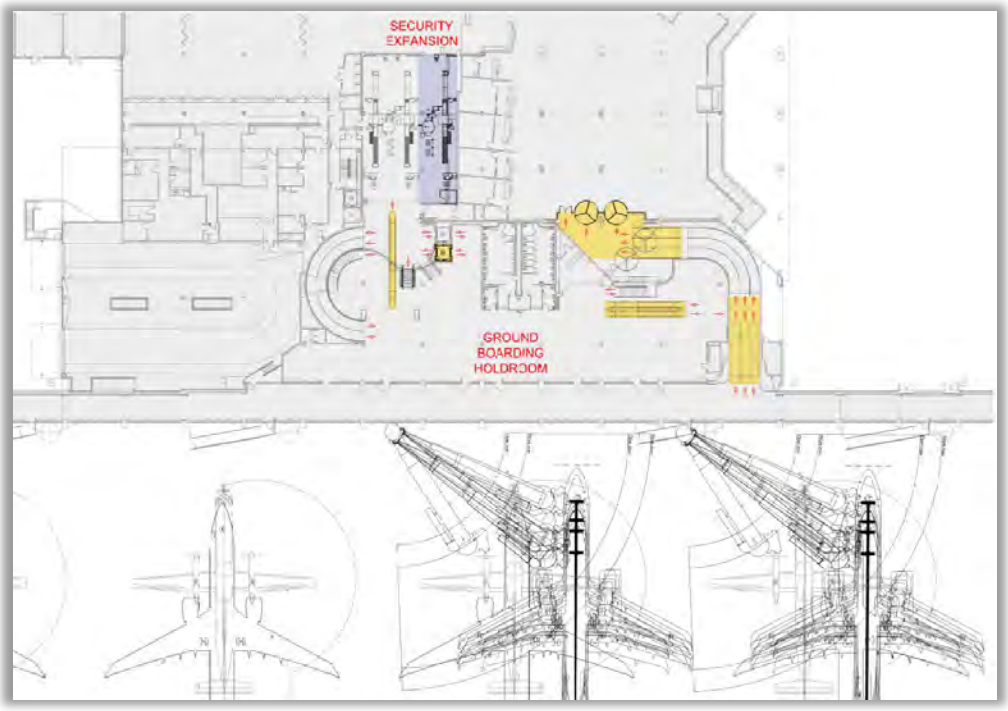
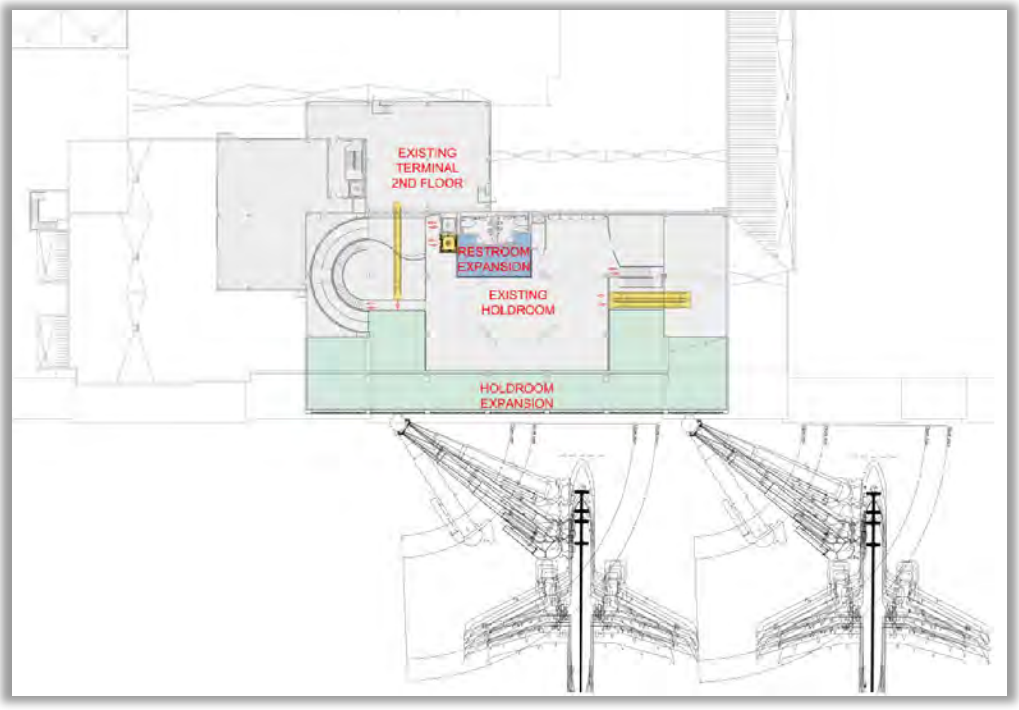


Figure 3-22 SECOND LEVEL TERMINAL BUILDING MASTER PLAN EXPANSION – PHASE ONE



3.4.5 CONCLUSIONS AND RECOMMENDATIONS

- ✓ Reconfigure second floor concourse and passenger departure lounges
- ✓ Construct a total of eight ramp gate hardstand positions with passenger boarding bridges
- ✓ Expansion and reconfiguration of concessions
- ✓ Expansion of ticket hall and main concourse
- ✓ Expansion of the outbound baggage make-up area

3.5 SUPPORT FACILITY REQUIREMENTS

3.5.1 FIXED BASE OPERATOR (FBO)

The Airport is served by one FBO, located on either side of Runway 11-29. The FBO has expressed a desire for expanded facilities, however, the development potential for both areas are limited due to other existing development in the area. The north apron area has the potential for expanded airside development behind the existing building line, but would likely be expensive due to site development costs.

As mentioned previously, the concept of a new separate general aviation development in the east quadrant of the airport could provide multiple new avenues for additional FBOs to be located at the airport.

3.5.2 UNITED STATES FOREST SERVICE (USFS)

The USFS has plans for expansion of their facilities to include additional training facilities, hangars and miscellaneous support facilities. All current plans fall within the USFS leasehold and are not expected to require additional land availability from the Airport.

3.5.3 CARGO FACILITIES

Air cargo operators performed 1,929 operations in 2016 and the forecast shows air cargo remaining flat at 2,100 annual operations through 2036. The proximity to major trucking routes and lack of demand for overnight shipments has not dictated a high amount of air freight. Air cargo operators use the general aviation apron north of Runway 11-29 to load and unload cargo, and handle processing off-site. No need for additional facilities for air cargo purposes are anticipated.

3.5.4 AIR SUPPORT AND MAINTENANCE FACILITIES

SNOW REMOVAL EQUIPMENT (SRE)

The Airport has plans underway to replace and relocate the SRE building to the north side of the airfield. The relocation will allow for an expanded building size and also open up valuable airside land for future aviation related development. The future size and location are being evaluated as of April 2017. The details will be incorporated into the **Chapter 4 Alternatives Analysis**.

AIRPORT RESCUE AND FIRE FIGHTING (ARFF)

The ARFF facility is centrally located northeast of the terminal building. Since RDM is certified under 14 CFR Part 139, it must comply with ARFF equipment, staff, and operational requirements developed by the FAA and the International Civil Aviation Organization Rescue and Fire Fighting Panel. According to Part 139 and FAA AC 150/5220-10E, ARFF equipment and staff requirements are based upon the length of the largest air carrier aircraft that serves an airport with an average of five or more daily departures. **Table 3-20** presents the ARFF Index, aircraft length criteria, and representative air carrier aircraft.

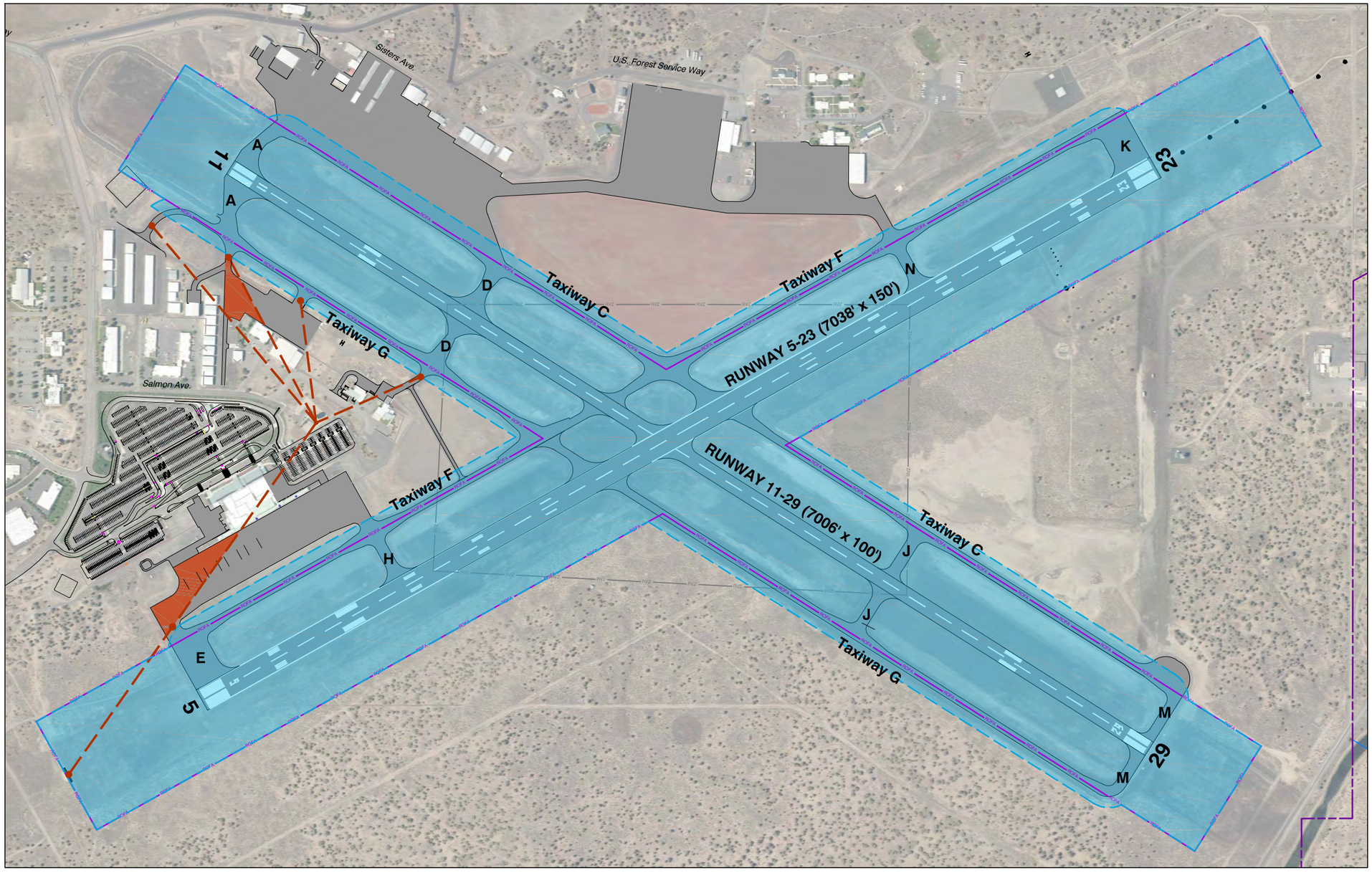
Table 3-20. ARFF Index Requirements

ARFF Index	Aircraft Length Criteria	Representative Aircraft
A	Less than 90 feet	CRJ-200
B	**90 feet but less than 126 feet**	**Q400,B-737, A-319, ERJ-145**
C	126 feet but less than 159 feet	B-757, MD-80, A-310
D	159 feet but less than 200 feet	B-767, DC-10
E	More than 200 feet	B-747, A-380
Source: Code of Federal Regulations, Part 139.315		

RDM currently falls under ARFF Index B based on the longest aircraft operating at the Airport with an average of five or more daily departures. The Airport currently meets the ARFF Index B requirements. No change to the ARFF Index is expected within the 20-year planning window.

AIR TRAFFIC CONTROL TOWER (ATCT)

No changes to the location, size, or function of the existing ATCT are anticipated within the 20-year planning timeframe. The existing ATCT line-of-sight is depicted on **Figure 3-23**. Several known areas of line-of-sight blockage have been depicted. ATC has an operational way of addressing these blocked areas. No new line-of-sight blockages should be created through future on-airport development. The ATCT line-of-sight will be an evaluation factor used in the **Chapter 4 Alternatives Analysis**.



LEGEND

- RDM Property Boundary
- Movement Area
- Runway Object Free Area (ROFA)
- Runway Visability Zone (RVZ)
- ATCT Line of Sight Shadow

N

0’ 350’ 700’

Figure 3-23
ATCT Line Of Sight

AIRPORT SERVICE ROADS

The Airport currently has a well-established network of perimeter service roads of varying types. A combination of dirt and paved service roads allow airport personnel to access all areas of the existing airfield. No changes to the airport service roads are anticipated for the existing airfield layout.

Should the **Chapter 4 Alternatives Analysis** recommend a runway extension or the protection for an ultimate third runway, service roads would need to be reevaluated for those planned improvements.

SECURITY GATES

The perimeter fence line contains multiple gates. There a several types of gates used according to their purpose and need. Gates are located primarily near the north and south general aviation areas of the airport providing access to and from hangars, businesses and general aviation users. No areas of improvement have been identified for the existing airport configuration. As alternative airfield layouts are addressed in Chapter 4, so will the requirements for additional airfield access points.

DISASTER PLANNING FACILITY REQUIREMENTS

In the event of a Cascadia Subduction earthquake event or other similar magnitude disaster event, the Airport could very likely be called to serve as a critical transportation link to help supply people, equipment and supplies necessary to manage the event's aftermath. Preliminary discussion with personnel from the Office of Emergency Management and Oregon Air National Guard have indicated that the Airport could be used as a forward operating base where supplies and people would arrive by air and be redistributed where necessary. Inbound supplies would likely arrive via C-17 and C-130 military transport aircraft. Depending on the source, personnel could also arrive on those military transport aircraft or on chartered commercial flights.

Physical space for both supplies and aircraft will likely be at a premium in the immediate days/weeks following an event. Long-term development plans generated in this Master Plan will consider what areas of the Airport could be used to accommodate the mobilization following a disaster event where RDM serves a critical role.

In the days/weeks immediately following a Cascadia event or similar disaster, it is likely that scheduled airline service would be halted.

3.5.5 CONCLUSIONS AND RECOMMENDATIONS

- ✓ Identify location for relocated SRE building
- ✓ Identify on-airport areas for storage of supplies to assist with the response to a Cascadia Subduction event

3.6 FACILITY REQUIREMENTS SUMMARY

The following summarizes the facility requirements necessary for the Airport to accommodate its projected 20-year growth, increase aviation and non-aviation related revenue generating development, and comply with required airfield design standards.

- ✓ Runway 5-23 will need an extension to a length of about 10,000 feet to accommodate the future airlines passenger fleet
- ✓ The parallel taxiways and runway connector taxiways will be designated as TDG3
- ✓ Taxiway system geometry improvements:
  - Taxiway A (north side): add pavement and restripe to provide a right angel taxiway
  - Taxiway A (south side): add pavement and restripe to provide a right angel taxiway
  - Taxiway E: replace existing taxiway segment between the apron and Taxiway F with a new connector taxiway located about 400 feet east of the existing taxiway
  - Taxiway H: replace the existing taxiway segment between the apron and Taxiway F with a new connector taxiway located about 175 feet east of the existing taxiway
  - Taxiway C hot spot: shift segment that crosses Runway 5-23 to the east
  - Taxiway G hot spot: shift segment that crosses Runway 5-23 to the west
  - Runway exit taxiways: retain current locations
  - Pavement strength: evaluate pavement strength requirements when narrow body airline aircraft begin regularly scheduled operations at the Airport
- ✓ General aviation development:
  - Site aircraft storage hangars to accommodate at least 33 aircraft.
  - Locate additional long-term general aviation development area for future hangars and/or future FBOs
- ✓ Expand passenger terminal apron.
- ✓ Identify an area within the terminal loop road for transportation network companies to pick-up and drop-off passengers
- ✓ Locate parking lot expansion for up to 1,100 parking spaces
- ✓ Locate parking lot expansion for up to 500 employee and tenant parking spaces
- ✓ Evaluate alternative sites for off-site rental car service center

- ✓ Non-aviation revenue generating improvements:
  - North Development Parcel Subarea: Install a loop water line system between Lake Road and Veterans Way are not well-connected. Construct new streets.
  - North Business Park Subarea: Install a loop water system between Veterans Way and Oregon Route 126. Upgrade the local streets (10th Street, Sisters Avenue, Ochoco Way) to current local industrial standard (40-foot paved width with sidewalks). Upgrade Veterans Way to meet the major collector standard (36-foot paved width with sidewalks).
  - South Apron Subarea: Construct sidewalks on the north side of Salmon Avenue
  - West Business Park Subarea: Install sidewalk infill as necessary along Airport Way and Veterans Way
  - Airport Way Subarea: Install sidewalk on both sides of Airport Way and Mt. Hood Drive. Upgrade Wickiup Avenue to current local industrial standard (40-foot paved width with sidewalks).
  - Fairgrounds Industrial Subarea: Install sidewalks on south side of Airport Way
- ✓ Terminal Improvements:
  - Reconfigure second floor concourse and passenger departure lounges
  - Construct a total of eight ramp gate hardstand positions with passenger boarding bridges
  - Expansion and reconfiguration of concessions
  - Expansion of ticket hall and main concourse
  - Expansion of the outbound baggage make-up area
- ✓ Identify location for relocated SRE building
- ✓ Identify on-airport areas for storage of supplies to assist with the response to a Cascadia Subduction event

Chapter 4 details alternative evaluations for each of the above facility requirements.

CHAPTER SUMMARY

This chapter evaluates a series of alternative solutions to satisfy the Redmond Municipal Airport's (RDM or "the Airport") facility requirements, which are described in **Chapter 3 – Facility Requirements**. The purpose of this analysis is to enable development of airport facilities that can realistically accommodate forecasted demand. The process of defining and evaluating alternatives is iterative, beginning with a broad range of possibilities that are then refined based on alternative evaluation criteria and Airport development goals. The alternatives evaluation process is structured to systematically evaluate options and provide the technical basis for arriving at a preferred development concept. Criteria utilized to evaluate development alternatives include:

- ✓ Operational performance
- ✓ Environmental considerations
- ✓ Construction feasibility
- ✓ Financial impacts
- ✓ Stakeholder feedback

Various sets of improvement plans were developed for the Airport's airside, landside and terminal areas to accommodate projected needs throughout the planning period. Although they do not exhaust all the variations, the developed alternatives form an appropriate base to produce a "preferred" plan of development for the airport. The preferred alternative serves as a guide for capital improvement planning and is the basis of the Airport Layout Plan (ALP). A summary of the recommended alternatives is included below. The analysis that led to the selection of a preferred alternative is described in this chapter.

- ✓ **Runway Alternative – Alternative 1**
  The recommended alternative extends Runway 5-23 2,962 feet to the southwest for a total runway length of 10,000 feet, as shown in **Figure 4-2**. The runway extension of Runway End 5 would occur on airport-owned property, requires no additional land acquisition or easements, and does not require building demolition or relocation of existing highways and roads. It is assumed that Runway 5-23 would have an upgraded approach that supports area navigation (RNAV) and localizer performance with vertical guidance (LPV) approach capabilities.
- ✓ **Taxiway Alternative – Alternative 1**
  The recommended alternative, as shown in **Figure 4-8** identifies a new full-length parallel taxiway east of Runway 5-23, addresses Federal Aviation Administration (FAA) "Hot Spots" One and Two, and can be constructed in multiple phases as demand dedicates. Improvements to Taxiway A and Taxiway F are identified to comply with FAA Advisory Circular (AC) 150/5300-13A, Change 1, *Airport Design*.

- **Vehicle Parking Alternative – Alternative 1**
  The recommended alternative, as shown in **Figure 4-10**, adds 4,000 parking stalls and converts the existing hourly terminal parking lot in front of the terminal into a combination of hourly and premium long-term parking. The existing employee vehicle parking lot to the west of the passenger terminal would be reduced to accommodate expanded vendor vehicle parking. A second employee vehicle parking lot would be developed within the central passenger terminal area. Additional long-term vehicle parking would be developed west of SE Airport Way and a remote vehicle parking lot would be developed north of the Deschutes County Fairgrounds Expo Center, along the west side of SE Airport Way. Rental car facilities would be developed just north of the additional long-term vehicle parking lot.
- **General Aviation Development Alternative – Alternative 2**
  The recommended alternative, as shown in **Figure 4-15,** identifies the expansion of aeronautical and non-aeronautical development north from the existing north development area. The resultant expansion would support a new flight school, hangar expansion for both corporate and general aviation users, and support non-aeronautical development.
- **Passenger Terminal Alternative – Alternative 3**
  The recommended alternative, as shown in **Figures 4-24, 4-25,** and **4-26,** identifies expansion of the existing terminal to the west and will expand passenger boarding and holdroom areas, outbound and inbound baggage operations, Transportation Security Administration (TSA) security screening, rental car counters and offices, ticket counters, queuing and airline ticketing offices, administration space, and mechanical support spaces. The terminal expansion supports seven new aircraft gates, with the ability to add an eighth gate, that accommodate Aircraft Design Group (ADG)-III aircraft (Airbus A320 or Boeing B737) served through passenger boarding bridges (PBBs). The proposed expansion stays clear of the Airport's Runway Visibility Zone (RVZ).

4.0 INTRODUCTION

This chapter introduces a variety of alternatives related to the Airport's runways, taxiways, vehicle parking, general aviation (GA) development, location of support facilities, passenger terminal and non-aeronautical development. Alternatives are analyzed using evaluation criteria developed for the Master Plan and were agreed upon during the initial scoping of the project. The outcome of the analysis and the public process is the selection of a preferred alternative for the Master Plan. Each alternative was evaluated according to five categories: alignment with operational performance, environmental considerations, constructability, financial impacts/cost to the Airport, and stakeholder feedback. Feedback was collected throughout the planning process from the Master Plan Planning Advisory Committee (PAC) and the public. The PAC is a diverse group made up of elected officials, on- and off-airport businesses, and members of the broader community. The PAC's role is to help shape the Master Plan into a document that is reflective of community goals and interests while satisfying FAA requirements for airport

development. The preferred alternative identified in **Section 4.6** is used to prepare the implementation plan described in a subsequent chapter. The implementation plan includes phasing of improvements, expected capital costs, and key decision points where the Airport will reevaluate implementation assumptions prior to further development. The preferred alternatives will be shown on the ALP.

The chapter is organized as follows:

4.1 AIRPORT DEVELOPMENT OBJECTIVES

The Master Plan is intended to produce a cohesive set of alternatives that position the Airport to accommodate the forecasted demand over the next 20 years. Prior to developing and evaluating specific alternatives, the Airport's development objectives must be understood. Development objectives for this Master Plan include:

- ✓ Accommodate future demand over the next 20 years and position the Airport to attract additional tenants and businesses
- ✓ Increase revenue generation through the development of non-aeronautical land
- ✓ Provide development area for GA and United States Forest Service (USFS) activities
- ✓ Develop the passenger terminal and associated facilities to provide high levels of service
- ✓ Develop facilities in an environmentally compatible manner
- ✓ Develop facilities in accordance with all federal, state, and local regulations
- ✓ Develop facilities consistent with Stakeholder needs

Development to meet long-term demand requires consideration of both the airside and landside needs of the Airport. Airside facilities include runways, taxiways, support facilities, and non-terminal building areas, while landside facilities include vehicle parking areas, walkways, public access roads, rental car facilities, taxi and ground transportation, hotels, and any other areas accessible to the public. Those needs are presented in the following airside and landside planning sections.

4.1.1 AIRSIDE PLANNING

Airside needs include:

- ✓ Analyze the ability of the Airport to meet design standards identified in the FAA AC 150/5300-13A, Change 1, *Airport Design*
- ✓ Address FAA identified Hot Spots on the taxiways
- ✓ Analyze existing and future capacity constraints, which include an expanded passenger terminal and apron area, additional supporting taxiways, runway extension, and a future parallel runway
- ✓ Provide a variety of aircraft storage options including t-hangars, box hangars, and corporate hangars
- ✓ Identify location for a new fuel farm to support passenger airline and GA operations, and define fuel truck haul routes to minimize taxiway crossings
- ✓ Incorporate a flight school into proposed development
- ✓ Expand property available for development by GA and corporate aviation tenants
- ✓ Identify a storage location for emergency preparedness in support of the Federal Emergency Management Agency (FEMA) or other emergency responding agencies
- ✓ Identify strategic land acquisition to support airport operation and future development

4.1.2 LANDSIDE PLANNING

Landside needs include:

- ✓ Remove roadways within the existing and future runway protection zones (RPZs) when feasible
- ✓ Maximize buildable property for aeronautical and non-aeronautical development
- ✓ Analyze locations for expanded short- and long-term passenger vehicle parking, rental car operators and associated support facilities, Airport employee and vendor parking, and overflow parking
- ✓ Analyze existing landside access and roadway networks to support future development
- ✓ Identify strategic land acquisition to support proposed improvements

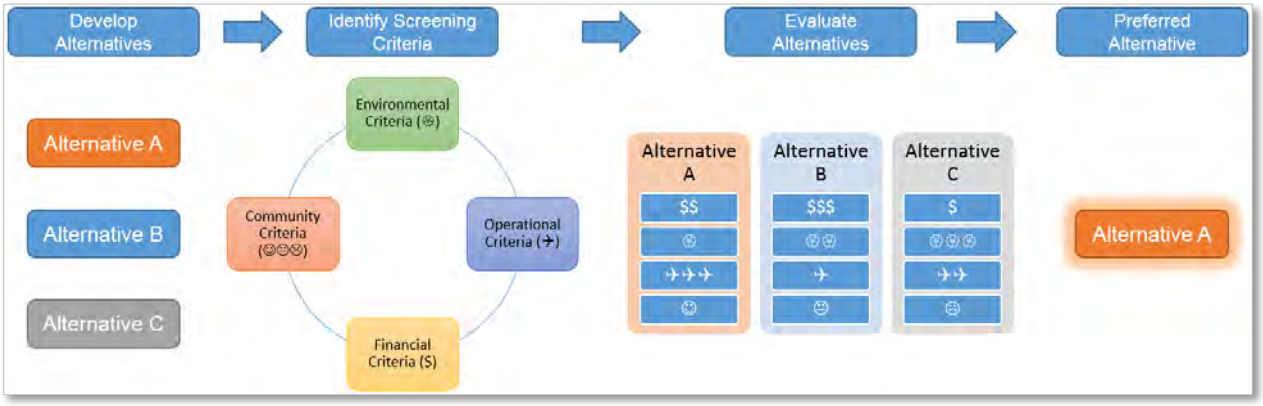
4.2 ALTERNATIVES DEVELOPMENT PROCESS

The framework for the alternatives development was established in **Chapter 1 – Inventory**, **Chapter 2 – Forecast**, and **Chapter 3 – Facilities Requirements**. Information contained in these chapters was used to develop layouts that support the Airport's ability to accommodate forecasted demand and prepare a 20-year facility plan for the Airport moving forward. Developing the alternatives included examining:

- ✓ FAA Airport Design Standards
- ✓ Land Development Strategies
- ✓ Revenue Producing Opportunities
- ✓ Aircraft Operations
- ✓ Passenger Enplanements

These factors provide the framework necessary to formulate feasible development alternatives to meet future demand. The typical alternatives development and evaluation process is illustrated in the following **Figure 4-1**.

Figure 4-1. Typical Alternatives Development Process



4.2.1 AIRPORT MASTER PLAN ADVISORY COMMITTEE INPUT

Throughout this planning process, public involvement and stakeholder outreach has been a continuous process involving educational, listening, and collaborative components. Stakeholder groups include the PAC, Airport Committee, City of Redmond, and members of the public. The feedback received during the process is used to qualitatively compare the alternatives.

4.3 EVALUATION CATEGORIES

The following evaluation categories provide the basis of analysis for each alternative and support a fact-based comparison:

- ✓ Operational Capabilities (Specific to Functional Area)
- ✓ Performance Requirement Benchmarks (Ability to accommodate demand)
- ✓ Land Use Compatibility
- ✓ Environmental Impacts
- ✓ Stakeholder Feedback
- ✓ Constructability
- ✓ Financial Cost/Impacts

These categories were developed to ensure the selected alternative is consistent with the role of the Airport and are described in the following sections.

4.3.1 OPERATIONAL CAPABILITIES

This evaluation category is applied to the alternatives to determine their ability to satisfy the facility requirements identified in **Chapter 3 – Facility Requirements**. An analysis of the demand and capacity requirements, and geometric and other standards that govern the design of airport components, guided development of the facility requirements.

4.3.2 PERFOMANCE REQUIREMENTS BENCHMARKS

This evaluation category is applied to the alternatives to determine their ability to support demand identified in **Chapter 2 – Aviation Activity Forecasts**. Alternatives aligned with the forecasts if they provided the facilities necessary to meet identified demand through 2036.

4.3.3 LAND USE COMPATABILITY

This category evaluates alternatives based on compatible land use and the potential impacts to land or other environmental factors that could influence an alternative. These include noise exposure, wetlands or stream impacts, or other factors that might be unique to developed alternatives.

4.3.4 ENVIRONMENTAL IMPACTS

This category evaluates alternatives based on compatibility with existing environmental assets with the goal of developing in an environmentally sustainable manner. The following impacts to specific environmental elements were considered:

- ✓ Air Quality
- ✓ Biological Resources (including fish, wildlife, and plants)
- ✓ Climate
- ✓ Coastal Resources
- ✓ Department of Transportation Act, Section 4(f)
- ✓ Farmlands
- ✓ Hazardous Materials, Solid Waste, and Pollution Prevention
- ✓ Historical, Architectural, Archaeological, and Cultural Resources
- ✓ Land Use
- ✓ Natural Resources and Energy Supply
- ✓ Compatible Land Use
- ✓ Socioeconomic, Environmental Justice and Children's Environmental Health and Safety Risks
- ✓ Visual Effects (Including Light Emissions)
- ✓ Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

Early identification of these environmental factors may help avoid impeding future development plans. The analysis is not intended to fulfill the environmental clearance requirements as defined in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act*.

4.3.5 STAKEHOLDER FEEDBACK

Stakeholder input was obtained from the PAC, Airport Advisory Committee, City of Redmond, FAA, various stakeholders, community members, and members of the public to assist in evaluating the alternatives. Public and committee meetings were held on the following dates:

- ✓ Stakeholder Interviews – September 26, 2016
- ✓ Redmond City Council – October 25, 2016
- ✓ PAC Meeting #1 – November 9, 2016
- ✓ Airport Committee – November 10, 2016
- ✓ Redmond City Council – February 7, 2017
- ✓ PAC Meeting #2 – February 8, 2017
- ✓ Redmond City Workshop – April 25, 2017
- ✓ PAC Meeting #3 – June 22, 2017
- ✓ FAA Teleconference – August 4, 2017
- ✓ PAC Meeting #4 and Open House – October 18, 2017
- ✓ Redmond City Council – January 9, 2018
- ✓ PAC Meeting #5 and Open House #2 – Scheduled for Winter 2018

These public meetings were supplemented with presentations, exhibits, and one-on-one interviews. Input was considered and incorporated into the development of the alternatives for RDM.

4.3.6 CONSTRUCTABILITY

This category evaluates alternatives based on implementing the alternative in logical phases. Timing and the sequence of construction can create delays, increase cost, and impact airport operations. Each alternative was examined to determine the degree of its impact on airport operations.

4.3.7 FINANCIAL COSTS/IMPACTS

This category evaluates alternatives based on cost factors to assess feasibility and form a relative basis of comparison. The analysis looks at the following for each alternative:

- ✓ Ability to fund the required capital expenditures
- ✓ Airport operating costs
- ✓ Potential revenues, operating and capital expenses, and potential funding sources for each alternative

Capital expenses include demolition costs, construction and site preparation costs, environmental costs and lease buyouts.

4.4 EVALUATION PROCESS

This section defines the alternatives analysis process utilized in accordance with FAA AC 150/5070-6B, *Airport Master Plans*. Developing multiple alternatives represents the first of a multi-step process that leads to the selection of a preferred alternative. It is important to note that the current FAA-approved ALP identifies future improvements recommended in a prior master planning effort. The master planning process addresses facility needs, but also allows the components of the previous preferred alternative to be retained or modified, if they meet current needs.

Airport development alternatives are created to respond to defined facility needs, with the goal of identifying general preferences for both individual items and the overall concepts being presented. The process will allow the widest range of ideas to be considered and the most effective facility development concept to be defined.

Elements of a preferred alternative will emerge from the evaluation process that can best accommodate all required facility improvements. Parts of the various alternatives will be consolidated into a preferred alternative based on the input of multiple stakeholders. The preferred alternative can be refined further as the City proceeds through the process of finalizing the remaining elements of the airport Master Plan. Public input and coordination with the PAC, FAA, and RDM throughout the evaluation process will also help to shape the preferred alternative.

Once the preferred alternative is selected by RDM, a detailed capital improvement program will be created that identifies and prioritizes specific projects to be implemented. The elements of the preferred alternative will be integrated into the updated ALP drawings that will guide future improvements at the Airport.

4.5 AIRPORT DEVELOPMENT ALTERNATIVES

The initial airport development alternatives are intended to facilitate a discussion and evaluation about the most efficient way to meet the facility needs of the Airport. The facility requirements identified in the previous chapter include a variety of airside, landside, passenger terminal, and other development needs. The airport development alternatives are organized into several groups:

- ✓ Runway Alternatives
- ✓ Taxiway Alternatives
- ✓ GA Development Alternatives
- ✓ Vehicle Parking Alternatives
- ✓ Support Facilities Alternatives
- ✓ Passenger Terminal Alternatives
- ✓ Non-Aeronautical Property Development Alternatives

The airport development alternatives are described below and depicted in **Figures 4-2** through **4-32** to illustrate the key elements of each alternative.

4.5.1 RUNWAY ALTERNATIVES

Runway 5-23 is the Airport's primary runway and is 7,038 feet long and 150 feet wide. The runway has pavement strength of 68,000 pounds for single-wheel gear (SWG) aircraft and 110,000 pounds for dual wheel gear (DWG) aircraft and is designed to C-III Standards. Runway 11-29 is the crosswind runway and is 7,006 feet long and 100 feet wide. The runway has pavement strength of 28,000 pounds for SWG and 40,000 pounds for DWG and is designed to B-III Standards. Additional airfield capacity is not required as the existing primary runway can accommodate future demand through 2036.

Chapter 3 – Facility Requirements explained the potential need for a 2,962-foot-runway extension to Runway 5-23 for a total runway length of 10,000 feet to serve markets in the Midwest. To examine the feasibility of an extension at RDM, six runway extension alternatives have been identified and are evaluated in the following sections. The alternatives assume an upgraded approach to Runway End 5 that supports LPV approach capabilities, similar to the localizer and glideslope of an Instrument Landing System (ILS) approach into Runway End 23. The MALSR (Medium Approach Light System with Runway Alignment Indicator Lights) will remain within the RPZ and on airport property. Earthwork for the runway and supporting taxiway extension alternatives to the southwest requires significant fill due to the uneven terrain and requirements to match existing grades of the runway and taxiway. **Chapter 3** also explained how the existing Runway 5-23 RSA had no penetrations and a recommendation was made to change declared distances to the full length of the runway. To ensure that there are no future RSA penetrations

and that declared distances can stay at 10,000 feet, the RSA around any future extension must remain clear of objects.

None of the alternatives would impact night operations.
Runway extension alternatives consider RPZ requirements in FAA AC 150/5300-13A, Change 1, *Airport Design* and the 2012 memorandum *Interim Guidance on Land Uses within a Runway Protection Zone (2012 RPZ Memo).* Modifications to Runway End 23 will require evaluation of the relocation of Highway 126 to meet FAA design guidance. The alternatives comply with AC 150/5300-13A, Change 1, *Airport Design* standards for the runway safety area (RSA), runway object free area(ROFA), and taxiway object free area (TOFA).

ALTERNATIVE 1 – EXTEND RUNWAY 5-23 SOUTHWEST

This alternative provides a 10,000- foot- long runway by extending Runway 5-23 to the southwest, as shown in **Figure 4-2**. The extension of Runway End 5 will occur on airport-owned property, requires no additional land acquisition or easements, and does not require building demolition or relocation of existing highways and roads. The construction of the proposed runway extension and supporting taxiways would require 79,092 cubic yards (CY) of material excavation and the supporting taxiway would require 10,792 CY of material excavation for 89,884 CY of total material excavation. This alternative would add 77,400 square yards (SY) of additional pavement. FAA runway and taxiway design criteria are met with this alternative.

This alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact on airport operations. The extension would increase the extent of the RVZ by 1,481 feet to the southwest. The aircraft rescue and firefighting (ARFF) building will obstruct the view of aircraft arriving to or from the intersection of the two runways. The ARFF building will relocate to keep the RVZ clear of obstructions.

Four obstructions (trees) have been identified within the future 50:1 Approach Surface, however, these obstructions are on existing airport property and can be mitigated. The extension does not change any instrument approach capabilities and Navigational Aids (NAVAIDs) would be relocated appropriately.

This alternative is estimated at a total project cost of $48,450,000 and includes engineering, environmental compliance, construction management services, relocation of the ARFF building, and extension of Taxiway F to the new end of Runway 5.

ALTERNATIVE 2A – EXTEND RUNWAY 5-23 NORTHEAST

This alternative involves extending Runway 5-23 2,962 feet to the northeast with a parallel taxiway and separate exit and entrance connectors as shown in **Figure 4-3**. The extension of Runway 23 by 2,962 feet requires the relocation and realignment of Highway 126 by 1.75 miles, and 62 acres of additional

property to comply with AC 150/5300-13A and the *2012 RPZ Memo.* The required acquisition off the end of Runway 23 is located outside City Limits and outside the Redmond urban growth boundary (UGB) in unincorporated Deschutes County. The property is zoned Exclusive Farm Use (EFU), for which state law severely restricts non-agricultural uses. As a result, extending the runway outside the UGB or rerouting a portion of Highway 126 outside the UGB would require seeking an Exception to Statewide Planning Goal 3 (Agricultural Lands) and receiving approval from the Board of County Commissioners. To obtain approval, the City would have to demonstrate that it performed an alternatives analysis demonstrating that other options within the UGB were not viable. This could subject the City and the County to potential appeals and project delays.

The North Unit Main Canal, a Section 4(f) historic resource due to its age, would also be located within the RPZ, and FAA may require potential mitigation measures such as the placement of a cap on the canal in the RPZ area. The extension would increase the extent of the RVZ by 1,481 feet to the northeast; however, there would be no additional inclusions of facilities within the RVZ.

The construction of the proposed runway extension and supporting taxiway and connectors would require 1,693 CY of material excavation and the supporting taxiway would require 718 CY of material excavation for 2,411 CY of total material excavation. This alternative would add 77,400 SY of additional pavement. The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations.

The extension does not change any instrument approach capabilities and all NAVAIDs would be relocated appropriately.

No new obstructions to the 50:1 approach surface were identified with the proposed extension.

This alternative is estimated at a total project cost of $37,550,000 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 2B – EXTEND RUNWAY 5-23 NORTHEAST

This alternative is a derivative of Alternative 2A and similarly involves extending Runway 5-23 2,962 feet to the northeast with a parallel taxiway and separate exit and entrance connectors as shown in **Figure 4-4**. Instead of relocating Highway 126 outside of critical runway geometric areas, such as the RPZ, Highway 126 would remain in its current alignment and a tunnel would be constructed underneath the Runway 23 to achieve the 2,962-foot extension. This alternative requires 63 acres of additional property to comply with AC 150/5300-13A and the 2012 memorandum *2012 RPZ Memo.* The required acquisition off the end of Runway 23 is located outside City Limits and outside the Redmond UGB in unincorporated Deschutes County. The property is zoned EFU, for which state law severely restricts non-agricultural uses. As a result, extending the runway outside the UGB or rerouting a portion of Highway 126 outside the UGB would require seeking an Exception to Statewide Planning Goal 3 (Agricultural Lands) and

receiving approval from the Board of County Commissioners. To obtain approval, the City would have to demonstrate that it performed an alternatives analysis of other options within the UGB that were not viable. This would be a high bar to meet and could subject the City and the County to potential appeals and project delays.

The North Unit Main Canal will be located within the Runway 23 RPZ for this alternative as discussed in Alternative 2A.

This alternative will require the same amount of material excavation and additional pavement as Alternative 2A. This alternative will also have no effect on instrument approach capabilities, relocates NAVAIDs appropriately, and has no identified obstructions.

This alternative is estimated at a total project cost of $58,440,000 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 3A – SPLIT RUNWAY 5-23 EXTENSION

This alternative involves extending Runway 5-23 by 400 feet to the northeast and by 2,562 feet to the southwest for a total runway length of 10,000 feet with a parallel taxiway and separate exit and entrance connectors as shown in **Figure 4-5.** This alternative assumes the FAA would not require RPZ compliance for the existing alignment of Highway 126 through Runway 23's RPZ. Extending Runway End 23 to the northeast utilizes an existing avigation easement for a portion of the land that falls within Runway 23's RPZ. Runway 5-23 extends 400 feet to the northeast in this alternative due to the extent of the OFA stopping prior to Highway 126. Extending Runway End 5 to the southwest would occur on existing airport property and requires no additional land acquisition or easements nor any building demolition or relocation of existing highways or roads.

The construction of the proposed split runway extension and supporting taxiway and connectors would require 72,092 CY of material excavation and the supporting taxiway would require 9,416 CY of material excavation for 81,508 CY of total material excavation. This alternative would add 85,300 SY of additional pavement. This extension would however increase the extent of the RVZ by 1,281 feet and include a portion of the existing passenger terminal aircraft apron and the ARFF building. The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations.

Four obstructions (trees) have been identified within the future 50:1 Approach Surface for the extended Runway 5; however, these obstructions are on existing airport property and could easily be mitigated. The extension does not change any instrument approach capabilities and all NAVAIDs would be relocated appropriately.

This alternative is estimated at a total project cost of $29,319,000 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 3B – SPLIT RUNWAY 5-23 EXTENSION

This alternative involves equally extending Runway 5-23 by 1,500 feet to the northeast and by 1,462 feet to the southwest with a parallel taxiway and separate exit and entrance connectors as shown in **Figure 4-6.** The extension of Runway End 23 to the northeast requires relocating and realigning 0.8 miles of Highway 126 0.34 miles north and utilizes an existing avigation easement for a portion of the land that falls within Runway 23's RPZ. The realignment of Highway 126 is 1.25 miles and is outside of the future RPZ for Runway End 23. Extending Runway End 5 to the southwest would occur on existing airport property and does not require additional land acquisition, easements, building demolition, or relocation of existing highways or roads.

The North Unit Main Canal, a Section 4(f) historic resource due to its age, would be located within the Runway End 23 RPZ, and FAA may require mitigation measures such as the placement of a cap on the canal in the RPZ. The extension would increase the extent of the RVZ to the southwest by 731 feet and to the northeast by 750 feet; however, there would be no additional inclusions of facilities within the RVZ.

The construction of the proposed runway extensions and supporting taxiway and connectors would require 11,893 CY of material excavation, and the supporting taxiway would require 6,416 CY of material excavation for 18,309 CY of total material excavation. This alternative would add 81,600 SY of additional pavement. The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations.

This alternative has the same obstructions and mitigation identified in Alternative 3A and also relocates NAVAIDs as needed.

This alternative is estimated at a total project cost of $31,555,000 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 3C – SPLIT RUNWAY 5-23 EXTENSION

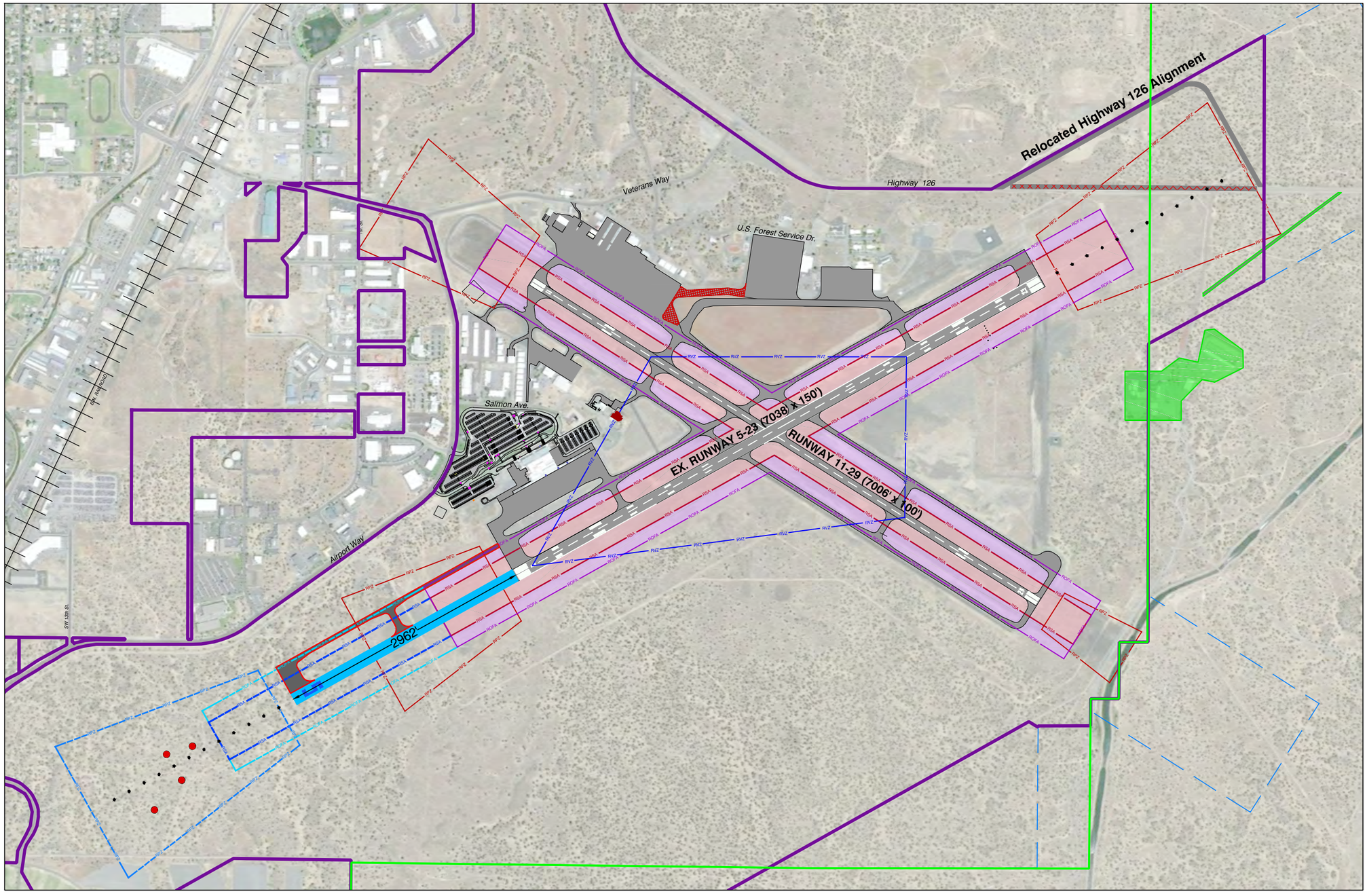
This alternative is a derivative of Alternative 3B and similarly involves extending Runway 5-23 by 1,500 feet to the northeast and by 1,462 feet to the southwest with a parallel taxiway and separate exit and entrance connectors as shown in **Figure 4-7.** The extension of Runway End 23 to the northeast requires relocating and realigning 0.8 miles of Highway 126 0.50 miles north and utilizes an existing avigation easement for a portion of the land that falls within Runway 23's RPZ. The realignment of Highway 126 is 3 miles and is outside of the avigation easement of Runway End 23. Extending Runway End 5 to the southwest would occur on existing airport property and does not require additional land acquisition, easements, building demolition, or relocation of existing highways or roads.

The North Unit Main Canal will be located within the Runway 23 RPZ for this alternative as discussed in Alternative 3B.

The construction of the proposed runway extensions and supporting taxiway and connectors would require 11,893 CY of material excavation, and the supporting taxiway would require 3,416 CY of material excavation for 15,309 CY of total material excavation. This alternative would 81,600 SY of additional pavement. The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations.

This alternative has the same obstructions and mitigation identified in Alternative 3A and also relocates NAVAIDs as needed.

This alternative is estimated at a total project cost of $36,850,000 and includes engineering, environmental compliance, and construction management services.



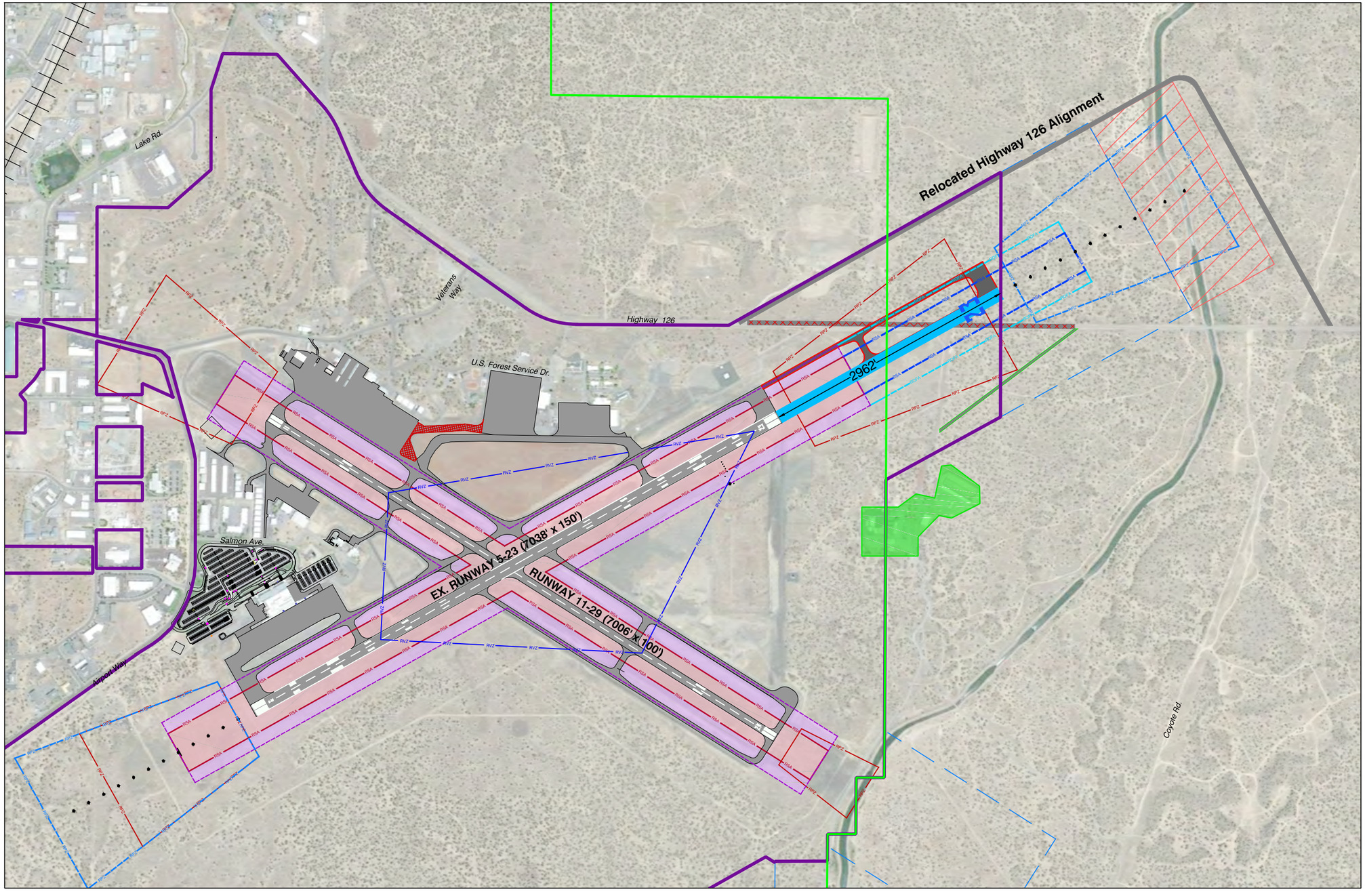
LEGEND

- RDM Property Boundary
- Urban Growth Boundary
- Avigation Easement
- Future Runway Extension
- Runway Safety Area (RSA)
- Future RSA
- Runway Object Free Area (ROFA)
- Future ROFA
- Runway Protection Zone (RPZ)
- Future RPZ
- Highway 126 Relocation Alignment Distance: 0.8 miles
- Highway 126 Removal Removal Distance: 0.55 miles
- Gravel Road Relocation Alignment Distance: 0.4 miles
- Tenant
- ARFF Building
- Future Parallel Taxiway
- Removed Airfield Pavement
- Runway Visibility Zone (RVZ)
- Obstruction to 50:1 Approach Surface
  Total Obstructions: 4

N

0’ 600’ 1,200’

Figure 4-2
Alternative 1 - Extend Runway Southwest



LEGEND

- RDM Property Boundary
- Urban Growth Boundary
- Avigation Easement
- Future Runway Extension
- Runway Safety Area (RSA)
- Future RSA
- Runway Object Free Area (ROFA)
- Future ROFA
- Runway Protection Zone (RPZ)
- Future RPZ
- Highway 126 Relocation Alignment Distance: 1.75 miles
- Highway 126 Removal Removal Distance: 0.75 miles
- Gravel Road Relocation Alignment Distance: 0.4 miles
- Tenant
- Future Land Acquisition (62 acres)
- Future Parallel Taxiway
- Removed Airfield Pavement
- Runway Visibility Zone (RVZ)
- Obstruction to 50:1 Approach Surface Total Obstructions: 0

N

0' 600' 1,200'

Figure 4-3
Alternative 2A - Extend Runway Northeast

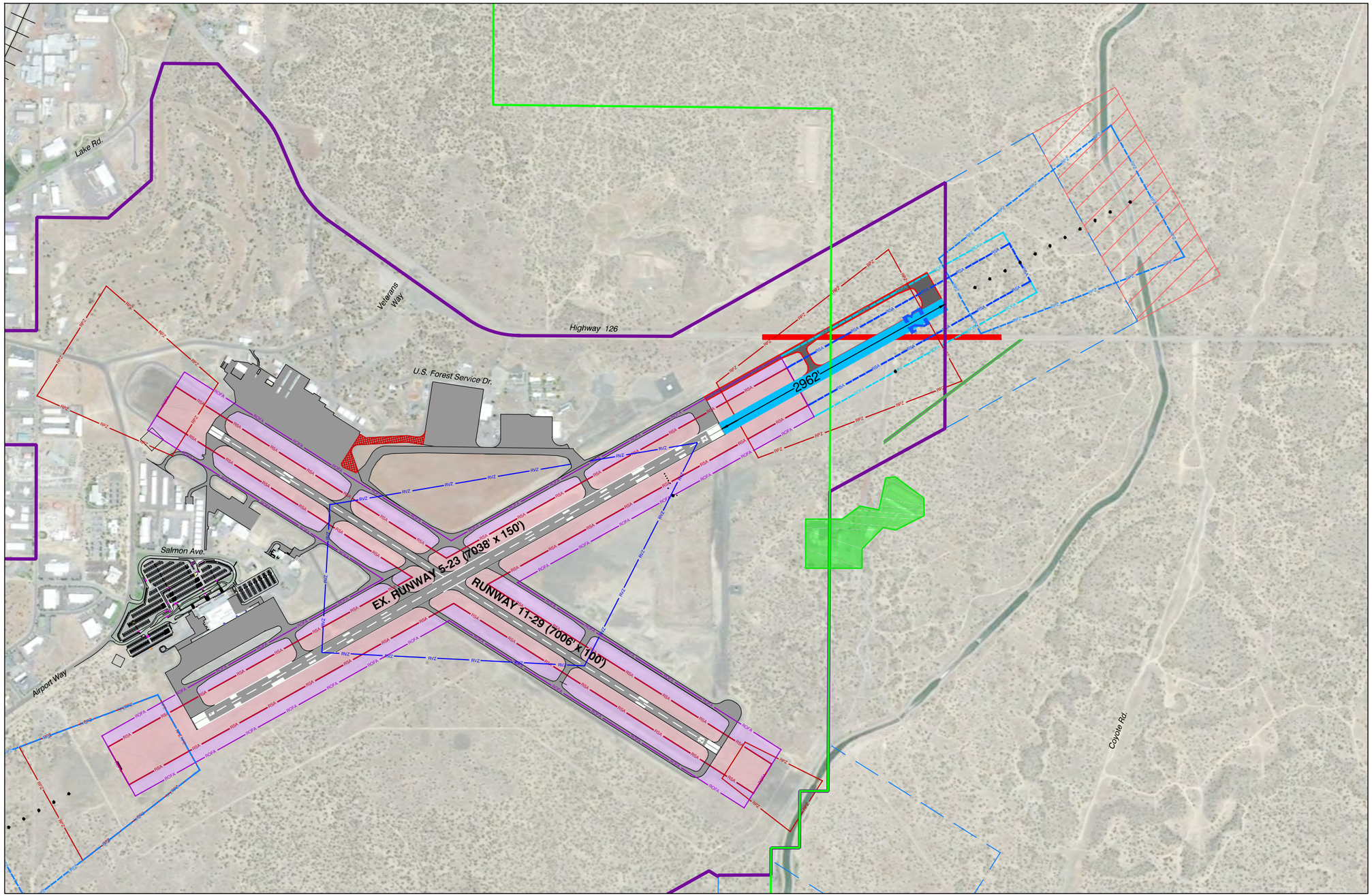
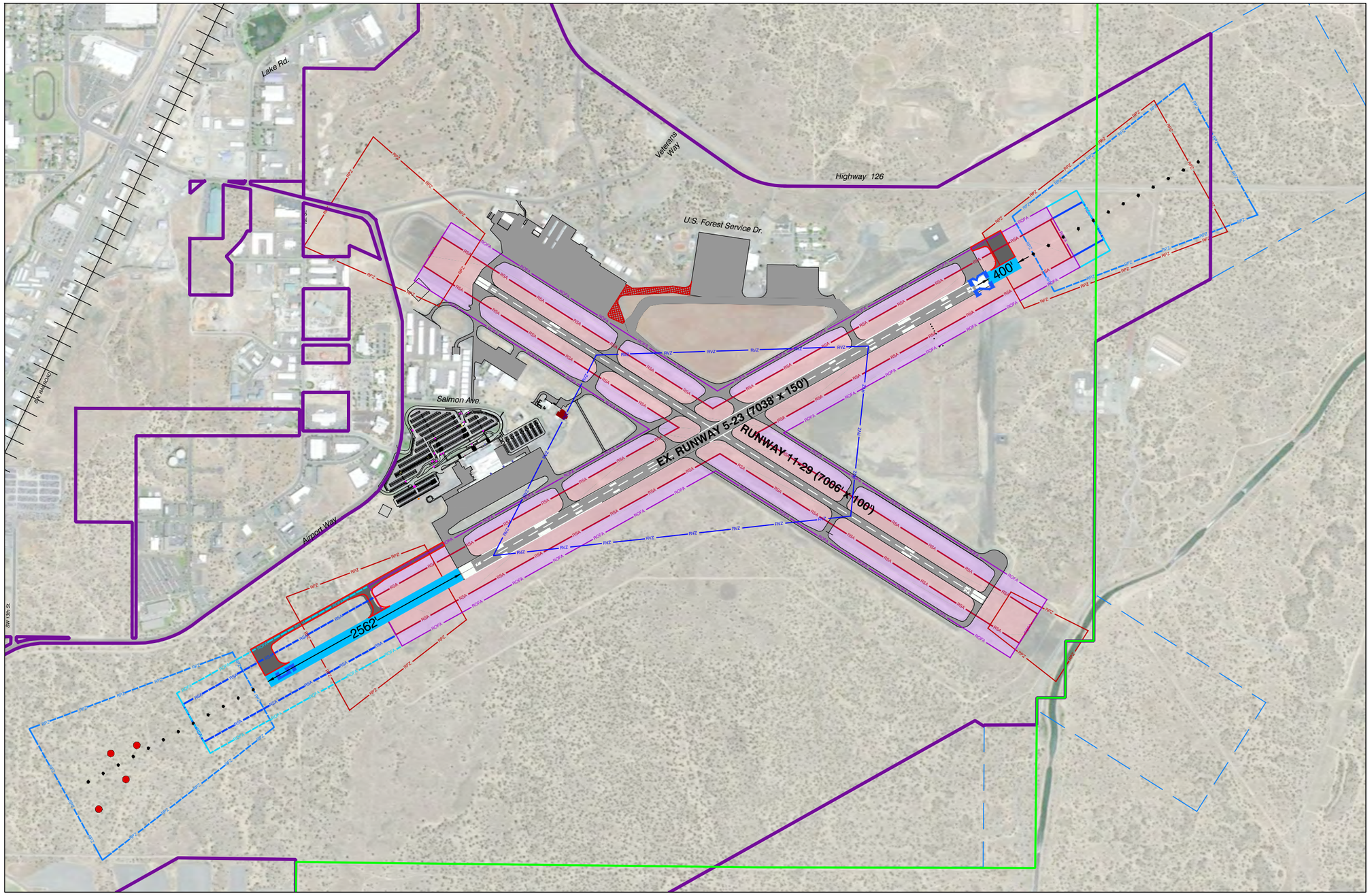


Figure 4-4
Alternative 2B - Extend Runway Northeast



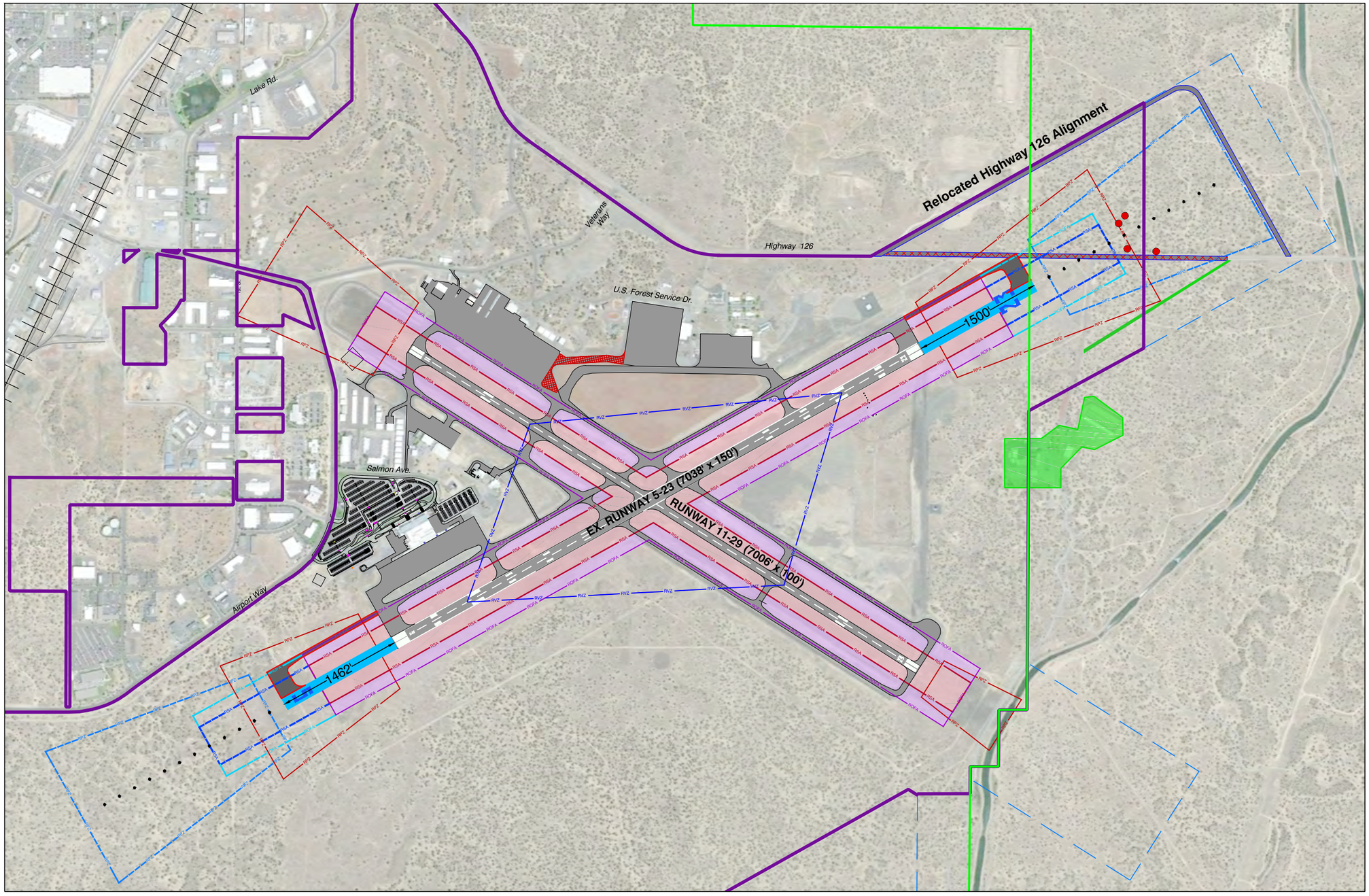
LEGEND

- RDM Property Boundary
- Urban Growth Boundary
- Avigation Easement
- Future Runway Extension
- Runway Safety Area (RSA)
- Future RSA
- Runway Object Free Area (ROFA)
- Future ROFA
- Runway Protection Zone (RPZ)
- Future RPZ
- ARFF Building
- Future Parallel Taxiway
- Removed Airfield Pavement
- Runway Visibility Zone (RVZ)
- Obstruction to 50:1 Approach Surface
  Total Obstructions: 4

N

0' 600' 1,200'

Figure 4-5
Alternative 3A - Split Runway Extension



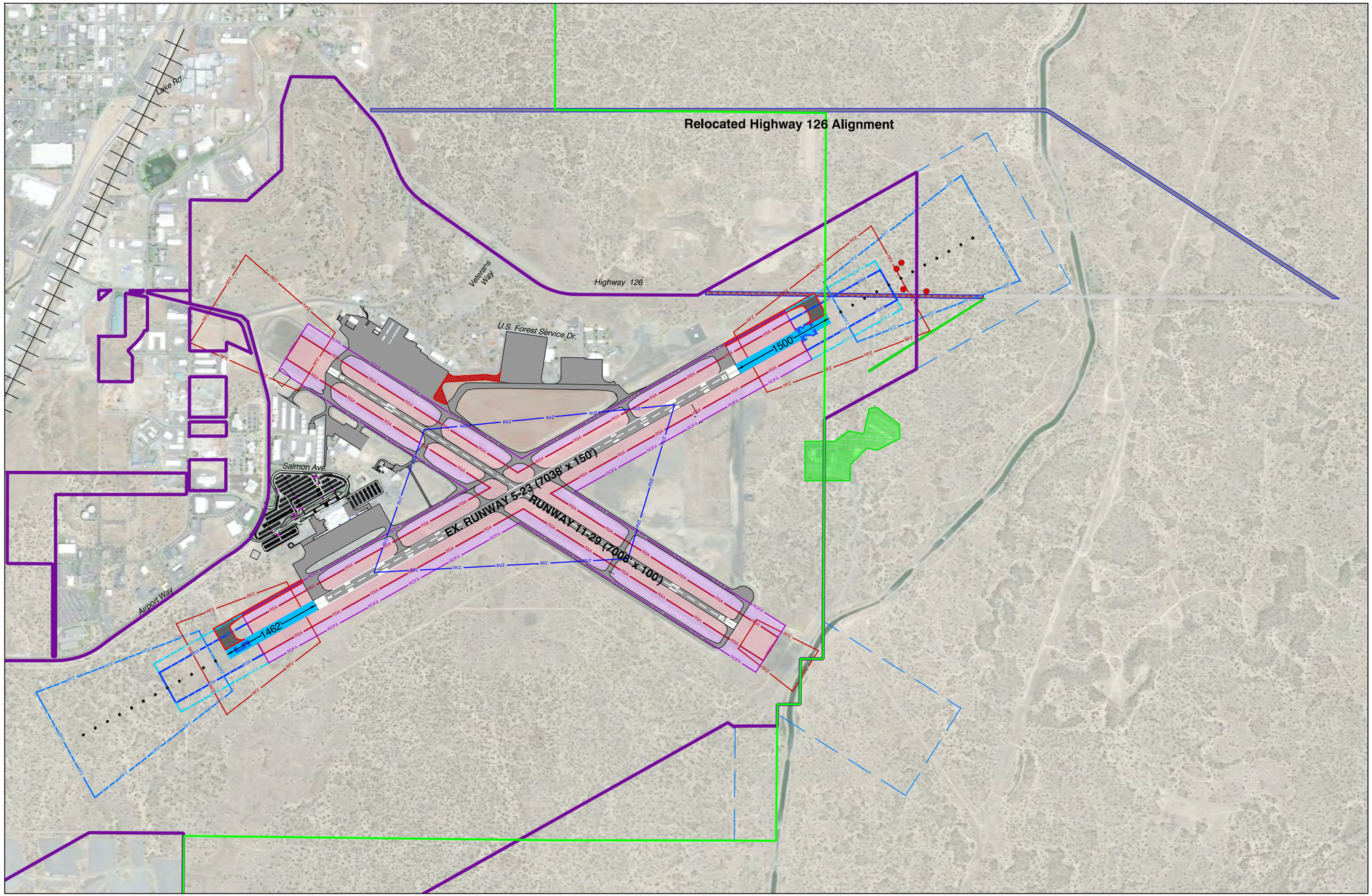
LEGEND

- RDM Property Boundary
- Urban Growth Boundary
- Avigation Easement
- Future Runway Extension
- Runway Safety Area (RSA)
- Future RSA
- Runway Object Free Area (ROFA)
- Future ROFA
- Runway Protection Zone (RPZ)
- Future RPZ
- Highway 126 Relocation
  Alignment Distance: 1.25 miles
- Highway 126 Removal
  Removal Distance: 0.8 miles
- Gravel Road Relocation
  Alignment Distance: 0.4 miles
- Tenant
- Future Parallel Taxiway
- Removed Airfield Pavement
- Runway Visibility Zone (RVZ)
- Obstruction to 50:1 Approach Surface
  Total Obstructions: 4

N

0' 600' 1,200'

Figure 4-6
Alternative 3B - Split Runway Extension



LEGEND

- RDM Property Boundary
- Urban Growth Boundary
- Avigation Easement
- Future Runway Extension
- Runway Safety Area (RSA)
- Future RSA
- Runway Object Free Area (ROFA)
- Future ROFA
- Runway Protection Zone (RPZ)
- Future RPZ
- Highway 126 Relocation
  Alignment Distance: 3 miles
- Highway 126 Removal
  Removal Distance: 0.8 miles
- Gravel Road Relocation
  Alignment Distance: 0.4 miles
- Tenant
- Future Parallel Taxiway
- Removed Airfield Pavement
- Runway Visibility Zone (RVZ)
- Obstruction to 50:1 Approach Surface
  Total Obstructions: 4

N

0' 750' 1,500'

Figure 4-7
Alternative 3C - Split Runway Extension

SUMMARY EVALUATION OF RUNWAY ALTERNATIVES

Table 4-1 presents a summary and an evaluation of the various alternatives for a runway extension at RDM. Alternative 1 is the preferred alternative because the Airport owns the land on which the runway extension will be built.

Table 4-1. Summary Evaluation Matrix of Runway Alternatives

Impact Category	Alternative 1	Alternative 2A	Alternative 2B	Alternative 3A	Alternative 3B	Alternative 3C
Description of Improvement	Extend Runway 5 2,962' to the southwest	Extend Runway 23 2,962' to the northeast	Extend Runway 23 2,962' to the northeast and Highway 126 tunnel under runway and taxiway	Extend Runway 5 2,562' to the southwest and extend Runway 23 400' to the northeast	Extend Runway 5 1,462' to the southwest and extend Runway 23 1,500' to the northeast	Extend Runway 5 1,462' to the southwest and extend Runway 23 1,500' to the northeast
Operational Capabilities						
Attract Larger Airplanes and Operating Weights and Range	Potential with longer published runway length for 5-23	Potential with longer published runway length for 5-23		Potential with longer published runway length for 5-23		
Critical Airspace Approach and Departure Surface Considerations	Instrument approach capabilities added to Runway 5	Instrument approach capabilities added to Runway 5		Instrument approach capabilities added to Runway 5		
Effect on All-Weather Capabilities	No Change	No Change		No Change		
NAVAIDS	Relocate with extension	Relocate with extension		Relocate with extension		
Runway Protection Zone Conflicts	Highway 126 in Runway End 23 RPZ	None	None due to Highway 126 tunnel.	Highway 126 in Runway End 23 RPZ	None	
Surface Transportation	Airport perimeter road in Runway 5 RPZ; Highway 126 in Runway 23 RPZ	None		Airport perimeter road in Runway 5 RPZ; Highway 126 in Runway 23 RPZ	None	
Effect on Night Operations	Instrument lighting proposed for Runway 5	Instrument lighting proposed for Runway 5		Instrument lighting proposed for Runway 5		
Performance Requirements						
Supporting Taxiways	Extend Taxiway F southwest 2,962' to new end of Runway 5	Extend Taxiway F northeast 2,962' to new end of Runway 23		Extend Taxiway F northeast 400' to new end of Runway 23 and 2,562' southwest to new end of Runway 5	Extend Taxiway F northeast 1,500' to new end of Runway 23 and 1,462' southwest to new end of Runway 5	
Obstructions	0 obstructions to NE 4 obstructions to SW	No obstructions		0 obstructions to NE 4 obstructions to SW	4 obstructions to NE 0 obstructions to SW	
Runway Visual Zone	Extends southwest by 1,481'; air carrier apron and ARFF bldg penetrate RVZ	Extends northeast by 1,481', no additional inclusions		Extends southwest by 1,281' and northeast by 200', air carrier apron and ARFF bldg penetrate RVZ	Extends southwest by 731' and northeast by 750', no additional inclusions	
Land Use Compatibility						
Impacts to Off- Airport Land Use	Potential decreased compatibility to the southwest	Potential decreased compatibility to the northeast and relocation of business required	Potential decreased compatibility to the southwest and northeast	Potential decreased compatibility to the southwest and northeast		
Impacts to Airport Property Use	Reduction in available building area southwest of relocated approach end of Runway 5 due to RPZ and approach surface shift	No Change		Reduction in available building area southwest of relocated approach end of Runway 5 due to RPZ and approach surface shift		

Table 4-1. Summary Evaluation Matrix of Runway Alternatives						
Impact Category	**Alternative 1**	**Alternative 2A**	**Alternative 2B**	**Alternative 3A**	**Alternative 3B**	**Alternative 3C**
Description of Improvement	Extend Runway 5 2,962' to the southwest	Extend Runway 23 2,962' to the northeast	Extend Runway 23 2,962' to the northeast and Highway 126 tunnel under runway and taxiway	Extend Runway 5 2,562' to the southwest and extend Runway 23 400' to the northeast	Extend Runway 5 1,462' to the southwest and extend Runway 23 1,500' to the northeast	Extend Runway 5 1,462' to the southwest and extend Runway 23 1,500' to the northeast
Environmental Impact Potential						
Property Acquisitions / Easements	None	62 acres (Runway 23 RPZ and property around RPZ)		None		
Historic, Architectural, and Archaeological and Cultural Resources	None	The North Unit Main Canal (Historic Resource) would be located in the RPZ		None	The North Unit Main Canal (Historic Resource) would be located in the RPZ	
Section 4(F) of the Department of Transportation Act	None	The North Unit Main Canal (Section 4(f) Resource) would be located in the RPZ		None	The North Unit Main Canal (Section 4(f) Resource) would be located in the RPZ	
Material Excavation Quantities	Runway: 79,092 CY Taxiway: 10,792 CY Total: 89,884 CY	Runway: 1,693 CY Taxiway: 718 CY Total: 2,411 CY		Runway: 72,092 CY Taxiway: 9,416 CY Total: 81,508 CY	Runway: 11,893 CY Taxiway: 6,416 CY Total: 18,309 CY	Runway: 11,893 CY Taxiway: 3,416 CY Total: 15,309 CY
Impervious Surfaces (Runways and Associated Taxiways)	77,400 SY of additional pavement. (includes extension of Twy F)	77,400 SY of additional pavement. (includes extension of Twy F); 1.75 miles of relocated Highway 126	77,400 SY of additional pavement. (includes extension of Twy F)	85,300 SY of additional pavement. (includes extension of Twy F)	81,600 SY of additional pavement. (includes extension of Twy F); 1.25 miles of relocated Highway 126	
Stakeholder Feedback						
On/Off Airport Related Impacts	Low	Medium	High	Low	Medium	High
Project Risk	Low	High		Low	High	
Implementation Complexity	Low	High		Low	High	
Constructability						
Impact to Airport Operations	Low	Low		Low		
Phasing Complexity	Low	Low	High	Low	Medium	
Financial Costs/Impacts						
Project Cost	$48,450,000	$37,550,000	$58,440,000	$29,319,000	$31,555,000	$36,850,000
ALTERNATIVE EVALUATION						
DETERMINATION	**Favorable**	**Favorable**	**Not Favorable**	**Neutral**	**Not Favorable**	**Not Favorable**

AIRFIELD CAPACITY AND THIRD RUNWAY

As discussed in **Chapter 3 – Facility Requirements**, RDM is currently operating at 20 percent of its annual capacity, 27 percent of its Visual Flight Rules (VFR) hourly capacity and 36 percent of its Instrument Flight Rules (IFR) capacity with the existing runway configuration. Flight school operations are expected to double total operations at RDM but will not change the percentage of the mix index because of the weights of aircraft in the flight school fleet. All aircraft in the flight school fleet weigh below 12,500 pounds, and only aircraft that weigh greater than 12,500 pounds can be used in the mix index equation to determine maximum annual service volume (ASV). Total operations at RDM will approximate to 80,000, only 40 percent of its ASV of 200,000 operations. It is anticipated that the aviation activity forecasted through 2036 will not significantly change airfield capacity thus not justifying the need for additional runway capacity. However, a third parallel runway was identified in the previous April 2005 Airport Master Plan and is included on the FAA-approved current ALP (February 2005). The runway is parallel to Runway 5-23 with 3,700 feet centerline to centerline separation and is to initially be constructed 6,200 feet long and 100 feet wide with supporting taxiways and connectors. The ultimate runway was identified as 8,000 feet long and 100 feet wide.

Though it is not anticipated RDM will need a new third runway through 2036, this improvement will be preserved and carried forward into the preferred alternative. Land use controls are in place to protect the third runway from encroachment by incompatible development. Keeping the runway on the ALP preserves long-range flexibility for the Airport should operations require additional capacity, or airport development moves farther west.

4.5.2 TAXIWAY ALTERNATIVES

Airports should provide a safe and efficient taxiway system to expedite aircraft movements to and from the runways and apron areas. The purpose of taxiway improvements is to develop layouts that are operationally efficient, enhance safety, improve circulation, increase capacity and address needs identified in **Chapter 3 – Facility Requirements**. Alternatives are evaluated in this section and recommended improvements to the taxiway system are identified below.

- ✓ Taxiway A (north side): additional pavement will be added to shift the point at which Taxiway C curves and becomes Taxiway A. Taxiway centerline striping on the apron will be modified to connect to Taxiway C and require an additional turn to access Taxiway A.
- ✓ Taxiway A (south side): pavement will be added to shift the point at which Taxiway A connects to Taxiway G. This will require aircraft using the apron taxilane to taxi on Taxiway G before turning to access Taxiway A.
- ✓ Taxiway E: the existing taxiway segment between the apron and Taxiway F will be removed. It will be replaced with a new connector taxiway located about 400 feet east of the existing taxiway (measured centerline to centerline).

Taxiway H: the existing taxiway segment between the apron and Taxiway F will be removed. It will be replaced with a new connector taxiway located about 175 feet east of the existing taxiway (measured centerline to centerline).

ALTERNATIVE 1 – FULL-LENGTH PARALLEL TAXIWAY

This alternative involves addressing FAA-identified Hot Spots 1 and 2 and refines the Airport's taxiway system to resolve issues related to direct access to the runway from an aircraft apron area and non-standards pavement conditions, as shown in **Figure 4-8**, and as discussed in FAA AC 150/5300-13A, Change 1, *Airport Design*. A new parallel taxiway would be constructed in three phases on the eastside of Runway 5-23 with new taxiway connectors to the runway and Taxiway F. The first phase of construction would add 34,379 SY of additional pavement. The second phase would add 24,765 SY of additional pavement, and the third phase would add 26,067 SY of additional pavement. Pavement from Taxiways C and G between the new parallel taxiway and Taxiway F would be removed to address FAA Hot Spots 1 and 2 and mitigate the potential of a runway incursion. The existing Taxiway H and E intersections that facilitate direct access from the passenger apron to Runway 5-23 would be moved to a location that mitigates the potential for aircraft to accidentally cross Taxiway F and unintentionally enter the runway environment. An additional Taxiway connection to Taxiway F would be constructed to facilitate aircraft movement to and from the apron area. To resolve the non-standard pavement conditions, pavement would be added to both sides of the Taxiway A intersections to form a 90-degree turn and eliminate the wide-pavement areas.

Separately, in-fill pavement would be added to the existing aircraft apron area to increase the size of the apron and provide additional uses to include aircraft parking, ground service equipment staging, and storage or other as-needed storage or staging.

The phased approach to project construction allows the Airport to add additional taxiway pavement as needed and minimizes impact on airport operations during construction. The runways will need to be closed temporarily when connector taxiways are added, and when Phase 2 crosses Runway 11-29. Construction can be scheduled to minimize overall disruption.

This alternative is estimated at a total project cost of $20,400,00 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 2 – PARALLEL TAXIWAY WITH OFFSET

This alternative, as shown in **Figure 4-9**, is a derivative of Alternative 1 and similarly addresses FAA identified Hot Spots 1 and 2 and resolves all pavement conditions identified in FAA AC 150/5300-13A, Change 1, *Airport Design*. The only difference between Alternatives 1 and 2 relate to designing the new parallel taxiway on the eastside of Runway 5-23 and eliminating the taxiway connectors between Taxiway C and G. New taxiway connectors would be constructed to prevent the creation of hot spots similar to the

existing FAA identified Hot Spots 1 and 2 on the opposite side of the airfield. Other conditions remain the same.

This alternative is estimated at a total project cost of $10,913,000 and includes engineering, environmental compliance, and construction management services.

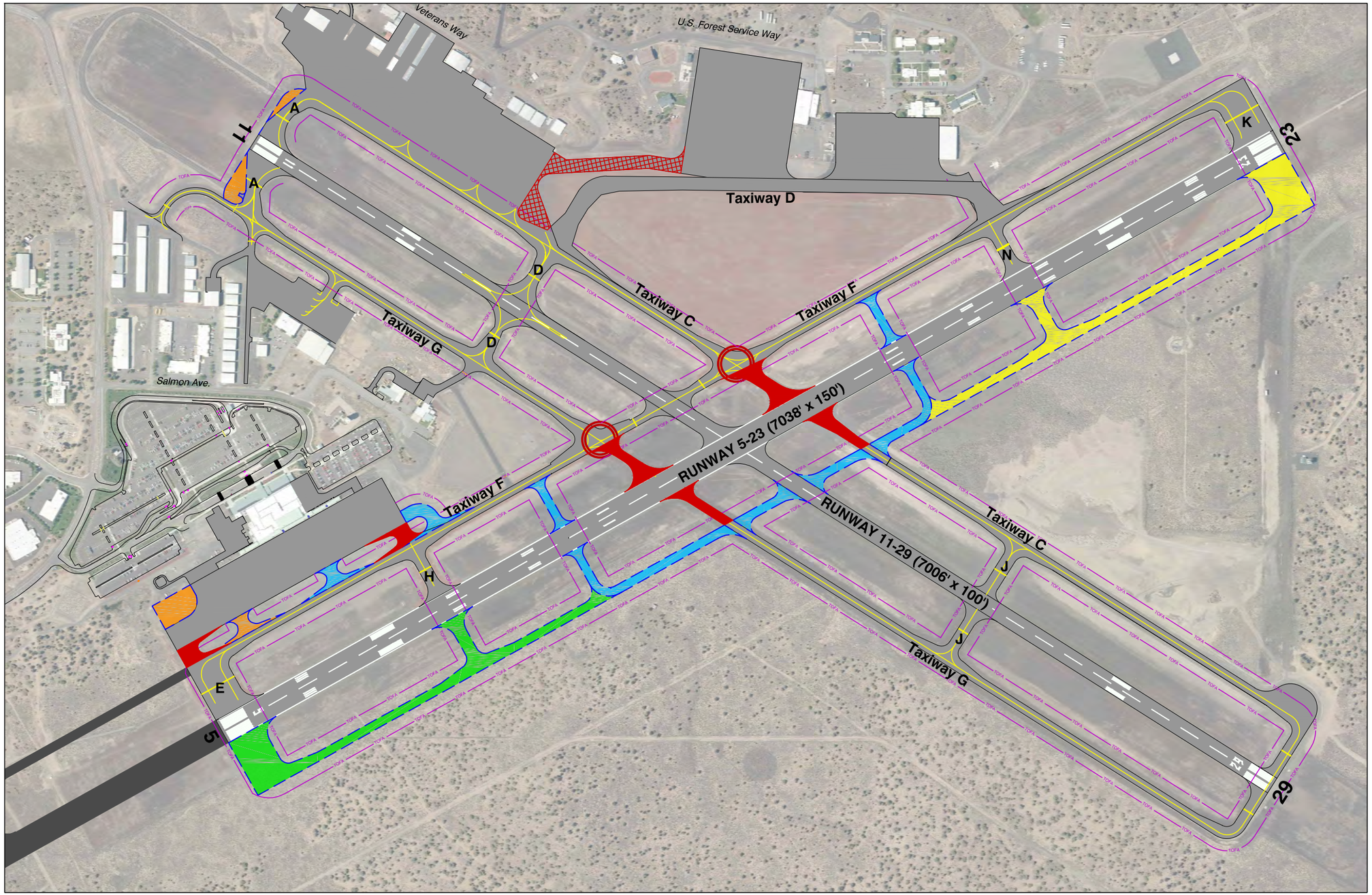


Figure 4-8
Alternative 1 - Full Length Parallel Taxiway

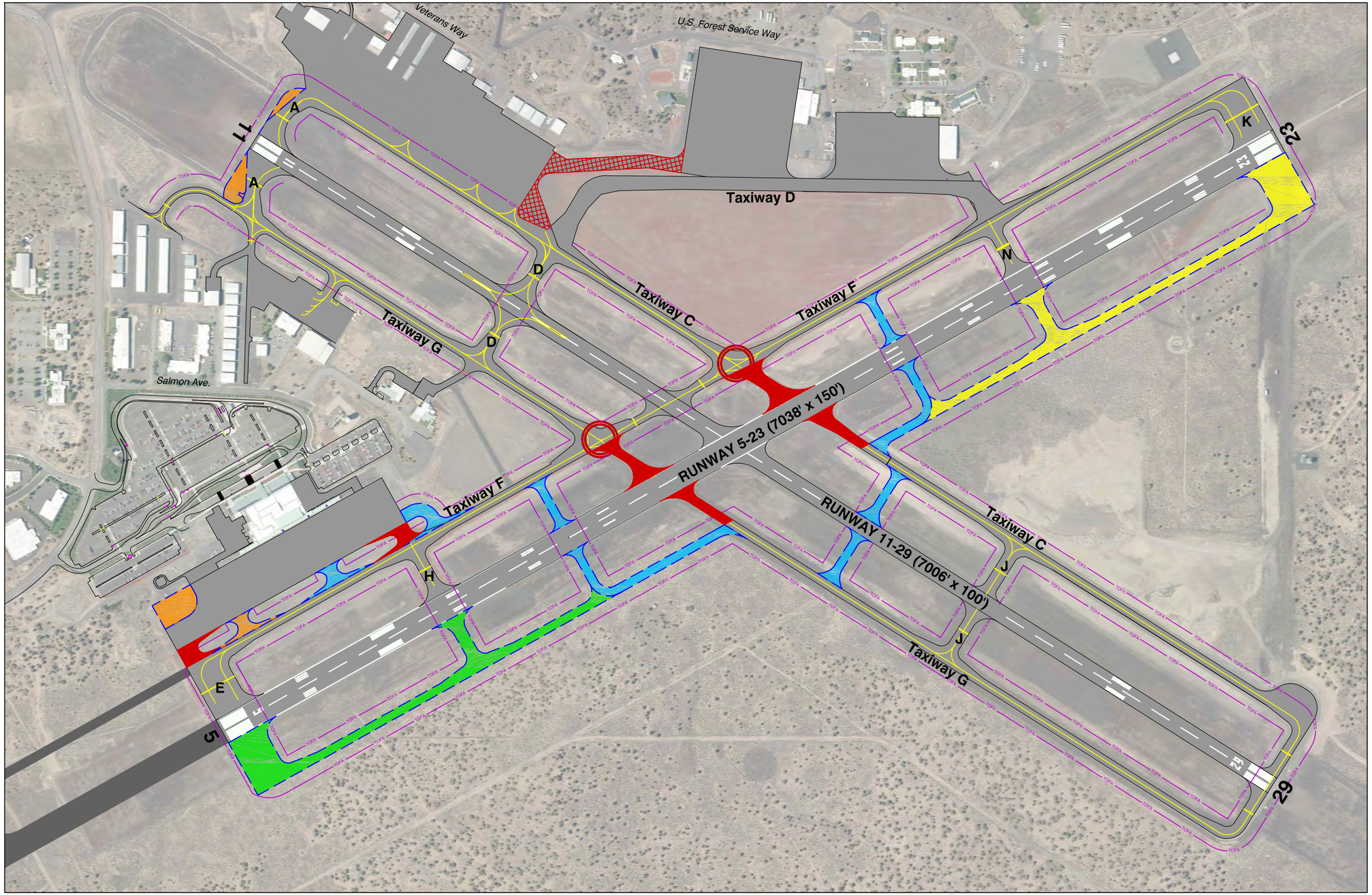


Figure 4-9
Alternative 2 - Parallel Taxiway with Offset

SUMMARY EVALUATION OF TAXIWAY ALTERNATIVES

Table 4-2 presents a summary and an evaluation of the various alternatives for taxiway improvements at RDM. Alternative 1 is the preferred alternative due to the taxiway connectors not being offset, resulting in a full length parallel taxiway.

Table 4-2.Summary Evaluation Matrix of Taxiway Alternatives Impact Category	Alternative 1	Alternative 2
Description of Improvement	Parallel taxiway on east side of RWY 5-23.	Parallel taxiway on east side of RWY 5-23.
Operational Capabilities		
Airfield Operability & Access	New east and west access to RWY 5-23	New east and west access to RWY 5-23
Presents Solution for FAA Identified Hot Spots 1 & 2	Yes	Yes
Airline and GA Aircraft Separation	Yes	Yes
Performance Requirements		
Reduces Aircraft Taxi Times	TBD	TBD
Increases Potential for Development	Yes	Yes
Expansion Capabilities	Project can be completed in multiple phases	Project can be completed in multiple phases
AC 150/5300-13A Deficiencies	Resolved	Resolved
Complies with Current Design Criteria	Yes	Yes
Land Use Compatibility		
Impacts to Airport Property Use	New airside or landside development area east of RWY 5-23	New airside or landside development area east of RWY 5-23
Aviation Compatible Use	Yes	Yes
Environmental Impact Potential		
Property Acquisitions / Easements	None	None
Impervious Surfaces	Additional Pavement: Phase 1: +/- 34,379 SY Phase 2: +/- 24,765 SY Phase 3: +/- 26,067 SY	Additional Pavement: Phase 1: +/- 34,379 SY Phase 2: +/- 24,765 SY Phase 3: +/- 26,067 SY
Constructability		
Impact to Airport Operations	Low	Low
Phasing Complexity	Low	Low
Financial Costs/Impacts		
Project Cost	$20,400,000	$10,913,000
ALTERNATIVE EVALUATION		
DETERMINATION	**Favorable**	**Favorable**

4.5.3 AIRPORT VEHICLE PARKING ALTERNATIVES

Chapter 3 – Facilities Requirements identified the need for additional vehicle parking. The airport reached the terminal parking lot capacity of 1,083 vehicles multiple times in 2016 and had to utilize overflow parking lots. An additional 1,100 parking stalls will be needed to meet demand through 2036. This section analyzes landside alternatives through options focused on adding hourly and premium vehicle parking, long-term vehicle parking, remote vehicle employee vehicle parking, vendor vehicle parking, and rental car facilities.

It is noted that the Airport has begun to see service by transportation network companies (TNCs) like Lyft and Uber. Service by TNCs could theoretically reduce future parking demand if passengers opt to take TNCs to and from the Airport rather than using their own vehicles. It is recommended that the Airport monitor how TNCs impact parking demand and adjust planning assumptions accordingly. Since each community is different and TNCs are a relatively new entrant to the RDM market, it is unknown how much impact they will have on parking demand.

A passenger vehicle parking garage was not considered as part of the alternatives analysis due to the abundance of available vacant land, operational impacts during construction, costs associated with long-term operations and maintenance, and impacts to the scenic views to and from the passenger terminal building.

ALTERNATIVE 1 – SOUTHWEST DEVELOPMENT

This alternative adds an estimated 4,000 parking stalls, as shown in **Figure 4-10**, and involves converting the existing hourly terminal parking lot into a combination of hourly and premium long-term parking. The estimate for the number of parking stalls is based on the average space for stalls and circulation.

Additional hourly and premium long-term parking would be developed directly adjacent to the existing hourly terminal parking. This vehicle parking lot would require the relocation of existing tenants and building demolition. The existing employee vehicle parking lot to the west of the passenger terminal would be converted to hourly or premium long-term parking. A new employee vehicle parking lot would be developed off Salmon Avenue, between the south GA apron and snow removal equipment building. Additional long-term vehicle parking would be developed west of SE Airport Way, and a remote vehicle parking lot would be developed north of the Deschutes County Fair Grounds Expo Center, along the west side of SE Airport Way. Rental car facilities would be developed just north of the additional long-term vehicle parking lot.

For the Airport to provide service to these new areas, the Airport would need to implement a bus operation as the distance to the new passenger parking lot from the passenger terminal ranges from 1.2 to 1.5 miles. This would increase costs due to the need for procurement of a bus fleet, and the on-going costs for fuel, maintenance, and drivers.

The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas and would have minimal impact to airport operations. Potential exists for the discovery of archaeological resources in the project area, and it is recommended that a field survey be conducted prior to any construction.

This alternative is estimated at a total project cost of $21,400,000 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 2A – SE AIRPORT WAY DEVELOPMENT

This alternative adds an estimated 3,100 parking stalls, as shown in **Figure 4-11**, and involves converting the existing hourly terminal parking lot into a combination of hourly and premium long-term parking. The estimate for the number of parking stalls is based on the average space for stalls and circulation.

The existing employee vehicle parking lot to the west of the passenger terminal would be converted to hourly or premium long-term parking. A new employee vehicle parking lot would be developed off Salmon Avenue, between the south GA apron and snow removal equipment building. Additional remote and long-term vehicle parking would be developed closer to the central passenger terminal area east of SE Airport Way and outside of critical Runway 5-23 design surfaces. Rental car facilities would be developed just north of the additional long-term vehicle parking lot adjacent to the central passenger terminal area.

For the Airport to provide service to these new areas, the Airport would need to implement a bus operation as the distance to the new passenger parking lot ranges from half a mile to one mile. This would increase costs due to the procurement of a bus fleet, fuel, maintenance, and drivers.

The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations. A potential exists, however, for the discovery of archaeological resources in the area of this alternative, and it is recommended a survey be conducted prior to any construction.

This alternative is estimated at a total project cost of $13,692,000 and includes engineering, environmental compliance, and construction management services. It does not include increased operational costs or vehicle costs associated with bus service.

ALTERNATIVE 2B – SE AIRPORT WAY DEVELOPMENT

This alternative adds an estimated 1,600 parking stalls, as shown in **Figure 4-12**, and is derived from Alternative 2A. Alternative 2B involves converting the existing hourly terminal parking lot into a combination of hourly and premium long-term parking. The estimate for the number of parking stalls is based on the average space for stalls and circulation.

The existing employee vehicle parking lot to the west of the passenger terminal would be converted to hourly or premium long-term parking. A new employee vehicle parking lot would be developed off Salmon Avenue, between the south GA apron and snow removal equipment building.

Additional long-term vehicle parking would be developed in multiple phases, with the first phase on property west of SE Airport Way on a vacant parcel within an industrial complex. The second phase would be on property east of SE Airport Way close to the terminal area. Additional remote vehicle parking and rental car facilities would be developed closer to the central passenger terminal area west of SE Airport Way and outside of critical Runway 5-23 design surfaces. These facilities would be adjacent to the second phase for long-term vehicle parking.

For the Airport to provide service to these new areas, a similar type of bus operation as Alternative 2A would need to be implemented by the Airport as the distance to the new passenger parking lot from the passenger terminal ranges from half a mile to one mile.

The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations. A potential exists, however, for the discovery of archaeological resources in the area of this alternative, and it is recommended a survey be conducted prior to any construction.

This alternative is estimated at a total project cost of $10,678,000 and includes engineering, environmental compliance, and construction management services. It does not include increased operational costs or vehicle costs associated with bus service.

ALTERNATIVE 2C – SE AIRPORT WAY DEVELOPMENT

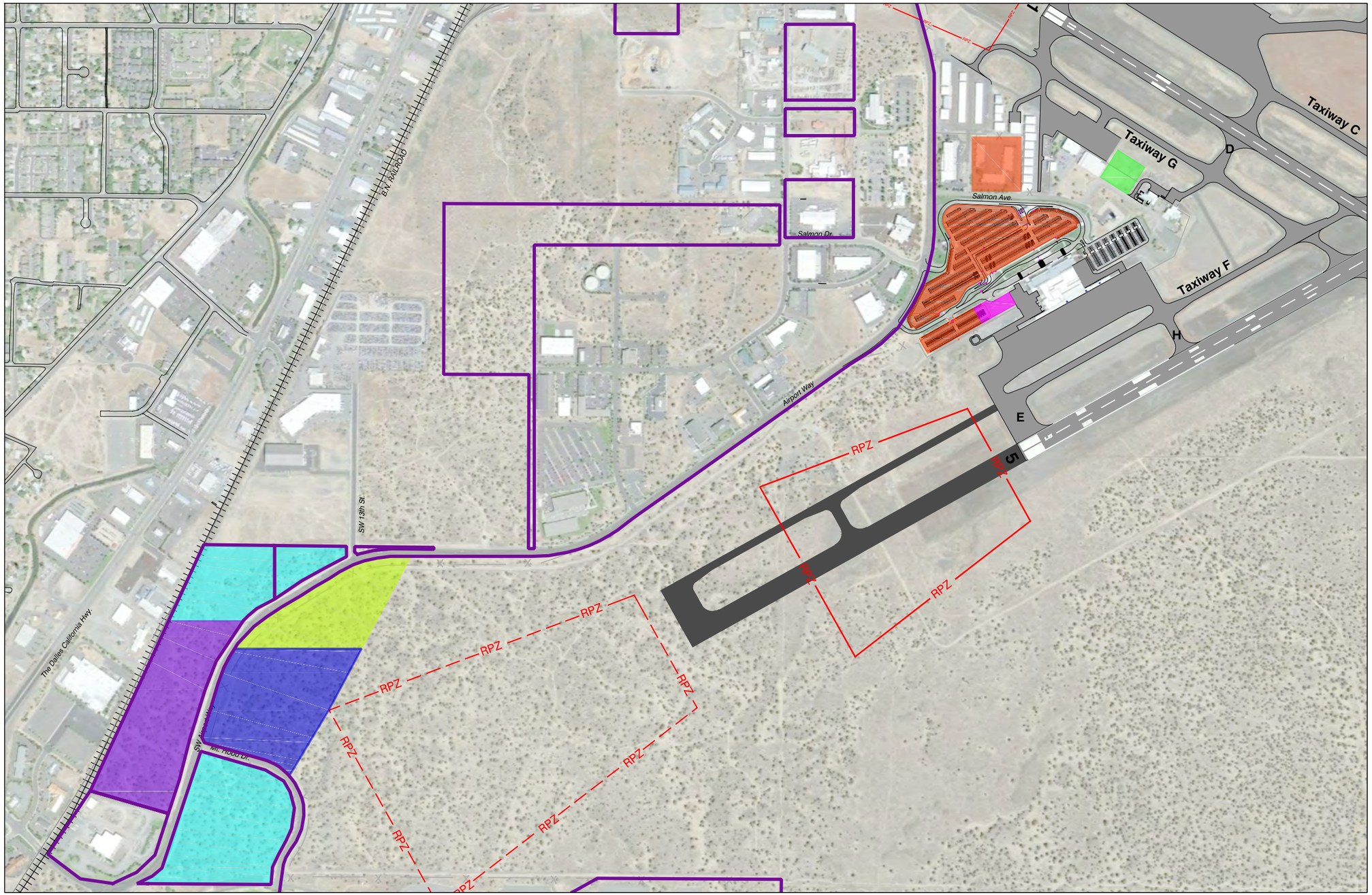
This alternative adds an estimated 1,700 parking stalls, as shown in **Figure 4-13,** and is derived from Alternatives 2A and 2B. Alternative 2C involves converting the existing hourly terminal parking lot into a combination of hourly and premium long-term parking. The estimate for the number of parking stalls is based on the average space for stalls and circulation.

The existing employee vehicle parking lot to the west of the passenger terminal would be converted to hourly or premium long-term parking. A new employee vehicle parking lot would be developed off Salmon Avenue, between the south GA apron and snow removal equipment building. Additional long-term vehicle parking would be developed in multiple phases with the first phase on property east of SE Airport Way. The second phase would require the relocation of existing tenants and building demolition; however, this parcel of land is close to the terminal area. Tenants would be relocated to a vacant parcel within an industrial complex. Additional remote vehicle parking and rental car facilities would be developed closer to the central passenger terminal area west of SE Airport Way and outside of critical Runway 5-23 design surfaces. These facilities would be adjacent to the initial phase for long-term vehicle parking.

For the Airport to provide service to these new areas, the Airport would need to implement a bus operation as the distance to the new passenger parking lot from the terminal building ranges from one half to one mile. This would increase costs due to the need for procurement of a bus fleet, and the on-going costs for fuel, maintenance, and drivers.

The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations. A potential exists, however, for the discovery of archaeological resources in the area of this alternative, and it is recommended a survey be conducted prior to any construction.

This alternative is estimated at a total project cost of $16,222,000 and includes engineering, environmental compliance, and construction management services. It does not include increased operational costs or vehicle costs associated with bus service.



LEGEND

- RDM Property Boundary
- Runway Protection Zone (RPZ)
- Runway Extension - Alternative 1
- Future RPZ
- Rental Car Facilities
- Long Term Parking
- Remote Parking
- Area 1 - Hourly & Premium Long-Term Parking
- Area 2 - New Employee Parking
- Area 3 - Expanded Vendor Parking as Necessary
- Commercial Area

N

0’ 400’ 800’

Figure 4-10
Alternative 1 - Southwest Development

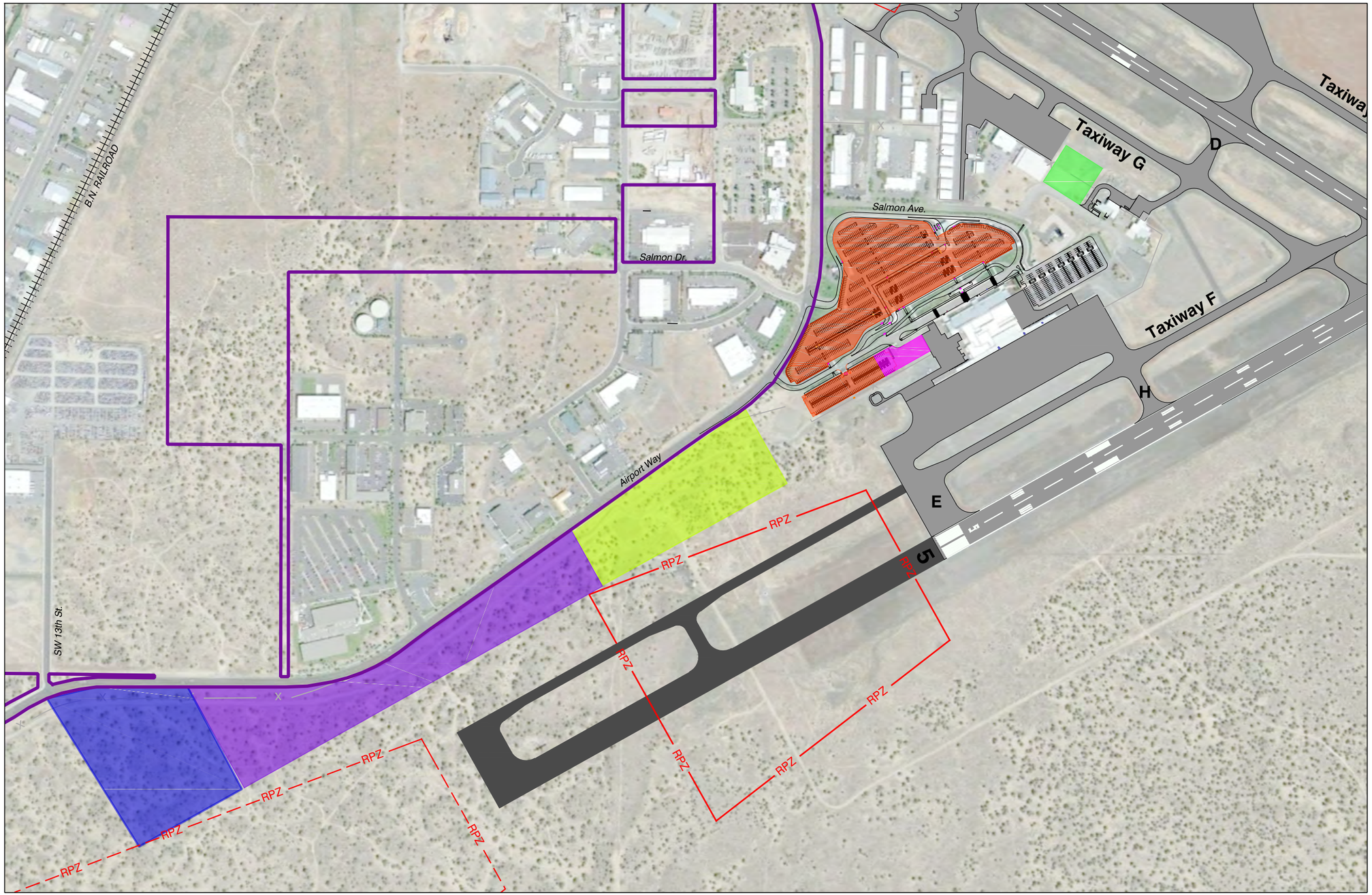


Figure 4-11
Alternative 2A - SE Airport Way Development

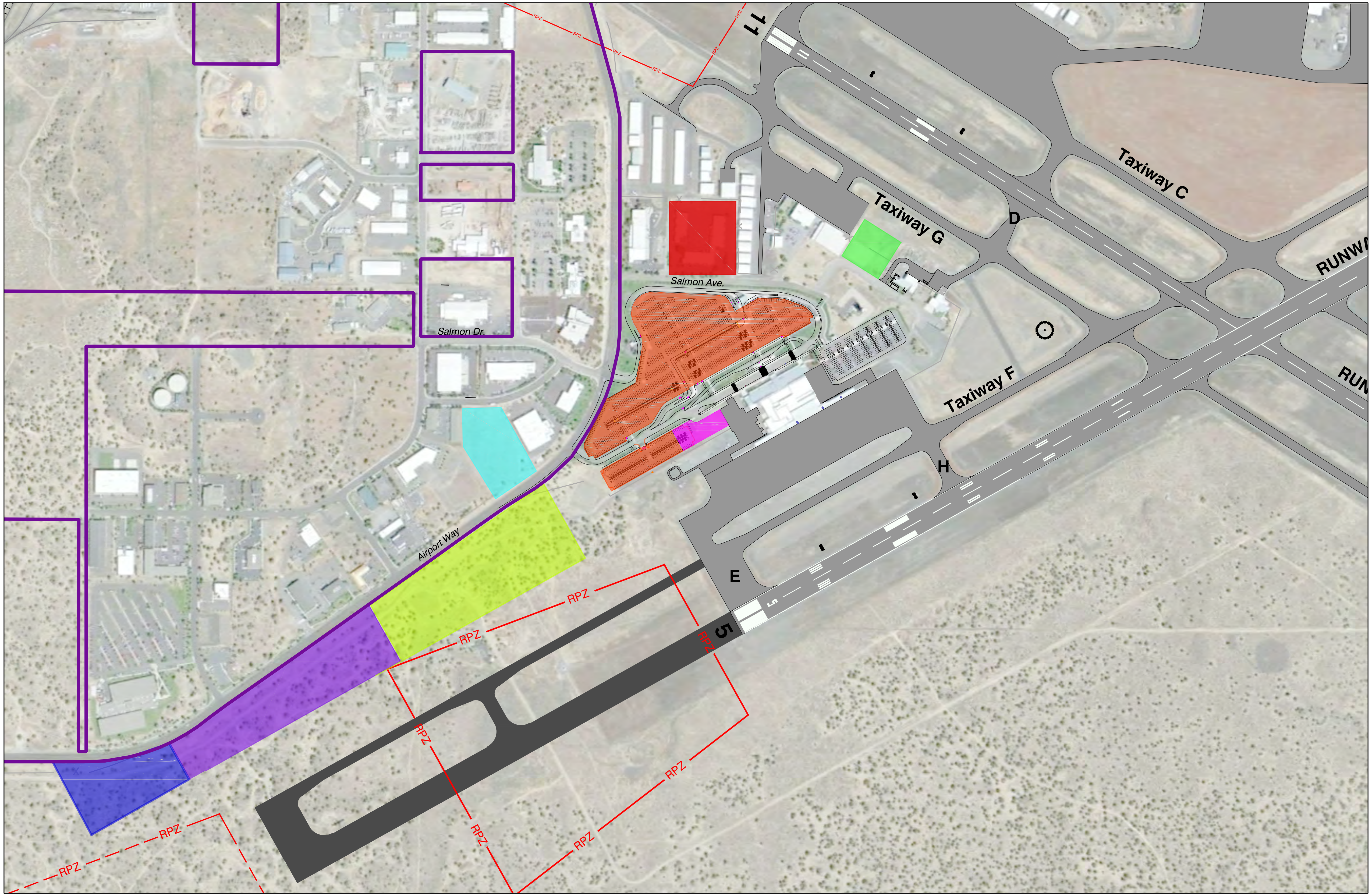
LEGEND

- RDM Property Boundary
- Runway Protection Zone (RPZ)
- Runway Extension - Alternative 1
- Future RPZ
- Rental Car Facilities
- Long Term Parking Phase 1
- Long Term Parking Phase 2
- Remote Parking
- Area 1 - Hourly & Premium Long-Term Parking
- Area 2 - New Employee Parking
- Area 3 - Expanded Vendor Parking as Necessary

N

0’ 300’ 600’

Figure 4-12
Alternative 2B - SE Airport Way Development



LEGEND

- RDM Property Boundary
- Runway Protection Zone (RPZ)
- Runway Extension - Alternative 1
- Future RPZ
- Rental Car Facilities
- Long Term Parking Phase 1
- Long Term Parking Phase 2
- Remote Parking
- Area 1 - Hourly & Premium Long-Term Parking
- Area 2 - New Employee Parking
- Area 3 - Expanded Vendor Parking as Necessary
- Relocated Tenants

N

0' 300' 600'

Figure 4-13
Alternative 2C - SW Airport Way Development

REDMOND MUNICIPAL
AIRPORT MASTER PLAN

SUMMARY EVALUATION OF VEHICLE PARKING ALTERNATIVES

Table 4-3 presents a summary and an evaluation of the various alternatives for vehicle parking at RDM. Alternative 1 is the preferred alternative because of the increase in the amount of parking stalls (estimated increase of 4,000) and the minimal impact to airport operations.

Table 4-3. Vehicle Parking Alternatives Summary Evaluation Matrix

Impact Category	Alternative 1	Alternative 2A	Alternative 2B	Alternative 2C
Description of Improvement	Reorganization of existing vehicle parking and additional long term/remote vehicle parking lots	Reorganization of existing vehicle parking and additional long term/remote vehicle parking lots		
Operational Capabilities				
Operability & Access to Terminal	Increases existing parking stalls by 314%.	Increases existing parking stalls by 287%.	Increases existing parking stalls by 153%.	Increases existing parking stalls by 161%.
Surface Transportation	Passengers are transported via bus to/from the terminal.	Passengers are transported via bus to/from the terminal.		
Transportation Cost	Increased cost for procurement of bus fleet, fuel and continued maintenance	Increased cost for procurement of bus fleet, fuel and continued maintenance		
Performance Requirements				
Addition or Subtraction of Vehicle Parking Stalls	Estimated 4,052 additional stalls	Estimated 3,109 additional stalls	Estimated 1,667 additional stalls	Estimated 1,744 additional stalls
Estimated Distance from Terminal to Vehicle Parking Lot	6,500' to 8,000'	2,000' to 5,000'	1,500' to 4,000'	1,000' to 4,000'
Conforms to FAA Standards	No Parking in RPZ.	Future parking in RPZ and no height conflicts with critical surfaces.		
Land Use Compatibility				
Impacts to Airport Property Use	Undeveloped property repurposed into vehicle parking.	None		Business relocation to repurpose land into vehicle parking.
Property Acquisition	None	None	Yes	
Business Relocation	Yes	None		Yes
Impacts to Off- Airport Land Use	None	None	Vacant property repurposed into vehicle parking.	Vacant property repurposed for Commercial/Industrial use.
Environmental Impact Potential				
Property Acquisitions / Easements	None	None	Yes	
Historic, Architectural, and Archaeological and Cultural Resources	Potential exists for discovery of archaeological resources	Potential exists for discovery of archaeological resources		
Threatened and Endangered Species	Requires Contact of USFWS - East Wolf Mgmt. Zone.	Requires Contact of USFWS - East Wolf Mgmt. Zone.		
Stakeholder Feedback				
Supporting Services	Required	Required		
Compatible w/Existing Development	Above Average	Excellent	Above Average	Above Average
Protection of Scenic View (Terminal)	No Impact	No Impact		
Constructability				
Impact to Airport Operations	Minimal	Construction near SE Airport Way and Central Terminal Area		
Building Demolition	Yes	No		Yes
Phasing Complexity	Low	Medium		
Financial Costs/Impacts				
Project Cost	$21,400,000	$13,692,000	$10,678,000	$16,222,000
OVERALL EVALUATION				
DETERMINATION	**Favorable**	**Favorable**	**Not Favorable**	**Not Favorable**

4.5.4 GENERAL AVIATION DEVELOPMENT ALTERNATIVES

As discussed in **Chapter 4 – Facility Requirements**, the existing GA facilities are constrained and lack easily developable areas with airfield access. Demand forecasts project additional based aircraft, corporate aviation related activities, and a potential flight school. This section analyzes GA development alternatives focused on accommodating anticipated demand with a maximum build potential.

ALTERNATIVE 1 – CENTRAL DEVELOPMENT AREA

This alternative, as shown in **Figure 4-14**, focuses on the development of a vacant 37.6-acre parcel of land southeast of the proposed taxiway parallel to Runway 5-23. This parcel has been identified for future aviation use and can be developed to accommodate many GA activities. This site does penetrate the existing RVZ and has direct access to Runway 5-23.

The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations. Earthwork is a significant factor due to the significant grades and known presence of rock in the area that requires excavation and embankment quantities of 9,200 CY and 151,000 CY, respectively.

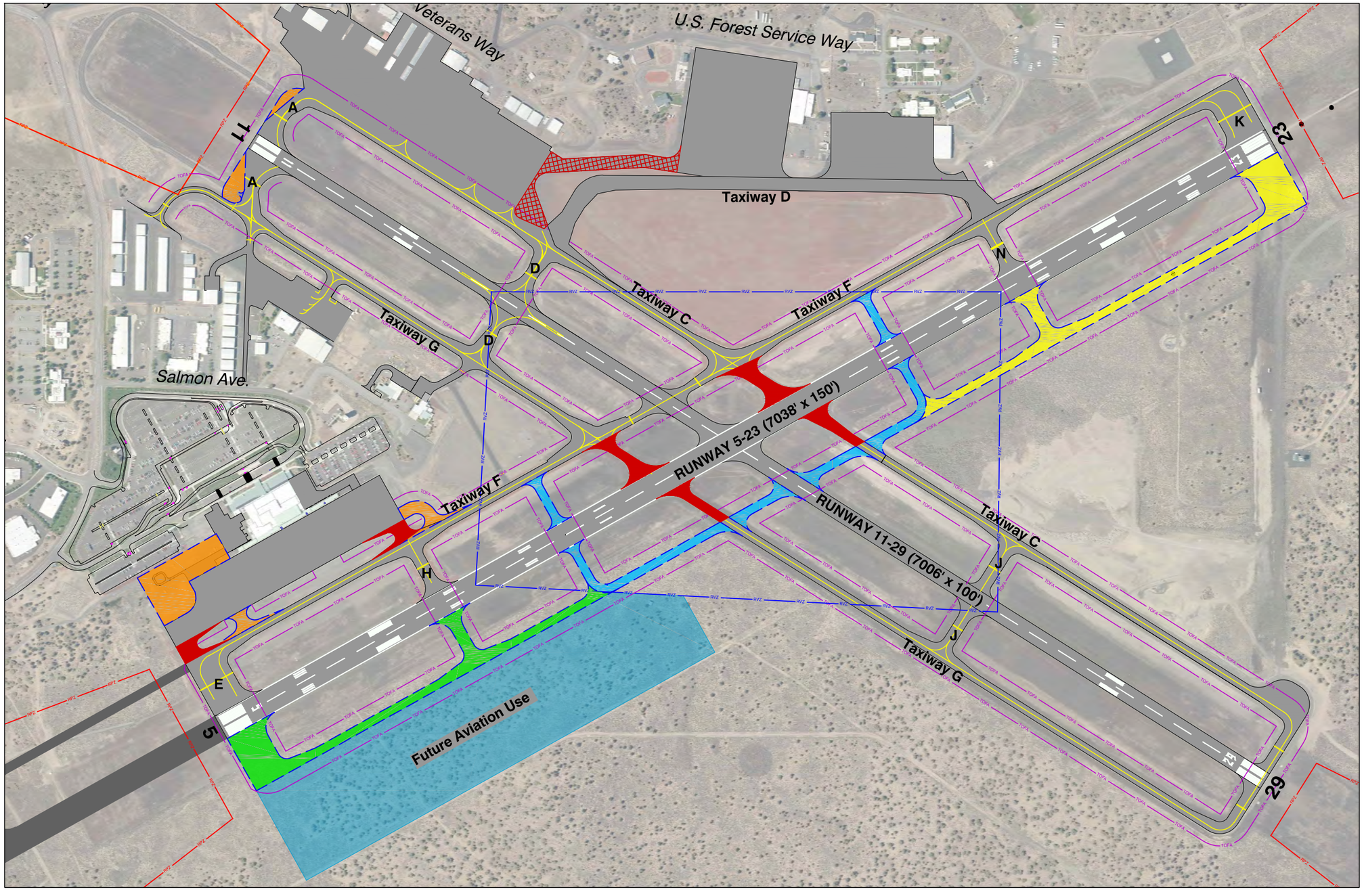
This alternative is estimated at a total project cost of $19,491,000 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 2 – NORTH DEVELOPMENT AREA

This alternative, as shown in **Figure 4-15,** focuses on the redevelopment of existing GA facilities on the northwest side of the Airport while maximizing the development of vacant land north and south of SE Veterans Way for a total of 60 acres.

Future aviation development would occur north of existing GA facilities and south of Highway 126. The development would require relocating segments of SE Airport Way, SW Sisters Avenue, and SE Sisters Avenue and provide new access to existing buildings, leasehold areas, and new facilities. The future aviation development would be the potential site for a new flight school, or fixed-base operator (FBO). A new single engine air tanker (SEAT) Base would be located adjacent to existing USFS buildings. New commercial development would surround proposed aviation development and border, but not impact, Highway 126. It is recommended that all Airport property on the north side of the Airport, that is outside of the RPZ for Runway End 11, the USFS lease and GA development areas, be rezoned for airport compatible general commercial zoning.

This alternative is estimated at a total project cost of $72,000,000 and includes engineering, environmental compliance, and construction management services. Total project cost reflects the full buildout of this alternative.



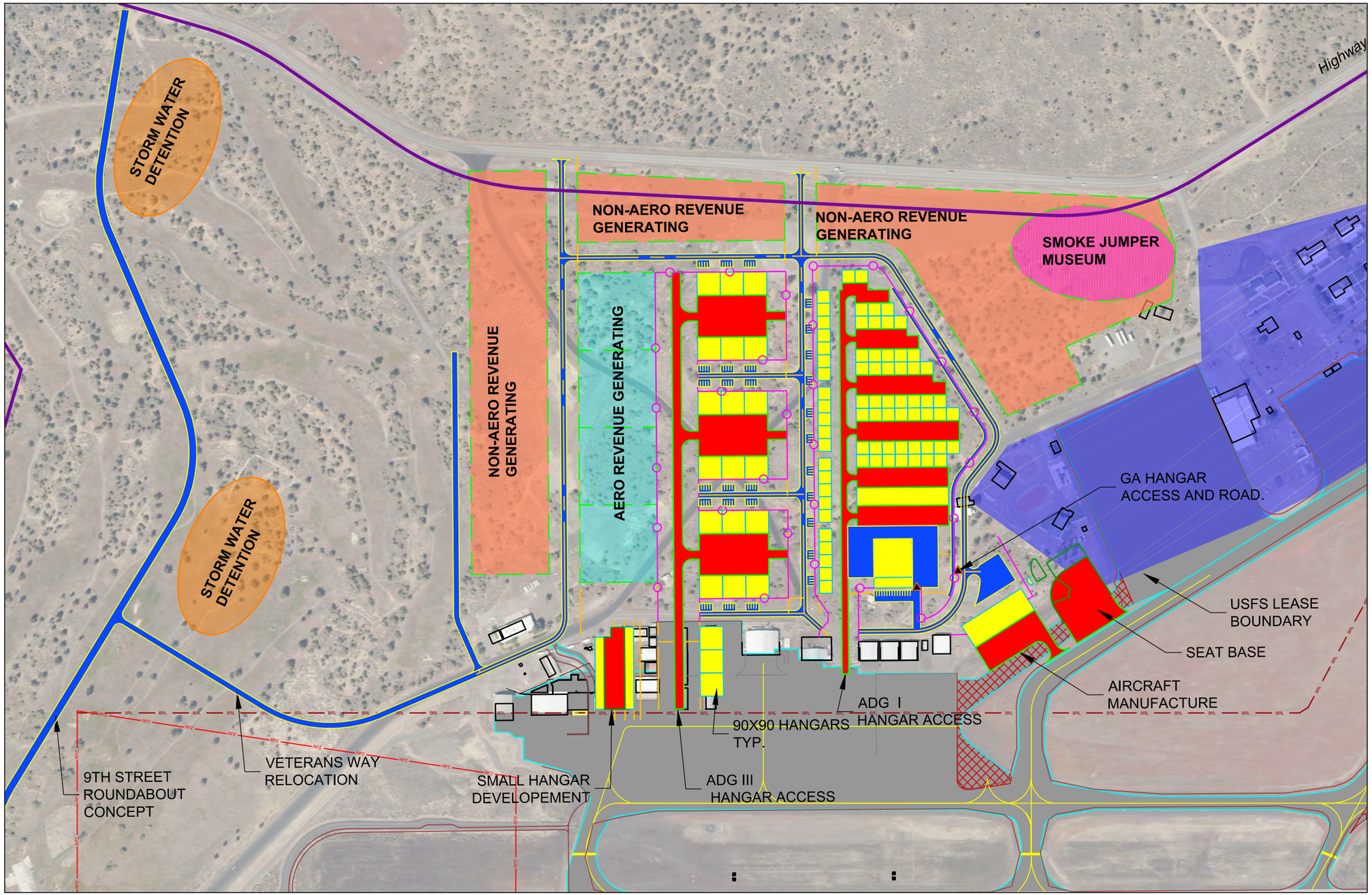
LEGEND

- Taxiway/Taxilane Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- Runway Visibility Zone (RVZ)
- Existing Pavement
- Runway Extension - Alternative 1
- Removed Airfield Pavement
- Airfield Pavement to be Removed
- Future Taxiway Pavement (Phase 1)
- Future Taxiway Pavement (Phase 2)
- Future Taxiway Pavement (Phase 3)
- Fiscal Year 2018 project
- Central GA Development Area: 1,642,054 Sq. FT.

N

0' 300' 600'

Figure 4-14
Alternative 1 - Centralized Development Area



LEGEND

- Building Restriction Line (BRL)
- Airport Property Line
- United States Forest Service Leased Property (USFS)
- Future Airport Building
- Future Airport Pavement
- Future Road / Parking
- Future Aviation Development
- Future Commercial Area
- Smoke Jumper Museum
- Stone Water Detention
- Security Fence
- Vehicular Access Gate

N

0’ 200’ 400’

Figure 4-15
Alternative 2 - North Development Area

SUMMARY EVALUATION OF GA DEVELOPMENT ALTERNATIVES

Table 4-4 presents a summary and an evaluation of the various alternatives for GA development at RDM. Alternative 2 is the preferred alternative because development of the north area will have minimal impacts to airport operations and the airfield and will help meet demand for future based aircraft.

Table 4-4. General Aviation Development Alternatives Summary Evaluation

Impact Category	Alternative 1	Alternative 2
Description of Improvement	Expand GA development east of RWY 5-23.	Expand north GA area for future based aircraft.
Operational Capabilities		
Operability & Access	Accommodates anticipated demand. New roadways required.	Accommodates anticipated demand. Roadway relocations required.
Airfield Impacts	Low	Low
Airline and GA Aircraft Separation	Yes	Yes
Hangar and Building Facility Additions	Greenfield site - potential multiple uses.	New flight school, FBO and hangar facilities for corporate and general aviation users
Performance Requirements		
Expansion Capabilities	Estimated 1,642,054 Sq. FT. of new development	Estimated 2,574,000 Sq. FT. of new development
Increases Potential for Development	Yes	Yes
Land Use Compatibility		
Impacts to Airport Property Use	Undeveloped land repurposed into aviation use.	Undeveloped land repurposed into aviation use.
Impact to Other Facilities	None	Demolition of older hangar facilities
Environmental Impact Potential		
Impervious Surfaces	Unknown	Estimated 46,350 SY of additional airfield pavement and 34,350 SY of additional roadway pavement
Property Acquisitions / Easements	None	Relocation of Veterans Way and 10th Street
Historic, Architectural, and Archaeological and Cultural Resources	None	Removal of two of four historic structures on airport property (Warehouse #1 and #2, circa 1940)
Section 4(F) of the Department of Transportation Act	None	Potential removal of an identified Section 4(f) resource
Tenant Relocation Required	No	Yes
Threatened and Endangered Species	Requires Contact of USFWS - East Wolf Mgmt. Zone.	Requires Contact of USFWS - East Wolf Mgmt. Zone.
Constructability		
Impact to Airport Operations	Low	Low
Grading/Soil Conditions	Complex	Complex
Facilities Demolition	None	Yes
Phasing Complexity	Low	Medium
Financial Costs/Impacts		
Project Cost	$19,491,000	$72,000,000
OVERALL EVALUATION		
DETERMINATION	**Favorable**	**Favorable**

4.5.5 AVIATION SUPPORT FACILITIES ALTERNATIVES

This section develops and evaluates alternatives for fuel farm expansion and the identification of fuel truck routes that minimize taxiway crossings. Aviation support facilities such as fuel farms are necessary to serve existing users but also encourage growth in aviation-related activities. Another important factor is the identification of a dedicated on-airport fuel truck haul route to expedite the delivery of fuel and provide for the highest level of safety by minimizing airfield crossings.

FUEL FARM

During the busiest times of the year, the Airport requires multiple Jet A fuel deliveries per day to keep up with demand. The lack of storage capacity is operationally inefficient and puts the Airport at risk of not being able to meet demand should the supply chain be disrupted by a fuel shortage or natural disaster. Analysis considers an expanded fuel farm location that would increase Jet A fuel storage capacity. For planning purposes, all fuel farm alternatives include five 20,000-gallon Jet A tanks. This order of magnitude increase in fuel storage would allow the Airport to have approximately fifteen days of fuel capacity during the very busiest times of year, which meets the needs projected in the demand forecasts, and is similar to the storage capacity of other airports with a similar amount of jet and turbo-prop operations. There is potential for the development of two fuel farm locations to expedite delivery and minimize the crossing of Runway 11-29, with one site to potentially serve the north GA users, and a second to support airline operations. All fuel farm alternatives can be expanded as demand dictates.

All alternatives are estimated at a total project cost of $5,200,000 that includes site work, concrete pad, containment, five 20,000 United States Gallon (USG) tanks, permitting, paved vehicle access, and other associated costs.

Each of the alternatives involve the construction of a fuel farm. The proposed fuel farm can accommodate five 20,000 USG Jet A fuel tanks to increase Jet A fuel capacity by 100,000 USG over the Airport's existing capacity of 44,000 USG. The existing airfield perimeter fence will need to be reconfigured to account for two new access gates that allow the ingress and egress of fuel trucks to access the secure airside of the Airport, but with access limited to only the fuel farm. The fuel farm can be expanded to accommodate additional Jet A tanks or other types of fuel.

ALTERNATIVE 1 – SE AIRPORT WAY

This alternative, as shown in **Figure 4-16**, involves the construction of a fuel farm off Airport Way, south of the existing parking lots. This proposed location of a new fuel farm does not penetrate the existing or any future RVZ for Runway 5-23.

The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas and would have minimal impact to airport operations.

ALTERNATIVE 2 – NORTH DEVELOPMENT AREA: VETERANS AVENUE

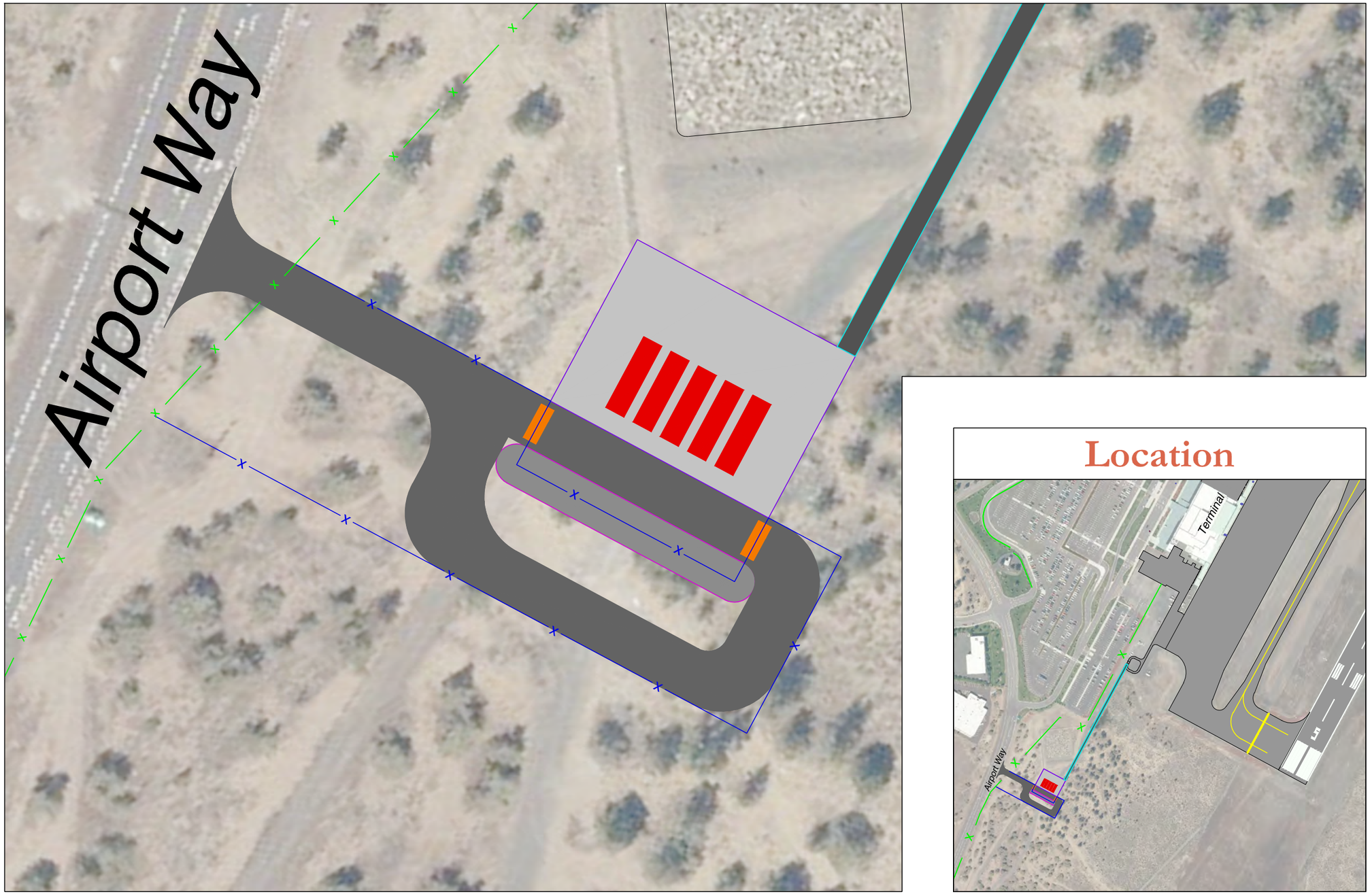
This alternative, as shown in **Figure 4-17**, involves the construction of a fuel farm off Veterans Avenue, on the north GA apron. This proposed location of a new fuel farm does not penetrate the existing or any future RVZ for Runway 5-23.

Construction of this alternative requires the demolition of an existing building that has been identified as a Section 4(f) historic resource (Warehouse #2, circa 1940). The method of construction is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations. A potential exists, however, for the discovery of archaeological resources in the area of this alternative, and it is recommended a survey be conducted prior to any construction.

ALTERNATIVE 3 – NORTH DEVELOPMENT AREA: SISTERS AVENUE

This alternative, as shown in **Figure 4-18**, involves the construction of a fuel farm off Sisters Avenue, on the north GA apron. This proposed location of a new fuel farm does not penetrate the existing or any future RVZ for Runway 5-23.

The complexity of constructing this alternative is straightforward relative to project phasing, contractor mobilization, and staging areas, and would have minimal impact to airport operations. A potential exists, however, for the discovery of archaeological resources in the area of this alternative, and it is recommended a survey be conducted prior to any construction.



LEGEND

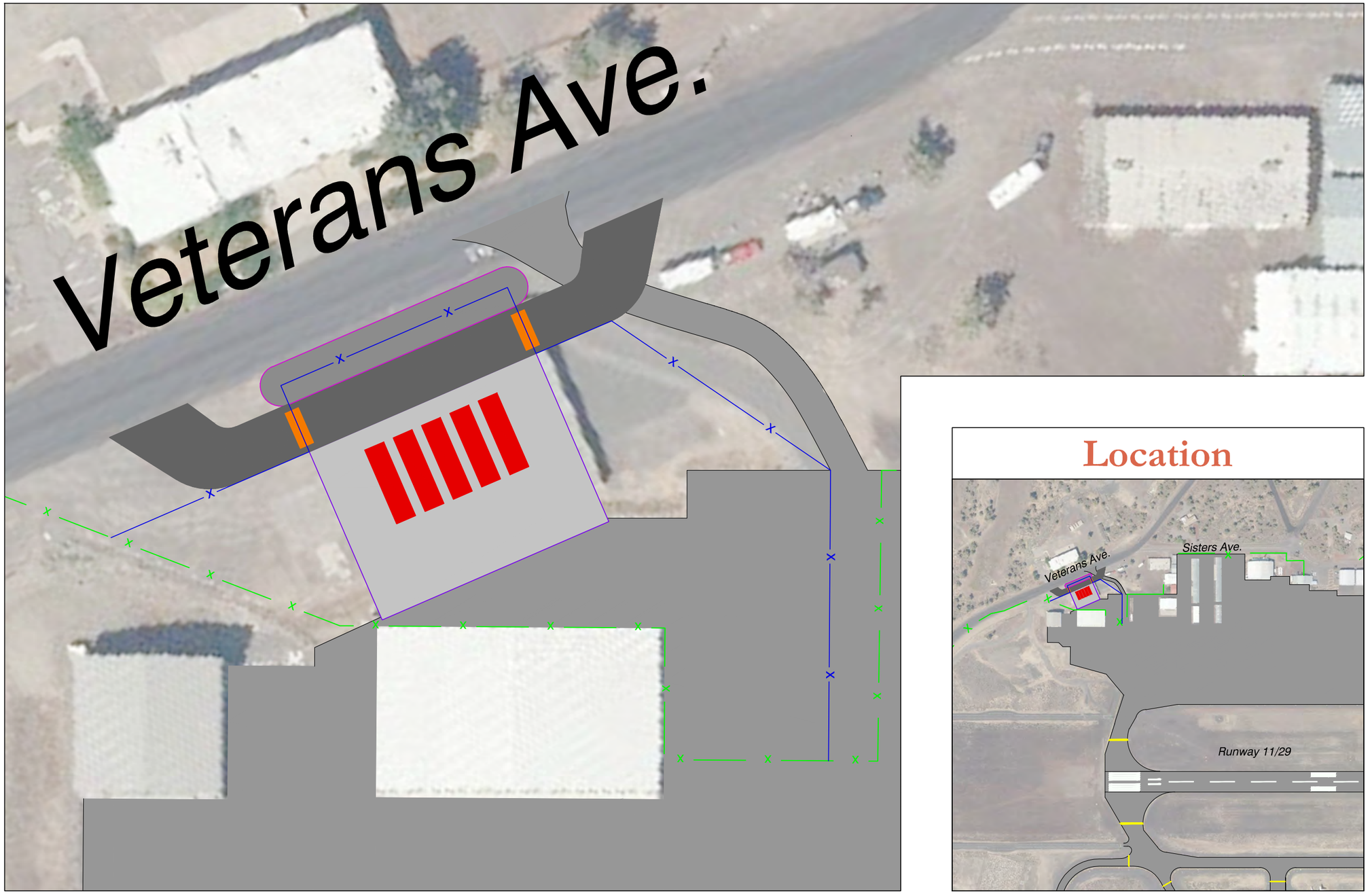
- Existing Fence Line
- Adjusted Fence Line
- Fuel Farm Gate
- Paved Area around Fuel Farm
- Curb
- Road/Loop to Fuel Farm
- Fuel Truck Road
- Fuel Tanks (Jet A)
  Five 20,000 Gallon Tanks
  Total: 100,000 Gallons

N

0’ 25’ 50’

Location

Figure 4-16
Alternative 1 - SE Airport Way



LEGEND

- Existing Fence Line
- Adjusted Fence Line
- Fuel Farm Gate
- Paved Area around Fuel Farm
- Curb
- Road/Loop to Fuel Farm
- Fuel Truck Road
- Fuel Tanks (Jet A)
  Five 20,000 Gallon Tanks
  Total: 100,000 Gallons

N

0’ 25’ 50’

Location

Figure 4-17
Alternative 2 - North Development Area: Veterans Ave.

LEGEND

- Existing Fence Line
- Adjusted Fence Line
- Fuel Farm Gate
- Paved Area around Fuel Farm
- Curb
- Road/Loop to Fuel Farm
- Fuel Truck Road
- Fuel Tanks (Jet A)
  Five 20,000 Gallon Tanks
  Total: 100,000 Gallons

N

0’ 25’ 50’

Location

Figure 4-18
Alternative 3 - North Development Area: Sisters Ave.

SUMMARY EVALUATION OF FUEL FARM EXPANSION ALTERNATIVES

Table 4-5 presents a summary and an evaluation of the various alternatives for the expansion of the fuel farm at RDM. Alternative 1 is the preferred alternative because of the low impact to the airfield and airport operations. The location of the fuel farm is beneficial for commercial operations because fuel trucks will have a short commute time between the fuel farm and commercial apron, and the addition of Jet A fuel tanks near the commercial apron will negate the need for a fuel truck haul route.

Constructability Impact Category	Alternative 1	Alternative 2	Alternative 3
Description of Improvement	Construction of five 20,000 USG Jet A fuel tanks (100,000 USG)	Construction of five 20,000 USG Jet A fuel tanks (100,000 USG)	Construction of five 20,000 USG Jet A fuel tanks (100,000 USG)
Operational Capabilities			
Airfield Operability & Access	Serves Jet A users only. No 100 LL or mogas tanks. Tanker entrance off of Airport Way.	Serves Jet A users only. No 100 LL or mogas tanks. Tanker entrance off of Veterans Ave.	Serves Jet A users only. No 100 LL or mogas tanks. Tanker entrance off of Sisters Ave.
Airfield Impacts	None	None	None
Performance Requirements			
Level of Service	15 day fuel reserve	15 day fuel reserve	15 day fuel reserve
Expansion Capabilities	Additional tanks can be added in the future.	Additional tanks can be added in the future.	Additional tanks can be added in the future.
Land Use Compatibility			
Impact to Other Facilities	None	Demolition of existing building	Demolition of older hangar buildings.
Impacts to Airport Property Use	None	None	None
Environmental Impact Potential			
Permits/Code Requirements	Federal, State, City permits and Code Requirements	Federal, State, City permits and Code Requirements	Federal, State, City permits and Code Requirements
Historic, Architectural, and Archaeological and Cultural Resources	None	Removal of one of four historic structures on airport property (Warehouse #2, circa 1940). Potential exists for discovery of archaeological resources.	Potential exists for discovery of archaeological resources.
Section 4(F) of the Department of Transportation Act	None	Potential removal of an identified Section 4(f) resource	None
Tenant Relocation	No	Yes	Yes
Property Acquisitions / Easements	No	No	No
Constructability			
Impact to Airport Operations	Low	Low	Low
Facilities Demolition	No	Yes	Yes
Phasing Complexity	Low	Low	Low
Financial Costs/Impacts			
Project Cost	$5,200,000	$5,200,000	$5,200,000
OVERALL EVALUATION			
DETERMINATION	**Favorable**	**Favorable**	**Favorable**

ON-AIRPORT FUEL TRUCK HAUL ROUTES

Fuel trucks currently travel from the north GA apron to the commercial terminal apron to refuel aircraft because Jet A fuel is only stored at the north GA apron. Travel between both aprons requires fuel trucks to travel on taxiways that are in the movement area. Fuel truck haul route alternatives are designed to allow fuel trucks to deliver fuel from the north GA apron to the commercial apron and to stop fuel trucks from traveling on taxiways or runways.

Fuel truck haul route alternatives can be ignored if Jet A fuel tanks are built on both sides of Runway 11-29. If Jet A tanks are built south of Runway 11-29, in proximity to the commercial apron, fuel trucks will be able to deliver fuel to the commercial apron without having to travel on taxiways or runways.

ALTERNATIVE 1 – INNER ROUTE

This alternative, as shown in **Figure 4-19**, involves the construction of a road for fuel trucks to deliver fuel to aircraft on the commercial apron without crossing or traveling on a taxiway or runway. The proposed road starts at the north GA apron and connects with the service road that exists around Runway 11 to avoid the TOFA. It then continues off the service road outside of the RPZ and crosses three taxiway connectors as the road avoids the TOFA. The road stays parallel with Runway 11-29 until it crosses in front of the segmented circle at the intersection of Runways 11-29 and 5-23, and then it turns running parallel with Runway 5-23, continuing straight to the commercial apron, and staying outside of the TOFA.

This alternative is estimated at a total project cost of $514,200 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 2 – CENTRAL ROUTE

This alternative, as shown in **Figure 4-20,** involves the construction of a road for fuel trucks to deliver fuel to aircraft on the commercial apron without crossing or traveling on a taxiway or runway. The road begins at the north GA apron and connects with the existing service road around Runway End 11 to avoid the TOFA. It then continues off the service road while in the RPZ and continues along the Airport's perimeter to the south GA apron and parallels Runway 11-29 to the area of the segmented circle and follows the same route to the commercial apron that is shown for Alternative 1.

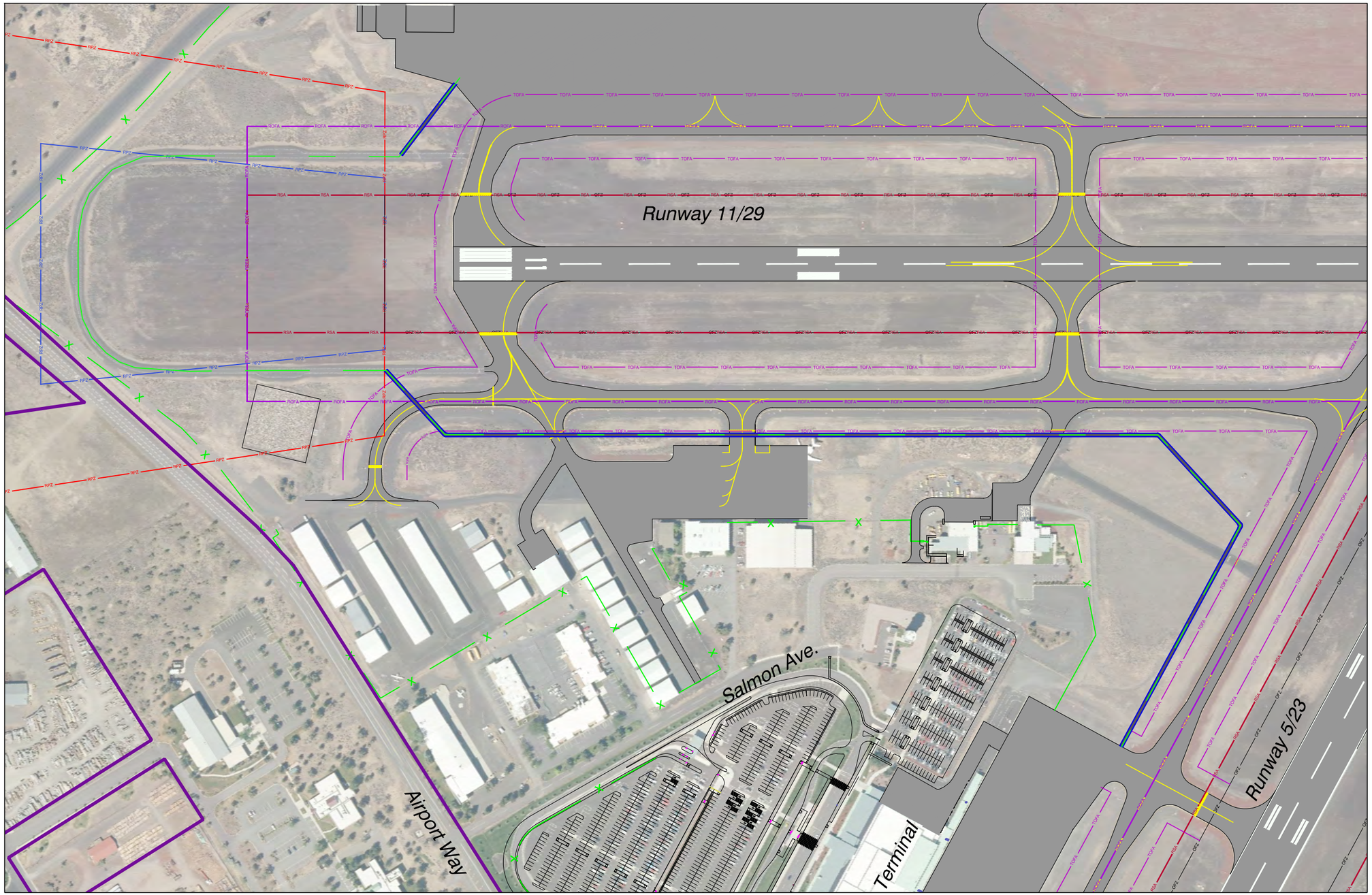
This alternative is estimated at a total project cost of $162,000 and includes engineering, environmental compliance, and construction management services.

ALTERNATIVE 3 – OUTER ROUTE

This alternative, as shown in **Figure 4-21,** involves the construction of a road for fuel trucks to deliver fuel to aircraft on the commercial apron without crossing or traveling on a taxiway or runway. The proposed

road follows the same route as Alternative 2 until it reaches the ARFF. It then follows the existing perimeter fence to the commercial apron.

This alternative is estimated at a total project cost of $183,000 and includes engineering, environmental compliance, and construction management services.



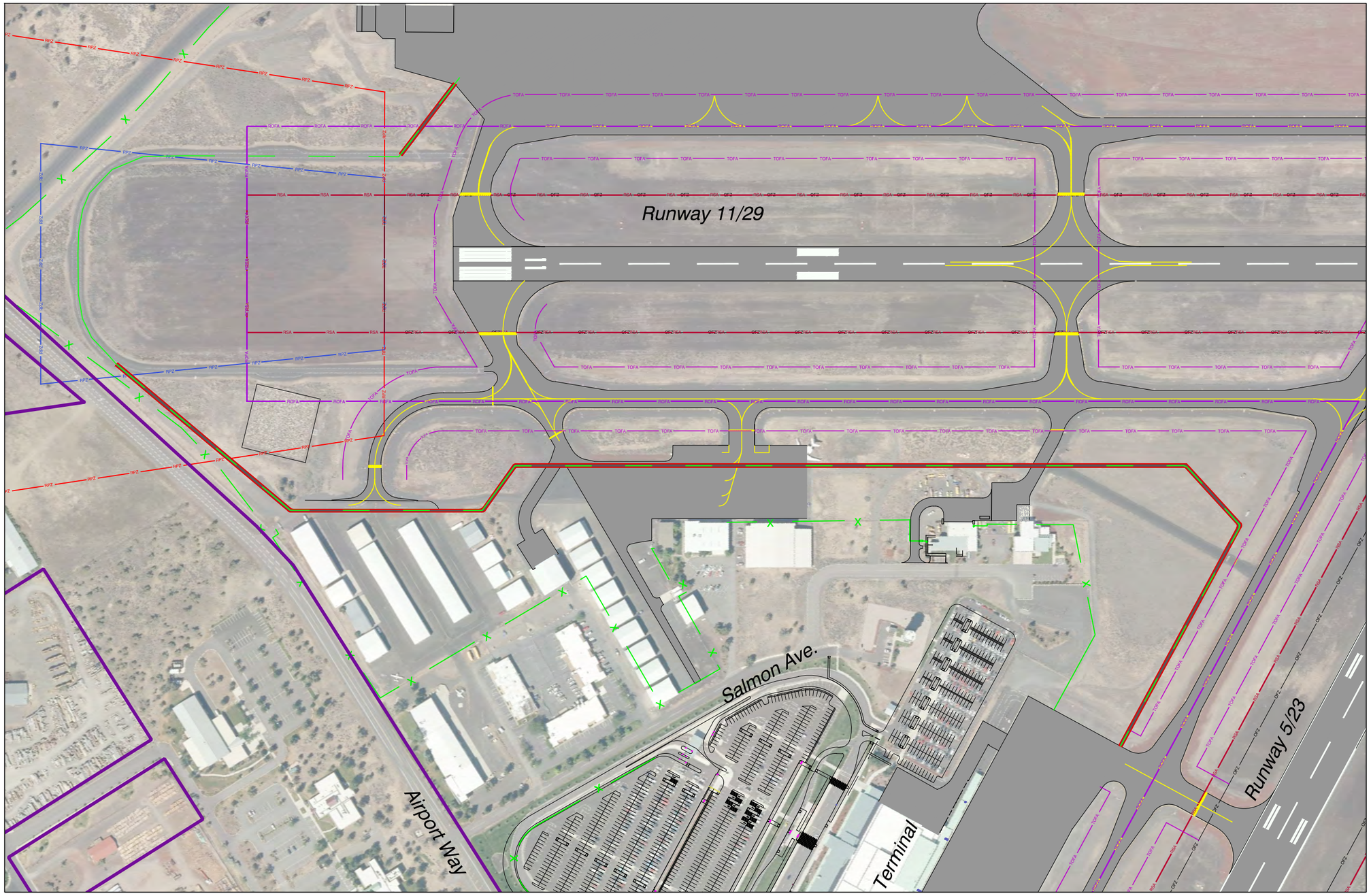
LEGEND

- Airport Property Line
- Runway Protection Zone (RPZ)
- Departure RPZ
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Taxiway/Taxilane Object Free Area (TOFA)
- Fuel Truck Route
- Fuel Truck Road Alternative 1

N

0’ 150’ 300’

Figure 4-19
Alternative 1 - Inner Route



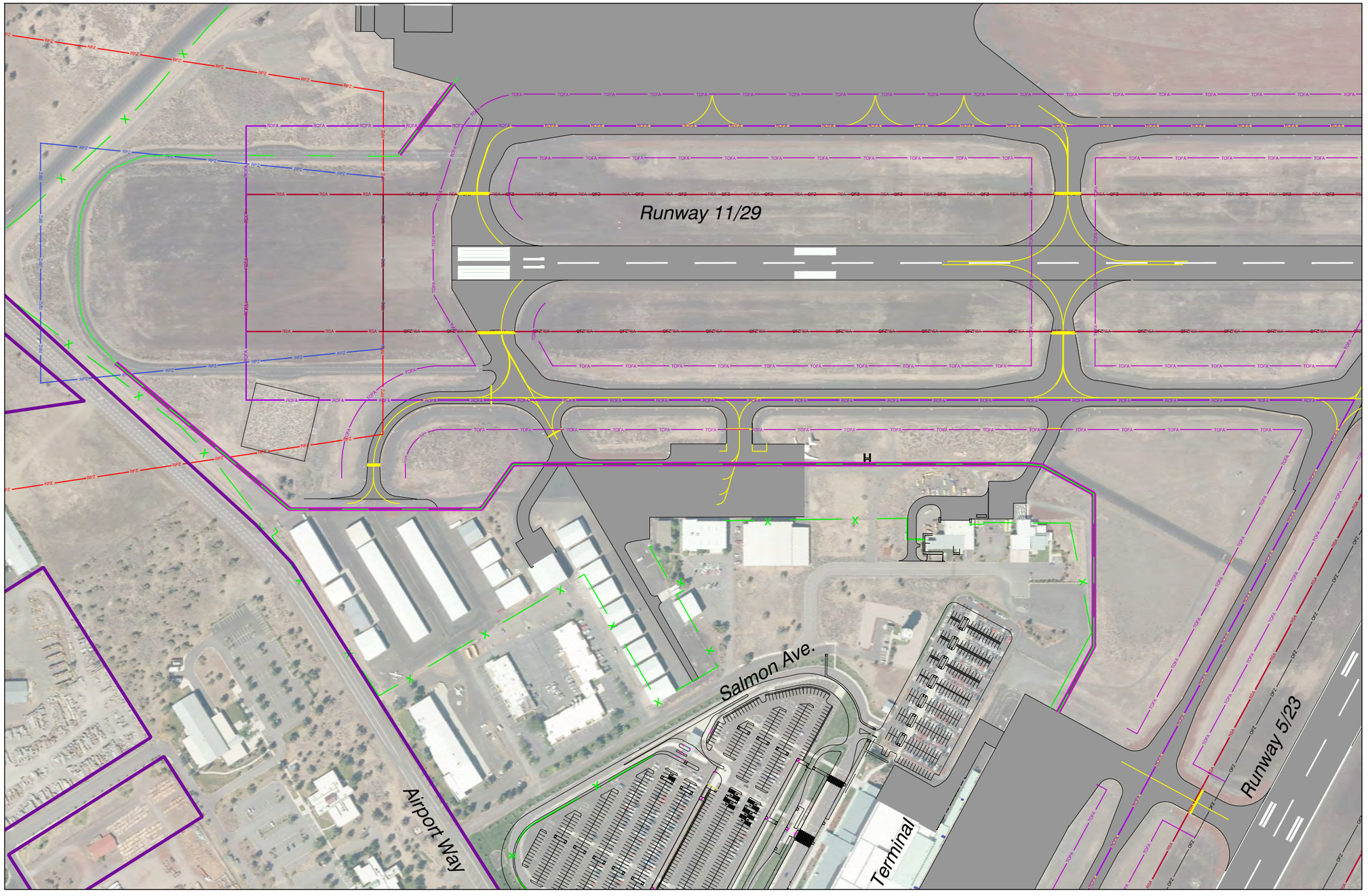
LEGEND

- Airport Property Line
- Runway Protection Zone (RPZ)
- Departure RPZ
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Taxiway/Taxilane Object Free Area (TOFA)
- Fuel Truck Route
- Fuel Truck Road Alternative 2

N

0’ 150’ 300’

Figure 4-20
Alternative 2 - Central Route



LEGEND

- Airport Property Line
- Runway Protection Zone (RPZ)
- Departure RPZ
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Taxiway/Taxilane Object Free Area (TOFA)
- Fuel Truck Route
- Fuel Truck Road Alternative 3

N

0’ 150’ 300’

Figure 4-21
Alternative 3 - Outer Route

SUMMARY EVALUATION OF FUEL TRUCK HAUL ROUTE ALTERNATIVES

Table 4-6 presents a summary and an evaluation of the various alternatives for the construction of a fuel truck haul route at RDM. Alternative 1 is the preferred alternative because of the minimal impact to airport operations and facilities.

Table 4-6. Fuel Truck Haul Routes Alternatives Summary Evaluation Matrix

Impact Category	Alternative 1	Alternative 2	Alternative 3
Description of Improvement	Construction of a two way on-airport fuel truck haul route to eliminate the crossing of active runways/taxiways.	Construction of a two way on-airport fuel truck haul route to eliminate the crossing of active runways/taxiways.	Construction of a two way on-airport fuel truck haul route to eliminate the crossing of active runways/taxiways.
Operational Capabilities			
Airfield Operability & Access	Connects North GA, Central GA and Airline Operations.	Connects North GA, Central GA and Airline Operations.	Connects North GA, Central GA and Airline Operations.
Airfield Operational Impacts	Minimal	Minimal	Minimal
Performance Requirements			
Route Alignment	Eliminates taxiway and runway crossings. Penetrations to the TOFA and ROFA. Crosses four taxilane connectors.	Eliminates taxiway and runway crossings. Penetrations to the TOFA and ROFA. Crosses four taxilane connectors.	Eliminates taxiway and runway crossings. Penetrations to the TOFA and ROFA. Crosses four taxilane connectors.
Land Use Compatibility			
Impacts to Airport Property Use	None	None	None
Impact to Other Facilities	None	Crosses South GA Apron	Crosses South GA Apron
Environmental Impact Potential			
Property Acquisitions / Easements	None	None	None
Tenant Relocation Required	None	None	None
Constructability			
Impact to Airport Operations	Minimal	Minimal	Minimal
Facilities Demolition	None	None	None
Phasing Complexity	Low	Low	Low
Financial Costs/Impacts			
Project Cost	$514,200	$162,000	$183,000
OVERALL EVALUATION			
DETERMINATION	**Favorable**	**Neutral**	**Neutral**

4.5.6 PASSENGER TERMINAL ALTERNATIVES

As discussed in **Chapter 3 – Facility Requirements**, the existing passenger terminal was originally designed for smaller commuter aircraft with 35 to 50 seats. As airlines retired these aircraft to focus on more fuel-efficient aircraft with 65 to 90 seats, existing facilities have struggled to meet the existing passenger demand. The forecasted growth in passengers requires additional space in almost every functional terminal component. The following areas are specifically addressed in this chapter:

- ✓ Passenger boarding and holdrooms
- ✓ Outbound and inbound baggage operations
- ✓ TSA security screening
- ✓ Rental car counters and offices
- ✓ Ticket counters, queuing, and airline ticketing offices
- ✓ Administration space
- ✓ Mechanical support spaces

It is anticipated that airlines will operate even larger aircraft at the Airport within the 20-year forecast horizon to include variants of the Airbus A320 or Boeing 737, ADG-III aircraft. This section develops and evaluates alternatives for the expansion of the current passenger terminal to serve the anticipated demand in passengers and larger aircraft.

ALTERNATIVES 1 & 2 – WEST & EAST EXPANSIONS

PASSENGER BOARD BRIDGES AND HOLDROOMS

With the projected increase in passengers, and the airlines' planned transition from regional aircraft to larger and more efficient jets, the terminal will need physical improvements to accommodate these changes. The use of passenger boarding bridges (PBBs) provides a more efficient and comfortable way to board the larger aircraft. Smaller regional jets, like the CRJ 200, can be accessed from the current boarding floor with bridges, but larger jets can only be served from the second floor waiting area. The holdrooms and associated support spaces (e.g., restrooms, concession, etc.) will need expansion to meet the larger passenger capacity of the aircraft.

By 2026 it is anticipated that five passenger boarding bridges will be needed, and by 2036, an additional three bridges will be needed. To handle this expansion, the first and second floor holdrooms will need to increase in size.

There is only one recommended boarding bridge layout for 2026. The second floor will be slightly expanded over the existing ground floor concourse to accommodate two boarding bridges. These PBBs will service larger ADG-III aircraft such as the A320 or a 737. The lower level gates 3, 5, and 6 will be reconfigured to house PBBs that will service small regional aircraft. Gates 2, 4, and 7 will remain as ground floor boarding.

Two alternatives exist for the 2036 expansion. The first, identified in **Figure 4-22**, is to expand the terminal's second floor towards the west over an expanded baggage make-up area and the existing first floor passenger holdroom. In this alternative, five additional PBBs will be installed for aircraft boarding from the second floor. Gate 3 will remain as a first level accessed PPB.

A second alternative, identified in **Figure 4-23**, is to expand the terminal's second floor towards the east over an expanded first floor holdroom and incoming baggage. Four additional PBBs will be added to provide aircraft boarding from the second floor. Gates 5 and 6 will remain as first floor accessed PPBs.

The expansion of the gate and holdroom areas for both options is projected to be approximately 35,000 square feet (sf).

OUTBOUND AND INBOUND BAGGAGE OPERATIONS

By 2019, it is expected that the outbound baggage system will be at capacity due to the increased passenger enplanements. In addition to the increase in enplanements, the first floor holdroom expansion to the west will occupy a portion of the existing outbound baggage system. The outbound baggage system will require an expansion of approximately 3,500sf.

Inbound baggage operations will also need expansion. The existing baggage claim has two baggage carousels. It is anticipated that two additional carousels will be needed to meet the increased passenger load. This expansion will move towards the east. The expansion of the inbound baggage area is projected to be an additional 7,800sf.

TRANSPORTATION SECURITY ADMINISTRATION SECURITY SCREENING

The current Transportation Security Administration (TSA) screening area at the Airport consists of two screening lanes and will be at maximum capacity in five to six years. The expected need, by 2036, is for four lanes to provide uncongested screening. The increased area needed for this expansion will be accomplished by appropriating the area currently occupied by the rental car counters and offices. Future screening options may also provide a separate screening lane for security badged personnel.

The additional space required for the expanded TSA screening area will be 4,500sf.

RENTAL CAR COUNTERS AND OFFICES

To accommodate the expansion of TSA screening, the rental car counters and offices will require relocation. Rental car operations will expand to the northeast corner of the terminal. This area will be directly connected to baggage claim and sized to meet the future needs of the Rent-A-Car (RAC) operations.

TICKET AGENT POSITIONS, QUEUING, AND AIRLINE TICKET OFFICES

There are currently 20 agent positions at the ticketing counters with an anticipated need to add an additional four positions by 2026 and an additional nine positions by 2036, for a total of 33 positions. Additional queuing space will also be required for the 13 new positions. A westward expansion will allow for these future needs. To support the expanded ticketing operation, additional Airline Ticket Offices (ATOs) will be necessary.

The additional space required for the expanding ticketing operations and ATO offices is projected to be 10,800sf.

ADMINISTRATION SPACE

As the terminal expands, additional administrative space will be required to accommodate the growing staff. It is anticipated that a future administrative space would be provided on the second floor above the planned RAC expansion.

MECHANICAL, ELECTRICAL, IT, AND OTHER SUPPORT SPACE

To support the expansion of the terminal, additional space will be needed for mechanical, electrical, IT, and support space.

ALTERNATIVE 3 – NEW CONCOURSE EXPANSION

Development of Alternative 3 is based on comments about Alternative 1 from airport management and the general public from the open house meeting on October 18, 2017. Alternative 3 provides details on each phase of the terminal expansion.

To facilitate future passenger capacity and the ability to handle large jet aircraft, renovations to the existing terminal would proceed in three phases: 1) renovating the existing ground floor holdroom (identified in **Figure 4-24)**; 2) expanding the terminal west and adding a new concourse adjacent to the existing second floor holdroom (identified in **Figure 4-25)**; and 3) expanding the remaining areas of the terminal (identified in **Figure 4-26)**.

PASSENGER BOARD BRIDGES AND HOLDROOMS

Phase one will include reconfiguring the boarding corridor into extra passenger holdroom space to increase seating capacity. An expansion of the passenger holdroom will extend east past the exit lane. The ground floor of the passenger holdroom expansion will be 5 feet higher than the existing holdroom to facilitate PBBs. The extra 5 feet allows PBBs to reach the larger aircraft on the apron. Three PBBs are anticipated in the holdroom expansion. The exit lane will receive renovations to handle an increase in passengers. No renovations will occur on the second floor.

TERMINAL EXPANSION AND NEW CONCOURSE

Phase two will expand the terminal west and add a new concourse adjacent to the existing second floor holdroom. In the interest of fiscal responsibility, avoiding construction-related congestion, and alleviating space needs in the terminal, a new building will be built adjacent to and connected to the west side of the terminal. The new building will house the ticket hall and larger baggage handling area on the ground floor. The second floor of the new building will contain a new concourse that is adjacent to the existing second floor holdroom. Access to the concourse will be possible with escalators and elevators that will be in the ground floor holdroom. The new concourse will have four PBBs. Once the new ticket hall is operational, a portion of the existing ticket hall and ticket offices will be repurposed as the new security checkpoint to accommodate passenger capacity needs. Mechanical facilities will be relocated to the new building. Renovations will occur to the existing second floor holdroom to connect to the new concourse.

TERMINAL EXPANSION OF REMAINING AREAS

In Phase three, RAC operations will relocate to the existing airport administration area, baggage claim will expand into the area previously occupied by RAC operations, and the existing TSA security checkpoint will be reconfigured into a new exit lane. Completion of phase three of Alternative 3 will provide space for the expansion of program areas in order of emerging need in the future. There will be two possible configurations for aircraft boarding, the first being seven PBBs and three ground boarding positions, and the second being eight PBBs and one ground boarding position. **Figure 4-26** shows the first configuration for boarding. This configuration, when upgrading to an eighth PBB, will remove two of the three ground boarding positions and allow for the additional PBB to facilitate boarding from the ground floor holdroom or from the second floor holdroom.

This alternative is estimated at a total project cost of 110,698,900 and includes engineering, environmental compliance, and construction management services. Total project cost includes the cost of the northeast terminal apron reconstruction alternative.

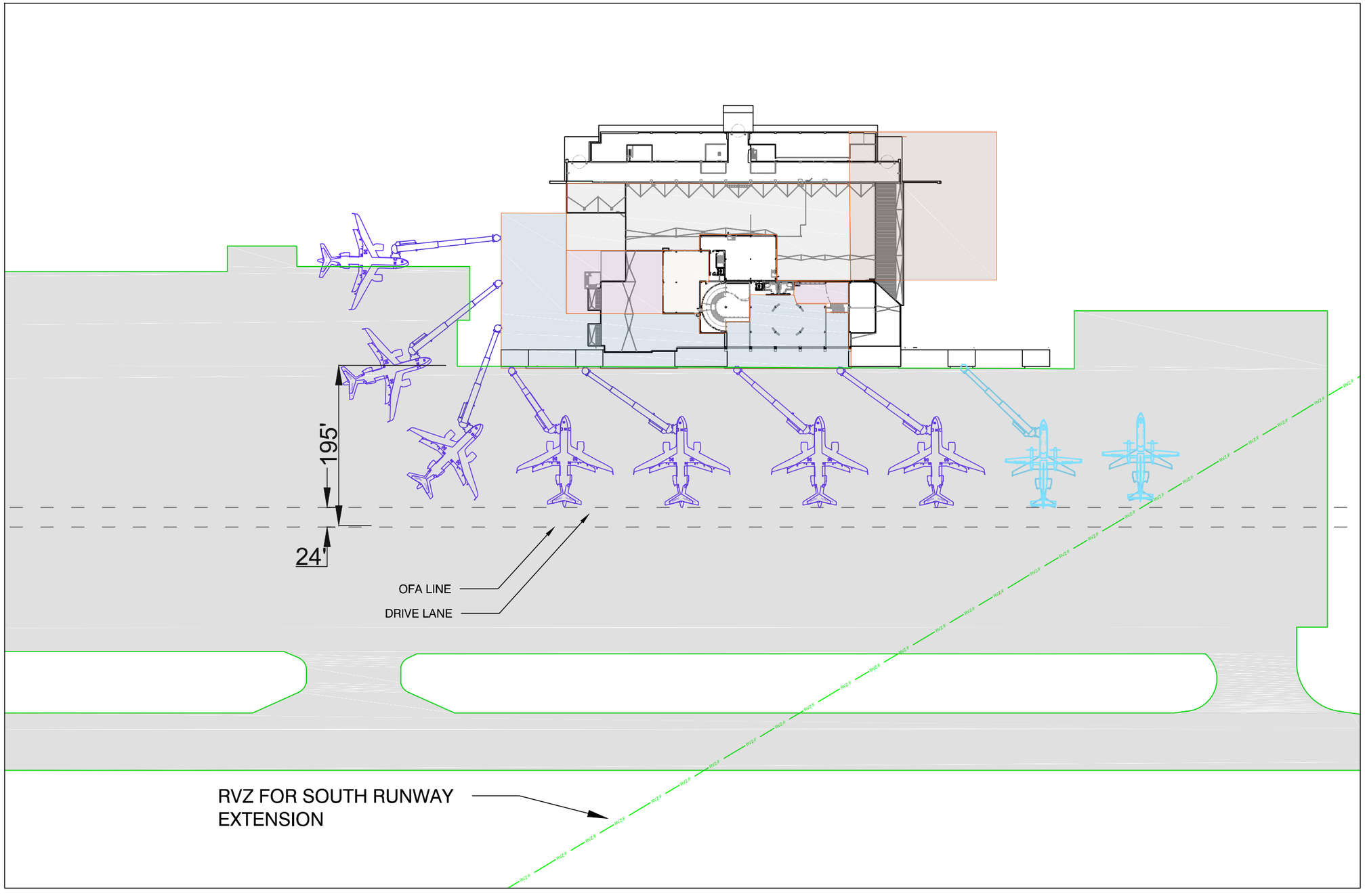


Figure 4-22
Alternative 1 - Forecast 2036 West Aircraft Boarding Expansion

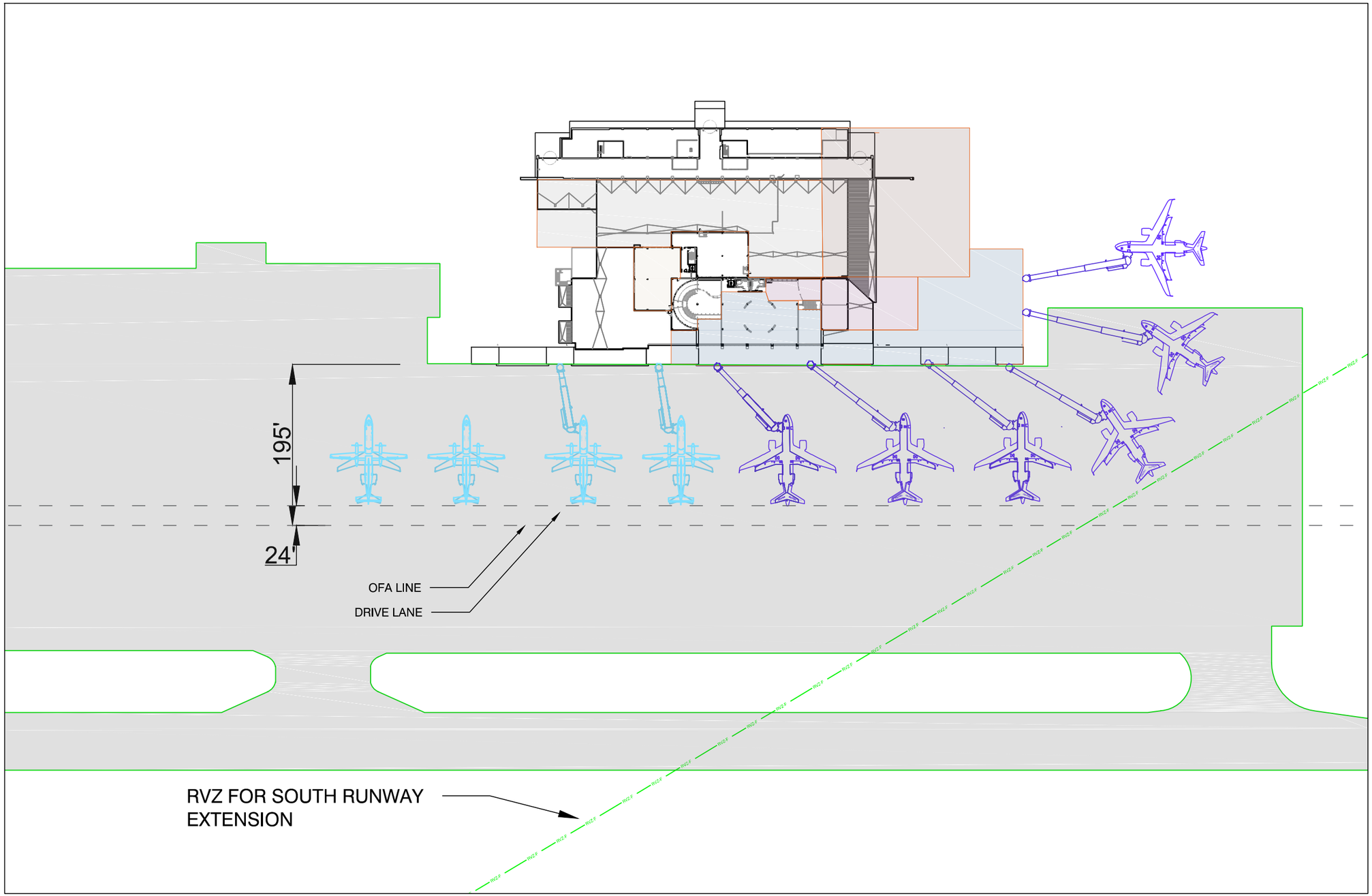


Figure 4-23
Alternative 2 - Forecast 2036 East Aircraft Boarding Expansion

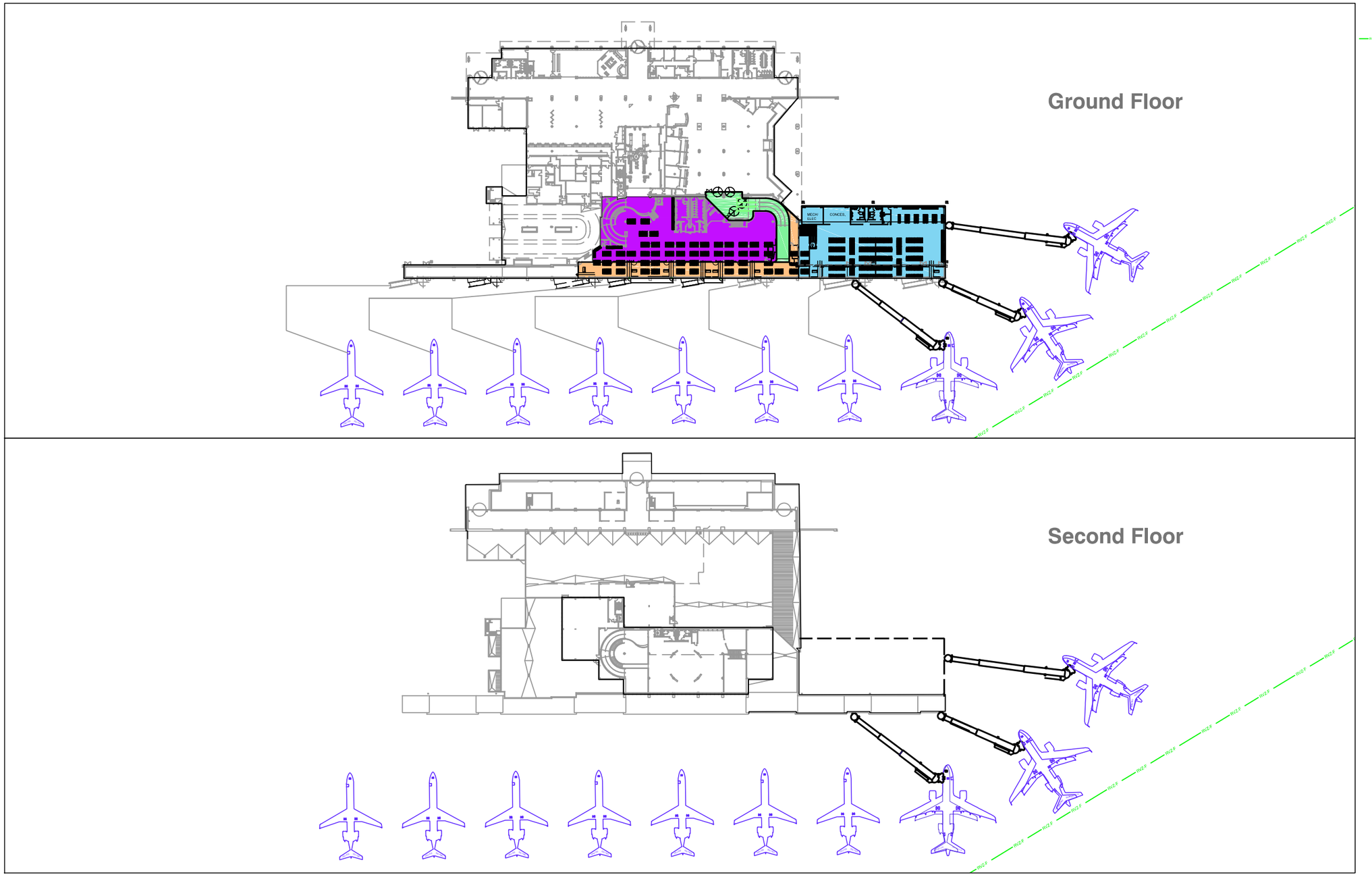
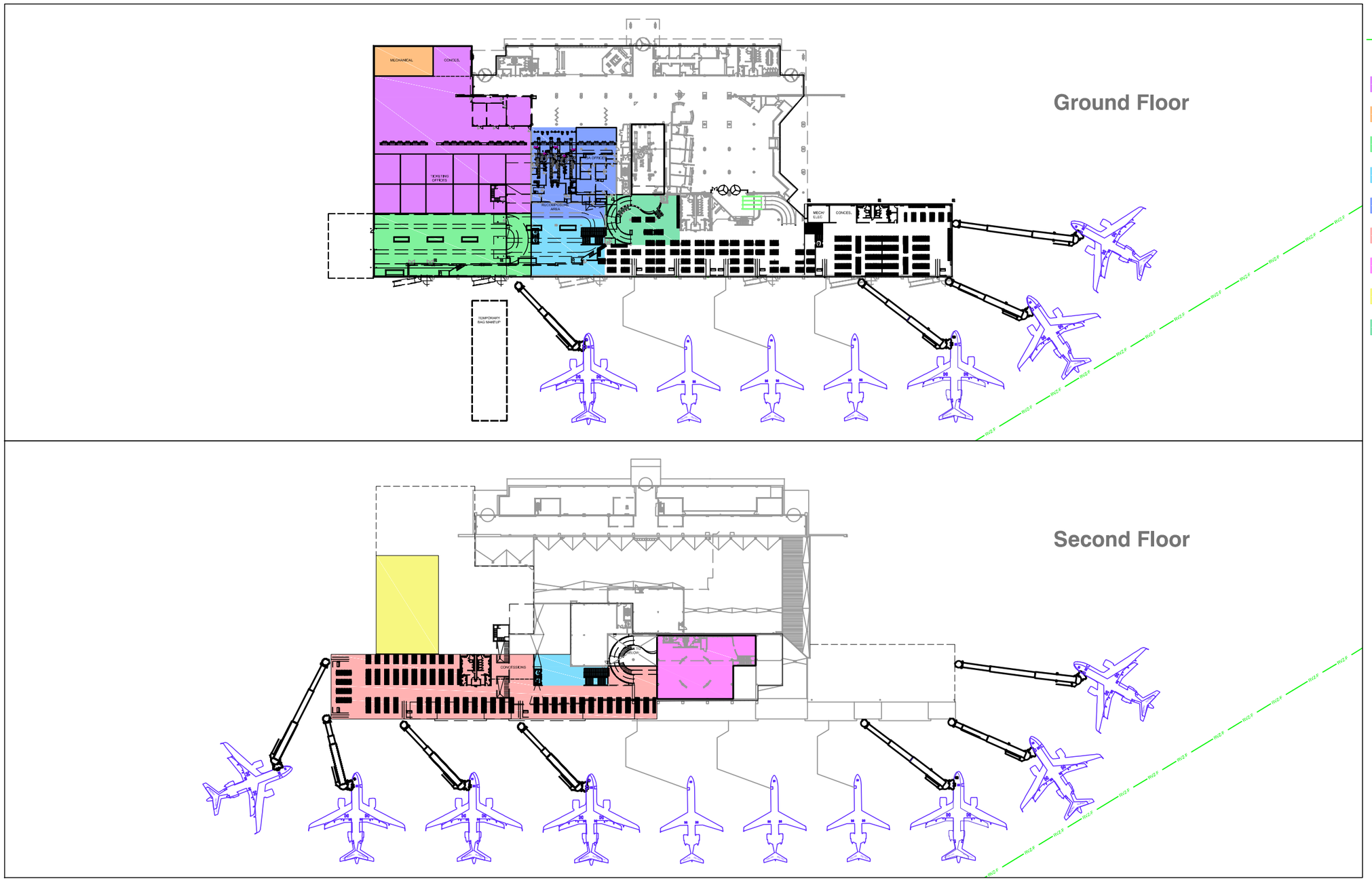


Figure 4-24
Alternative 3 - Forecast 2036 New Concourse Expansion - Phase 1



LEGEND

- Runway Visibility Zone (RVZ)
- Ticket Hall (31,940 Square Feet)
- Relocated Mechanical (2,710 Square Feet)
- Baggage Make-up (14,690 Square Feet)
- Vertical Circulation (6,290 Square Feet)
- Renovation of Ticket Hall into Security Point (11,220 Square Feet)
- Second Level Concourse (26,840 Square Feet)
- Renovation of Existing Second Level Concourse (8,620 Square Feet)
- Office Area (9,100 Square Feet)
- Partial Renovation of Existing Ground Level Concourse (5,530 Square Feet)

Figure 4-25
Alternative 3 - Forecast 2036 New Concourse Expansion - Phase 2

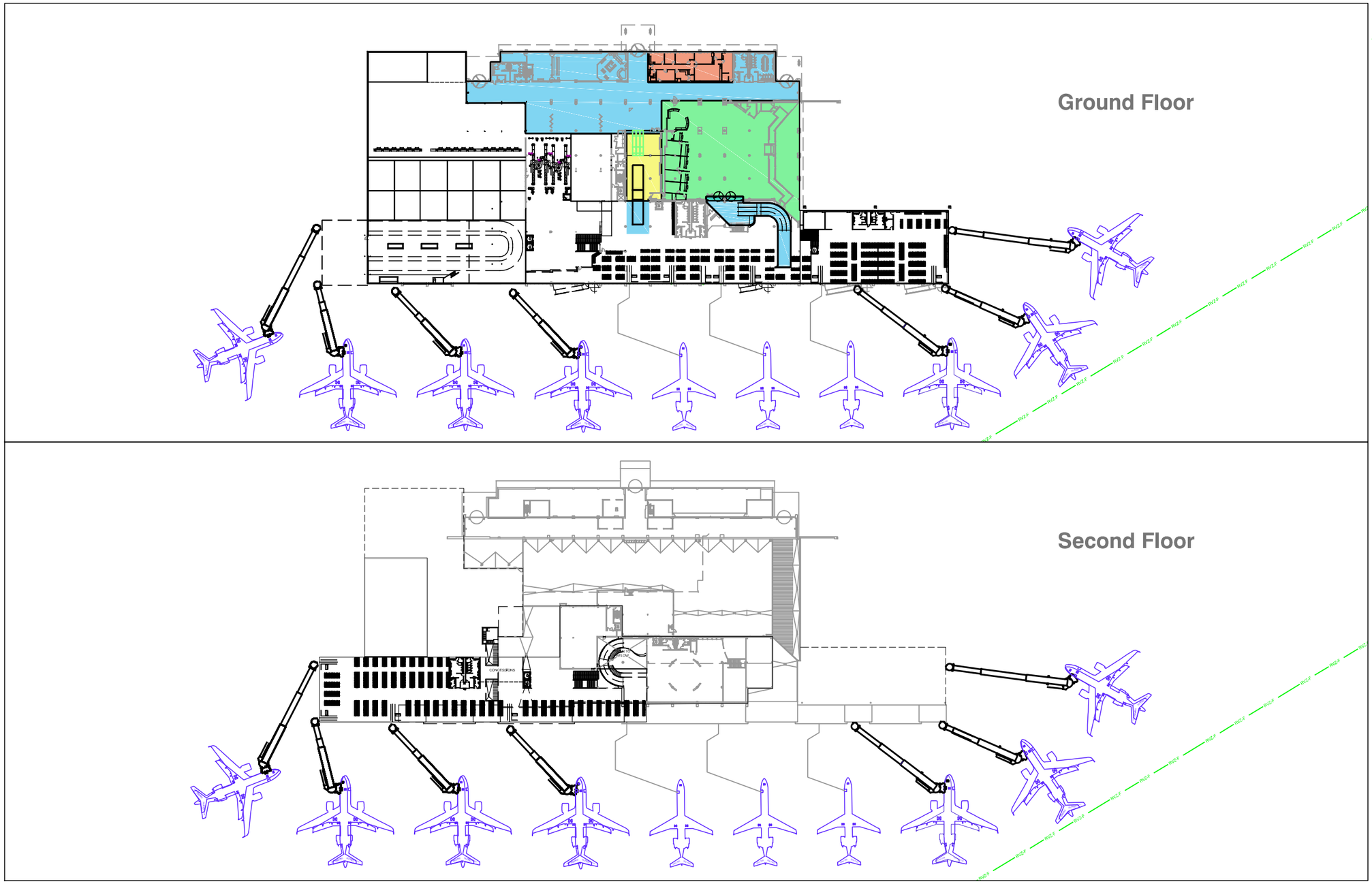


Figure 4-26
Alternative 3 - Forecast 2036 New Concourse Expansion - Phase 3

SUMMARY EVALUATION OF PASSENGER TERMINAL ALTERNATIVES

Table 4-7 presents a summary and an evaluation of the various alternatives for improvements to the passenger terminal at RDM. Alternative 3 is the preferred alternative because expanding the existing terminal to the west provides greater flexibility for future growth.

Table 4-7. Passenger Terminal Alternatives Summary Evaluation Matrix

Impact Category	Alternative 1	Alternative 2	Alternative 3
Description of Improvement	Expansion of existing terminal facilities to the west	Expansion of existing terminal facilities to the east	Expansion of existing terminal facilities and new concourse
Operational Capabilities			
Operability & Access	Reconfiguration of internal building space and temporary placement of facilities	Reconfiguration of internal building space and temporary placement of facilities	Reconfiguration of internal building space and temporary placement of facilities
Operational Impacts	Runway 5 expansion to the SE increases extent of the RVZ but does not include aircraft parking positions	Runway 5 expansion to the SE increases extent of the RVZ to include aircraft parking	Runway 5 expansion to the SE increases extent of the RVZ to include aircraft parking
Performance Requirements			
Accommodates Anticipated Passenger Demand	Yes	Yes	Yes
Accommodates Anticipated ADG-III Aircraft (A320 / B737)	Yes	Yes	Yes
Land Use Compatibility			
Impacts to Airport Property Use	Yes	Yes	Yes
Impact to Other Facilities	Yes	Yes	Yes
Environmental Impact Potential			
Property Acquisitions / Easements	None	None	None
Tenant Relocation Required	Yes	Yes	Yes
Constructability			
Impact to Airport Operations	Minimal	Minimal	Minimal
Facilities Demolition	Yes	Yes	Yes
Phasing Complexity	Low	Low	Low
Financial Costs/Impacts			
Project Cost	In Progress	In Progress	$110,698,900
OVERALL EVALUATION			
DETERMINATION	**Favorable**	**Not Favorable**	**Favorable**

4.5.7 NON-AERONAUTICAL DEVELOPMENT ALTERNATIVES

The economic benefits generated from an airport's commercial, industrial, and aviation-related tenants provide substantial tax revenues and employment opportunities for the surrounding communities. Thus, it is in the Airport's best interest to develop future commercial/industrial uses, in addition to aviation-related activities, where feasible. Development around the Airport will diversify revenue streams and promote compatible development. Multiple subareas on and around the Airport were analyzed to examine their development potential to include the:

- ✓ Fairgrounds Industrial Subarea
- ✓ Airport Way Subarea
- ✓ West Business Park
- ✓ North Business Park
- ✓ North Apron
- ✓ South Apron
- ✓ North Development Parcel
- ✓ USFS Campus
- ✓ Terminal

Non-aeronautical alternatives were developed for the Fairgrounds Industrial and Airport Way Subareas in addition to the West and North Business Parks. The remaining potential development areas were excluded from non-aeronautical concept planning due to their planned aviation use or other exclusive uses (e.g., USFS use of its campus and potential emergency response training facility in the North Development Parcel).

Non-aeronautical landside alternatives were developed to illustrate the following potential uses:

- ✓ Accommodation and food services
- ✓ Industrial (which includes speculative light industrial buildings, construction firms, manufacturing, and wholesalers and warehousing)
- ✓ Gas station/ convenience store
- ✓ Office/flex (only in the North Business Park)

Conceptual building footprints were developed for the City-owned parcels within the Fairgrounds Industrial Subarea, Airport Way Subarea, West Business Park, and North Business Park. Additional buildings are likely to be constructed on privately held land as well, though those have not been illustrated within the development alternatives prepared for this Master Plan.

Table 4-8 summarizes the approximate size of the resulting non-aviation building floor areas that could be accommodated on City-owned land within each of the four subareas and further described in the subsequent alternatives.

Table 4-8. Summary of Non-Aviation Building Areas by Subarea (Square Feet)

Use	Subarea			
	Fairgrounds Industrial	Airport Way	West Business Park	North Business Park
Accommodations	0	130,000	0	0
Food/restaurant	0	11,000	0	0
Gas station/ convenience store[1]	0	4,500	0	0
Industrial buildings[2]	70,000	299,500	123,000	0
Office/flex[3]	0	0	0	289,000

Notes:
[1] Gas station/convenience store is not a permitted use in the M-1 Light Industrial zone so a zone change or code amendment would be necessary to accommodate this use.
[2] Industrial buildings include light industrial buildings, construction firms, manufacturing uses, wholesalers, and warehouse use.
[3] The illustrated portion of the North Business Park is zoned C-5 Tourist Commercial, which does not permit industrial uses. Office uses have been illustrated in this area as they are permitted in the zone.

As a subsequent effort to the Master Plan update, the City may wish to consider amending the zoning near the Airport to accommodate a wider range of airport-compatible uses, including commercial, industrial, and institutional uses. Currently, nearby zones include Airport, Light Industrial (M-1), Tourist Commercial (C-5), Open Space Park Reserve (OSPR), Park, and Public Facility (PF), each of which has its own set of permitted uses and development standards. Some communities have been able to capitalize on their public airports by applying zoning designations that allow for a wide range of uses so long as they do not affect aviation operations. Permitting a variety of uses and imposing regulations to limit impacts on aviation may be a way for the City to stimulate economic development while maintaining and enhancing the viability of the Airport. To implement this option, the City may need to amend the Comprehensive Plan and Comprehensive Plan Map, Development Code, and Zone Map.

FAIRGROUNDS INDUSTRIAL SUBAREA

The Fairgrounds Industrial Subarea is zoned Light Industrial (M1) and the majority is privately owned. The southernmost lot in this subarea is an 8-acre City-owned lot. The concept plan illustrates the potential for 70,000sf of industrial buildings on the City parcel. While not pictured on the diagrams, the privately owned land has the potential for up to 200,000sf of additional industrial buildings and 15,000-20,000sf of supporting commercial uses (e.g., restaurants).

AIRPORT WAY SUBAREA

The Airport Way Subarea is zoned Light Industrial (M1) and the land is owned by the City. The southern 9 acres are currently developed with Peterson Caterpillar's facility. The concept plan illustrates nearly

300,000sf of industrial buildings, plus 15,500sf of supporting commercial (gas station and restaurants) and a five-story, 130,000sf hotel (hotels may require additional soundproofing measures due to proximity to the railroad and runway). Of this, a hotel, 4,000sf of restaurant, and 195,000sf of industrial buildings are depicted west of Airport Way. If the land west of Airport Way is needed for rental car facilities and airport parking as envisioned in some aviation alternatives, then some or all these non-aviation uses would not be possible at this location. East of Airport Way, the concept plan illustrates 7,000sf of restaurant, 4,500sf of gas station/convenience store, and 104,500sf of industrial buildings. Due to the large parcel size east of Airport Way, an internal circulation network with private roadways has also been illustrated.

WEST BUSINESS PARK

The West Business Park area contains multiple zoning designations, including Light Industrial (M1), Public Facility, and Park. The concept plan illustrates 123,000sf of industrial buildings on City-owned land within the M1 zone. Potential building locations were selected to avoid the future westward extension of Salmon Drive and the future realignment of the Airport Way-Veterans Way intersection. While not pictured on the diagrams, the privately owned land has the potential for up to 375,000sf of additional industrial buildings.

NORTH BUSINESS PARK

The North Business Park area contains multiple zoning designations, including Light Industrial (M1), Tourist Commercial (C5), and Open Space Park Reserve (OSPR). As the southern portion of this subarea is anticipated to be used for aviation purposes, only the northern portion by Highway 126 is available for non-aeronautical development. This northern portion is zoned C5 and industrial uses are not allowed, so the concept plan illustrates 289,000sf of office buildings. The C5 zone would also permit food services and accommodations, which have not been illustrated but may be considered if such uses are not developed along Airport Way south of the Airport.

SITE, TRANSPORTATION, AND UTILITY CONSTRUCTION COST ESTIMATES

Based on the illustrated non-aeronautical development, this section describes order-of-magnitude site preparation costs as well as transportation and utility costs that can be anticipated to serve the developments.

In general, the site preparation costs include site clearing and grading, stormwater management, installation of utilities, and construction of new roadways. Site development costs have been estimated on a square-foot basis and assume typical construction methods and design for commercial and industrial developments.

The overall public utility systems within the non-aeronautical development areas appear to have capacity to accommodate the proposed uses, so a need for upgrades to existing utilities are not expected to be necessary. Some of the study areas require public utility extensions to serve new development.

FAIRGROUNDS INDUSTRIAL SUBAREA

Site preparation for the Fairgrounds Industrial Subarea is expected to include extension of SW Elkhorn Avenue to connect to the southern terminus of SW Badger Way, which will include 8" sewer and 12" water public utility extensions within the new roadway.

Site preparation construction costs are expected to total over $4 million, as outlined below:

- ✓ On-site earthwork, parking, and private roadways - $1,232,900
- ✓ On-site private utilities - $818,900
- ✓ Public roadways - $960,000
- ✓ Public utilities - $1,160,000
- ✓ Total site development costs: $4,171,800

AIRPORT WAY SUBAREA

Site preparation for the Airport Way Subarea is expected to include extension of 12" public water lines along Mt Hood Drive and within the southern on-site private roadway, as well as extension of 8" public sewer lines within the southern private roadway.

Site preparation construction costs are expected to total nearly $13 million, as outlined below:

- ✓ On-site earthwork, parking, and private roadways - $6,536,800
- ✓ On-site private utilities - $5,528,200
- ✓ Public roadways - $0
- ✓ Public utilities - $855,000
- ✓ Total site development costs: $12,920,000

WEST BUSINESS PARK

Site preparation for the West Business Park Subarea is expected to include extension of SE Salmon Drive to the western edge of the subarea, which will include 12" water and 8" sewer public utility extensions within the new roadway. The proposed realignment of the intersection of SE Airport Way and SE Veterans Way is not included in the non-aeronautical site development roadway costs listed below.

Site preparation construction costs are expected to total over $8 million, as outlined below:

- ✓ On-site earthwork, parking, and private roadways - $3,277,700
- ✓ On-site private utilities - $2,651,600
- ✓ Public roadways - $850,000
- ✓ Public utilities - $1,232,500
- ✓ Total site development costs: $8,011,800

NORTH BUSINESS PARK

Site preparation for the North Business Park Subarea is expected to include upgrades of the existing SE 10th Street and SE Veterans Way to meet city standard road sections, which will include 12" water and 8" sewer public utility extensions within 10th Street. SE Veterans Way includes public utilities that do not need upgrades or extensions. The proposed realignment of the intersection of SE Airport Way and SE Veterans Way is not included in the non-aeronautical site development roadway costs listed below.

Site preparation construction costs are expected to total over $8 million, as outlined below:

- ✓ On-site earthwork, parking, and private roadways - $3,045,400
- ✓ On-site private utilities - $2,396,200
- ✓ Public roadways - $470,000
- ✓ Public utilities - $451,300
- ✓ Total site development costs: $6,392,900

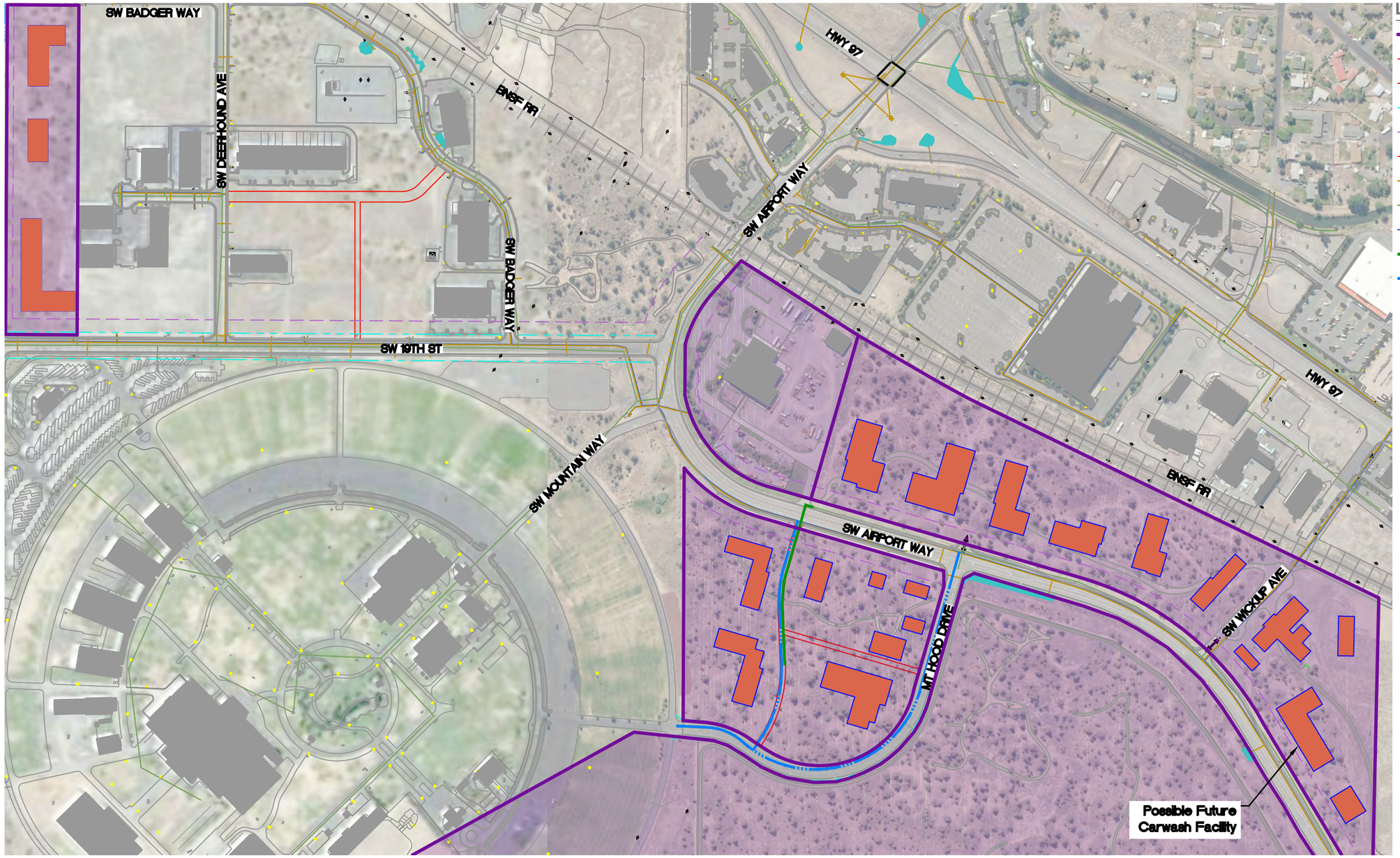
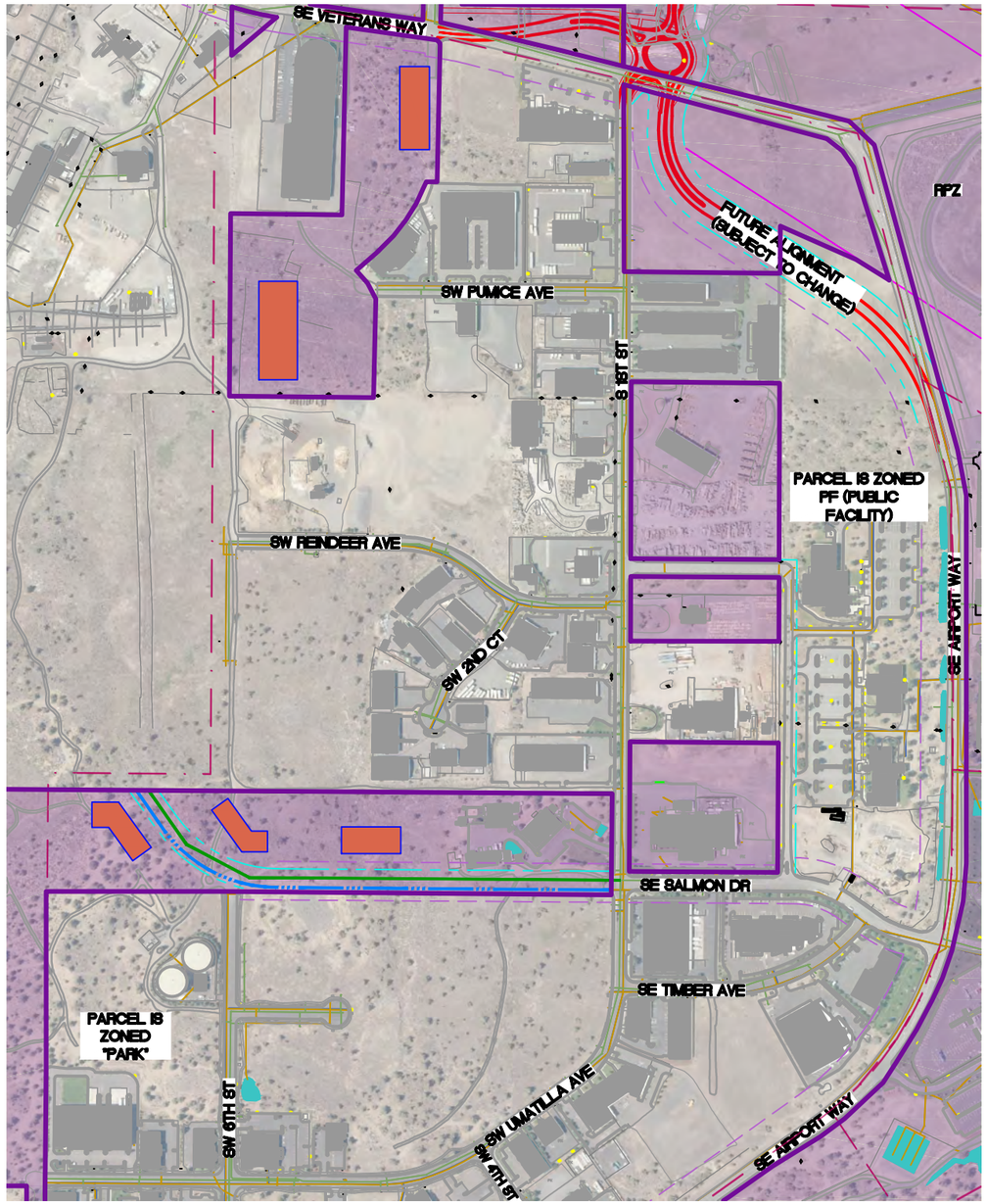
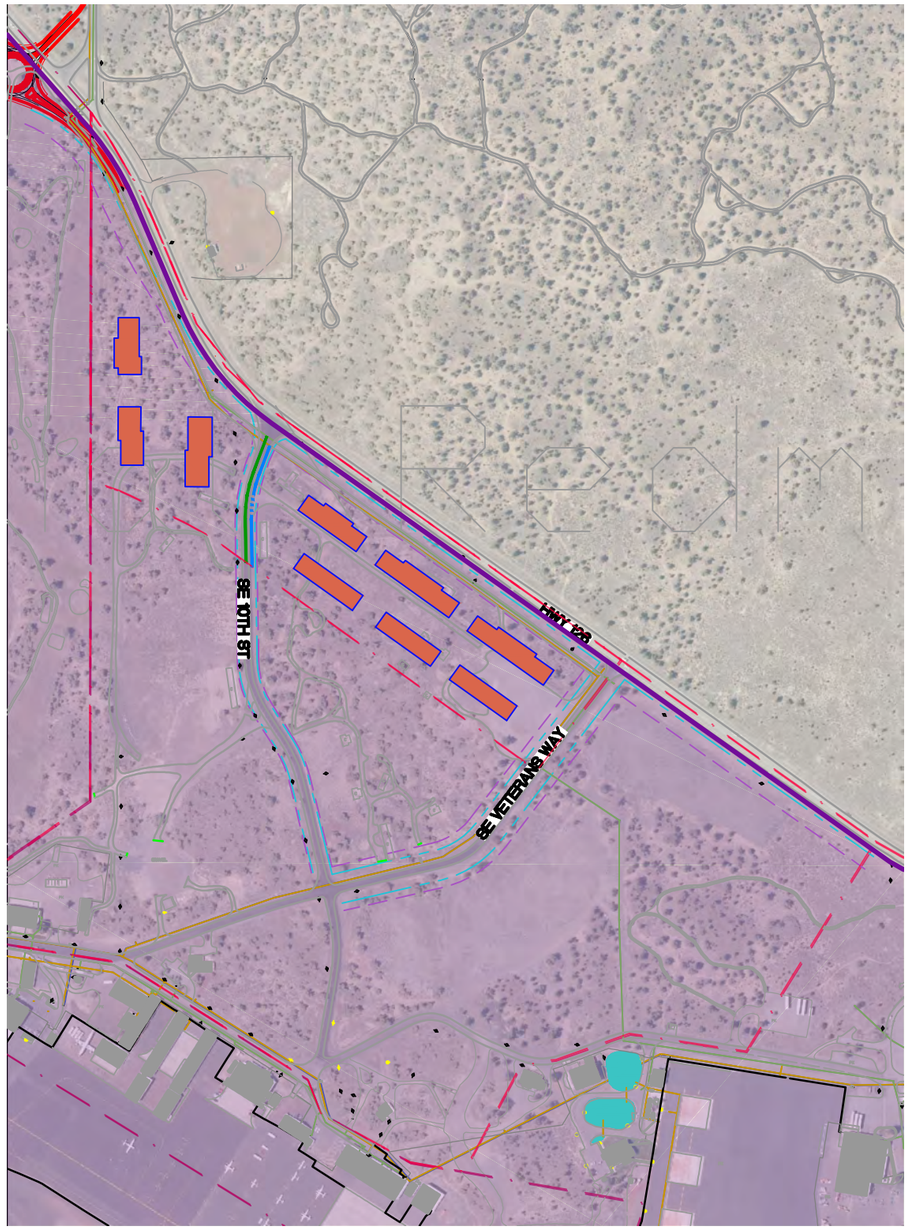


Figure 4-27
Alternatives - Fairgrounds Industrial & Airport Way Subareas





LEGEND

- RDM Property Boundary
- Right Of Way Line
- Runway Protection Zone (RPZ)
- R.O.W. Dedication
- Setback
- Future Road
- Existing Storm
- Existing Sewer
- Existing Water
- Future Sewer
- Future Water
- Existing Building
- Potential Building
- Existing Detention Pond
- RDM Property

N

0' 250' 500'

Figure 4-28
Alternatives - West & North Business Park Subareas

4.5.8 AIRCRAFT RESCUE & FIRE FIGHTING BUILDING ALTERNATIVES

The FAR Part 139 establishes certification requirements for airports serving scheduled air carrier operations. As an FAR Part 139 certified airport, RDM must provide Aircraft Rescue and Firefighting (ARFF) services in support of scheduled air carrier service. Part 139 requires that ARFF services must be able to meet a three-minute response time where an ARFF vehicle must reach the midpoint of the farthest runway serving air carrier aircraft from its assigned post or reach any other specified point of comparable distance on the movement area that is available to air carriers and begin application of an extinguishing agent. The existing ARFF building will lie within the future RVZ if Runway 5-23 extends to the southwest; in this scenario, the ARFF site would need to be relocated. The relocated site must remain clear of all FAR Part 77 surfaces, existing, and future RVZ and not impact FAA Air Traffic Control Tower (ATCT) line of site. Three possible locations were identified for the ARFF building, as described below.

ARFF RELOCATION SITE 1

This alternative, as shown in **Figure 4-29**, involves demolishing the existing ARFF facility and the construction of a new ARFF facility on a portion of the former footprint of the existing site, while shifting the future building a sufficient distance to remain clear of FAR Part 77 and the RVZ. The new ARFF location remains clear of all FAR Part 77 surfaces, does not impact the existing or future RVZ, and does not impact the existing ATCT line of site.

This alternative is estimated at a total project cost of $3,250,000 and does not include demolition, engineering, environmental compliance, or construction management services.

ARFF RELOCATION SITE 2

This alternative, as shown in **Figure 4-30,** involves the construction of a relocated ARFF building on a vacant parcel of land, northeast of the ATCT, adjacent to the existing Snow Removal Equipment (SRE) building. The new ARFF location remains clear of all FAR Part 77 surfaces, does not impact the existing or future RVZ, and does not impact the existing ATCT line of site.

This alternative is estimated at a total project cost of $2,877,280 and does not include engineering, environmental compliance, or construction management services.

ARFF RELOCATION SITE 3

This alternative, as shown in **Figure 4-31,** involves converting the existing SRE building into the ARFF building. The new ARFF location remains clear of all FAR Part 77 surfaces, does not impact the existing or future RVZ, and does not impact the existing ATCT line of site.

This alternative is estimated at a total project cost of $2,877,280 and does not include engineering, environmental compliance, or construction management services.

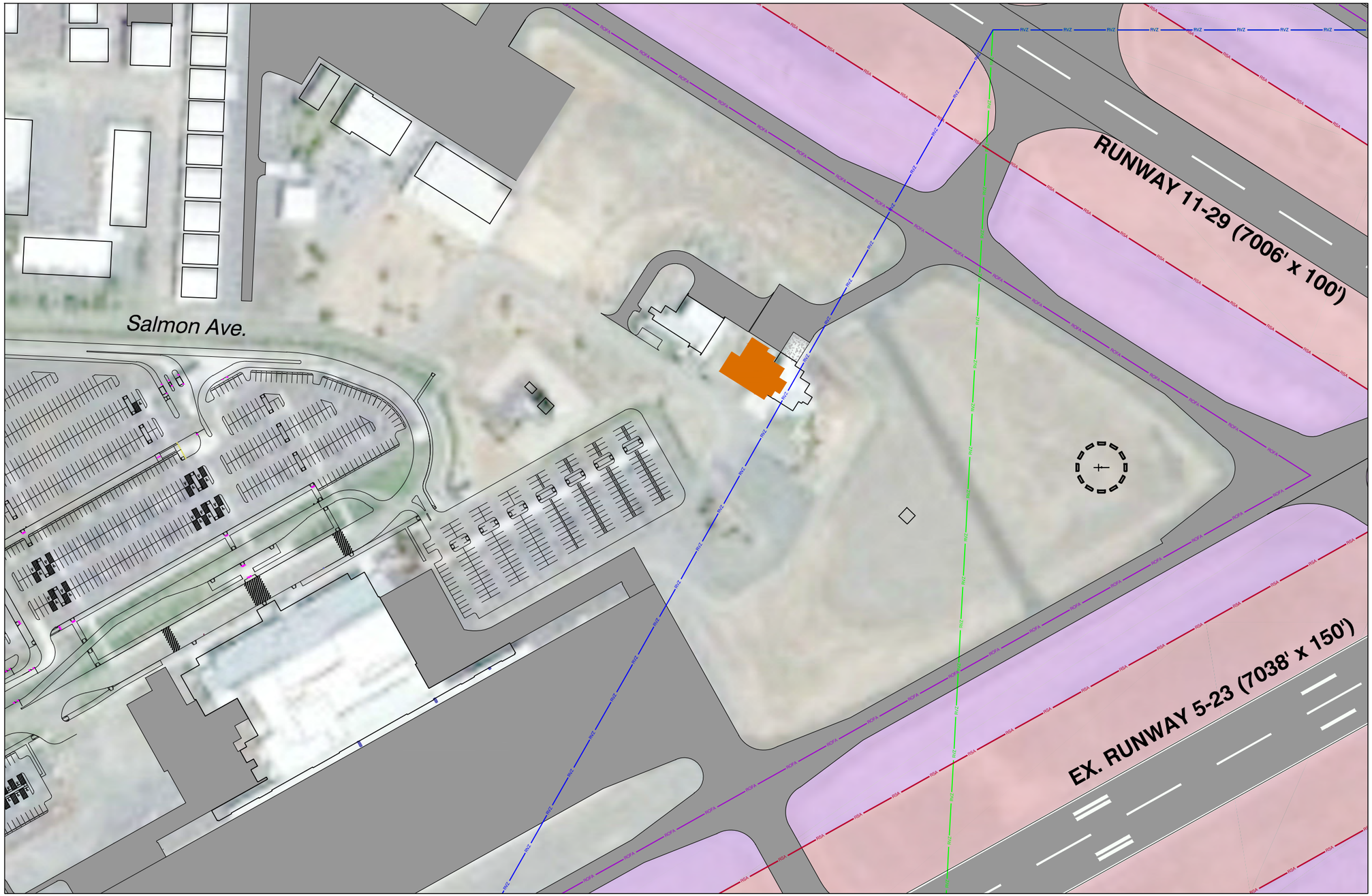


Figure 4-29
Alternative 1A - ARFF Relocation Site 1

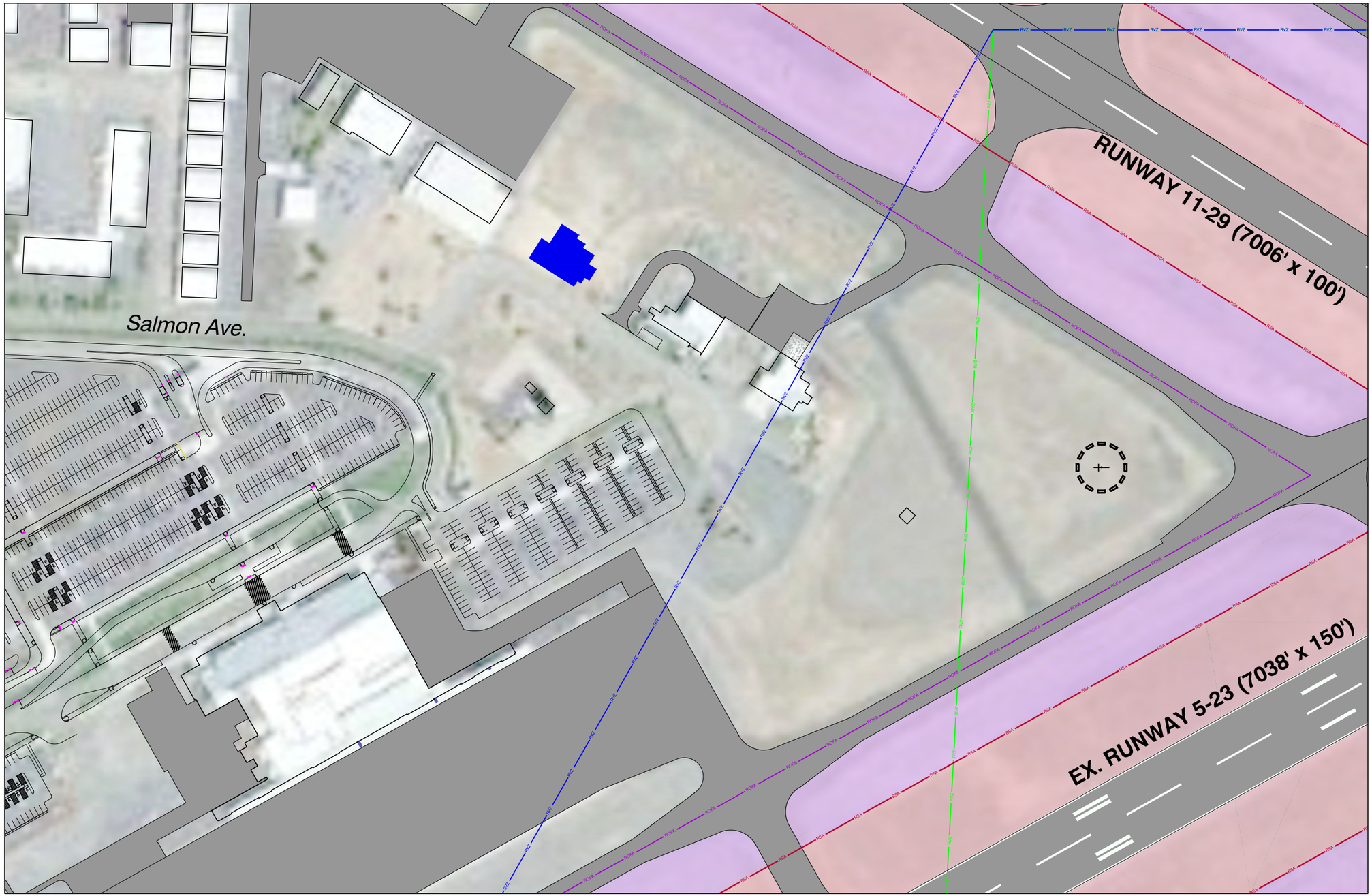


Figure 4-30
Alternative 1B - ARFF Relocation Site 2

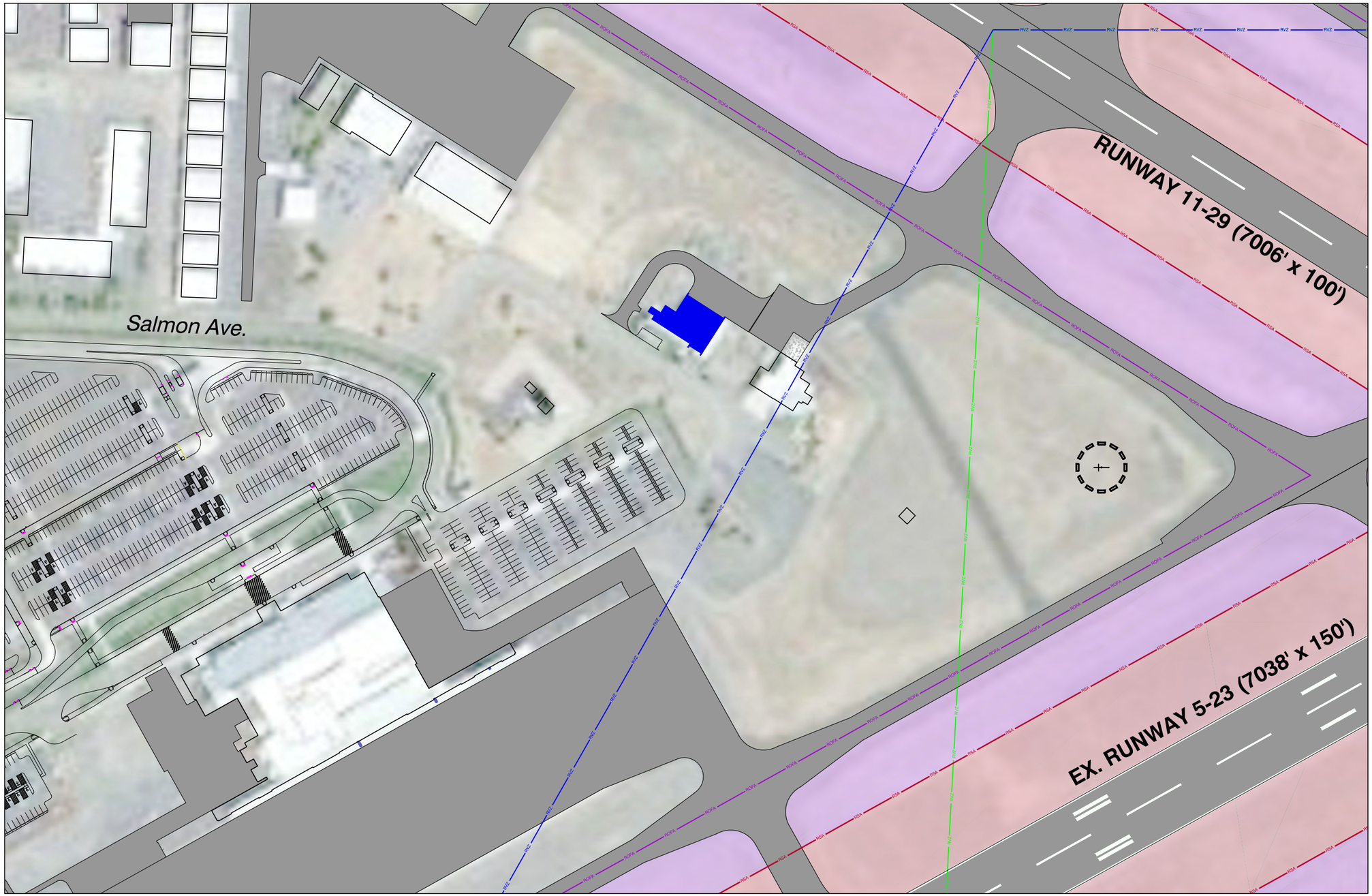


Figure 4-31
Alternative 1C - ARFF Relocation Site 3

SUMMARY EVALUATION OF ARFF BUILDING ALTERNATIVES

Table 4-9 presents a summary and an evaluation of the various alternatives for the relocation of the ARFF building. Alternative 1 is the preferred alternative because the ARFF building will continue to be in range to meet required response times for emergencies and the alternative uses a portion of the existing ARFF building footprint for the relocation.

Table 4-9. ARFF Relocation Alternatives Summary Evaluation Matrix

Impact Category	Alternative 1	Alternative 2	Alternative 3
Description of Improvement	Relocate ARFF to portion of existing ARFF footprint.	Relocate ARFF next to SRE building.	Relocate ARFF to existing SRE building.
Operational Capabilities			
Operability & Access	ARFF will remain in response time distance for emergencies	ARFF will remain in response time distance for emergencies	ARFF will remain in response time distance for emergencies
Airfield Impacts	Low	Low	Low
Performance Requirements			
Expansion Capabilities	Yes	Yes	Yes
Land Use Compatibility			
Impacts to Airport Property Use	ARFF wll be out of RVZ	ARFF wll be out of RVZ	ARFF wll be out of RVZ
Impact to Other Facilities	None	None	SRE building converted into ARFF
Environmental Impact Potential			
Property Acquisitions / Easements	None	None	None
Historic, Architectural, and Archaeological and Cultural Resources	None	None	None
Section 4(F) of the Department of Transportation Act	None	None	None
Tenant Relocation Required	Yes	Yes	Yes
Threatened and Endangered Species	Requires Contact of USFWS - East Wolf Mgmt. Zone.	Requires Contact of USFWS - East Wolf Mgmt. Zone.	Requires Contact of USFWS - East Wolf Mgmt. Zone.
Constructability			
Impact to Airport Operations	Low	Low	Low
Grading/Soil Conditions	Complex	Complex	Complex
Facilities Demolition	Yes	Yes	Yes
Phasing Complexity	Low	Low	Low
Financial Costs/Impacts			
Project Cost	$3,250,000	$2,877,280	$2,877,280
OVERALL EVALUATION			
DETERMINATION	**Favorable**	**Favorable**	**Favorable**

4.5.9 NORTHEAST PASSENGER TERMINAL APRON RECONSTRUCTION ALTERNATIVE

As part of the terminal expansion project, the northeast passenger terminal apron needs to be reconstructed with concrete to accommodate a parked regional jet Embraer ERJ-175 to have adequate support for the weight of the aircraft and tail height clearance of the FAR Part 77 transitional surface, and to remain clear of the future RVZ. The section of apron that would be reconstructed is located on the northeast side of the existing apron. The concrete area would be 135’ in width and 30’ in length for a total area of 4,126sf of Portland Cement Concrete Pavement (PCCP). The apron reconstruction would potentially require the relocation of two light poles, relocation of the vehicle service road, and relocation of ground support equipment storage on the apron.

ALTERNATIVE 1 – NORTHEAST APRON RECONSTRUCTION

This alternative, as shown in **Figure 4-32,** involves the reconstruction of 4,126sf of pavement to PCCP to accommodate the weight of an ERJ-175. This alternative is estimated at a total project cost of $1,998,900 and does not include any relocation of light poles, service roads, demolition of existing facilities, engineering, environmental compliance, or construction management services.

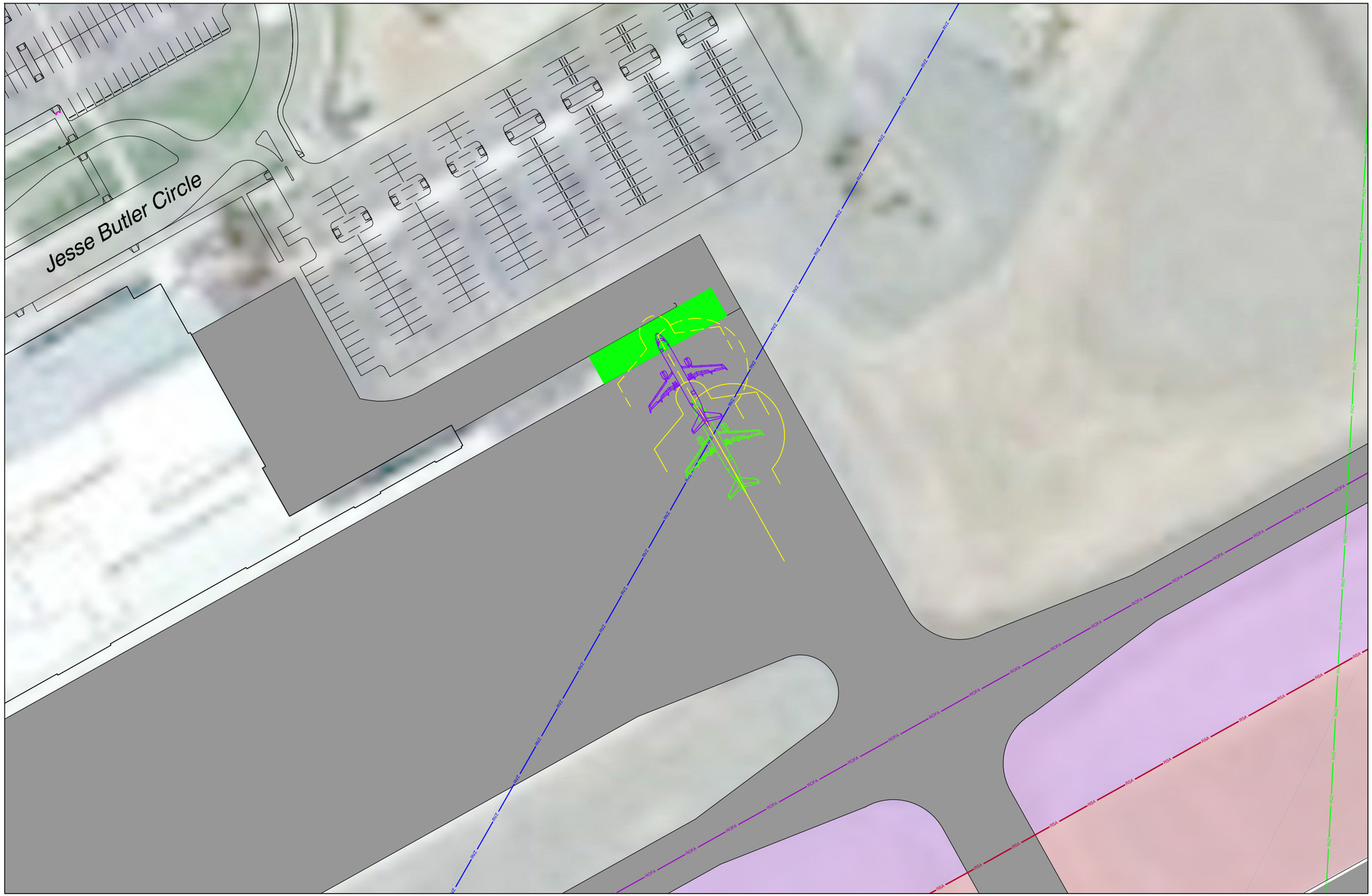


Figure 4-32
Alternative 1 - Northeast Apron Reconstruction

4.6 ALTERNATIVES SUMMARY

The preferred Airport development alternative outlines the necessary development and facility improvements that will not only meet the forecasted demand presented in **Chapter 2 – Forecast**, but also ultimately supports competitiveness and financial viability for the Airport. It is recommended that the Airport acquire available property north of Highway 126 for future aeronautical and non-aeronautical uses, in addition to ensuring compatible uses. The following improvement alternatives are recommended.

AIRSIDE FACILITIES

- ✓ Extend Runway End 5 to the southwest by 2,962 feet for a total length of 10,000 feet for Runway 5-23
- ✓ Upgrade the approach to Runway 5to support LPV approach capabilities
- ✓ Demolish existing taxiway connectors E and H that provide direct access to Runway 5-23 from the passenger terminal apron and reconstruct taxiway connectors E and H in a position that conforms to current FAA AC 150/5300-13A, Change 1, *Airport Design* standards
- ✓ Construct a new taxiway connector from Taxiway F to the passenger terminal apron on the northeast side
- ✓ Construct the first phase of a new parallel taxiway on the east side of Runway 5-23, and eliminate two segments of Taxiways F and C, to address FAA identified Hot Spots 1 and 2
- ✓ Construct the second phase of a new parallel taxiway on the east side of Runway 5-23 to facilitate aircraft movements and support a future central GA development area
- ✓ Construct the third phase of a new parallel taxiway on the east side of Runway 5-23 to facilitate aircraft movements
- ✓ Construct improvements to the north and south ends of taxiway connector A to conform to current FAA AC 150/5300-13A, Change 1, *Airport Design* standards
- ✓ Reconstruct the passenger terminal apron to allow the tail of a parked ERJ-175 to remain under the FAR Part 77 surfaces and have the weight of the aircraft properly supported
- ✓ Coordinate with the FAA, Oregon Department of Transportation – Highway Division, County of Deschutes, and the local Irrigation District for the relocation of a segment of Highway 126 outside of Runway 23's RPZ to comply with requirements in FAA AC 150/5300-13A, Change 1, *Airport Design* and the *2012 RPZ Memo*

GENERAL AVIATION DEVELOPMENT

- ✓ Expand existing GA facilities on the north side
- ✓ Develop new GA facilities east of the Runway 5 End that would support future aviation uses upon buildout of the north side GA facilities

VEHICLE PARKING

- ✓ Develop property near the Deschutes County Fair Grounds Expo Center for the expansion of rental car facilities, new long-term parking, and remote parking
- ✓ Expand employee parking to include the vacant parcel within the central terminal area
- ✓ Expand existing vendor parking to consume a portion of the existing employee parking lot

SUPPORT FACILITIES

- ✓ Relocate the SRE building to the northside GA development area
- ✓ Construct a new fuel farm south of the existing passenger terminal
- ✓ Relocate the ARFF building outside of the future RVZ

PASSENGER TERMINAL BUILDING

- ✓ Expand the passenger terminal building to the west to accommodate future passenger demand and larger ADG-III aircraft

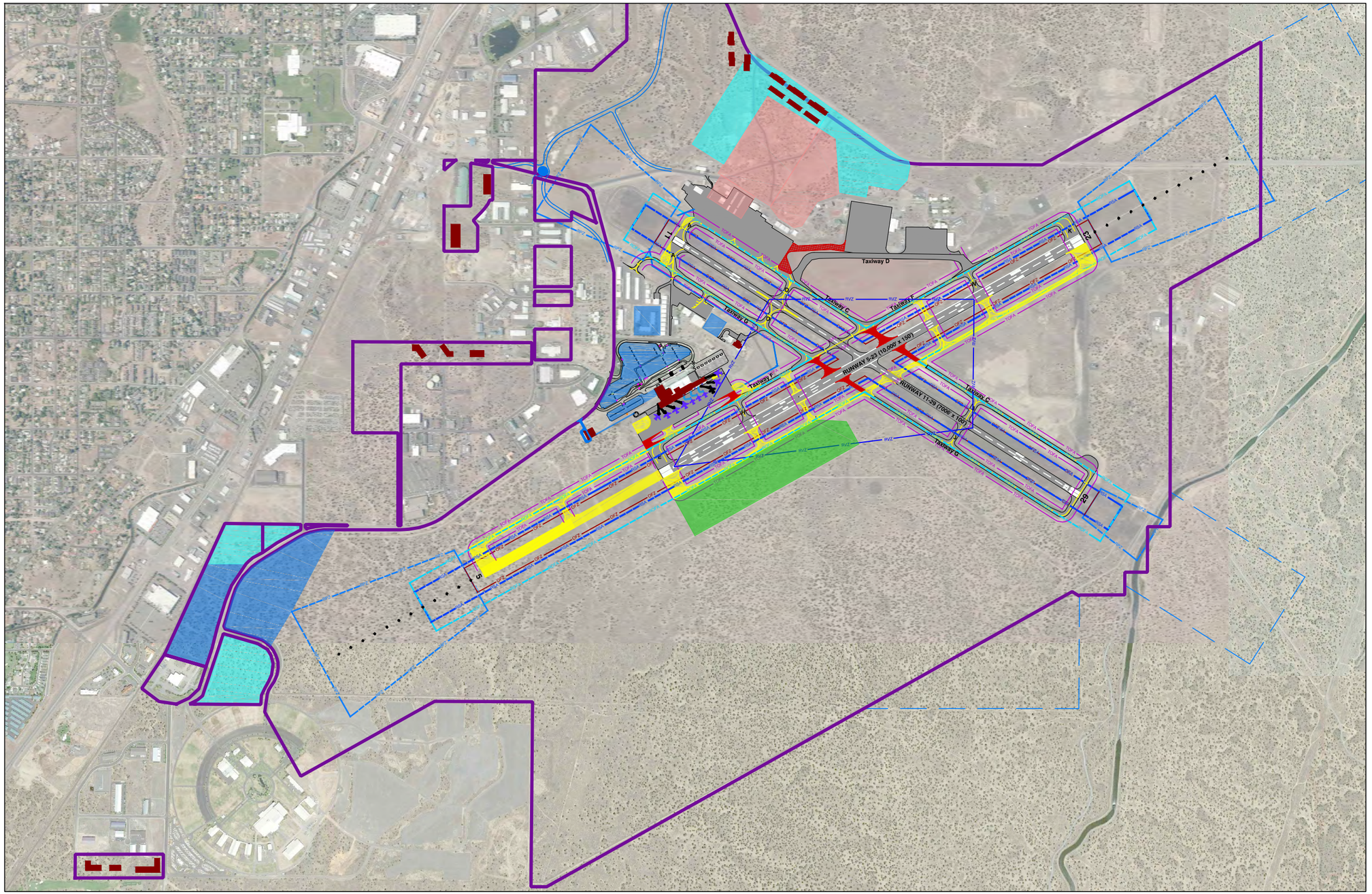
NON-AERONAUTICAL PROPERTY DEVELOPMENT

- ✓ Develop non-aeronautical property in the Fairgrounds Industrial, Airport Way, West Business Park, and North Business Park Subareas
- ✓ Explore amending the zoning near the Airport to accommodate a wider range of airport-compatible uses, including commercial, industrial, and institutional uses

4.6.1 PREFERRED DEVELOPMENT CONCEPT

Capital costs will be calculated and added to the improvement projects identified in the implementation plan. The preparation of an updated ALP will begin to show how the Airport will look at the end of the implementation plan.

The preferred airport layout is shown **in Figure 4-33**.



LEGEND

- Airport Property
- Easement
- Runway Object Free Area (OFA)
- Runway Obstacle Free Zone (OFZ)
- Runway Protection Zone (RPZ)
- Runway Safety Area (RSA)
- Runway Visibility Zone (RVZ)
- Taxiway/Taxilane Object Free Area (TOFA)
- Existing Pavement
- Removed Airfield Pavement
- Airfield Pavement to be Removed
- Future Commercial Area
- Future Pavement
- Future Auto Parking/Road
- Future General Aviation
- Future Building/Building Expansion
- Aviation Reserve

N

0' 750' 1500'

Figure 4-33
Preferred Alternatives

5.0 FINANCIAL FEASIBILITY

This chapter describes the 20-year Capital Improvement Plan (CIP) for Redmond Municipal Airport (RDM or the Airport). The CIP is a strategic year-by-year project development schedule for the continued development, upgrade, and expansion of facilities and equipment. The CIP is developed in accordance with federal and state aviation grant programs and is structured to fit the Airport's financial capabilities. The Federal Aviation Administration (FAA) and the Oregon Department of Aviation (ODA) reviewed and accepted the Airport's current five-year CIP, which RDM updates annually. Annual updates include improvement projects identified in this Master Plan through the 20-year planning horizon.

The CIP is not intended to be rigid or inflexible. It does not require the Airport to build anything and does not require the FAA or ODA to fund identified projects. Projects that receive FAA funding will need to show that they meet FAA design standards, are justified based on FAA criteria described in this chapter, and undergo an environmental review pursuant to the requirements of the National Environmental Policy Act (NEPA), as amended.

5.1 APPROACH TO CAPITAL PLANNING

5.1.1 Project Phasing

The CIP identifies individual projects, costs, and funding participation phased within the short term (1-5 years), mid-term (6-10 years), and long-term (11-20 years) planning periods. The CIP projects are prioritized based on need identified in **Chapter 2, Aviation Activity Forecasts**, and **Chapter 3, Facility Requirements**. These considerations influenced project priority:

- ✓ Ability to enhance efficiency and meet FAA design standards.
- ✓ Ability to repair and upgrade facilities reaching the end of useful life.
- ✓ Ability to meet user demand and desired level of service.
- ✓ Ability to support long-term airport strategic goals related to scheduled commercial air service, general aviation, the U.S. Forest Service, and emergency response.

Several projects identified in this CIP can be phased over years. This approach helps distribute capital costs more evenly and allows the Airport to implement improvements as demand materializes. Project phasing supports accelerating or delaying project implementation in response to economic conditions and changing airport user needs.

5.1.2 Project Costs

Professional engineers and architects have developed cost estimates for each project contained in the CIP. All project costs use 2018 dollars. For projects not occurring in 2018, the estimators adjusted for inflation at a rate of three percent. Except where explicitly noted, project costs have fifteen percent contingency added to the construction cost to account for unknowns. Costs for environmental assessment, design, and construction management are included as appropriate.

5.1.3 Funding Participation and Commitment

The CIP identifies funding classified into one of three categories for each project:

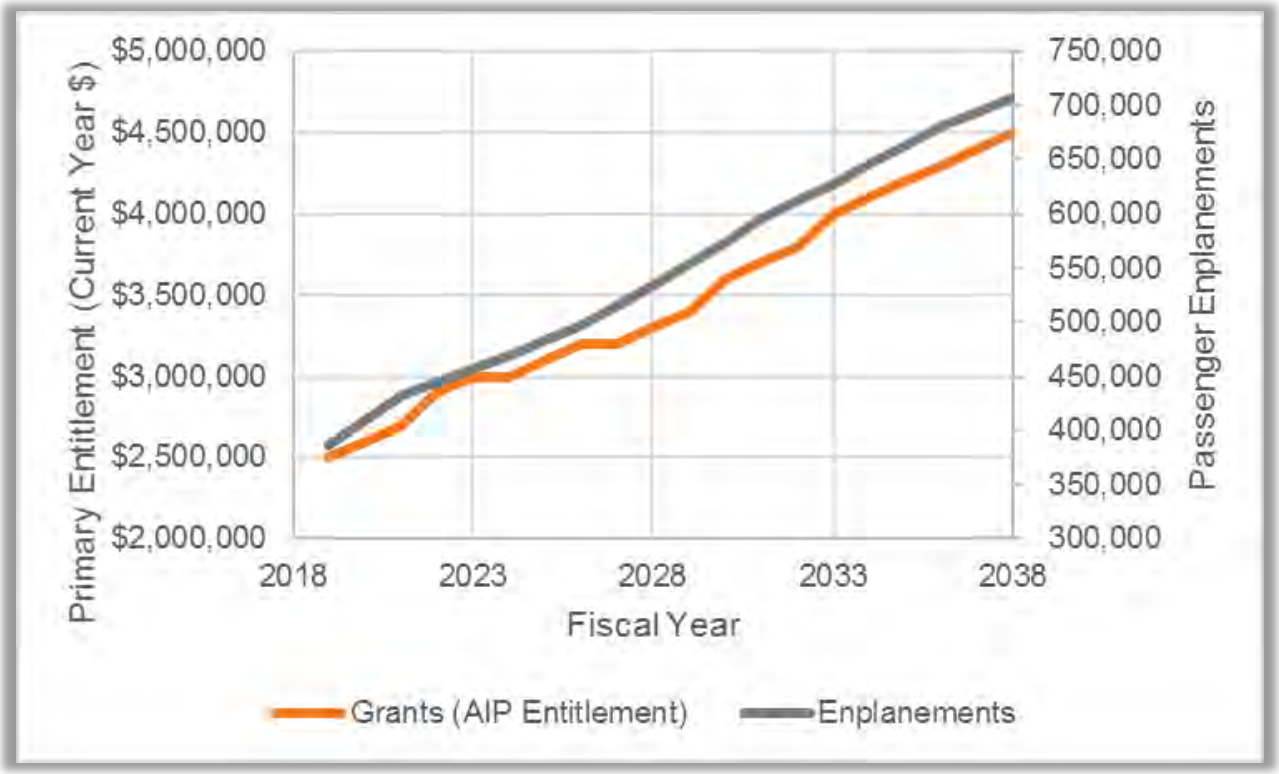
- ✓ FAA Airport Improvement Program (AIP)
- ✓ Passenger Facility Charges (PFCs)
- ✓ Local funds (Airport revenues, bonds, customer facility charge [CFC], and ODA grants)

FAA AIP funds are classified as entitlement and discretionary. The FAA grants funding to airport improvements through the Aviation Trust Fund (ATF), which is financed by aviation system user fees and taxes (e.g., airline passenger tax, aircraft parts taxes, fuel taxes, and aircraft registration fees). The AIP provides the mechanism to reinvest the ATF at FAA-eligible airports. FAA Order 5100.38D *Airport Improvement Program Handbook* (AIP Handbook) describes AIP funding eligibility. The AIP program requires the Airport to contribute a local match of 6.67 percent for AIP grants received, which is lower than the typical 10 percent requirement. This is due to the fact that the Airport receives a high federal share based the large amount of federal lands located in Deschutes County. More information can be found in FAA Order 5100.38D Appendix AA. The FAA distributes AIP entitlement funding annually, and the Airport can save the entitlement funds for up to three years, which helps pay for more expensive projects.

The FAA National Plan of Integrated Airport Systems (NPIAS) defines RDM as a primary airport, meaning it is a commercial service airport with more than 10,000 annual passenger enplanements. The NPIAS identifies airports eligible for AIP funding and estimates the amount of AIP funds needed to fund projects that will update airports to current FAA standards and increase capacity as needed. Primary airports are eligible for annual primary entitlement funding under the AIP. The total amount of primary entitlement funding depends on the number of enplaning passengers (passenger entitlements), and the volume of landed cargo (cargo entitlement). The AIP Handbook defines how the FAA calculates primary entitlement.

In fiscal year (FY) 2018, the primary entitlements (PE) for RDM totaled $2,240,000. The FAA calculates entitlement based on the last calendar year of data prior to the FAA fiscal year that starts in October. FY2018 started in October 2017, and FY2018 entitlement is based on enplanement levels in calendar year 2016. The FAA projects future entitlement funds using the passenger enplanement forecast for two years prior and rounded to the nearest hundred thousand. RDM sees less than 1/10 of a percent of national cargo volume, so cargo entitlements are not included in future entitlement projections. **Figure 5-1** shows the entitlement and passenger enplanement projections.

Figure 5-1: AIP Entitlement Funding Projection



Entitlement funds equal to current year dollars, not adjusted for inflation to 2018 values. Entitlement calculated using formula in AIP Handbook, Table 4-1, for when more than $3.2 billion is available in national AIP funding.
*Enplanement forecast described in **Chapter 3***

Projects eligible for AIP funding may receive discretionary funding if the total cost exceeds what can be covered by entitlement funds. Discretionary funds are not guaranteed and the project in question competes with others from across the NPIAS for funding.

The demand for FAA AIP funds exceeds the availability. The FAA uses a national priority rating system to allocate AIP grant funds for specific airport projects. This formula system, which is occasionally adjusted to reflect national priorities, considers the airport type and project role. The following are the FAA AIP funding categories and point system:

- ✓ Safety/Security = 10 points
- ✓ Statutory Emphasis Programs = 9 points
- ✓ Planning / Reconstruction / Environment = 8 points
- ✓ Capacity = 7 points
- ✓ Standards = 6 points
- ✓ Other = 4 points

PFCs are a fee attached to airline tickets to pay for facilities that passengers on commercial airlines use. This fee can be used for airport improvement projects; however, the Airport is required to consult with the airlines on which projects the fee will be used for. As of February 2018, the Airport collects $4.50 per enplaning passenger, and the proceeds are used for the debt service on the bonds that paid for the existing passenger terminal building. PFCs are allocated to the existing terminal debt service through the City of Redmond (the City) Fiscal Year 2038/2039.

Local funds include, but are not limited to, Airport revenues from leases, fuel surcharges, landing fees, and automobile parking. Local funds may include bonds issued on the full faith and credit of the City, grants from ODA, and CFCs from rental cars. The Airport does not receive funding from the City general fund for capital or operating expenses. The Airport uses local funds to provide the 6.67 percent match on AIP-eligible projects, and to pay for projects that are not eligible for AIP funding. FAA policy states that CFC funds can only be used for projects related to the rental cars.

The CIP identifies expected funding sources for each project based on cost and eligibility. The Airport updates it's five-year CIP with the State and the Airport annually and will update funding sources appropriately as the time nears to implement projects. Before projects included on the CIP can be implemented, they may require environmental assessment and property acquisition. The CIP allocates time and money for the Airport to complete these actions. The cost estimates include contingency for unknown expenses such as legal fees, design challenges, and changing regulation.

5.1.4 Airport Funds

The City reviewed the Airport's financial data to ascertain the availability of local funds to support the CIP. The City performed a financial analysis during the development of the CIP to identify if the expected local capital requirements could be met. The City's model considered revenue growth based on additional landings and passengers and the ability of the Airport to take on debt to finance more expensive capital projects.

Airport revenue consists of grants and fees collected from users of the air carrier terminal. Such fees include: PFCs, landing fees, rental car commissions, and parking fees. Federal and state grants for approved capital improvement projects make up a sizable portion of airport funding. The airport also receives revenue from non-aviation related land leases.

The source of funds for operational and capital improvement projects at the Airport is the Airport Fund. The Airport Fund is divided into two sub-funds: Capital Projects and Operational Projects. The Capital Projects sub-fund is used to construct major capital projects. Operational projects are further divided into three programs: the Terminal program, the Airfield program, and the General Operations program:

- The Terminal program funds Airport Terminal operations and is collected through Airline tenants paying rent, maintenance, and overhead fees.
- The Airfield program funds Airport Airfield operations and maintenance. Costs for the Airfield program are recovered through landing and fuel flowage fees.
- The General Operations program funds maintenance, improvement, and leasing of industrial properties, private hangars, and vehicle parking lots for passengers and rental car agencies.

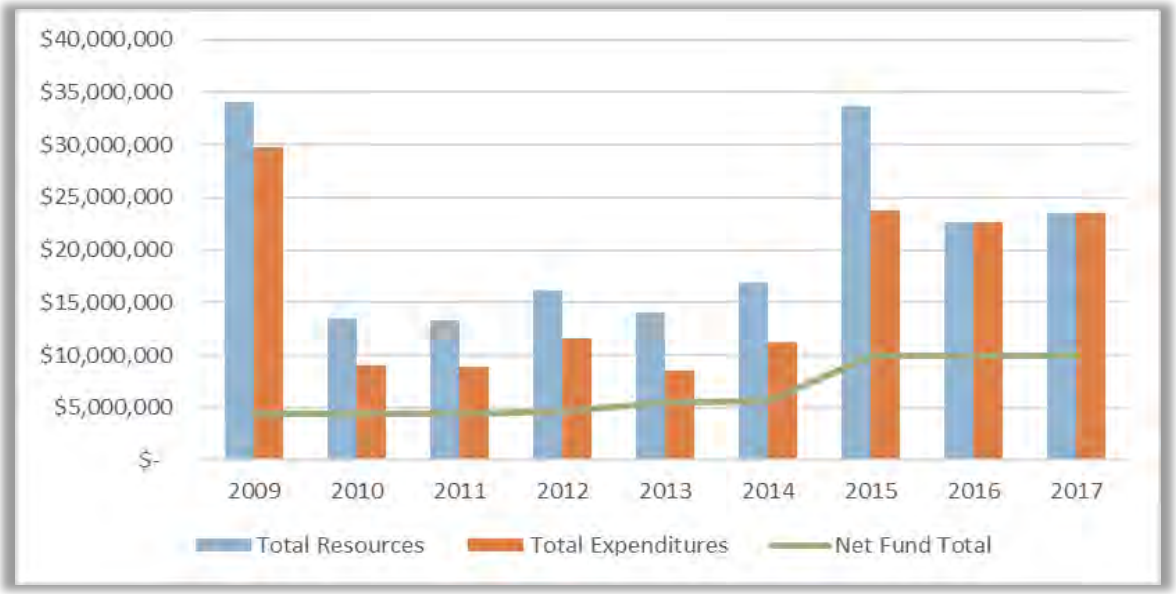
Airport funds vary from year to year depending on how busy the Airport is. Large capital projects, typically paid for by AIP grants, are the primary cause of large variations of the past five years. For example, the Airport received $3 million in grants during FY2014, and more than $12 million in grants for FY2015. **Table 5-1** shows the resource and expenditure by sub-fund.

Table 5-1. Total Resources and Expenditures by Sub-Fund					
	2013	2014	2015	2016	2017
Total Resources	$14,106,302	$16,846,264	$33,649,483	$22,616,499	$23,477,443
Total Beginning Fund Balances	$4,620,801	$ 5,562,536	$ 5,617,592	$ 8,039,651	$ 6,755,917
Total Current Resources	$9,485,501	$11,283,728	$28,031,891	$14,576,848	$16,721,526
Total Expenditures	$8,543,766	$11,228,672	$23,739,026	$22,616,499	$23,477,443
Operations	$7,307,316	$ 7,375,838	$ 9,929,537	$11,157,582	$13,308,184
Debt Service Reserve	$0	$0	$0	$ 2,515,917	$2,715,259
Customer Facility Charge	$0	$0	$0	$0	$739,000
Capital Projects	$1,236,450	$ 3,852,834	$13,809,489	$ 8,943,000	$6,715,000
Net Fund Total	$5,562,536	$5,617,592	$9,910,457	$9,910,456	$9,910,456

Total Resources is the sum of Total Beginning Fund Balances and Total Current Resources.
Total Expenditure is the sum of Operations, Debt Service Reserve, Customer Facility Charge, and Capital Projects.
Net Fund Total is the difference between Total Resources and Total Expenditure.
Source: City of Redmond: The Airport Fund

Figure 5-2 provides information on expenditures by sub-funds and total resources from FY2009 to 2017. FY2009 to FY2015 are income statements, and FY2016 and FY2017 are budgets. The budgets are balanced: expenses equal projected revenues. The Total Resources category is the sum of current resources and the fund balance from the beginning of the previous year. The Airport has had surplus net funds with enough resources to cover expenditures. Additional details of the annual revenue and expenditure can be found in the City's annual budget.

Figure 5-2: Airport Fund Resources and Expenditures



5.2 CAPITAL IMPROVEMENT PLAN

The Airport completed its latest CIP in January 2018, which covers projects for FY2019 to FY2023, and reviewed it with the FAA Seattle Airports District Office (ADO). The FAA prefers that the next three years of capital projects remain consistent to assist in the allocation of funds across the NPIAS. Thus, near-term projects have a relatively firm timeline compared to mid- and long-term projects which have more flexible timelines. The Master Plan CIP focuses on projects that occur beyond FY2023; however, there are some recommendations for reordering projects in FY2022 and FY2023 based on conversations that occurred during Master Plan CIP development. **Table 5-2** includes a summary of the costs and funding sources.

Table 5-2. Summary of Capital Improvement Plan

Period (Years)	Years	Project Costs	Entitlement	Discretionary	Local
Near-term (1-5)	2019-2023	$39,558,000	$13,633,403	$8,653,020	$17,271,577
Mid-term (6-10)	2024-2028	$28,148,001	$11,861,480	$2,143,327	$14,143,194
Long-term (11-20)	2029-2038	$203,001,667	$42,705,187	$64,244,174	$96,052,306
CIP	2019-2038	$270,707,668	$68,200,070	$75,040,521	$127,467,077

PFC funds are not shown as a source of up-front capital improvement funds. PFCs are expected to be used for terminal building debt service throughout the 20-year CIP.
This list includes only projects that are considered candidates for AIP funding.

The CIP summary shown above does not include projects not eligible for AIP funding and does not include PFCs or CFCs as funding sources. Funding from the Airport and the State are part of the local funding category, and availability of State funding should be assessed closer to the time to implement the project. AIP discretionary funding can be variable, and the project may need to be advanced or delayed depending on funding availability. The components of each period of the CIP are described in the following sections.

5.2.1 Near-term CIP (FY2019-FY2023)

The near-term CIP includes construction of a new snow removal equipment (SRE) storage facility, acquisition of SRE and aircraft rescue and firefighting (ARFF) equipment, pavement rehabilitation, airfield lighting, and the first phase of the passenger terminal building expansion. **Table 5-3** shows the near-term CIP, and the projects are described in the following sections. **Figure 5-3** shows project locations.

Table 5-3. Near-term CIP

Year	Project	Entitlement	Discretionary	Local	Total
2019	SRE Building	$2,500,000	$0	$8,613,000	$11,113,000
2020	SRE Vehicles	$1,493,333	$0	$106,667	$1,600,000
	SRE Building (Reimbursement)	$490,000	$0	$0	$490,000
2021	Rehabilitate Taxiways F, E, H, N, K	$2,316,737	$1,873,930	$299,333	$4,490,000
	Widen Taxiway F	$0	$4,648,000	$332,000	$4,980,000
	Rehabilitate Electrical Vault	$933,330	$0	$66,667	$1,000,000
2022	Pavement Management Plan	$56,000	$0	$4,000	$60,000
	Terminal Phase 1, Part 1	$1,574,720	$0	$645,280	$2,220,000
2023	Terminal Phase 1, Part 2	$4,269,280	$2,131,090	$7,204,630	$13,605,000
Near-Term CIP Total		$13,633,403	$8,653,020	$17,271,577	$39,558,000

2019 Projects

The Airport plans to build an SRE building on the north side of the Airport. This building will provide crews with a centralized storage location for their supplies and vehicles that are presently dispersed around the airfield. The project is expected to cost $11 million dollars and will be funded by $3 million in AIP entitlement funding, and $8 million in local funds. The Airport will be reimbursing itself $490,000 via entitlement funding in FY2020.

2020 Projects

The 2020 projects include the second phase of the SRE building and the purchase of two SRE vehicles. The Airport will carry the remaining $250,000 of AIP entitlement funding over to the next year, which will help cover the costs of the planned pavement and electrical projects. No environmental, design, or construction projects are planned for 2020.

2021 Projects

The 2021 projects include rehabilitation of Taxiways F, E, H, N, and K, widening of Taxiway F, and rehabilitation of the lighting electrical vault. Taxiway F is the parallel taxiway to Runway 5-23, and Taxiways E, H, N, and K and the connector taxiways. Taxiway F is going to be widened near the passenger terminal apron to accommodate the wheelbase of the Bombardier Q400 aircraft used by Alaska Airlines.

The equipment in the electrical vault, located on the north side of the Airport in the general aviation area, is aging and in need of replacement.

These projects include a mix of AIP entitlement, discretionary, and local funds. The Airport has coordinated with the Seattle ADO on the needs for discretionary funds in 2021.

2022 Projects

The 2022 projects include an update of the pavement management plan and the start of the passenger terminal program. The pavement management plan will assess the condition of the airfield pavements and be used to plan future capital investment. The passenger terminal program is a multi-year project that includes terminal rehabilitation and expansion needed to meet the expected level of passenger demand.

The terminal program begins with environmental permitting and design for Phase 1A, reconfiguration of the existing holdroom and Phase 1B, expansion of the holdroom and additional terminal apron to accommodate parked aircraft. Phase 1A, 1B, and the terminal apron will occur over three years, starting with environmental permitting and design. It is expected that both phases of the project will be Categorically Excluded under FAA Order 5050.4B *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* as it involves the rehabilitation of an existing building and expanding the building into a paved area.

The completion of the terminal program's design and environmental review is expected to be completed within one year. The project could experience a delay into early 2023; however, it is not expected the delay will impact the 2023 terminal construction project.

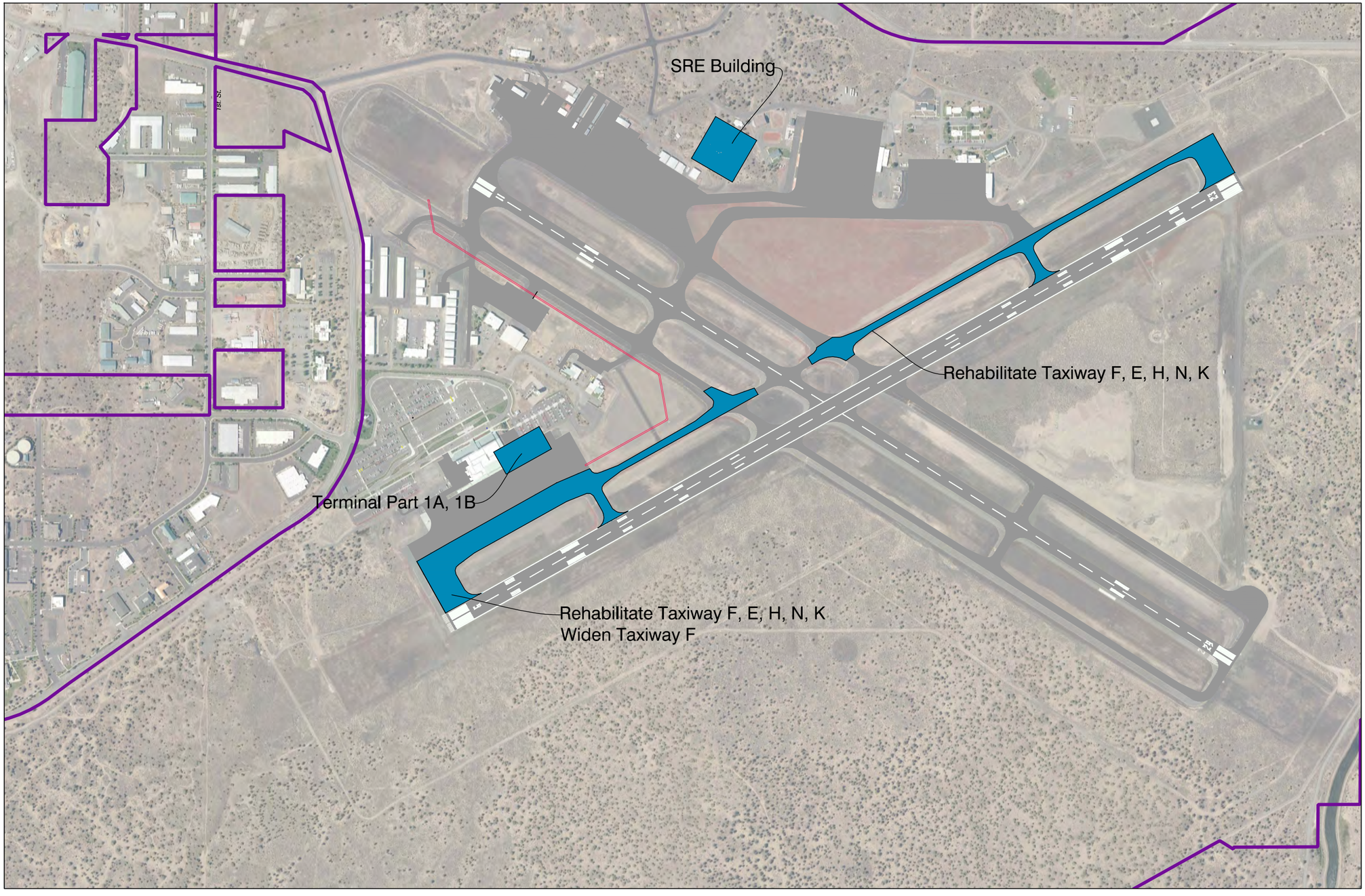
The availability of funds necessary to design and build the terminal improvements is a key consideration in implementing the project. Phase 1A and Phase 1B are expected to require more than $2.6 million in discretionary funds and $11 million in local funds. These shares were calculated assuming 93 percent of terminal square footage for Phase 1A and 91 percent for Phase 1B would be eligible for any type of AIP funding (entitlement or discretionary), and of that square footage, only 20 percent would be competitive for discretionary funds due to the nature of the project to enhance capacity. If discretionary funding is not available, or the terminal project does not compete as well for the funding as expected, then the local share will be higher. Airport operating revenues cannot cover the level of investment required and PFCs are needed for debt service on the existing terminal.

The Airport can issue a bond to cover construction costs and expects passenger growth will increase the operating revenues required for the debt service. The risk with this approach is that if passenger volumes decline, then the Airport may face a budget shortfall and need to reallocate funds to cover the debt. Demand projections and growth demonstrated by the Airport, the airlines that serve the airport, and the travelers coming to and from Deschutes County suggest that a severe decline is unlikely; however, it is recommended that the City perform a sensitivity analysis on this project prior to implementation.

2023 Project

The 2023 project is the construction of Phase 1A, 1B, and the apron. Phase 1A and the apron will be built in one year. The 2023 project will be finished in 2024 when Phase 1B is completed. The project should be designed to minimize disruption for the traveling public; however, there is a risk that construction-related disruptions may negatively impact passenger numbers during construction. The Airport dealt with construction impacts on passenger volumes and landing fees during May 2016 when the intersection of the runways was re-constructed. The loss of PFCs, concessions and parking revenues, landing fees and fuel flowage fees should be accounted for when reviewing project financials.

The terminal project is expected to be completed in 2024. Completing the entire project in 2023 may be possible. This would increase capital expenditure, but reduce operational impacts associated with construction. Construction phasing will be explored in more detail when the project is designed, and an implementation plan is developed.



LEGEND

- RDM Property Boundary
- Fuel Truck Road
- CIP Projects

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5.2.2 Mid-term CIP (FY2024-FY2028)

The mid-term CIP includes the completion of Terminal Phase 1B, acquisition of an ARFF truck, rehabilitation of the Taxiway G pavement and lighting, the environmental assessment for the general aviation expansion, a new Master Plan, a fuel truck haul road, and pavement maintenance. The mid-term CIP includes 500 additional stalls of automobile parking. **Table 5-4** shows the mid-term CIP, and the projects are described in the following sections. **Figure 5-4** shows the planned locations for these projects.

Table 5-4. Mid-term CIP

Year	Project	Entitlement	Discretionary	Local	Total
2024	Terminal Phase 1, Part 3	$2,066,667	$1,024,660	$2,538,673	$5,630,000
	ARFF Truck	$933,333	$0	$66,667	$1,000,000
	Mid-term Auto Parking (300 stalls)	Ineligible	Ineligible	$6,420,000	$6,420,000
2025	Rehabilitate Taxiway G Pavement	$2,596,000	$1,118,667	$265,333	$3,980,000
	Rehabilitate Taxiway G Lighting	$504,000	$0	$36,000	$540,000
	Mid-term Auto Parking (200 stalls)	Ineligible	Ineligible	$4,410,000	$4,410,000
2026	Northside GA Expansion (Enviro)	$289,333	$0	$20,667	$310,000
2027	Northside GA Expansion	$2,594,667	$0	$185,333	$2,780,000
	Master Plan Update	$592,667	$0	$42,333	$635,000
2028	Master Plan Update, continued	$606,667	$0	$43,333	$650,000
	Fuel Truck Road	$625,333	$0	$44,667	$670,000
	Pavement Rehabilitation	$1,052,813	$0	$70,188	$1,123,001
Mid-Term CIP Total		$12,798,980	$11,861,480	$2,143,327	$14,143,194

2024 Project

Among the 2024 projects is the completion of construction for Phase 1B. This project will increase the height of the passenger holdroom floor to allow passenger boarding bridges to reach larger aircraft on the apron. Additional projects in 2024 include ARFF truck acquisition and construction of mid-term auto parking. Acquisition of an ARFF truck to replace the existing, older vehicle will require local funds. Construction of auto parking will create 300 additional parking stalls. This new lot requires removal of the United States Department of Agriculture building and is not eligible for AIP funding. The project will help the Airport meet parking demand. Transportation network companies Uber and Lyft began operating at the Airport in 2017. It is recommended that the Airport monitor the effect of these companies on parking demand and adjust capital programming as demand warrants.

2025 Projects

Taxiway G pavement and lighting rehabilitation projects will both occur in 2025. Both project timelines are flexible; however, while maintenance of existing pavement and lighting can keep them in working order, costs will increase over time as pavement and equipment deteriorate. The lighting equipment can be upgraded to use LEDs for long term cost savings through lower power consumption, as the types of LEDs planned for use are functional in the winter months when snow piles around the base of the lights. Traditional incandescent lights melt snow with the heat they release where LEDs may not without being equipped with thermostatically-controlled heating units.

The third project to occur in 2025 is the construction of 200 parking stalls. As with the parking project in 2024, the additional parking stalls will help the Airport meet parking demands.

2026 Projects

The 2026 projects include the environmental permitting phase of the Northside GA Expansion project and the reimbursement of ARFF truck costs. Design and construction of the Northside GA Expansion will take place in 2027. The project expands the available GA area with additional hangars and facilities and will also involve rerouting an existing road. This project will require an environmental assessment. The reimbursement of the ARFF truck costs is a financial transaction with which the airport is reimbursed through the entitlement funds for the ARFF truck acquisition in 2024.

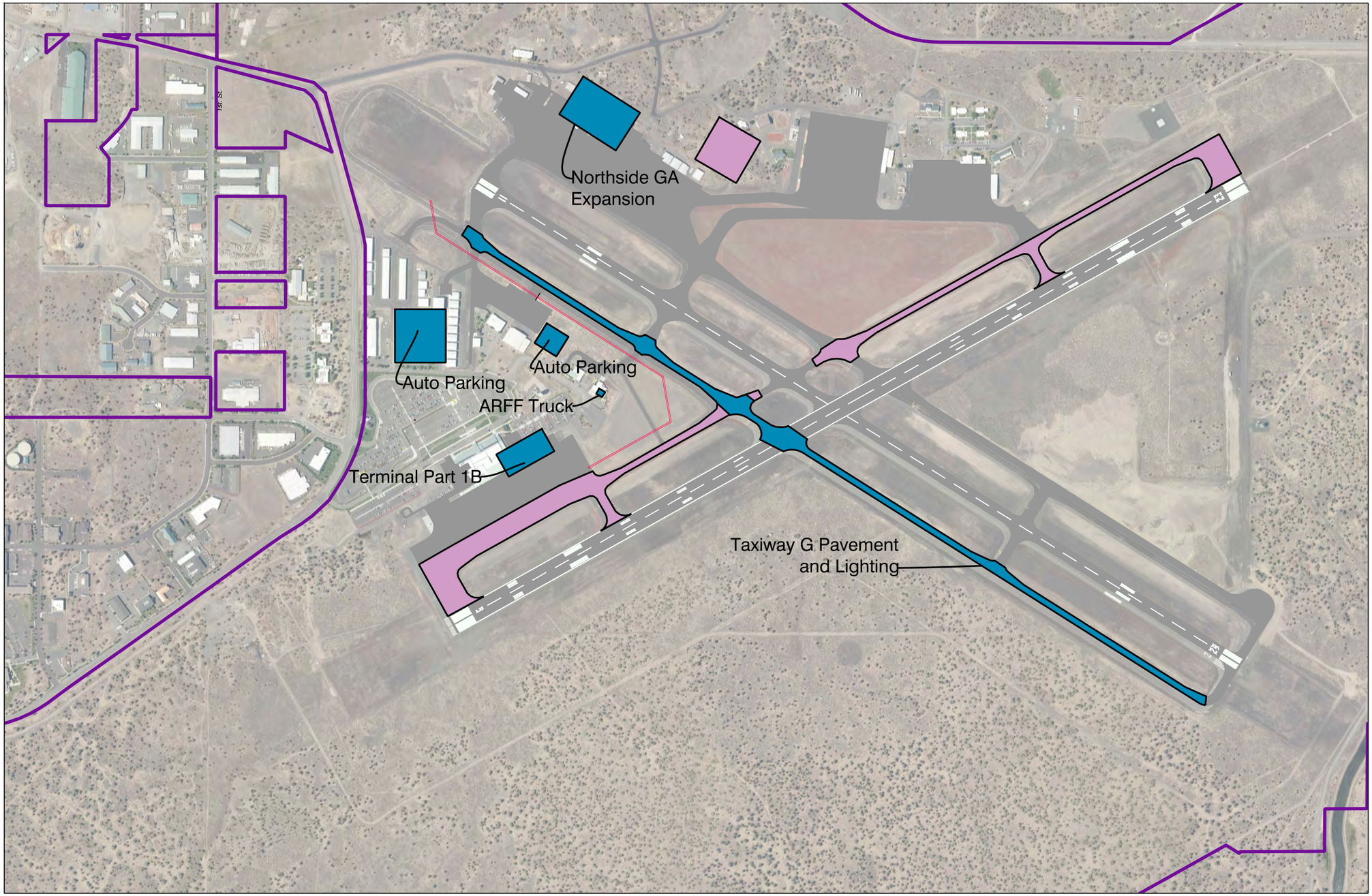
2027 Projects

The design and construction phase of the Northside GA Expansion will take place in 2027. Due to the geology, there will be significant work required to bring the terrain to airport grade before construction of the facilities can occur. The Airport will prepare sites for private investment and construct automobile and aircraft access. Tenants will develop these sites and the speed at which this occurs can impact the Airport's return on investment. The project is a low priority compared to other CIP projects and not very competitive for discretionary funding due to it not being a necessity for Airport operations.

The second 2027 project is the beginning of an Airport Master Plan. The Master Plan will likely revisit the need for the runway extension, assess long-term passenger terminal needs, and determine if additional automobile parking is needed. The implementation details of the Long-term Projects will be planned during the master plan project.

2028 Projects

Projects in 2028 include completing the Master Plan, the fuel truck road, and a placeholder for pavement rehabilitation if needed. The road is intended to minimize the amount of time trucks spend on aircraft movement areas when transferring fuel from the northside to the southside. The Airport is considering building Jet A fuel tanks near the terminal building, which may negate the need for a fuel truck road.



LEGEND

- RDM Property Boundary
- Fuel Truck Road
- Completed CIP Projects
- CIP Projects

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5.2.3 Long-term CIP (FY2029-FY2038)

The long-term CIP encompasses the runway and taxiway extension projects as well as the ARFF building relocation needed to accommodate the extensions. Phase 2 of the terminal project is scheduled to take place between 2035 and 2037. Three pavement rehabilitation projects are planned within that period but are considered "as-needed." **Table 5-5** shows the long-term CIP, and the projects are described in the following sections. **Figure 5-5** shows the planned locations for these projects.

Table 5-5. Long-term CIP

Year	Project	Entitlement	Discretionary	Local	Total
2029	Runway Extension Environmental	$1,754,667	$0	$125,333	$1,880,000
	Taxiway Extension Environmental	$373,333	$0	$26,667	$400,000
2030	Runway Extension Design	$2,846,667	$0	$203,333	$3,050,000
	Taxiway Extension Design	$513,333	$0	$36,667	$550,000
	ARFF Building Design	$392,000	$0	$28,000	$420,000
2031	Runway Extension 1 of 2	$372,520	$22,382,147	$1,625,333	$24,380,000
	Taxiway Extension 1 of 2	$4,456,667	$0	$318,333	$4,775,000
	ARFF Building Relocation	$3,929,333	$0	$280,667	$4,210,000
2032	Runway Extension 2 of 2	$3,800,000	$19,636,000	$1,674,000	$25,110,000
	Taxiway Extension 2 of 2	$0	$4,592,000	$328,000	$4,920,000
2033	Pavement Rehab	$2,818,667	$0	$201,333	$3,020,000
2034	Terminal Phase 2 Environmental	$1,332,533	$0	$420,800	$1,753,333
2035	Terminal Phase 2 Design	$6,855,200	$0	$2,164,800	$9,020,000
2036	Terminal Phase 2 (1 of 2)	$5,593,600	$8,686,800	$42,869,600	$57,150,000
2037	Terminal Phase 2 (2 of 2)	$4,400,000	$8,947,227	$45,516,107	$58,863,334
2038	Pavement Rehab	$3,266,667	$0	$233,333	$3,500,000
Long-Term CIP Total		$39,351,587	$42,705,187	$64,244,174	$96,052,306

2029 Projects

The two 2029 projects are the environmental phases of the southwest runway extension and the associated parallel taxiway extension. The runway extension NEPA process may take 18 months or more. Justification for the runway extension is expected to occur as part of the 2027 Master Plan, and much of the environmental baseline work will occur at this time. The 2017 Master Planning process included the concept of runway extension in stakeholder meetings and the response was generally positive. The underlying goal of the extension is to open the Airport to additional markets in the Midwest that are out of range or payload-limited with the existing runway configuration. The runway length assessment is included in **Chapter 3**.

2030 Projects

Both design phases of the southwest runway extension and the associated full-length parallel taxiway will occur in 2030. The design phase of the ARFF building will also occur in 2030. The existing ARFF building lies within the runway visibility zone of extended Runway 5-23 and will need to be relocated. This project is considered part of the runway extension project as the building would not need to be moved if the runway was not extended.

2031 Projects

Construction of the runway and taxiway extensions will begin in 2031 and is expected to take two years. The ARFF building relocation will also take place in 2031 and is expected to be completed within a year. The first year of work is expected to include earthwork and grading. There is an elevation change between the existing location of Runway End 5 and where future Runway End 5 will be located. Cost estimates include approximately 950,000 cubic yards of fill for the embankment required to meet runway and taxiway grading and safety area requirements.

2032 Projects

Construction on the runway and taxiway extensions is scheduled for completion in 2032. Work completed in 2032 will include paving of the runway and taxiways and relocation of navigational aids. Runway 5-23 will need to be temporarily shortened during construction to keep aircraft clear of the construction equipment. Project phasing and implementation will be structured to minimize runway closure and downtime.

2033 Project

There are no definitive capital projects for 2033; however, the Airport can use that year to catch up on pavement rehabilitation, if needed. It is recommended that the Airport begin to save its primary entitlement funds this year to help offset the cost of Phase 2 of the passenger terminal building. The need for Phase 2 is expected to be validated by the 2037 Master Plan. The Master Plan will include new enplanement forecasts and an assessment of the performance of the passenger terminal building since Phase 1 was constructed.

2034 Project

The 2034 project is the environmental permitting of Passenger Terminal Phase 2. This improvement extends the overall building footprint to the southwest, over what is now the vendor parking lot. Passenger Terminal Phase 2 is expected to be eligible for a categorical exclusion under NEPA because impacts are limited to previously disturbed parcels. Should an environmental assessment be required, it is expected that one can be completed within a year and not delay the start of construction.

2035 Project

The 2035 project is the design of Passenger Terminal Phase 2. Phase 2 will expand the terminal and add a new concourse adjacent to the second floor holdroom. The new building will have the ticket hall and larger baggage handling area on the ground floor and a new concourse on the second floor adjacent to the existing second floor holdroom. The existing ticket hall and offices will be repurposed as the new security checkpoint after the new ticket hall is completed.

2036-2037 Projects

Passenger Terminal Phase 2 will be built over two years and construction will be structured to minimize impact on existing terminal operations. It is possible that closure and relocation of terminal facilities during construction may temporarily decrease airline activities; however, this impact is not expected to extend past construction.

Passenger Terminal Phase 2 is expected to cost more than $126 million when it is constructed (assuming 3 percent inflation), or roughly $72 million in 2018 dollars. Passenger Terminal Phase 2 will be funded by a combination of entitlement, discretionary, and local funds. PFCs are expected to be obligated for debt service on previously completed capital projects like Passenger Terminal Phase 1. Preliminary estimates suggest that 76 percent of square footage will be eligible for AIP funding, and of that, 20 percent will compete well for discretionary funding. The high-level funding split is 14 percent for entitlement ($18 million), 14 percent for discretionary ($18 million), and 72 percent for local funds ($91 million). This funding split is expected to be revised as part of the 2027-2028 Master Plan.

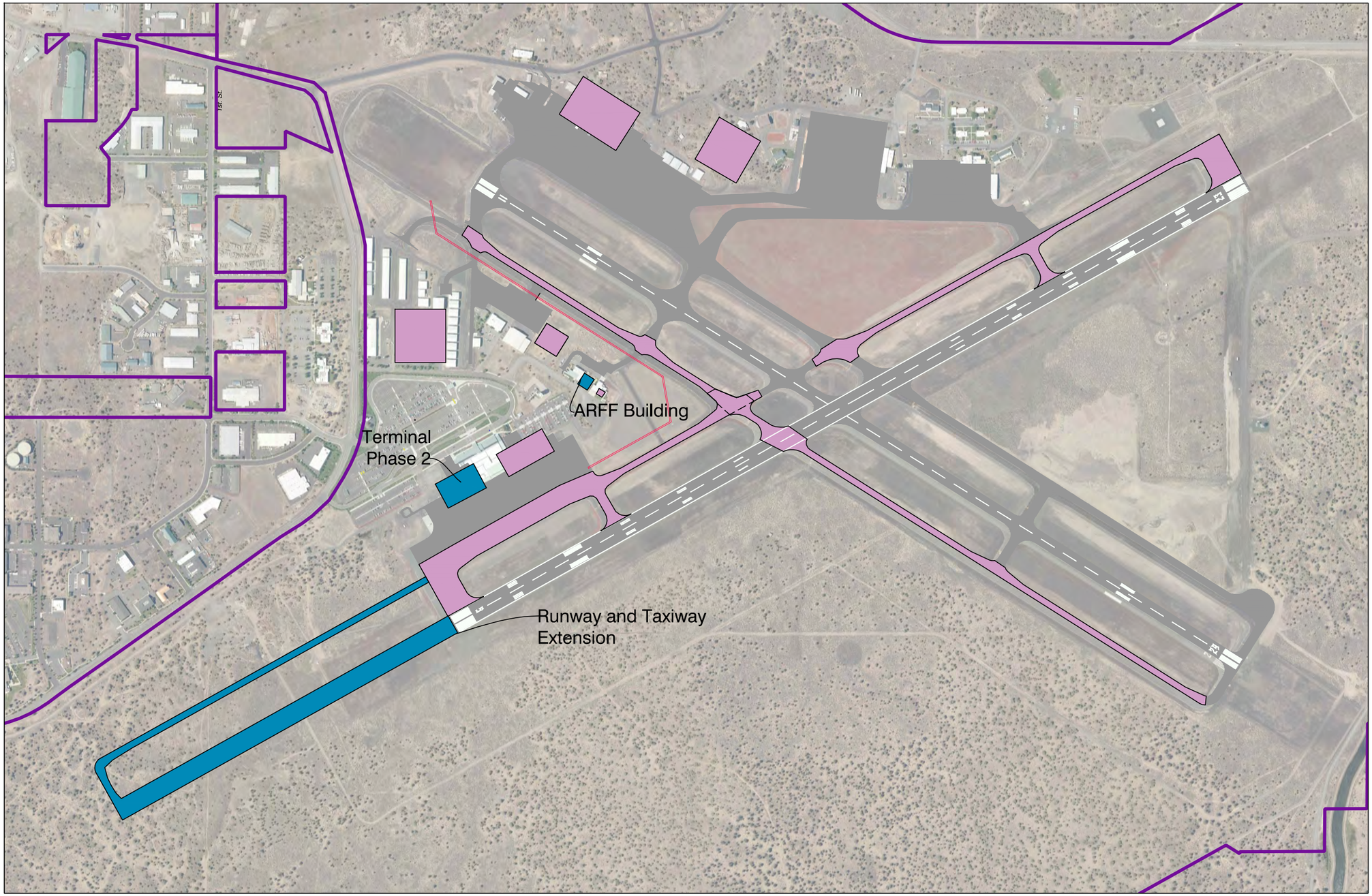


Figure 5-5
Long-Term (2029-2038) CIP Projects

5.3 CHAPTER SUMMARY

The 20-year CIP provides a flexible guideline for the Airport to plan for near-, mid-, and long-term project goals. Project phasing allows the Airport to account for economic changes and adjust project priorities to meet the Airport's financial capabilities. The projects have been distributed across 20 years to reflect the airport needs and to distribute capital costs evenly.

The near-term, five-year (FY2019-2023) CIP will help the Airport grow and meet demand by organizing resources to rehabilitate taxiways and runways as well as begin the large-scale terminal remodeling and expansion project. Including taxiway and runway rehabilitation in the near-term will help lower overall costs by mitigating the need for ongoing maintenance, which will increase in cost over time.

The mid-term (FY2024-2028) CIP projects include the continuation of the terminal phase and Taxiway G pavement and lighting rehabilitation. Additionally, the planned Northside general aviation expansion and additional parking is aimed at meeting the forecasted increase in activity at the Airport. The long-term (FY2029-2032) CIP projects consist of large-scale projects including runway extension, taxiway extension, and the second phase of terminal expansion. Many of these projects are multi-year and will require a large amount of funding. The long-term projects will increase the Airport's capabilities and contribute to helping the Airport meet increased demand.

APPENDIX A:

ALP CHECKLIST (in development)

APPENDIX B:

SUPPLEMENTAL FORECAST INFORMATION

APO TERMINAL AREA FORECAST DETAIL REPORT
For**ecast Issued January 2017

RDM

	AIRCRAFT OPERATIONS													
	Enplanements			Itinerant Operations					Local Operations					
Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft
REGION: ANM STATE: OR LOCID: RDM														
CITY: REDMOND AIRPOR T: ROBERTS FIELD														
2006	1,427	195,796	197,223	1,433	16,803	22,170	366	40,772	27,376	240	27,616	68,388	0	129
2007	9,262	220,771	230,033	2,781	16,349	26,174	306	45,610	48,990	336	49,326	94,936	0	129
2008	13,886	229,311	243,197	4,413	13,795	20,221	312	38,741	42,519	303	42,822	81,563	0	146
2009	26,618	191,208	217,826	4,444	9,680	16,014	173	30,311	25,261	134	25,395	55,706	0	125
2010	28,031	197,530	225,561	4,858	9,396	14,767	221	29,242	22,416	300	22,716	51,958	0	118
2011	26,259	205,719	231,978	4,140	8,886	13,610	224	26,860	19,554	96	19,650	46,510	0	75
2012	16,660	214,173	230,833	3,931	8,649	14,709	212	27,501	18,565	371	18,936	46,437	0	75
2013	430	226,980	227,410	4,201	8,232	13,414	323	26,170	16,124	812	16,936	43,106	0	91
2014	305	255,560	255,865	4,738	8,573	12,372	383	26,066	17,213	406	17,619	43,685	0	83
2015	303	268,829	269,132	4,335	6,578	11,551	241	22,705	22,854	214	23,068	45,773	0	83
2016*	536	297,786	298,322	5,127	6,340	10,985	341	22,793	16,829	540	17,369	40,162	0	85
2017*	536	359,803	360,339	6,897	6,245	10,711	341	24,194	15,877	540	16,417	40,611	0	87
2018*	536	369,043	369,579	7,682	5,659	10,735	341	24,417	15,909	540	16,449	40,866	0	89
2019*	536	377,594	378,130	8,528	4,981	10,759	341	24,609	15,941	540	16,481	41,090	0	91
2020*	536	385,844	386,380	9,356	4,315	10,783	341	24,795	15,973	540	16,513	41,308	0	93
2021*	536	394,034	394,570	10,139	3,699	10,807	341	24,986	16,005	540	16,545	41,531	0	95
2022*	536	402,010	402,546	10,733	3,297	10,832	341	25,203	16,037	540	16,577	41,780	0	97
2023*	536	409,726	410,262	11,038	3,222	10,857	341	25,458	16,069	540	16,609	42,067	0	100
2024*	536	417,274	417,810	11,246	3,254	10,882	341	25,723	16,101	540	16,641	42,364	0	102
2025*	536	425,305	425,841	11,462	3,293	10,907	341	26,003	16,134	540	16,674	42,677	0	105
2026*	536	433,799	434,335	11,691	3,333	10,932	341	26,297	16,167	540	16,707	43,004	0	108
2027*	536	442,039	442,575	11,913	3,373	10,957	341	26,584	16,200	540	16,740	43,324	0	111

2028*	536	450,341	450,877	12,136	3,414	10,982	341	26,873	16,233	540	16,773	43,646	0	114
2029*	536	458,968	459,504	12,368	3,455	11,007	341	27,171	16,266	540	16,806	43,977	0	117
2030*	536	467,560	468,096	12,599	3,497	11,032	341	27,469	16,299	540	16,839	44,308	0	120
2031*	536	476,332	476,868	12,835	3,539	11,057	341	27,772	16,332	540	16,872	44,644	0	123
2032*	536	485,049	485,585	13,070	3,582	11,082	341	28,075	16,365	540	16,905	44,980	0	126
2033*	536	493,906	494,442	13,308	3,625	11,107	341	28,381	16,398	540	16,938	45,319	0	129
2034*	536	503,097	503,633	13,555	3,669	11,132	341	28,697	16,431	540	16,971	45,668	0	132
2035*	536	512,709	513,245	13,814	3,713	11,157	341	29,025	16,464	540	17,004	46,029	0	135

APO TERMINAL AREA FORECAST DETAIL REPORT
For**ecast Issued January 2017**

RDM

AIRCRAFT OPERATIONS

	Enplanements			Itinerant Operations					Local Operations					
Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft
2036*	536	522,589	523,125	14,080	3,758	11,182	341	29,361	16,497	540	17,037	46,398	0	138

Source: https://www.census.gov/content/dam/Census/newsroom/releases/2015/cb15-56_table3.pdf

The 20 Fastest-Growing Metro Areas from July 1, 2013, to July 1, 2014

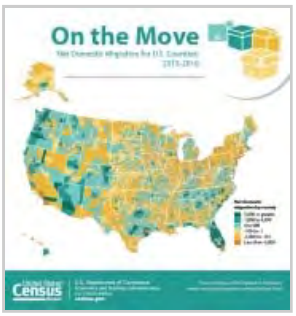
Rank	Metro Area	Percent Change
1.	The Villages, Fla.	5.4
2.	Myrtle Beach-Conway-North Myrtle Beach, S.C.-N.C.	3.2
3.	Austin-Round Rock, Texas	3.0
4.	Odessa, Texas	2.9
5.	St. George, Utah	2.9
6.	Cape Coral-Fort Myers, Fla.	2.7
7.	Bend-Redmond, Ore.	2.7
8.	Greeley, Colo.	2.6
9.	Midland, Texas	2.6
10.	Naples-Immokalee-Marco Island, Fla.	2.5
11.	Houston-The Woodlands-Sugar Land, Texas	2.5
12.	Fort Collins, Colo.	2.4
13.	Hilton Head Island-Bluffton-Beaufort, S.C.	2.4
14.	Daphne-Fairhope-Foley, Ala.	2.4
15.	Raleigh, N.C.	2.3
16.	Orlando-Kissimmee-Sanford, Fla.	2.2
17.	Charleston-North Charleston, S.C.	2.2
18.	North Port-Sarasota-Bradenton, Fla.	2.2
19.	Panama City, Fla.	2.2
20.	Boise City, Idaho	2.1

Newsroom

FOR IMMEDIATE RELEASE: THURSDAY, MARCH 23, 2017

Maricopa County Added Over 222 People Per Day in 2016, More Than Any Other County

March 23, 2017
Release Number: CB17-44



MARCH 23, 2017 — Maricopa County, Ariz., replaced Harris County, Texas, as the county with the nation's highest annual population growth, according to U.S. Census Bureau population estimates released today. Harris County was the largest numeric gainer for eight years in a row. Maricopa County gained 81,360 people between July 1, 2015 and July 1, 2016, or about 222 people per day, while the nation's second-largest population gainer, Harris County, gained 56,587 people, or about 155 people per day on average.

Maricopa County, home to Phoenix, primarily grew through the addition of 43,189 residents from net domestic migration, a measure of how many people move to or from an area versus other parts of the United States. The county also added 25,428 people from natural increase (more births than deaths) and 10,188 people from net international migration.

Harris County, Texas, home to Houston, saw changes in net domestic migration, going from a net gain of more than 17,000 to a net loss of more than 16,000. Despite this, Harris County had the second largest gain in population due to high natural increase (46,412) and net international migration (27,922).

"In the early 2000s, Maricopa County was in the top one or two counties by numeric growth. From 2009-2011, Maricopa County saw much lower net migration than in the years before or after, which caused the county to drop out of the top population-gaining counties," explained

Peter Borsella, a demographer in the Census Bureau's population division. "While net international migration has not reached prior levels, net domestic migration and natural increase have continued to rise, making Maricopa County this year's largest numeric gainer."

In addition, Maricopa grew the fastest among the top 10 largest counties at 1.95 percent, an increase from 1.90 percent from the previous year. Harris County remained the third-largest county with 4.6 million people, and Maricopa County remained the fourth-largest county with 4.2 million people. Los Angeles County and Cook County, Ill., remained the largest and second-largest counties, respectively.

The statistics released today provide population estimates and components of change for our nation's 382 metropolitan statistical areas, 551 micropolitan statistical areas, and 3,142 counties, as well as Puerto Rico's metropolitan statistical areas, micropolitan statistical areas and municipios.

Find more highlights from this year's release below and local-level statistics on census.gov.

In the coming months, the Census Bureau will release 2016 population estimates for cities and towns, as well as national, state and county population estimates by age, sex, race and Hispanic origin.

Some High-Population Counties or County-Equivalents Continued to Experience Population Loss

These notable high-population counties continued to see population loss:

- Cook County, Ill. (Chicago): -21,324.
- Wayne County, Mich. (Detroit): -7,696.
- Baltimore city, Md.: -6,738.

Baltimore city saw an increase in population loss this year primarily due to a doubling of its net domestic out-migration.

Fastest-Growing Areas in Utah

Three of the 20 fastest-growing metro areas between 2015 and 2016 were located either partially or completely in Utah (St. George, Utah; Provo-Orem, Utah; and Logan, Utah-Idaho).

- Provo-Orem, Utah, and Logan, Utah-Idaho, saw natural increase as a larger component of growth than either net international migration or net domestic migration, while St. George, Utah, saw net domestic migration as a larger component of growth than either net international migration or natural increase.
- Also, San Juan County, Utah, was the fastest-growing county in the United States among counties with populations of 10,000 or more in 2015. It grew by 7.6 percent.

Second-Fastest-Growing U.S. County in 2015 Fell to 2,858th in 2016

North Dakota counties no longer top the list of fastest-growing counties by percentage change.

- McKenzie County fell from second-fastest growing by percentage change to 2,858th.
- Williams County fell from third to 3,105th.
- Mountrail County fell from sixth to 2,375th.
- Stark County fell from eighth to 3,103rd.

All of these counties lost population due to people moving away to other parts of the United States (negative net domestic migration). Formerly fast-growing North Dakota counties have been replaced in the top 10 by counties in Iowa, Oregon and Washington. Other top 10 counties once again are in Utah, Texas and Florida.

County Highlights

- Eight of the 10 counties with the most natural decrease (more deaths than births) were in Florida. Four of the top 10 counties with the most natural increase were in California, and 3 of the 10 were in Texas.
- St. Louis County, Mo., dropped below 1 million for the first time since 2011, largely due to a rise in net domestic out-migration.
- Three counties reached a population milestone of 100,000 or higher: Fairbanks North Star Borough, Alaska; Highlands County, Fla., and Carver County, Minn.
- Pasco County, Fla., reached a population of 500,000, and Tarrant County, Texas, reached 2 million.

Metropolitan Statistical Area Highlights

- The nation's 382 metro areas contained approximately 277.1 million people in 2016, representing approximately 86 percent of the nation's population. This was an increase of approximately 2.3 million people from 2015.
- For the fourth year in a row, The Villages, Fla., a metro area west of the Orlando-Kissimmee-Sanford, Fla., metro area, was the nation's fastest-growing metro area, with a 4.3 percent population increase between 2015 and 2016.
- The Dallas-Fort Worth-Arlington, Texas, and Houston-The Woodlands-Sugar Land, Texas, metro areas were the two largest numeric-gaining metro areas between 2015 and 2016, increasing by more than 100,000 each.
- Four metro areas were among both the 25 fastest growing and the 25 largest numeric gaining between 2015 and 2016: Austin-Round Rock, Texas; Raleigh, N.C.; Orlando-Kissimmee-Sanford, Fla.; and Las Vegas-Henderson-Paradise, Nev. For all four areas, net domestic migration was a larger component of change than either net international migration or natural increase
- Among the 10 largest metro areas, the Chicago-Naperville-Elgin, Ill.-Ind.-Wis., metro area was the only metro area that did not grow in population between 2015 and 2016.

Micropolitan Statistical Area Highlights

- The nation’s 551 micro areas contained approximately 27.7 million people in 2016, representing approximately nine percent of the nation’s population. This is an increase of approximately 16,000 people from 2015.
- Micro areas in the West grew the most.
  - Heber, Utah, was the fastest-growing micro area, with an increase of 4.7 percent between 2015 and 2016. The five fastest-growing micro areas were in the West: Heber, Utah; Prineville, Ore.; Ellensburg, Wash.; Bozeman, Mont.; and Cedar City, Utah. Among these five areas, net domestic migration was a larger component of change than either net international migration or natural increase.
  - Bozeman, Mont., had the largest numeric gain among micro areas between 2015 and 2016, increasing by approximately 3,800 people. Four of the five largest numeric-gaining micro areas between 2015 and 2016 were in the West: Bozeman, Mont.; Hilo, Hawaii; Kalispell, Mont.; and Oak Harbor, Wash.

Puerto Rico

- Overall, Puerto Rico's population has been decreasing since 2010. The Commonwealth total resident population decreased by 314,850 (or 8.4 percent) since 2010 to 3,411,307 on July 1, 2016.
- San Juan experienced the largest numeric decrease in population of any municipio, losing 8,497 residents between July 1, 2015 and July 1, 2016, followed by Bayamón (-4,448 residents) and Ponce (-3,748 residents).
- Of Puerto Rico's 78 municipios, only Gurabo experienced growth between July 1, 2015, and July 1, 2016, gaining 56 residents (an increase of 0.1 percent).
- All other municipios experienced a decline in population. The fastest-declining municipios were Peñuelas, Lares and Guánica, featuring a decline of 2.7 percent each.

To find where people are leaving from and moving to, visit Census Flows Mapper.

-X-

The Census Bureau develops county, metro area and micro area population estimates by measuring population change since the most recent census. The Census Bureau uses births, deaths, administrative records and survey data to develop estimates of population. For more detail regarding the methodology, see <www.census.gov/programs-surveys/popest/technical-documentation/methodology.html>.

The Office of Management and Budget's statistical area delineations (for metro and micro areas) are those issued by that agency in July 2015. Metro areas contain one urbanized area of 50,000 or more population, and micro areas contain at least one urban cluster of at least 10,000 (but less than 50,000) population. Both metro and micro areas consist of one or more whole counties or county equivalents. Some metro and micro area titles may be abbreviated in the text of the news release. Full titles are shown in the tables.

Top 10 Largest-Gaining Counties (Numeric Change): July 1, 2015 to July 1, 2016

County	Population	Numeric Change	Percent Change	Births	Deaths	Domestic Migration	International Migration
Maricopa County, Arizona	4,242,997	81,360	1.95	56,073	30,645	43,189	10,188
Harris County, Texas	4,589,928	56,587	1.25	73,072	26,660	-16,225	27,922
Clark County, Nevada	2,155,664	46,375	2.20	27,352	16,501	27,735	6,566
King County, Washington	2,149,970	35,714	1.69	25,905	13,580	8,511	15,500
Tarrant County, Texas	2,016,872	35,462	1.79	28,682	12,903	13,411	6,348
Riverside County, California	2,387,741	34,849	1.48	30,845	17,092	16,961	3,099
Bexar County, Texas	1,928,680	33,198	1.75	28,283	13,458	13,077	5,361
Orange County, Florida	1,314,367	29,503	2.30	16,721	8,198	10,083	11,078
Dallas County, Texas	2,574,984	29,209	1.15	40,063	16,407	-6,193	12,133
Hillsborough County, Florida	1,376,238	29,161	2.16	17,345	11,179	14,806	7,774

Top 10 Fastest-Growing Counties (Percent Change, Counties With a Population of 10,000 or More): July 1, 2015 to July 1, 2016

County	Population	Numeric Change	Percent Change	Births	Deaths	Domestic Migration	International Migration
San Juan County, Utah	16,895	1,188	7.56	240	112	1,038	13
Kendall County, Texas	42,540	2,088	5.16	391	389	1,844	77
Hays County, Texas	204,470	9,896	5.09	2,553	1,011	7,932	171
Wasatch County, Utah	30,528	1,363	4.67	475	126	891	77
Dallas County, Iowa	84,516	3,739	4.63	1,268	433	2,500	296
Comal County, Texas	134,788	5,675	4.40	1,597	1,085	4,760	109
Sumter County, Florida	123,996	5,114	4.30	501	1,742	4,873	55
Crook County, Oregon	22,570	923	4.26	240	236	886	7
Juab County, Utah	11,010	444	4.20	185	74	319	-1
Kittitas County, Washington	44,866	1,809	4.20	391	286	1,563	72

Top 10 Largest-Declining Counties or County Equivalents (Numeric Change): July 1, 2015 to July 1, 2016

County	Population	Numeric Change	Percent Change	Births	Deaths	Domestic Migration	International Migration

Cook County, Illinois	5,203,499	-21,324	-0.41	68,049	42,297	-66,244	18,434
Wayne County, Michigan	1,749,366	-7,696	-0.44	23,209	18,231	-17,346	
Baltimore city, Maryland	614,664	-6,738	-1.08	8,654	6,871	-11,008	2,195
Cuyahoga County, Ohio	1,249,352	-5,673	-0.45	14,941	13,563	-10,122	3,402
Suffolk County, New York	1,492,583	-5,320	-0.36	15,446	12,793	-11,278	4,327
Milwaukee County, Wisconsin	951,448	-4,866	-0.51	13,675	8,176	-13,186	2,505
Allegheny County, Pennsylvania	1,225,365	-3,933	-0.32	13,193	13,995	-5,821	3,479
San Juan County, New Mexico	115,079	-3,622	-3.05	1,703	1,026	-4,341	42
St. Louis City, Missouri	311,404	-3,471	-1.10	4,547	3,070	-6,189	981
Jefferson County, New York	114,006	-3,254	-2.78	2,000	945	-4,674	345

Top 25 Fastest-Growing Metro Areas (Percent Change): July 1, 2015 to July 1, 2016

Rank by Percent Change	Metro Area	2015 Population	2016 Population	Numeric Change	Percent Change	Natural Increase	Births	Deaths	Net Migration	Domestic Migration	International Migration
1	The Villages, FL	118,882	123,996	5,114	4.3	-1,241	501	1,742	4,928	4,873	55
2	Myrtle Beach-Conway-North Myrtle Beach, SC-NC	432,493	449,295	16,802	3.9	-488	4,214	4,702	15,308	14,881	427
3	Bend-Redmond, OR	174,942	181,307	6,365	3.6	398	1,853	1,455	5,698	5,695	3
4	Greeley, CO	285,053	294,932	9,879	3.5	2,381	4,106	1,725	7,300	6,991	309
5	Cape Coral-Fort Myers, FL	700,285	722,336	22,051	3.1	-658	6,666	7,324	20,780	17,769	3,011
6	St. George, UT	155,450	160,245	4,795	3.1	1,026	2,232	1,206	3,285	3,267	18
7	Provo-Orem, UT	585,362	603,309	17,947	3.1	10,004	12,347	2,343	7,765	6,893	872
8	Punta Gorda, FL	173,194	178,465	5,271	3.0	-1,614	1,044	2,658	6,154	5,800	354
9	Austin-Round Rock, TX	1,998,104	2,056,405	58,301	2.9	17,071	27,375	10,304	40,273	33,395	6,878
10	North Port-Sarasota-Bradenton, FL	768,013	788,457	20,444	2.7	-3,227	6,545	9,772	21,138	18,913	2,225
11	Coeur d'Alene, ID	150,364	154,311	3,947	2.6	480	1,834	1,354	3,169	3,123	46
12	Lakeland-Winter Haven, FL	649,425	666,149	16,724	2.6	892	7,678	6,786	15,061	12,152	2,909
13	Sebastian-Vero Beach, FL	147,792	151,563	3,771	2.6	-766	1,284	2,050	3,828	3,530	298
14	Raleigh, NC	1,271,381	1,302,946	31,565	2.5	8,414	15,893	7,479	22,607	18,510	4,097
15	Orlando-Kissimmee-Sanford, FL	2,382,132	2,441,257	59,125	2.5	10,798	28,849	18,051	46,922	29,441	17,481
16	Port St. Lucie, FL	454,111	465,208	11,097	2.4	-890	4,357	5,247	10,724	9,759	965

Rank by Percent Change	Metro Area	2015 Population	2016 Population	Numeric Change	Percent Change	Natural Increase	Births	Deaths	Net Migration	Dor Mig	
17	Naples-Immokalee-Marco Island, FL	356,570	365,136	8,566	2.4	-220	3,270	3,490	7,434	5,292	2,142
18	Daphne-Fairhope-Foley, AL	203,690	208,563	4,873	2.4	161	2,274	2,113	4,289	4,046	243
19	Boise City, ID	675,777	691,423	15,646	2.3	4,157	8,753	4,596	10,757	9,950	807
20	Logan, UT-ID	133,093	136,159	3,066	2.3	1,991	2,578	587	1,052	728	324
21	Deltona-Daytona Beach-Ormond Beach, FL	623,378	637,674	14,296	2.3	-2,437	5,714	8,151	15,419	13,981	1,438
22	Fayetteville-Springdale-Rogers, AR-MO	513,449	525,032	11,583	2.3	3,660	7,266	3,606	7,845	6,564	1,281
23	Olympia-Tumwater, WA	269,183	275,222	6,039	2.2	1,000	3,172	2,172	4,725	4,060	665
24	Charleston-North Charleston, SC	744,603	761,155	16,552	2.2	3,710	9,662	5,952	12,377	11,471	906
25	Las Vegas-Henderson-Paradise, NV	2,109,289	2,155,664	46,375	2.2	10,851	27,352	16,501	34,301	27,735	6,566

Contact

Public Information Office

301-763-3030

pio@census.gov

Related Information

- Press kit
- Detailed tables
- Graphic: Embed, Download or Print
- Spanish Version

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REDMOND ECONOMIC DEVELOPMENT INC.

Central Oregon Association of REALTORS®

COAR

YOUR VOICE IN REAL ESTATE

Presentation - November 4th, 2016

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REDI

REDMOND ECONOMIC DEVELOPMENT INC.

MISSION: Creating Prosperity through Community and Business Devel

VISION: Redmond - A great place to live and prosper

Recruitment

Help local businesses & pursue outside leads

Retention

Expansion

Policy

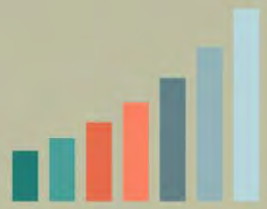
Advocate, collaborate, & track

Workforce

Space

Organizational Development

Pursue funding, quantify impact, & expand reach



Financial Sustainability

Marketing

For more information visit www.REDIINFO.com

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REDMOND ECONOMIC DEVELOPMENT INC.

23 Member Board of Directors

Representing a Cross Section of the Community:

- Elected Officials
- Real Estate/Escrow
- Utilities
- Traded Sector Businesses
- Communications
- Banking
- City Leadership
- Healthcare
- Legal
- Marketing
- Workforce/Staffing
- Financial/Accounting
- Education
- Economist

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Local Companies: expanding and adding

PCC

Consumer Cellular®

BASX SOLUTIONS

LIGHT ELEGANCE
WE'VE GOT GREAT CHEMISTRY

NEWHOUSE MANUFACTURING COMPANY

STRATOS AIRCRAFT

Emagineered SOLUTIONS

MEDLINE | ReNewal Full Circle Reprocessing

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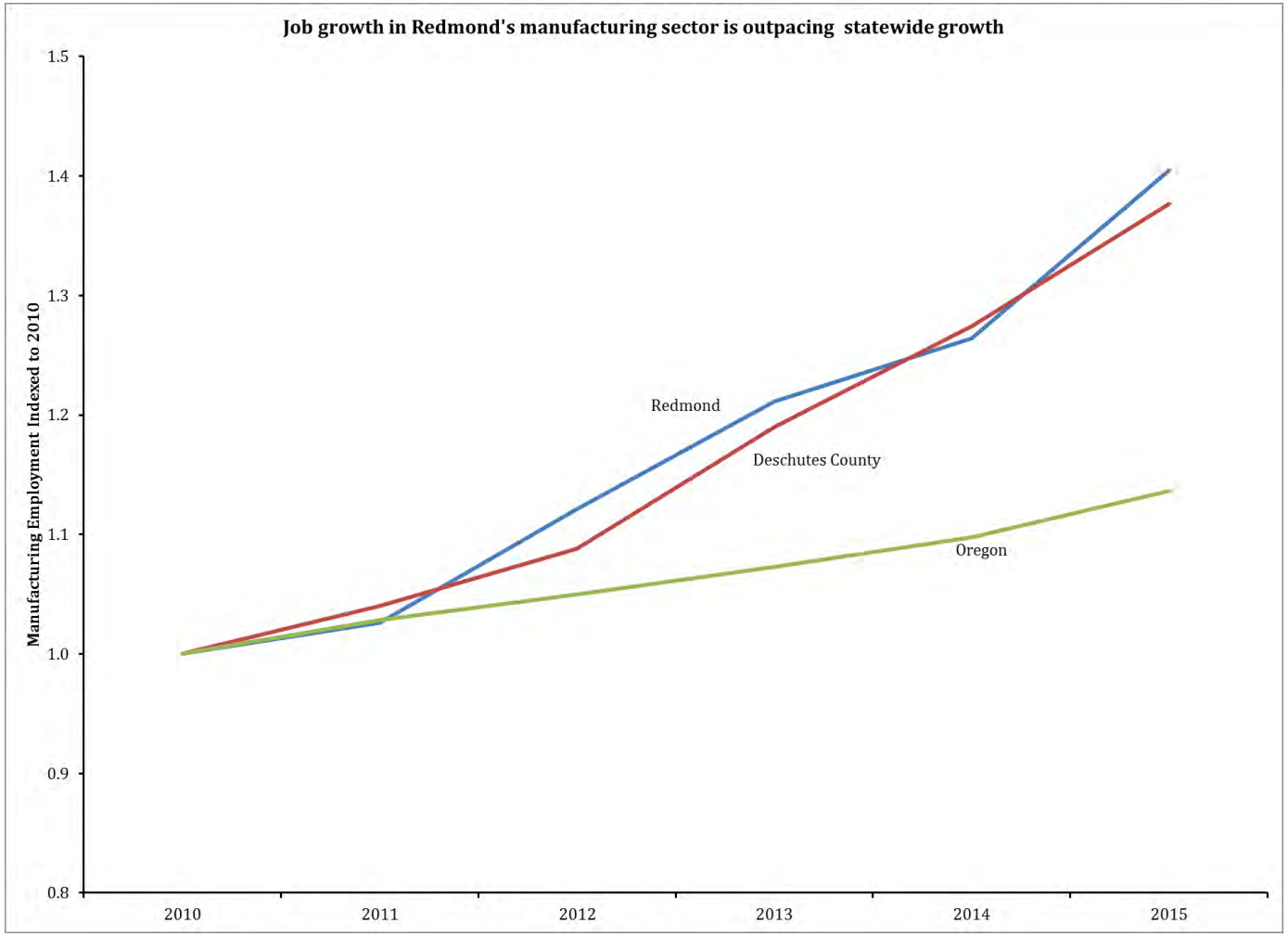

Manufacturing Growth in Redmond

-6.9% Increase '14-'15

-8th of all 382 Metro's

-41% 2010-2015

-Bend/Redmond MSA: 6th Fastest Year/Year Job Growth in US – all occupations

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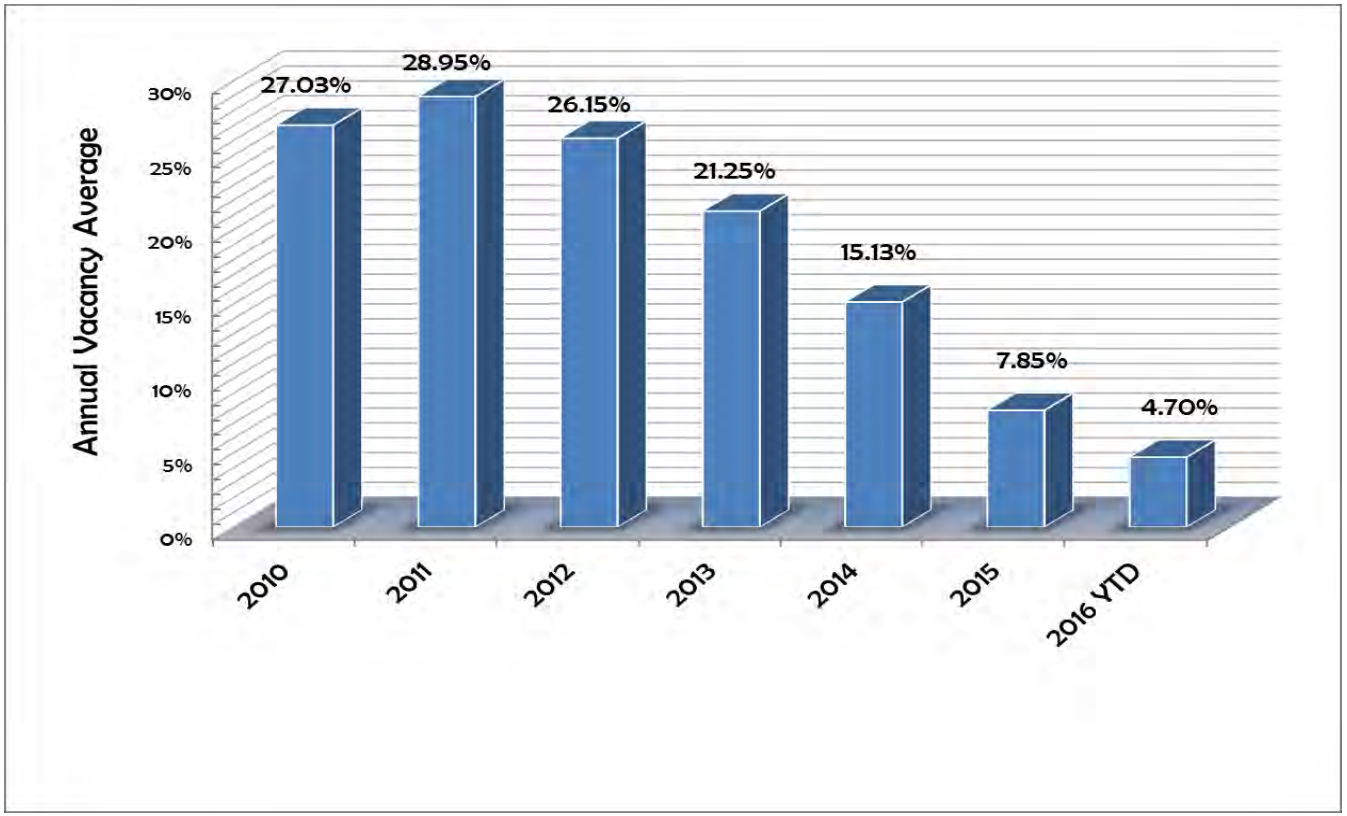
Redmond Industrial Vacancy Rate Trend



*Compass Points Publication

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Available Space

Flex Space 1,500-3,000 sf – **4** options exist

Flex Space 3,000-8,000 sf – **6** options available

Stand Alone buildings over 15,000 sf – **2** options exist

2 heavy industrial flex spaces at 13,000 and 28,000

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Industrial Land and Lease Rates

Industrial Land (M1 and M2)	$2.50-$4.50 sf
Industrial Warehouse Lease Rate (avg)	$.50/sf+ NNN
Upper Edge of Lease Market	$.70/sf + NNN

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Industrial Space - Market Demand

(REDI Pending Projects)

PROJECT NEED	DEMAND
1,500-3000 sf	3 Projects
3,000-8,000 sf	7 Projects
10,000-25,000 sf	8 Projects
25,000 sf and up	4 Projects

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REDI 2016 Developer Tour

FRANCIS HANSEN & MARTIN LLP
ATTORNEYS AT LAW

We HAVE Land!

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Lead Generation Activity

- Team Oregon Advanced Manufacturing

SHOT·SHOW GEAR UP

- Lead Generation Pilot

McMinnville ECONOMIC DEVELOPMENT PARTNERSHIP allhere

SEDCOR Strategic Economic Development Corporation

GREATER PORTLAND

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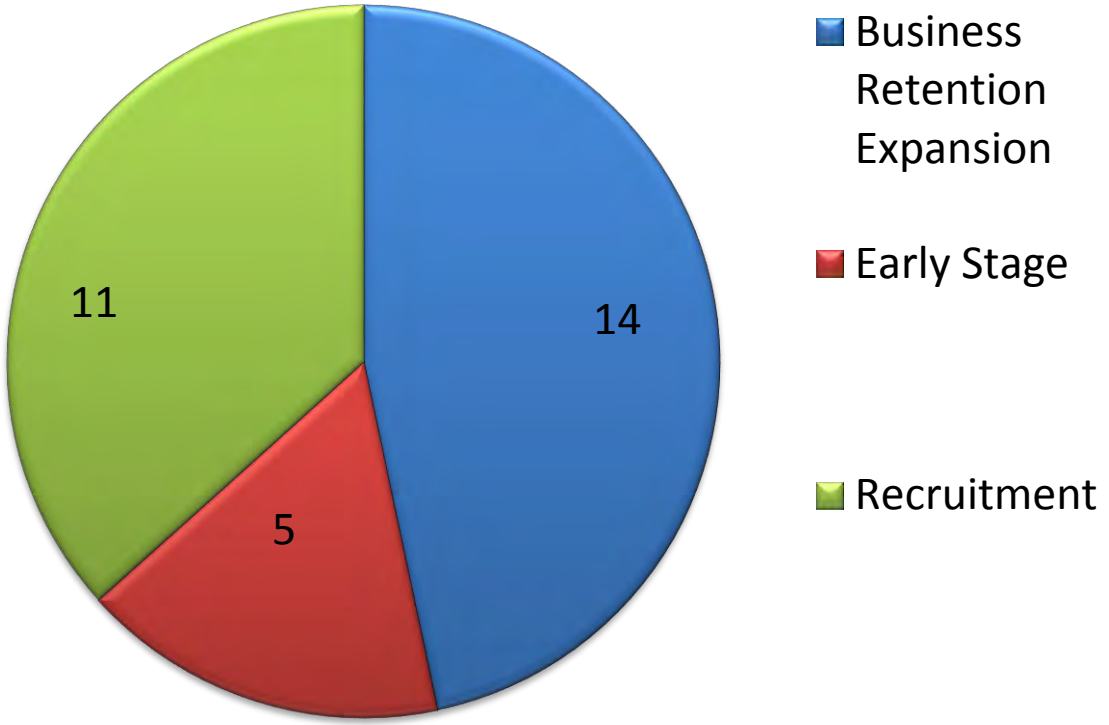
Project Type



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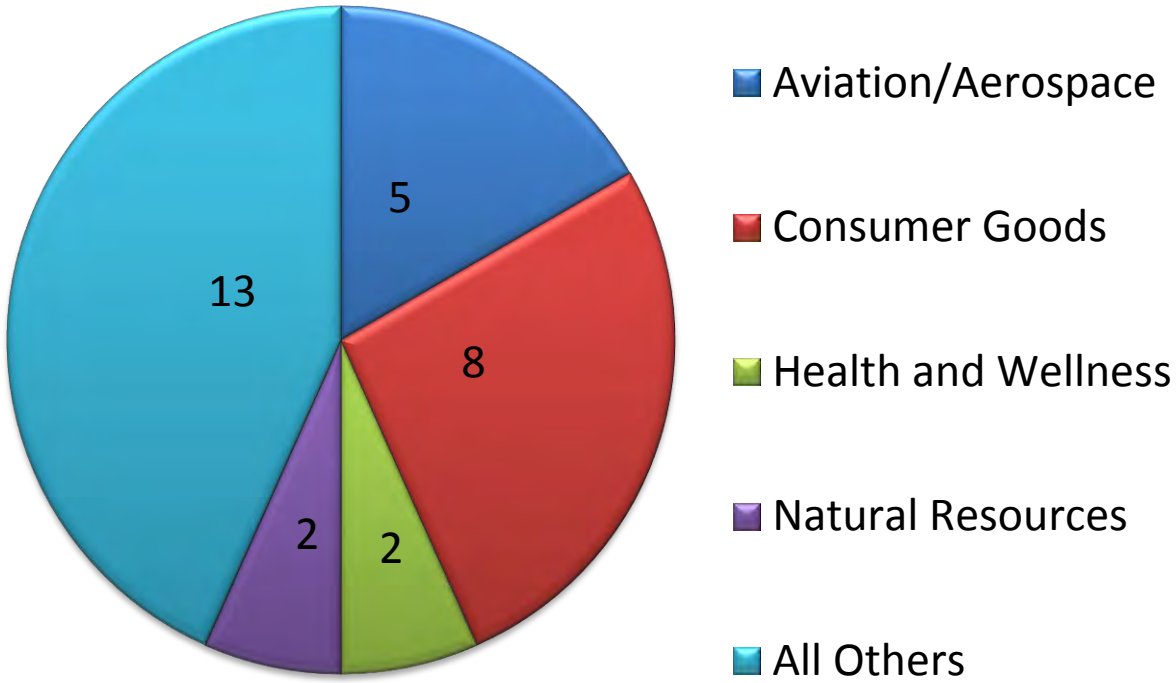
REDMOND ECONOMIC DEVELOPMENT INC.

Industry Type



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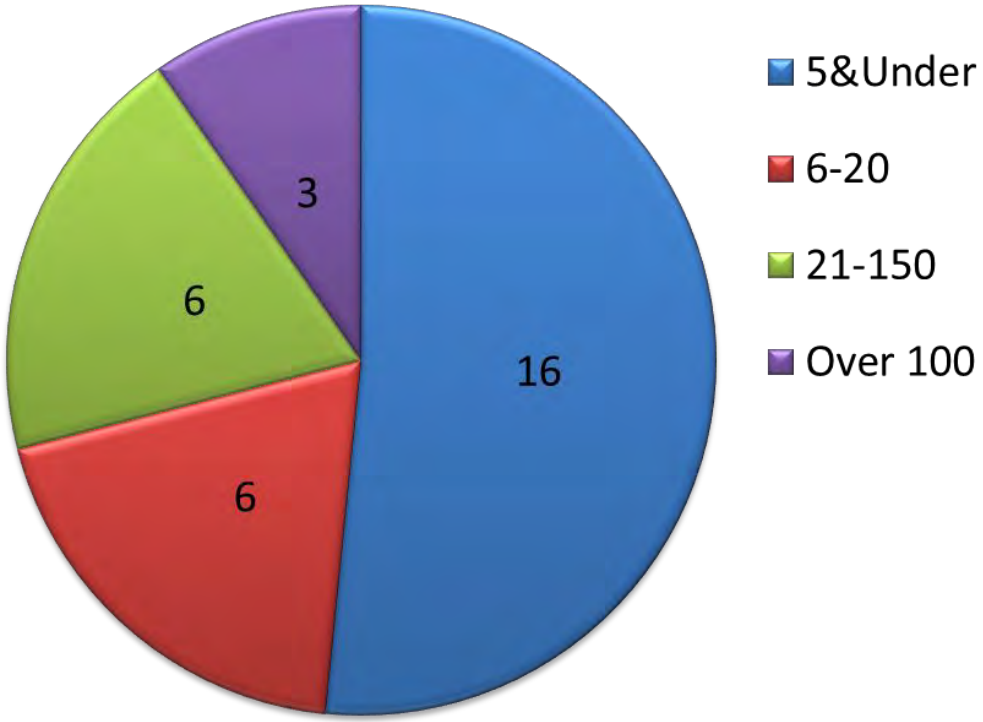
Project Pipeline: Jobs



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Strategic Initiatives: Strengthening Redmond's Business Environment

Certified Work Ready Communities

ACT Work Ready Communities
DESCHUTES COUNTY
OREGON
CERTIFIED 2015-17

Airlines Meetings (COAST)

DELTA AIR LINES

Alaska AIRLINES

Education @ Work

Central Oregon Education@Work
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Sustainable Operations:

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3rd Annual Investor Social

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REDMOND ECONOMIC DEVELOPMENT INC.

Questions?

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Figure A4-1: TAF and Airport Records Comparison

Fiscal Year	Enplanements				Air Carrier (AC) Operations				Air Taxi (AT) Operations				Commercial Operations (AC + AT)			
	TAF	Airport	Δ#	Δ%	TAF	Airport	Δ#	Δ%	TAF	Airport	Δ#	Δ%	TAF	Airport	Δ#	Δ%
2006	197,223	205,061	7,838	4%	1,433	887	-546	-38%	16,803	17,768	965	6%	18,236	18,655	419	2%
2007	230,033	239,096	9,063	4%	2,781	3,043	262	9%	16,349	17,508	1,159	7%	19,130	20,551	1,421	7%
2008	243,197	252,665	9,468	4%	4,413	5,211	798	18%	13,795	14,498	703	5%	18,208	19,709	1,501	8%
2009	217,826	229,987	12,161	6%	4,444	5,615	1,171	26%	9,680	10,119	439	5%	14,124	15,734	1,610	11%
2010	225,561	235,921	10,360	5%	4,858	6,151	1,293	27%	9,396	9,997	601	6%	14,254	16,148	1,894	13%
2011	231,978	242,888	10,910	5%	4,140	5,064	924	22%	8,886	9,616	730	8%	13,026	14,680	1,654	13%
2012	230,833	241,488	10,655	5%	3,931	4,898	967	25%	8,649	9,218	569	7%	12,580	14,116	1,536	12%
2013	227,410	236,586	9,176	4%	4,201	4,785	584	14%	8,232	9,185	953	12%	12,433	13,970	1,537	12%
2014	255,865	265,213	9,348	4%	4,738	5,812	1,074	23%	8,573	8,526	-47	-1%	13,311	14,338	1,027	8%
2015	269,132	277,157	8,025	3%	4,335	5,860	1,525	35%	6,578	6,586	8	0%	10,913	12,446	1,533	14%
2016	298,322	304,588	6,266	2%	5,127	6,697	1,570	31%	6,340	6,451	111	2%	11,467	13,148	1,681	15%
CAGR	2.1%	2.0%			6.6%	10.6%			-4.8%	-4.9%			-2.3%	-1.7%		

TAF records (enplanements and operations) come from TAF issued January 2017.
Airport records come from airlines (enplanements) and payment of landing fees (operations).
CAGR = Compound Annual Growth Rate

Figure A4-2: Airport Commercial Operations Records

		FAA Fiscal Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	RATE	CHART
Subtotal	Air Carrier	Scheduled Commercial Passenger	209	2,184	4,636	5,142	5,742	4,542	4,413	4,207	4,995	5,240	6,254	40.5%	
Subtotal	Air Carrier	Charter	52	136	51	34	41	8	-	22	44	39	21	-8.7%	
Subtotal	Air Carrier	Air Tanker	626	723	524	439	368	514	485	556	773	581	422	-3.9%	
Subtotal	Air Carrier	Sched. Com. Pax + Charter + Tanker	**887**	**3,043**	**5,211**	**5,615**	**6,151**	**5,064**	**4,898**	**4,785**	**5,812**	**5,860**	**6,697**	22.4%	
Subtotal	Air Taxi	Scheduled Commercial Passenger	14,455	14,006	10,961	6,764	6,186	6,283	6,340	5,916	6,602	4,560	4,522	-11.0%	
Subtotal	Air Taxi	Scheduled Commercial Freight	3,313	3,502	3,537	3,355	3,811	3,333	2,878	3,269	1,924	2,026	1,929	-5.3%	
Subtotal	Air Taxi	Sched. Com. Pax + Freight	**17,768**	**17,508**	**14,498**	**10,119**	**9,997**	**9,616**	**9,218**	**9,185**	**8,526**	**6,586**	**6,451**	-9.6%	
Total		Air Carrier + Air Taxi	**18,655**	**20,551**	**19,709**	**15,734**	**16,148**	**14,680**	**14,116**	**13,970**	**14,338**	**12,446**	**13,148**	-3.4%	

Source: Airport records depicting landing fees.

Figure A4-3: Airport Enplanement Records by Month

Enplanement/Deplanement by Airlines

Summary

FY	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16
July Enplane	10,019	9,924	11,849	13,948	15,054	16,137	13,410	13,559	14,017	18,349	18,763	23,618	23,354	22,583	22,879	23,819	24,812	24,320	26,448	28,710
July Deplane	10,176	10,177	12,415	14,554	15,235	16,508	13,868	13,788	13,849	18,552	19,059	23,704	23,807	23,405	23,713	24,022	25,560	24,529	27,272	29,650
August Enplane	10,440	10,638	12,796	14,765	15,746	17,598	14,511	13,886	15,646	18,536	22,290	24,251	23,321	23,205	23,728	23,986	24,210	23,877	27,374	29,276
August Deplane	10,750	10,420	12,321	13,783	15,495	17,634	14,175	13,676	14,603	17,789	21,844	24,018	22,954	22,341	22,849	23,452	23,821	23,660	27,414	28,118
September Enplane	9,183	9,879	11,149	12,954	13,792	9,694	12,205	12,255	13,263	16,221	19,002	20,542	18,743	19,374	19,475	20,702	19,686	21,797	23,466	24,896
September Deplane	8,409	9,132	10,789	12,650	13,236	9,126	11,456	11,538	12,924	15,787	18,304	19,601	17,808	18,958	19,125	20,322	19,119	20,544	21,192	24,250
October Enplane	8,896	9,053	10,795	12,336	14,000	11,181	11,567	12,635	13,381	16,115	19,282	21,106	18,728	18,785	19,310	19,456	18,943	21,207	21,796	24,496
October Deplane	8,652	8,856	10,618	12,184	13,578	10,781	11,074	12,178	13,166	15,962	18,617	20,419	18,220	18,446	18,880	19,317	18,328	20,968	21,311	23,962
November Enplane	7,548	7,871	10,311	11,897	13,231	10,903	11,039	11,852	13,239	14,164	18,347	20,292	17,835	18,790	19,016	18,945	18,192	20,075	20,405	23,974
November Deplane	7,614	8,215	10,006	12,052	13,020	10,847	11,372	12,009	13,107	13,513	18,204	20,139	18,117	18,885	19,144	18,855	18,178	20,707	19,985	23,272
December Enplane	8,835	9,840	12,368	12,519	13,708	11,513	12,751	12,718	14,101	17,176	19,081	22,085	19,649	21,159	21,057	20,051	18,885	22,806	19,988	25,286
December Deplane	9,250	10,419	13,029	13,297	14,722	12,171	13,442	13,293	14,930	17,959	20,027	23,514	20,481	22,615	22,421	22,003	19,960	24,281	20,651	26,871
January Enplane	9,151	9,455	10,443	12,218	12,726	11,243	11,485	11,678	14,216	16,126	18,166	21,328	17,633	18,621	19,826	18,578	18,194	20,550	21,225	24,863
January Deplane	8,079	8,337	9,288	10,823	11,276	10,089	9,995	10,088	12,715	14,372	16,646	19,010	15,466	16,413	17,465	16,547	16,644	18,108	18,651	22,364
February Enplane	8,493	8,555	10,579	11,293	12,506	10,422	10,757	11,859	12,275	14,930	16,523	20,509	16,620	16,427	17,158	17,039	16,469	17,502	19,357	22,912
February Deplane	8,182	8,348	10,555	11,207	12,063	10,410	10,707	11,872	12,246	14,753	16,285	20,610	16,575	16,286	16,914	16,812	16,456	18,209	19,118	22,633
March Enplane	8,983	9,449	11,525	13,347	14,627	11,633	11,866	12,601	15,229	17,271	18,969	19,852	19,179	18,887	20,231	19,860	18,926	21,067	22,469	25,313
March Deplane	9,202	9,625	11,620	13,400	14,360	11,876	11,742	12,758	15,320	16,393	18,291	19,706	18,936	19,363	20,512	19,427	18,901	20,692	22,361	25,514
April Enplane	8,577	8,802	11,027	11,853	12,753	10,597	10,276	11,353	14,089	15,243	18,224	19,362	16,970	17,870	17,570	17,533	17,561	19,479	20,986	23,656
April Deplane	8,474	8,833	10,550	11,450	13,230	10,549	10,365	11,149	13,830	15,619	18,769	19,688	17,195	17,241	17,243	17,871	17,477	19,706	20,973	24,180
May Enplane	9,069	9,387	10,975	12,851	13,672	11,064	11,427	11,799	15,535	16,066	20,003	20,391	17,578	18,350	18,916	18,944	18,398	21,165	21,901	7,379
May Deplane	8,732	9,501	11,085	13,921	13,927	11,335	11,526	12,308	15,728	16,797	20,288	20,812	18,256	18,886	19,390	19,840	19,138	22,021	22,305	7,086
June Enplane	9,794	11,277	12,541	14,190	14,755	12,664	12,933	13,686	16,476	17,915	22,090	22,322	20,633	20,950	21,297	22,374	21,024	24,074	26,148	30,397
June Deplane	9,793	11,224	12,310	14,293	15,104	12,788	13,093	13,477	16,697	17,828	22,672	22,603	21,190	21,003	22,131	22,732	21,379	24,623	25,978	30,578
TOTAL Enplane	108,988	114,130	136,358	154,171	166,570	144,649	144,227	149,881	171,467	198,112	230,740	255,658	230,243	235,001	240,463	241,287	235,300	257,919	271,563	291,158
TOTAL Deplane	107,313	113,087	134,586	153,614	165,246	144,114	142,815	148,134	169,115	195,324	229,006	253,824	229,005	233,842	239,787	241,200	234,961	258,048	267,211	288,478
TOTALS	216,301	227,217	270,944	307,785	331,816	288,763	287,042	298,015	340,582	393,436	459,746	509,482	459,248	468,843	480,250	482,487	470,261	515,967	538,774	579,636
FAA FY (Oct-Sep)	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Enplanements	109,787	119,483	142,231	157,096	165,407	141,346	143,801	153,107	181,647	205,061	239,096	252,665	229,987	235,921	242,888	241,488	236,586	265,213	277,157	304,588
Deplanements	107,707	118,883	140,048	156,593	164,548	140,345	142,318	150,508	179,867	202,403	237,122	251,070	229,140	234,825	241,896	241,904	235,194	265,193	273,351	301,464
Total	217,494	238,366	282,279	313,689	329,955	281,691	286,119	303,615	361,514	407,464	476,218	503,735	459,127	470,746	484,784	483,392	471,780	530,406	550,508	606,052

Source: Airport records, reported by the airlines.

APPENDIX C:

RECYCLING PLAN

Fly REDMOND

REDMOND MUNICIPAL AIRPORT RECYCLING, REUSE & WASTE REDUCTION PLAN

2018

Mead & Hunt

Fly REDMOND

REDMOND MUNICIPAL AIRPORT
RECYCLING, REUSE & WASTE REDUCTION PLAN
2018

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EXECUTIVE SUMMARY

The City of Redmond, Oregon, operator of Redmond Municipal Airport (RDM or the Airport) is committed to environmentally responsible operations. The Airport is updating their master plan and is including planning for solid waste in keeping with the *FAA Modernization and Reform Act of 2012* (FMRA) requirements. The purpose of this task was to evaluate RDM's existing waste and recycling program and provide recommendations to increase landfill diversion through waste reduction, reuse, and recycling.

The consultant conducted a facility walk-through and informal interviews with RDM staff to develop a baseline and identify areas of opportunity to divert waste from the landfill. The consultant developed recommendations appropriate for the Airport's waste stream based on the baseline information and identified opportunities.

Highlights of these recommendations include:

- ✓ Establish goals and objectives
- ✓ Track progress and report regularly
- ✓ Continue to promote emptying of water bottles pre-security and refilling post-security
- ✓ Collect and donate food, beverages, and toiletries
- ✓ Continue paper, plastic, plastic bottle, aluminum can, cardboard, and glass recycling and expand to other areas, including deplaned waste
- ✓ Improve education and outreach for passengers, employees, tenants, and contractors
- ✓ Supplement, right size, collocate, and standardize recycling stations and garbage cans
- ✓ Expand and improve signage, specifically at the security checkpoint
- ✓ Update contracts/leases and establish purchasing policy
- ✓ Maintain and improve recycling program according to Plan Do Check Act cycle

This range of recommendations will allow RDM the flexibility to implement those that are compatible with changing conditions and available resources, while providing the opportunity increase landfill diversion over time through a phased, comprehensive program.

1. INTRODUCTION

A. REGULATORY BACKGROUND AND PROJECT PURPOSE

Section 132(b) of the FMRA expanded the definition of airport planning to include "developing a plan for recycling and minimizing the generation of airport solid waste." FMRA Section 133 added a requirement that airports that prepare or update a master plan and receive Federal Aviation Administration (FAA) Airport Improvement Program (AIP) funding ensure that new or updated master plans address issues related to solid waste recycling. These issues include:

1) the feasibility of solid waste recycling
2) minimizing the generation of solid waste
3) operation and maintenance requirements
4) review of waste management contracts
5) the potential for cost savings or revenue generation.

In September 2014, the FAA released a memorandum titled "Guidance on Airport Recycling, Reuse, and Waste Reduction Plans." This memo details the FAA's expectations and suggestions for an airport's recycling plan. To comply with FMRA and according to the FAA's guidance memo, RDM is preparing this recycling, reuse, and waste reduction plan. The purpose of this plan is to document and assess RDM's existing waste and recycling program based on the factors listed above and to recommend improvements.

An airport's waste and recycling program and documented plan depend on several factors including:

- ✓ the size, location, and layout of the airport
- ✓ the amount and type of waste generated
- ✓ markets for recyclable commodities
- ✓ costs for recycling
- ✓ available local infrastructure
- ✓ the willingness of an airport and its tenants to implement recycling and other strategies

The extent and accuracy of available information governed the content of this plan.

B. AIRPORT DESCRIPTION

RDM is in the high desert region of central Oregon in the City of Redmond within Deschutes County. The City of Redmond owns RDM. The Airport Manager reports to the City Manager, and City employees are responsible for day to day airport operations. An Airport Committee advises elected City Council members on Airport matters. The Committee includes representation from Redmond, the City of Bend, Deschutes County, Jefferson County, and Crook County.

RDM, a non-hub primary airport, serves as the high desert region's only commercial service airport. The Airport is a public-use facility and is included in the FAA *National Plan of Integrated Airport Systems (NPIAS).* The Airport is an FAA Class I Part 139 facility, with facilities and services to accommodate scheduled passenger aircraft with 30 or more passenger seats. The Oregon Department of Aviation classifies RDM as a Category I – Commercial Service Airport.

The Airport serves commercial, general aviation (GA), military, and US Forest Service (USFS) activity. In fiscal year 2016, RDM saw approximately 546,700 total passengers (273,351 enplanements), saw 39,211 total operations, and had 40 based aircraft. Four airlines serve the Airport (American Airlines, Alaska Air, Delta Air, and United/United Express) and reach seven domestic destinations. Additional background and activity information is available in the Airport Master Plan.

C. WASTE DEFINITIONS AND PLAN FOCUS

Municipal Solid Waste (MSW) consists of everyday items that are used and then discarded. There are six primary types of MSW generated at airports:

a. General MSW consists of common inorganic waste, such as product packaging, disposable utensils, plates and cups, bottles, and newspaper. Less common items, such as furniture and clothing, are also considered general MSW.
b. Food waste is either food that is not consumed or the waste generated and discarded during food preparation. Food waste and green waste make up a waste stream known as "compostable" waste.
c. Green waste consists of tree, shrub and grass clippings, leaves, weeds, small branches, seeds, pods and similar debris generated by landscape maintenance activities. Green waste and food waste together may be referred to as "compostables."
d. Deplaned waste is a specific type of MSW that is removed from passenger aircraft. These materials include bottles and cans, newspaper and mixed paper, plastic cups, service ware, food waste, food soiled paper, and paper towels.
e. Construction and Demolition Waste (C&D) is generally categorized as MSW and is any non-hazardous solid waste from land clearing, excavation, and/or the construction, demolition, renovation or repair of structures, roads, and utilities. C&D waste commonly includes concrete, wood, metals, drywall, carpet, plastic, pipes, land clearing debris, cardboard, and salvaged building components.

This plan focuses on the management of MSW and other materials that can be recycled or disposed of in a landfill. This plan does not address the management of other types of waste, specifically:

- ✓ hazardous waste
- ✓ universal waste
- ✓ industrial waste
- ✓ waste from international flights
- ✓ C&D waste that is subject to special requirements or requires special handling (asbestos, lead, etc.).

The handling, recycling, and disposal of these materials are regulated by federal, state, and local laws.

D. KEY AIRPORT BUILDINGS AND PLAN SCOPE

The Airport's buildings include an airline passenger terminal, airport support facilities, GA facilities and tenant facilities.

AIRLINE PASSENGER TERMINAL

The passenger terminal serves airline passengers and provides space for airline-related services.

Airport administration offices, airline ticketing counters and offices, restrooms, food and retail store, security queuing area, meeter/greeter area, baggage claim, and rental car counters and offices comprise the pre-security or non-sterile portion of the terminal.

The administration offices include a reception area, offices, one conference room, and a breakroom. The firm providing airport security services has an office adjacent to the security checkpoint, and the City of Redmond Police Department also has an office in the terminal.

The ticketing counters, associated queuing lines and kiosks, and adjacent offices are allocated to each airline. A shop offering packaged food and drinks and retail items, including souvenirs, is in the non-sterile area. There are restrooms in the non-sterile area.

The meeter/greeter area connects the secure area exit with baggage claim and the car rental counters. This space also has a children's play area. There are two luggage belts in the baggage claim area, as well as a space for oversized baggage claim. Each rental car company has a counter and adjacent office for their use.

Passengers access the security checkpoint via a queuing area at its entrance. The Transportation Security Administration (TSA) operates the security checkpoint, which offers two lanes for screening of passengers and carry-on items. TSA personnel also have access to training areas, locker room space, and offices.

The post-security or secure portion of the terminal offers services for passengers already screened at the security checkpoint. The secure area includes a second food and retail shop, a bar/restaurant, restrooms, airline gates, and passenger holdrooms.

Secure area food and retail space is occupied by a small convenience store that also offers packaged foods and drinks as well as souvenirs (Figure 1).

Figure 1 : Terminal convenience store

The convenience store has a small coffee condiments area with a built-in trash can (Figure 2).

Figure 2 : Coffee condiments area in convenience store

A bar/restaurant is located on the second floor of the secure area and features bar seating as well as tables and chairs with wait staff service (Figure 3). The restaurant also sells packaged beverages (Figure 4).

Figure 3 : Bar and restaurant in secure area

Figure 4 : Bar area and cooler with packaged beverages

The secure area also has restrooms.

Six gates serve deplaning and enplaning passengers with each gate is dedicated to one airline. Holdrooms, where passengers wait to board departing flights within the departure lobby, are loosely defined at RDM by their proximity to each gate; the first-floor departure lobby is one space with seating available throughout. Additional general departure seating is available on the second-floor atrium.

Additional areas of the terminal are accessible only to credentialed staff and contractors. These areas include baggage screening, a maintenance shop, storage, and a breakroom.

AIRPORT SUPPORT FACILITIES

Airport staff maintain the property and perform snow removal and deicing activities. The Airport's plows, other winter equipment, and grounds maintenance vehicles are stored in the Snow Removal Equipment (SRE) Building.

The City of Redmond provides personnel to meet RDM's aircraft rescue and firefighting (ARFF) requirements. On-duty firefighters, ARFF vehicles, and associated activities are housed in a dedicated facility at RDM.

GENERAL AVIATION FACILITIES

One fixed-base operator (FBO) offers services such as ground handling, aircraft maintenance, hangar rental, fueling, and pilot/passenger facilities to support GA activity at RDM. The Airport has box hangars and T-hangars to store GA aircraft.

CARGO

Cargo facilities are made up of hangars that RDM leases and adjacent areas of the aircraft ramp/apron.

USFS

The USFS leases space to operate the Redmond Air Center, a firefighting facility protecting areas in Oregon, Washington, and Alaska. The Air Center is a hub of USFS firefighting operations, such as training and dispatching, as well as an incident support base for Federal Emergency Management Agency (FEMA) efforts in the event of a natural disaster in the Pacific Northwest.

PLAN SCOPE

The facilities described above include buildings and areas in which RDM has direct control of waste management and others in which RDM has influence but not direct control. According to FAA guidance, areas over which RDM has "direct control" or "influence" should be included in the Recycling, Reuse, and Waste Reduction Plan; areas outside Airport control or influence may be excluded. The Airport has direct control over operations and activities related to waste management in these areas:

- ✓ Passenger Terminal Building
  - public use spaces
  - airport administration offices
  - other staff work areas
- ✓ Airport SRE Building
- ✓ Airport maintenance activities

In addition, RDM can influence the management of waste and recyclables in tenant spaces through lease agreements and contracts, including:

- ✓ Passenger Terminal Building
  - TSA spaces
  - Airline leased areas
    (including ticketing counters, offices, breakrooms, and deplaned waste)
  - Rental car tenant areas
  - Retail areas and bar/restaurant
- ✓ FBO Building (leased by RDM)
- ✓ Aircraft hangars (leased by RDM)
- ✓ USFS facilities (leased by RDM)
- ✓ ARFF building (coordination with City of Redmond)

The Airport does not have control or influence over waste management in the FAA Air Traffic Control Tower (ATCT) nor areas adjacent to Airport property controlled by neighboring businesses and property owners; therefore, they are excluded from this plan.

2. EXISTING PROGRAM

A. DRIVERS

The Airport established its recycling program to reduce the quantity of material disposed of in the landfill and to conserve resources, including financial resources. The Airport staff's commitment and practices drive the program; it is supported by local recycling infrastructure.

B. ALIGNMENT WITH LOCAL PROGRAMS

The City, who owns and operates RDM, contracts with a waste hauling contractor to provide waste and recycling collection services for residents, multifamily units, and commercial businesses. RDM's program aligns with the City's efforts; RDM recycles all the material types collected by the City's contractor.

C. INFRASTRUCTURE

Employees, tenants, and passengers have access to a network of trash cans and recycling stations in the terminal. In general, there are many trash cans throughout the building and a few recycling stations in specific locations. The recycling stations and the garbage cans are lined/fitted with bags.

In the ticketing lobby and airline counter area, there are tall round, metal garbage cans with round openings in the lids (Figure 5). These garbage cans are also available at the entrance to the security screening checkpoint (Figure 6), in the baggage claim and meeter / greeter space (Figures 7 and 8), and throughout the sterile area, including in the holdroom (Figure 9) and atrium (Figures 10 and 11).

Figure 5 : Garbage cans in ticketing lobby

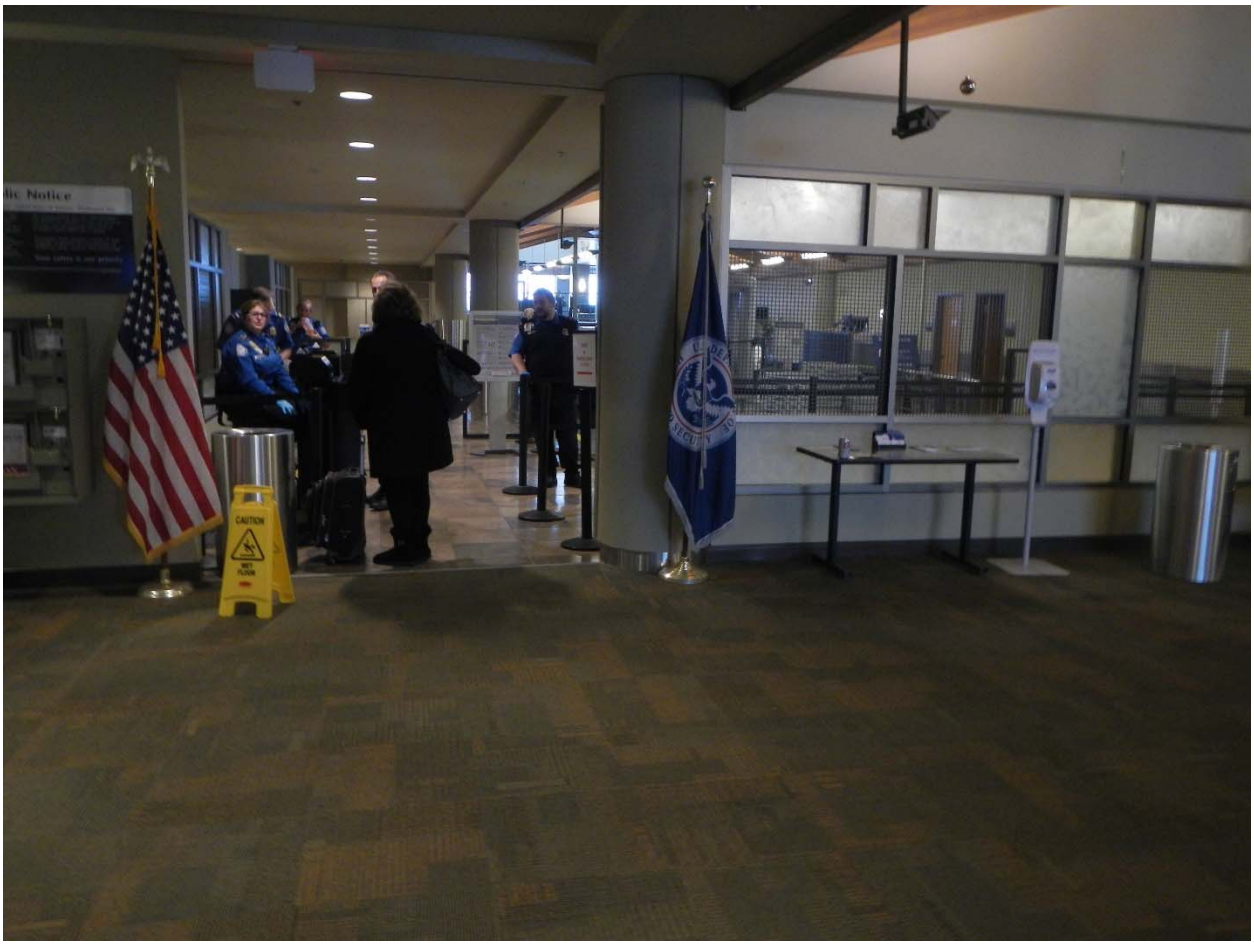


Figure 6 : Garbage cans at entrance to security screening checkpoint

Figure 7 : Garbage cans in baggage claim

Figure 8 : Garbage cans in meeter / greeter area

Figure 9 : Garbage cans in holdroom

Figure 10 : Garbage can in atrium near restaurant

Figure 11 : Garbage can in atrium

Recycling stations, conjoined units with four labeled compartments, are positioned in four locations within the non-sterile and sterile areas: in the security queuing area, at the base of the stairs leading to the atrium (Figure 12), within the atrium seating area near the restaurant (Figure 13), and in the meeter/greeter area near baggage claim (Figure 14).

Figure 12 : Recycling station in holdroom area, near stairs to atrium

Figure 13 : Recycling station in atrium, near restaurant

Figure 14: Recycling station in meeter/greeter area near baggage claim

At the curbside entrances to and exits from the terminal, there are large garbage cans featuring hoods with large openings (Figure 15).

Figure 15 : Curbside garbage can

The terminal restrooms feature paper towel dispensers and air hand dryers (Figure 16), with garbage cans positioned below the paper towel dispensers and small bins located in each toilet stall.

Figure 16 : Terminal restrooms offer both hand dryers and paper towel dispensers

Drinking fountains are available near the restrooms throughout the terminal; RDM has installed one water bottle refill station in the sterile area (Figure 17).

Figure 17 : Water bottle filling station and drinking fountain in holdroom

The restaurant kitchen and back of house area include space for food preparation, dishwashing, storage, and other activities. Space in this area is limited. Garbage is collected in a large container (Figure 18).

Figure 18 : Restaurant back of house area, including garbage can

Glass, plastic bottles, and cans are taken to the recycling station located in the atrium. Restaurant staff break down cardboard boxes and stack them throughout the day (Figure 19); they carry these to the terminal cardboard dumpster as needed to clear the space and at the end of the day.

Figure 19 : Restaurant collection of cardboard for recycling

The restaurant offers paper carryout containers, and restaurant employees use refillable water bottles. The retail areas have small trash cans near the register, and retail employees use the terminal recycling stations for paper, plastic bottles, cans, and glass.

In Alaska Air's ticketing area, each station has space for a small trash can. The cargo desk also has a small trash can (Figure 20). The airline's office/breakroom space has two large trash cans (Figure 21); a low, squat recycling bin for paper (Figure 22); and a container for cans and plastic bottles (Figure 23).

Figure 20 : Garbage can in airline cargo area

Figure 21 : Garbage can in airline breakroom area

Figure 22 : Recycling bin in airline office area

Figure 23 : Garbage and recycling collection in airline office area

The Delta ticket counter also has a space for a “trash box” (Figure 24). In the Delta offices, there are small garbage cans by the desks (Figure 25), and the area also has a low, squat recycling bin for paper (Figure 26).

Figure 24 : Airline ticketing counter with "trash box"

Figure 25 : Garbage can in airline office

Figure 26 : Recycling bin in airline office

In the airline baggage handling area, a space shared by all the airlines, there are small trash cans located by the vending machine (Figure 27).

Figure 27 : Vending machine and garbage cans in baggage handling area

The car rental offices have containers for trash, and some use the terminal recycling stations for paper, plastic bottles, cans, and glass.

In the administration offices, there are in-cabinet waste and recycling bins in the breakroom/kitchenette (Figure 28) and in the conference room (Figure 29).

Figure 28 : In-cabinet garbage and recycling bins in Airport administration breakroom

Figure 29 : In-cabinet garbage and recycling bins in Airport conference room

In the copy room, there is one bin each for garbage and recycling (Figures 30 and 31), as well as a small paper shredder.

Figure 30 : Airport administration copy room

Figure 31 : Garbage can and recycling bin in Airport administration copy room

Each office/desk has a garbage can and some employees use copy paper box lids to collect paper for recycling (Figures 32 and 33).

Figure 32 : Garbage can in Airport administration office

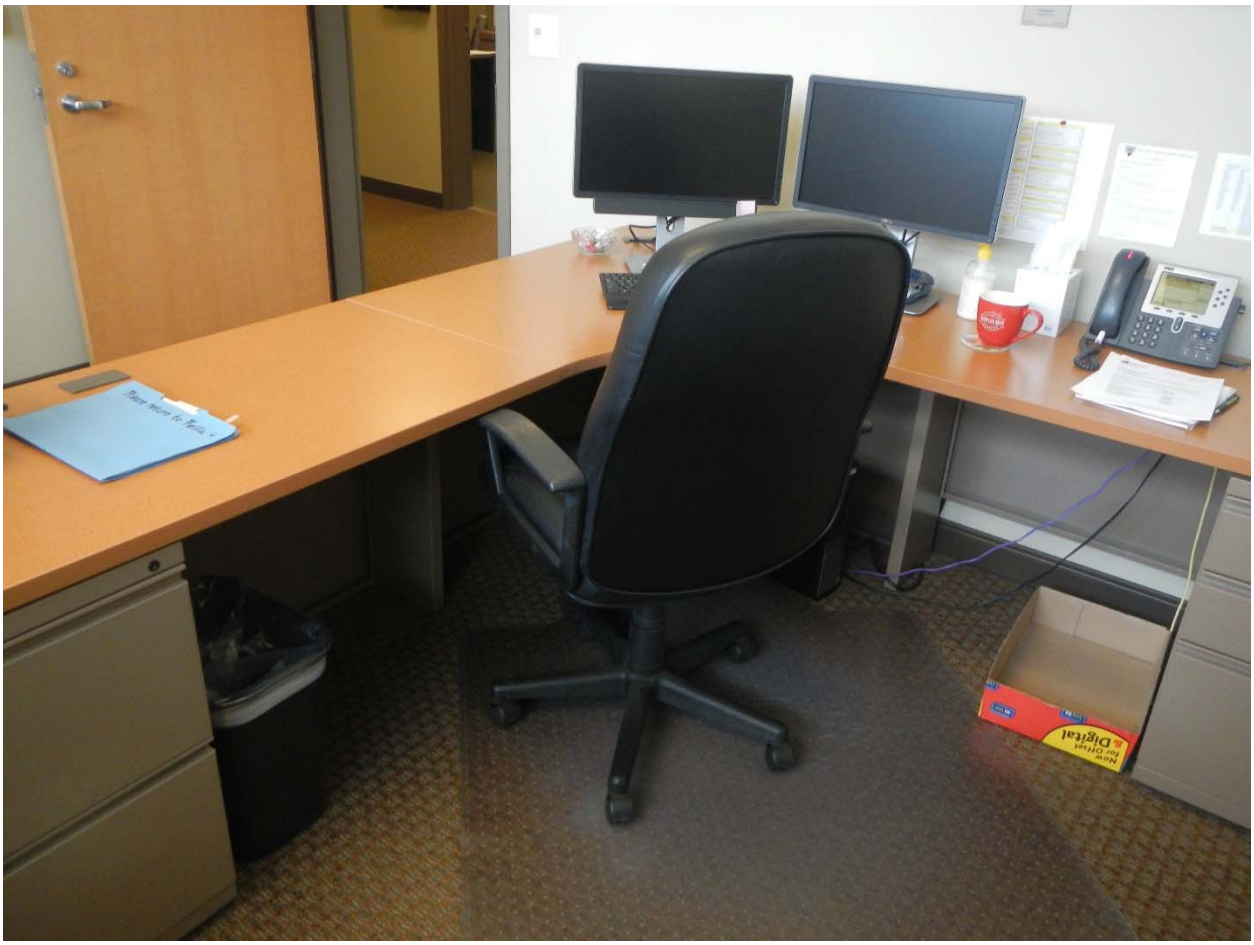


Figure 33 : Garbage can and box lid for recycling in Airport administration office

The labels on recycling stations in the terminal and on the bins in the administration offices are the primary method to convey messaging about and instructions related to recycling. The recycling stations in the terminal are labeled for plastic, glass, paper, and cans with graphics depicting a plastic bottle, glass bottle, stack of paper and envelope, and aluminum can, respectively (Figure 34). Additional signage posted on the recycling bins alerts passengers that there is a “Water bottle refill station in the boarding area” (Figure 35).

Figure 34: Recycling station labeling

Figure 35 : Recycling station sign alerting passengers about water bottle refill station located in the boarding area (holdroom)

RDM has also installed signage in the restrooms in the non-sterile area encouraging passengers to “Reuse your water bottle” (Figures 36 and 37). These signs instruct passengers to empty their bottles pre-security and refill them post-security at the drinking fountain in the boarding area.

Figure 36 : Restroom signage encouraging passengers to reuse water bottles

Figure 37 : Restroom signage encouraging passengers to reuse water bottles (closeup)

At the Maintenance building, there are several garbage cans, including in the supervisor's office and in the breakroom. The ARFF facility has carts for waste and recyclable materials (Figure 38), and there are also several recycling bins and trash cans (Figures 39 and 40).

Figure 38: Carts for garbage and recyclables at ARFF facility

Figure 39 : Garbage cans or recycling bins in ARFF building kitchen

Figure 40 : Container for recycling beverage containers in ARFF building

A trash dumpster, cardboard dumpster, and cart for recyclables are in the GA area (Figure 41).

Figure 41 : Dumpsters and carts located in GA area

The FBO terminal has several garbage cans but no recycling bins.

The carts, dumpster, and compactor used to consolidate waste and recyclables materials generated in the terminal are positioned within a landside fenced enclosure adjacent to the terminal building (Figure 42). The four, 95-gallon carts are used for comingled recyclables, the six-yard dumpster for cardboard, and the 20-yard compactor for waste. Containers for glass recycling are also located in the enclosure. A second 2-yard waste dumpster is in a landside enclosure near the terminal smoking area. The waste and recycling hauler provides these containers. Access to the enclosure is restricted to specific airport staff and the contractors' collection crews. The contractor uses its own vehicles to collect the waste and recyclable materials from RDM and transfer them for processing or disposal.

Figure 42 : Carts and compactor in fenced enclosure

Waste materials (food waste and other MSW) are collected from the dumpster weekly and the compactor biweekly. These materials are transported for disposal at Deschutes County's Knott Landfill. Recyclable materials (comingled paper, plastic, and aluminum, as well as segregated glass and cardboard) are collected weekly and transported to a recycling facility at the landfill where they are sorted, compressed into bales, marketed, and sold.

D. OPERATION AND MAINTENANCE REQUIREMENTS / ROLES AND RESPONSIBILITIES

RDM's recycling program is maintained by facilities staff, with support from Airport management personnel.

The facilities manager is primarily responsible for the recycling program, including directing housekeeping activities, adjusting the program, purchasing custodial supplies, and communicating with RDM's business coordinator about collection services.

Airport facilities staff includes six full time personnel. Facilities staff are responsible for custodial activities in specific buildings and areas, including collecting waste and recyclables from cans and bins and transferring these materials to the appropriate dumpsters. Airport facilities staff are responsible for custodial activities:

- ✓ in public spaces of the terminal
- ✓ in TSA areas
- ✓ in RDM offices
- ✓ in the SRE building
- ✓ in other Airport spaces
- ✓ on the airfield
- ✓ in GA hangars leased through Airport Administration

The Airport's terminal tenants (restaurant and shop, rental car companies, and airlines) and tenants in some of the outlying buildings (FBO and one GA hangar) are responsible for custodial activities in their areas including transferring waste to the appropriate dumpsters. The operators of the FBO, ATCT, and ARFF building are each responsible for securing their own waste and recycling services.

The Airport's business coordinator is responsible for communicating with the collection service providers and tracking program invoices. The aviation program manager is responsible for supporting the program through allocation of resources (financial and other) and for coordinating tenant leases.

High County Disposal (formerly High Desert Disposal) is the primary waste and recycling hauling contractor for RDM. High County Disposal collects garbage from RDM's dumpsters and transports this material to a transfer station for disposal at the Deschutes County's Knott Landfill. The transfer station is located approximately five miles south of the Airport, and the landfill is approximately 20 miles south of the Airport in Bend, Oregon.

High County Disposal also collects recyclable materials from RDM and transports them to one of the county's recycling facilities (located at the transfer station and the landfill) for processing. The Airport is also serviced by the parent company of High County Disposal, Bend Garbage & Recycling, for the collection of shredded paper and waste syringes. Deschutes Recycling, a sister company to High County Disposal, accepts yard waste for composting and sells compost to the public. The area does not appear to have a commercial food waste compost facility.

E. CURRENT WASTE REDUCTION, REUSE, AND RECYCLING EFFORTS

WASTE REDUCTION

Also called "waste minimization," waste reduction refers to reducing the volume of waste produced at its source. This can be accomplished through changing habits and practices, such as printing and purchasing. RDM currently employs the following practices to reduce the total amount of waste generated:

- ✓ Double sided printing in administration offices
- ✓ Email and internal websites for inter-office communication
- ✓ Shared drives for storage of documents
- ✓ Computer software to receive fax messages
- ✓ On-screen print preview and PDF printer or other electronic printing
- ✓ Outsourcing large print jobs

REUSE

In a waste management context, reuse refers to using materials and items more than once and as many times as possible before disposal. Reuse can include using items and materials for the original purpose or repurposing something for a different use. Reuse can require purchasing durable materials and items instead of disposable or single use options.

The Airport currently reuses:

- ✓ Ceramic coffee mugs and durable silverware, plates, bowls, and cups (instead of plastic, paper, or Styrofoam) in Administration breakroom
- ✓ Office supplies, including inter-office envelopes
- ✓ Towels/rags in maintenance areas
- ✓ Office furniture

RECYCLING

Using the infrastructure and resources described above, RDM currently recycles three streams: cardboard; glass; and comingled paper, plastic bottles, and aluminum cans.

Terminal tenants generate most of the cardboard in the form of shipping boxes. The paper stream includes printer paper, mail, envelopes, and other paper from the Airport Administration offices as well as paper items, such as newspapers and magazines, collected in the public areas of the passenger terminal. The plastic, aluminum, and glass streams are primarily made up of beverage containers, collected from the public areas of the passenger terminal as well as the administration offices and restaurant. Some plastic bottles and aluminum cans may be collected by employees and tenants for refund under the State's bottle bill.

CONSTRUCTION AND DEMOLITION DEBRIS, GREEN WASTE, AND OTHER WASTE

The Airport reuses and recycles the waste generated during construction projects where possible. For example, asphalt millings from a runway project were used to improve the perimeter road. Removed lighting fixtures were donated for reuse. The Airport works with the City Department of Public Works and follows the City's surplus goods policy/practices. Green waste generated from the maintenance of the property is managed on-site where possible. The Airport collects hazardous waste; used oil and filters; batteries; paint; used tires; and scrap metal for beneficial reuse, recycling, or return to supplier programs.

TENANT EFFORTS

In addition to the recycling program operated by RDM, tenants at the Airport may be recycling on their own. In some instances, these tenants may be using the Airport's bins, carts, dumpsters, and compactor.

F. TRACKING AND PERFORMANCE

The Airport does not currently track overall waste generation, recycled material volume, or other metrics. At present, RDM does not have specific waste or recycling objectives, targets, or goals.

3. WASTE AUDIT

RDM staff provided information about:

- ✓ airport buildings and facilities
- ✓ areas that generate waste
- ✓ the types of waste generated in each area
- ✓ the materials that can be recycled under the current program.

Facilities staff have informally observed passenger and employee waste and recycling related behaviors and, for this document, described generally how waste flows through the facility. The staff also described waste and recycling collection and hauling practices.

The consultant evaluated Airport information and records as well as aviation industry waste and recycling trends to identify the source, composition, and quantity of waste generated at RDM, including areas under RDM's direct control or influence. The consultant then used this information to identify opportunities to improve and monitor program effectiveness.

A. QUANTITY AND SOURCES

According to invoices provided by Airport staff, Bend Garbage & Recycling collects a 35-gallon roll cart of shredded paper approximately annually. Using conversion factors from the United States Environmental Protection Agency (EPA), this equates to approximately 8.5 pounds of paper.

According to invoices provided by Airport staff, the waste compactor serviced by High County Disposal has a capacity of 20 yards and is collected every other week. Assuming a load factor of 75 percent and based on conversion factors from the EPA, each load is estimated to contain 15 cubic yards or 4 tons of compacted municipal solid waste each collection. This totals approximately 105 tons a year. The Airport also uses a two-yard dumpster for waste; this container is serviced weekly. Based on the same load and conversion factors, this smaller container is estimated to contain 400 pounds of waste each collection for a total of 10 tons a year. Together, these dumpsters represent an annual generation of 115 tons of waste each year.

The invoices do not detail the size or collection frequency for the recycling carts and dumpsters. A representative from High County Disposal provided the following information about RDM's other waste and recycling containers' capacities and service schedules:

- ✓ Cardboard: one 6-yard dumpster; collected weekly
- ✓ Comingled recyclables: four, 95-gallon carts; collected weekly
- ✓ Glass: collected weekly

Based on a 75 percent load factor and conversion factors from the EPA, the consultant estimated that RDM recycles approximately 10 tons of cardboard and 10 tons of commingled recyclables. To estimate the annual quantity of glass recycled, information about the capacity of the glass recycling containers and their collection schedule is needed.

According to the invoices, the Airport also rented two 30-yard dumpsters for airfield waste collection and scrap metal collection in 2017. The quantity of waste generated from these occasional collection events is not included in the Airport's baseline annual generation.

Based on industry averages, the overall contribution of waste and recyclables from various areas and activities at RDM is likely similar to the distribution shown in Table 1.

Table 1: Estimated Generation at RDM by Area/Activity

RDM Area/Activity	Estimated Percent	Estimated Weight
Deplaned	20%	27 tons
Other Airline	24%	32 tons
Administration	3%	4 tons
Public Areas	35%	48 tons
Concessions	18%	24 tons
Total	100%	135 tons

Based on this distribution, programs that focus on the airlines and public areas may represent the best opportunities to reduce waste generation and increase landfill diversion. A physical waste sort could provide more detailed information about the amount and proportion of waste generated in total and by each area, activity, tenant, etc.

Based on the waste and recycling data presented above, the Airport's current recycling rate is about 15 percent.

B. COMPOSITION

Based on the activities taking place at RDM, a varied waste stream can be expected. According to industry case studies and previous waste planning projects, an airport's waste stream is approximately 40 percent recyclable, 35 percent compostable, and 25 percent waste that cannot be recycled or composted due to current technologies and, as a result, must be placed in a landfill.

Table 2 lists each area included in the scope of this plan and the type(s) of waste likely generated there.

Table 2: Redmond Municipal Airport Waste by Area and Material

Area | Material	Office Paper	Newspapers	Magazines	Plastic	Aluminum	Cardboard	Glass	Food Waste	Paper Products	Liquids	Toiletries	Packaging	Styrofoam	Metals	Depleaned Waste	Green / Yard Waste	Construction and Demolition Waste	Other Waste
Airline Terminal Building																		
Public passenger areas Curbs, ticketing lobby, restrooms, security screening queuing area, sterile gate areas, public "meet and greet" spaces, baggage claim area		x	x	x	x			x	x	x	x	x						x
Tenant areas Shops, bar/restaurant, and associated activities	x	x	x	x	x	x	x	x	x	x		x						x
Airline areas Offices, ticketing counters, gate stations, breakrooms, underwing services, and deplaned waste	x	x	x	x	x	x		x	x	x		x			x			x
Rental Car areas Offices, counters, return areas, service areas, breakrooms	x			x	x			x	x	x								x
TSA Spaces	x	x	x	X	X			x	x	x	x	x						x
Airport Administration Offices	x	x	x	x	x	x		x	x			x						x
ARFF Building	x	x	x	x	x	x	x	x	x			x						
SRE Building	x	x	x	x	x	x		x	x						x	x	x	x
Airport Maintenance Activities															x	x	x	x

A physical waste sort could provide more detailed information about the specific composition of waste at RDM. This information may include:

- ✓ the types of items included in each general category
- ✓ the contamination rate of the recycling stream (items that are not recyclable in the recycling bins)
- ✓ the recovery rate for recycling (the proportion of recyclable items that are segregated properly).

The data from a waste audit can also be used to identify opportunities to improve the composition of the waste stream (by item substitution, by improving recycling to reduce the volume of waste, etc.).

The following sections describe in more detail some of the waste and recyclable materials generated at an airport like RDM: toiletries, food and beverages at security screening, and liquids throughout the facility.

TOILETRIES, FOOD, AND BEVERAGES - TSA RESTRICTIONS

The TSA restricts the volume of liquids, gels and aerosols that can be carried onto an aircraft. Passengers are allowed three-ounce containers of toiletries in one one-quart baggie (3-1-1) in their carry-on luggage. Even though these restrictions have been in place for longer than 10 years, toiletries, beverages, and food items that do not meet the requirements are regularly found in passenger luggage during security screening.

When these items are found, the TSA gives passengers three options: pack the item in a checked bag, give the item to a non-traveling family member or friend, or forfeit the item. By law, the TSA cannot retain any items removed from passenger luggage, so items that are not repacked or handed off end up in the trash. In addition, when a restricted item is discovered in a passenger's carry-on or bag, the passenger may be subject to additional screening, which requires extra time and can interrupt the flow at a security screening checkpoint.

Some problematic items that end up in the trash at security checkpoints include: bottled water, other bottled or canned beverages, toothpaste (larger than travel size), shampoo and/or conditioner (larger than three ounces), sunscreen, and aloe gel. Some other, less obvious unallowable items are peanut butter, yogurt, applesauce, and maple syrup.

It is expected that the garbage cans and recycling station located in the security queuing area receive a fair amount of liquids and beverage containers due to TSA restrictions. These items end up in the waste stream where the liquids are difficult to manage and the containers cannot be recycled. Liquids add significant weight to the waste stream, contaminate other materials like paper, and may be rejected by a recycler, which can result in them being landfilled.

LIQUIDS

Liquids contaminate and degrade other materials within the recycling stream and add weight to recycling or waste streams where they are found. In some cases, liquids are thrown away in their containers, which means the recyclable material found in water bottles, aluminum soda cans, and plastic beverage containers is not captured for recycling.

C. PURCHASES

The Airport does not currently track the quantity and type of disposable items and supplies purchased for the facility. This information could provide insight on some of the materials coming into the Airport which will go back out as waste (other materials are brought on-site by passengers, employees, and vendors). The purchase list may include:

- ✓ items that have reusable or recyclable alternatives (foam cups)
- ✓ some items which could be eliminated (by converting paper forms to digital to reduce paper waste generated)
- ✓ some which indicate scale of the activity at the Airport (paper towel and garbage bags).

4. REVIEW OF WASTE MANAGEMENT CONTRACTS

As noted in Section 1, the FMRA lists the review of waste management contracts as an element of addressing solid waste recycling at an airport. The FAA memorandum titled "Guidance on Airport Recycling, Reuse, and Waste Reduction Plans" explains that the purpose of reviewing these contracts is to "identify opportunities for improving (waste) program scope and efficiency, as well as identify constraints."

In general, the Airport's contracts and leases address housekeeping requirements and related expectations for managing trash and provide limited information about recycling. These contracts and leases do not necessarily impede recycling or other waste management strategies; however, they do not explicitly require conformance with or support of the Airport's recycling and related efforts. The following sections describe the content of various Airport contracts related to waste and recycling.

A. CUSTODIAL AND WASTE HAULING CONTRACTS

RDM does not contract for custodial services for the areas under airport control; these areas are maintained by City employees.

The City has an exclusive franchise agreement established by ordinance with High County Disposal for the collection of waste and recyclable materials. The City's solid waste franchise ordinance outlines the responsibilities of the collection contractor, including:

- ✓ Dispose of waste at site owned and/or operated by Deschutes County
- ✓ Provide opportunity to recycle in accordance with State law and the Department of Environmental Quality (DEQ) rules
- ✓ Provide necessary collection vehicles, containers, facilities, and personnel

The Airport is also serviced by Bend Garbage & Recycling, the parent company of High County Disposal. The Airport does not have contractual agreements with High County Disposal or Bend Garbage & Recycling. The Airport is serviced by these companies under the City's franchise agreement and ordinance.

B. TENANT LEASES AND SERVICE CONTRACTS

Two of the Airport's agreements with tenant and service providers reference recycling or recycled products; however, the rest have basic requirements pertaining to trash removal and janitorial activities in leased areas. The Airport's template T-hangar lease agreement (dated 2016) specifies that the hangar tenant will perform or pay for housekeeping services including trash collection and removal in the leased space. The Airport uses a template titled, "Lease for Aeronautical Use Improvements." The lease template requires the tenant to perform maintenance including cleaning and trash collection and removal to keep the property clean and orderly.

An example agreement titled, “On-airport Rental Car Concession,” dated October 2016 stipulates that the rental car company will provide janitorial and cleaning services and supplies for the leased spaces. It also requires that the rental car company provide for “handling and disposal of all trash, garbage, recyclable material, and other refuse” generated in the tenant’s areas. This agreement explains that the City (Airport) will provide receptacles for these materials for the tenant’s use. Through the lease agreement, the rental car tenant agrees to bear any reasonable costs “associated with the implementation of any existing or future recycling program.” The tenant can also propose an alternative recycling plan for the City’s approval. The agreement also commits the tenant to undertaking “reasonable steps to minimize the impact of their operation on the environment.” Because this agreement is more recent than the other described in this section, it’s provisions about recycling may serve as an example for future contracts.

The Airport’s lease with one of the FBOs (dated July 2015) requires the operator to “make suitable arrangements for the storage, collection, and removal of all trash, garbage and other refuse resulting from (their) activities…in accordance with any applicable laws, ordinances, and rules and regulations of the Airport.” This lease does not specifically mention recycling. The 2003 agreement between these parties required the tenant to provide “proper containers for trash and garbage” and to “keep the lease premises free and clear of rubbish, debris, and litter at all times.”

An example agreement for commercial passenger air service dated July 2014 requires the airline to provide “arrangement for the adequate, sanitary handling and disposal of all trash, garbage, aircraft sewage, and other refuse.” This agreement explains that the City (Airport) will provide “covered metal receptacles” for these materials. No reference is made to recycling.

A 2014 addendum to the FBO’s 2010 agreement with a tenant stipulates that the tenant will provide containers for trash and garbage. Recycling is not mentioned.

The City has an intergovernmental agreement with one of the County’s fire protection organizations for ARFF services. This agreement does not specifically address waste (or recycling); however, it does detail that the organization is responsible for the maintenance of the Airport Fire Station.

The Airport has two agreements with a food and beverage service provider. The first, for food and beverage concession, specifies that the City (Airport) “will provide a common-use trash compactor or dumpsters with scheduled trash collection for the Airport tenants and concessionaries.” The concessionaire agrees to provide arrangement for the handling and disposal of trash, garbage, and other refuse and to maintain temporary collection areas in a sanitary and presentable condition. The concessionaire is required to handle waste materials to “prevent the presence of rodents” and to keep all garbage materials in durable, pest-proof, covered or lidded containers that are easily cleaned. When waste materials are transported within the Terminal, the concessionaire is required to package them in containers that prevent leaks and use only the routes established by the City (Airport). This agreement also details the concessionaire’s responsibilities as related to cooking oil/liquid grease.

The Airport's second agreement with the food and beverage service provider covers retail, coffee, and snack food concession. This second agreement includes the same language regarding use of the compactors and dumpsters, maintaining leased areas in a sanitary condition, and movement of materials. Neither agreement describes the recycling program.

The Airport's 2001 agreement with the USFS (amended in 2004 and 2011) stipulates that the tenant pays rent based on costs for janitorial services and garbage collection and removal.

The Airport's agreement with a GA tenant/aviation business requires the tenant to maintain the premises "in a neat, clean, safe, and sanitary condition" and to pay charges for utilities such as garbage collection and removal and janitorial work.

The Airport's contract with a parking management company, dated June 2011, prohibits this company from accumulating trash or waste material and requires the company to promptly dispose of materials daily. This agreement does include a clause in conformance to State law that requires the company to use recycled material where applicable, if the recycled product:

- ✓ is available
- ✓ meets standards
- ✓ can substitute for a non-recycled product
- ✓ cost does not exceed the cost of the non-recycled by more than five percent.

This agreement was the only one reviewed under this project that discussed recycled products; it may serve as an example for future contracts.

The parking agreement also includes a mechanism for the City (Airport) to reimburse the company for cost and expenses according to an operating budget; however, the line item for cleaning and janitorial supplies was listed for zero dollars in the copy provided for review under this project.

Two GA hangar leases dated 2008 and 2005, respectively, contain the same language: "Tenant shall provide proper containers for trash and garbage and shall keep the leased premises free and clear of rubbish, debris, and litter at all times." This is likely standard GA hangar tenant lease language, which does not include information about recycling.

A 2002 U.S. Government Lease for Real Property leased space at the Airport for use by the TSA. This agreement describes the services provided by the Airport, including trash removal and janitorial service and supplies. It also outlines other requirements including:

- ✓ cleaning to be completed during Airport hours
- ✓ rent to be adjusted annually based on actual janitorial costs
- ✓ the Airport to maintain the area in a clean condition and provide supplies and equipment

- ✓ daily emptying of trash receptacles, disposal of trash and garbage, and cleaning of cans used for collection of waste

C. EXPIRING LEASES AND CONTRACTS

Specific information regarding the expiration, extension and/or renewal dates of the Airport's numerous leases was not reviewed under this project. As outlined in the FAA guidance memo, "this information can signal the Airport's next opportunity to add recycling, reuse, and waste reduction objectives to existing leases and contracts."

D. FUNDING

Waste and recycling collection are funded in RDM's operating budget. RDM does not currently receive payment or rebates for recycled materials.

5. RECYCLING FEASIBILITY

Many factors impact the feasibility of recycling at RDM; some are universal, and others, specific to the facility. The following sections describe the more influential of these factors.

A. COMMITMENT AND SUPPORT

The willingness of RDM and its contractors and tenants to commit to and support the facility's recycling program are critical to the success of such a program. Without the commitment of resources such as funding, labor and time, space, and access to secure areas, a waste management program could struggle.

AIRPORT POLICY AND CONTRACTOR DEDICATION

RDM's administration has supported the recycling program in the past, and it is expected that this will continue in the foreseeable future. The administration has implemented other sustainability projects, for example, as a solar energy installation. Based on the resources allocated to these programs, the Airport Committee and City of Redmond appear to generally support recycling, practical waste management, and sustainable operations.

The City's waste management contractor is "committed to providing outstanding customer service, being recognized as leaders in our industry, and maintaining a connection (the) community of Central Oregon by supporting charitable endeavors." High Country Disposal's goal is to "continue to be on the forefront offering new programs and ways for our customers to recycle more." These commitments and goals align with continued support of the City and the Airport's recycling programs.

AIRLINE POLICIES

All four airlines that operate at RDM have established sustainability programs that include elements of waste and recycling. At least one of the airlines serving RDM separates and recycles materials deplaned from commercial service flights.

American Airlines has implemented recycling programs on the ground and in the skies. American recycles in back offices and breakrooms at their major hub at Dallas/Fort Worth International Airport, at maintenance centers, and in other offices/employee work areas. According to their website, the airline introduced the industry's first onboard recycling program and recycles aluminum cans, paper, and plastic in-flight.

During information interviews, Alaska Air staff and contractors described the process for separating recyclables in flight and during cabin cleaning activities. Alaska Airlines' environmental strategy includes working to reduce waste from flights and other facilities, including recycling and composting of coffee grounds. Alaska's 2015 goal was to increase recycling capture rate on flights from 79 percent to 85 percent. The airline specifically mentions that their recycling goals are "limited by local infrastructure as many airports and municipalities have different protocols and capabilities for co-mingled recycling." Alaska has

worked with a reuse company to salvage leather from old plane seats and reuse the material in consumer goods. The airline is also working with inflight crews to keep unused disposable items such as cups and napkins on aircraft instead of returning them to the catering carts, where they are thrown away in the unstocking process. Alaska's goal is to ensure all inflight service ware items are recyclable, reusable, and/or sustainably sourced. Alaska has also taken steps to reduce dependence on printed paper using iPads, iPhones, and tailored applications ("apps") in their operations.

Per corporate policy, Delta is "committed to minimizing waste streams through diversion and re-use, waste, recycling programs, and (waste reduction)." Delta has been working to increase the number of cities where they recycle and the volume of material collected. In addition, they track employee recycling at the headquarters campus in Atlanta and upcycle life vests, carpet, and leather seat covers. Aboard Delta flights, single stream materials, including plastic, aluminum, and paper, are collected by flight attendants in designated bags. These materials are collected by cabin service and transported to designated recycling containers. Empty cans and bottles left in the beverage carts are recycled by Delta's catering partners.

United Airlines is "committed to operating sustainably and responsibly" and has recycled over 28 million pounds of aluminum cans, paper, and plastic from flights and facilities. In 2014, United began to replace its hot beverage cups with fully recyclable alternatives made from recycled plastic water bottles.

Offering recycling for deplaned waste at RDM aligns the Airport with its airline partners.

B. TECHNICAL AND ECONOMIC FACTORS

LOCAL MARKETS AND INFRASTRUCTURE

Markets for recycled materials fluctuate widely based on many factors and interactions. Local waste haulers typically accept materials that can be recycled cost-effectively in the area. Manufacturers purchasing recycled material want it to be predictable and ready for use; therefore, recycling facilities are particular about what materials they accept and prefer materials that are of high value and clean and easy to separate.

The materials listed in Table 3 are accepted under the City's commercial recycling program. As noted above, inclusion in such programs typically indicates that the market and/or infrastructure for these materials is strong. RDM currently recycles all the materials the City's commercial recycling program accepts.

Table 3: Materials Accepted for Residential Curbside Recycling in the City of Tulsa
Recyclable Materials – City of Redmond Commercial Program
Cardboard
Tin and aluminum
Plastic bottles, tubs, and jugs
Mixed paper, newspaper, magazines
Glass
Source: High Country Disposal Commercial Recycling website https://highcountrydisposal.com/services-2/commercial-services/recycling-collection/

Deschutes County operates one landfill and four transfer stations/recycling centers in the Redmond area.

LOGISTICAL CONSIDERATIONS AND CONSTRAINTS

To maintain a recycling program at RDM, certain elements must be in place. These include:

- ✓ a proactive and engaged custodial staff
- ✓ a willing and affordable hauling contractor
- ✓ space for bins, dumpsters, and compactors
- ✓ access to secure areas of the facility (including airside ramps and sterile terminal areas).

At this time, these elements appear unconstrained; additional resources including custodial labor, waste hauling services, space, and airport access are anticipated to be available to support the continuation and/or expansion of the recycling program at RDM.

CONTRACTUAL ISSUES

A detailed evaluation of the Airport's contracts is included in Section 4. Any major contractual issues with maintaining and improving the recycling program at RDM are not anticipated. RDM and the waste and recycling collection contractor will need to continue to collaborate to support the facility's recycling program.

C. RECYCLING, LANDFILL, AND ENERGY-FROM-WASTE FACILITY REQUIREMENTS

The recycling facility and landfill that accept waste from RDM have specific acceptance criteria and requirements. Adherence to these specifications protects the safety of employees handling these materials; the integrity and operation of the equipment and infrastructure used to transfer, sort, and convert these materials; and the value of the recyclable stream. Information provided by High County Disposal indicates that the glass stream collected from the Airport has included contamination (non-glass materials); this presents challenges to recycling this material.

Components that seem recyclable (plastic, glass, or metal parts) comprise some items generated at RDM; however, the recycling facility has specific material standards, so it is important that non-recyclable items are not included in the facility's recycling stream.

Waste items that may be generated at the Airport, but are prohibited at the recycling facility include:

- ✓ Styrofoam
- ✓ Plastic bags
- ✓ Saran wrap
- ✓ Frozen food packaging
- ✓ Plastic clamshells
- ✓ Bakery containers
- ✓ Paper/plastic plates
- ✓ Paper napkins
- ✓ Paper/plastic cups
- ✓ Waxed cardboard
- ✓ Plastic lids and caps
- ✓ Liquid in container
- ✓ Lightbulbs
- ✓ Batteries
- ✓ Other garbage

Waste material that may be generated at RDM but is prohibited by the Deschutes County's Knott Landfill includes hazardous waste, radioactive waste, large batteries, paint, and C&D waste.

Some waste items cannot be recycled or landfilled, for example hazardous waste and chemicals, paint, batteries, and C&D waste. These items must be managed through hazardous waste or universal waste programs or disposed of at a specialized landfill.

COSTS

RDM strives to be as self-sustaining as feasible; therefore, it is imperative that programs implemented and maintained at the facility, including recycling, are as cost-effective as possible.

D. GUIDELINES AND POLICIES

To evaluate RDM's existing recycling plan in the context of local, state, and national requirements, the consultant reviewed federal, State of Oregon, and local waste and recycling regulations and policies/factors.

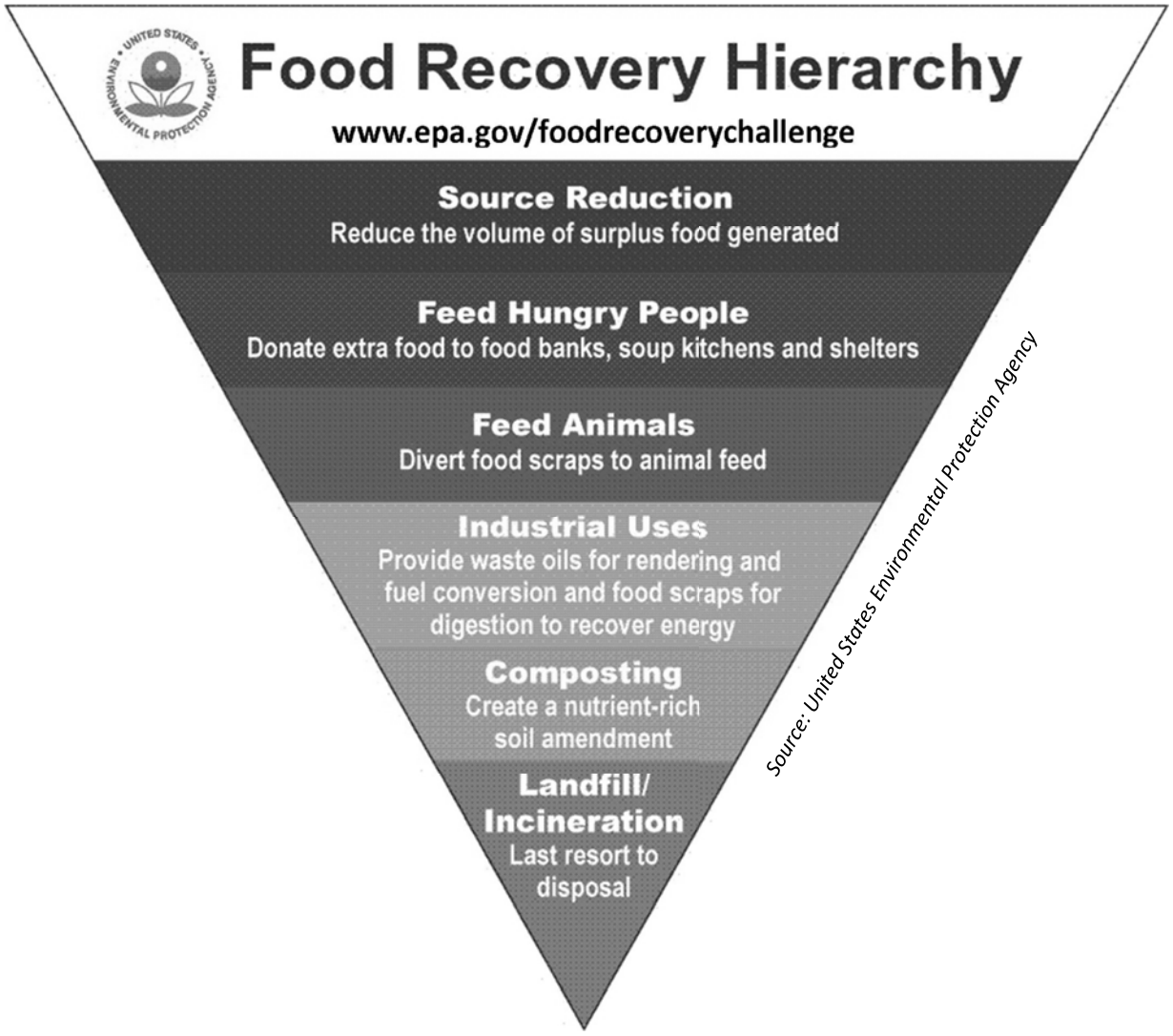
FEDERAL

At the federal level, the United States Environmental Protection Agency (EPA) is responsible for developing a solid waste management program under the Resource Conservation and Recovery Act (RCRA) and related policies and guidance. RCRA provides the framework for management of hazardous and non-hazardous waste. All generators of hazardous waste, including airports, are required to comply with RCRA and all other federal waste laws and regulations.

As described in Section 1, the FAA's definition of "airport planning" was updated in 2012 through FMRA to include planning for recycling and waste minimization. The Airport is required to address solid waste as part of airport master planning. The FAA provides guidance on airport waste and recycling in the September 2014 memo on the topic as well as in a synthesis document prepared in 2013 (both available on the FAA's website).

The EPA has developed a hierarchy of waste management strategies. This hierarchy, shown below, ranks these strategies from most- to least-environmentally preferred and places emphasis on reducing, reusing, and recycling.

In addition to the general waste management hierarchy, the EPA has also developed a preference ranking of management strategies for food waste, as shown below.



Source: United States Environmental Protection Agency

STATE

The State of Oregon's bottle bill was the first of its kind in the country and was introduced in 1971 to reduce litter. Under the current form of this law, customers pay a ten-cent deposit when they purchase soft drinks, water, and beer in metal, glass, and plastic bottles and cans. Then, customers return the empty containers to stores and centers to receive a ten-cent refund per container. This bill is administered by the Oregon Liquor Control Commission.

Outside of the bottle bill, the base recycling law is the Opportunity to Recycle Act, first passed in 1983 and last amended in 2015. The DEQ establishes Recycling and Waste Reduction administrative rules to elaborate on the Act and is responsible for regulating cities, counties, and other local governments regarding waste. The DEQ has developed a policy and integrated plan for managing waste materials, *Materials Management in Oregon: 2050 Vision and Framework for Action.*

The Opportunity to Recycle Act prioritizes certain waste management strategies over others in alignment with the hierarchy promoted by the EPA:

- ✓ Reduce
- ✓ Reuse
- ✓ Recycle
- ✓ Compost
- ✓ Energy Recovery
- ✓ Disposal

The state's material recovery rate goal is 52 percent for 2020 and 55 percent for 2025. In addition, the state's recovery rate goals for food waste, plastic waste, and carpet waste are all 25 percent by 2020. Each county (and some metropolitan areas) set their own voluntary recovery goals by statute.

To make progress under the 2050 Vision, cities of a certain size or within a certain region must implement three to five listed reduction and reuse elements. All other cities must implement a minimum number of recycling program elements, based on their size and location, chosen from the thirteen options listed in Senate Bill 263. The state's laws and plans allow the local units to implement programs to meet the statewide mandatory and individual voluntary goals.

LOCAL

Deschutes County operates one landfill, Knott Landfill, Recycling, and Transfer Facility, which is expected to reach capacity in 2029. The County has set a goal to recover 45 percent of waste generated by 2025 to reduce the amount disposed of in the landfill. As of 2018, the County has formed an advisory committee, hired a consultant, and is preparing a comprehensive solid waste management plan. The final plan may provide additional guidance and support for recycling in Redmond and at RDM.

According to the *Code of the City of Redmond*, the City's goal is to make RDM the "best airport of its size in the country." Sections 2.550 through 2.570 of the City's code describe the requirements for FBOs, airlines, charter and taxi flight operators, aircraft and parts dealer, and provider of agricultural services (crop dusting). The code also defines regulations for petroleum products sold and used at the facility, for leasing space, and for prohibiting unauthorized business as well as other aspects of the Airport's operation. The sole mention of waste or recycling appears in the section on commercial vehicle operations: drivers of commercial vehicles (car services, taxis, and courtesy vehicles) are to dispose of trash in the receptacles located on the sidewalk in the taxi parking area. Sections 2.590 through 2.588 outline the roles and responsibilities of the Airport Committee.

The *Code of the City of Redmond* includes information about garbage service in Sections 4.400 through 4.420. As outlined in the code, the City has contracted for the "exclusive right to collect, remove, and dispose of all refuse except recognized industrial by-products." The final section under the garbage heading details the City's conformance with the State's Opportunity to Recycle legislation. The City requires the collection contractor to provide recycling collection service for recyclable materials at the minimum level as required by the State or higher level as permitted by the City Council. The code specifies that the contractor's recycling program must include:

- ✓ One durable recycling container for each residential customer
- ✓ Expanded education and promotion
- ✓ Multifamily recycling
- ✓ Commercial recycling
- ✓ Recycling depots (drop-off locations)

The Code specifies that the promotion of the program is the responsibility of the contractor. However, the Code also recognizes that education on the need for recycling is a joint responsibility of the City, schools, community organizations, the contractor, the County, and other parties.

Based on the availability of residential and commercial recycling, the project team assumes the residents of the communities surrounding the airport, and therefore the employees and passengers, have been exposed to recycling, receive on-going messaging about its importance, and are generally supportive of recycling efforts.

E. OTHER INCENTIVES

As noted earlier in Section 5, most of the airlines serving RDM have recycling programs and targets. Aligning the RDM program with the airlines' practices provides the opportunity for a win-win scenario whereby the facility can reduce its environmental impact and, by helping the airlines reduce their impacts, generate goodwill with the airlines.

6. COST SAVINGS OR REVENUE GENERATION

The costs associated with a recycling program depend on available infrastructure, material markets, and the type of waste generated at a facility. These costs sometimes include capital costs for containers, landfill tipping fees, hauling costs, material rebates, and labor. An evaluation of the potential cost savings and revenue generation opportunities is required for an Airport Recycling, Reuse, and Waste Reduction Plan according to FMRA.

Airport staff provided a garbage collection expenses tracking spreadsheet for review under this project. This spreadsheet included costs for terminal waste collection, airfield waste collection, and general waste collection (specific single collection events), with the fees for collection of recyclable materials included in the waste costs. Based on data from 2015 through 2017, on average, the Airport spends approximately $8,800 each fiscal year (July 1 to June 30) for collection of waste from the terminal. One scrap metal collection from a GA hangar conducted in August 2017 cost two thousand dollars. Calendar year 2017, the Airport spent approximately fifty dollars a month for collection of waste from the airfield. The Airport pays to have waste syringes collected from the restrooms and shredded paper collected from the offices about once a year.

To estimate approximate annual costs for recycling, information about the charges associated with the collection of the recycling dumpster and carts and other services is needed. After supplementing the information compiled and analyzed in this document, RDM can make informed solid waste management decisions over time. Using the information provided in this plan and cost information available to RDM, RDM can begin to analyze the program's financials, evaluate costs, and determine if enhancements should be implemented. If expansion of the program is not technically or economically feasible at this time, this information will help RDM determine when improvements might be feasible.

7. RECOMMENDATIONS

This section documents recommendations for the Airport, including waste reduction, reuse, and recycling strategies, based on the information presented earlier, specifically the waste audit and feasibility discussion.

A. OBJECTIVES AND TARGETS

It is recommended that the Airport set specific, measurable, achievable, realistic, and time-bound (SMART) goals for its waste and recycling program. Having an established set of objectives and targets provides a basis and foundation for subsequent activities and actions. Progress toward such goals does require tracking, but can also provide information on progress and improvements, which can be a valuable marketing and education tool.

The waste source, quantity, and composition information in Section 3 provides baseline data for establishing objectives and targets, and Section 5 describes the goal and target established by the State of Oregon. The objectives and targets derived from this information can be used to calculate target levels for RDM. A physical material sort would further inform goal-setting efforts.

These are potential objectives and targets RDM might adopt or use as inspiration for other goals:

- ✓ Recover 45 percent of waste generated by 2025
  (based on Deschutes County goal, current rate is estimated at 15 percent)
- ✓ Recover 55 percent of waste generated by 2025
  (based on State of Oregon goal, current rate is unknown)
- ✓ 100 percent of tenant leases include recycling provisions
- ✓ 100 percent of RDM employees completed simple training on recycling program
  (more details later in this section)

In the absence of established specific objectives and targets, the following sections present general, universal recommendations for increasing recycling and reducing waste generation at an airport like RDM.

B. TRACKING AND REPORTING

As noted in Section 2, RDM does not currently track metrics associated with the waste management program. It is recommended that RDM begin to regularly estimate and track the volume of waste sent to the landfill and the volume of material collected for recycling as well as the costs associated with these services. Trends associated with waste generation, landfill, recycling, and cost can be assessed for issues or opportunities for improvement.

RDM's waste and recycling performance is not currently reported to stakeholders. It is recommended that RDM proactively provide this information to management, employees, tenants, and interested external stakeholders on a regular basis. The purposes of this reporting are:

- ✓ to remind management employees, tenants, and contractors about the recycling program
- ✓ to communicate the Airport's commitment to its recycling program and its broader commitment to sustainability
- ✓ to solicit feedback and suggestions for improving the recycling program.

The frequency of reporting is up to the Airport, but it is recommended that reporting be completed at least annually. The reporting schedule should also be updated as needed to accommodate changes to the program. The schedule is expected to initially increase in frequency as the program evolves and new strategies are implemented, and then potentially return to a lesser frequency as the program is maintained.

C. REDUCE AND REUSE

To reduce the facility's environmental impacts, RDM should focus on moving materials up the waste management hierarchy. Waste reduction is the most environmentally preferred waste management strategy as determined by the EPA. Waste reduction can be accomplished in many ways, including reusing items.

It is recommended that the Airport evaluate the following reduction and reuse strategies to determine which, if any, are feasible and prudent for implantation at RDM.

- ✓ Substituting disposable items with durable alternatives in the administration office and other staff work areas
- ✓ Reusing items and materials where possible
- ✓ Working with the restaurant tenant to donate edible food to a community food security organization
- ✓ Collecting and donating unopened food, beverage, and toiletry items subject to TSA restrictions
- ✓ Encouraging reuse by passengers, tenants, and contractors

LIQUIDS

It is expected that the garbage can located in the security queuing area receives a fair amount of liquids and beverage containers due to TSA restrictions. Unfortunately, when these materials end up in the waste stream, the liquids are difficult to manage, and the containers cannot be recycled. Liquids add significant weight to the waste stream, contaminate other materials like paper, and may be rejected by a recycler, which will result in them being landfilled.

To minimize the amount of liquid discarded in the security checkpoint area, it is recommended that RDM continue to promote emptying of water bottles in the restroom sinks and refilling post security. Existing colorful, graphic signs in the terminal restrooms encourage passengers to empty water bottles prior security and to refill them after screening. These signs are positioned above eye-level. The message might reach more passengers if the signs were lowered and supplemented, for example, with vinyl cling decals on the mirrors over the sinks and posters or other visuals in the checkpoint queuing area.

In the future, these signs could be revised to also encourage passengers to recycle disposable water bottles if they do not wish to refill them. It is further recommended that RDM make a recycling station available in the immediate proximity of the pre-security restrooms so that passengers who do empty their disposable containers in the sinks have a convenient place to recycle the items they do not wish to refill.

D. DONATION OF FOOD, BEVERAGES, AND TOILETRIES

It is recommended that RDM work with the food and beverage concessionaire to assess the possibility of donating edible food to a local food bank, soup kitchen, or shelter for distribution to the populations they serve. Feeding people is the second preferred strategy for addressing food waste according to the EPA. Federal and state laws protect organizations that donate food in good faith from liability. Some organizations will pick up food at the source which reduces the demand on the Airport and concessionaire.

It is recommended that RDM investigate the feasibility of collecting unopened bottles of water, other beverages, food and toiletries that are restricted from carry-on luggage and donating them to a local charity or other organization. These items can be very heavy and add weight to the waste stream.

In compliance with TSA requirements, these items may need to be collected prior to the security checkpoint queuing area. RDM would collect these items by locating a container at the security checkpoint and managing storage of the items until the receiving organization could collect them. To implement this recommendation, coordination between RDM, the designated receiving organization, and the TSA would be needed. An example of an Airport with such a program is McCarran International Airport in Las Vegas, Nevada.

Example Donation Collection at McCarran International Airport (LAS)

E. RECYCLE AND COMPOST

Recycling is the second preferred waste management strategy, according to the EPA, after waste reduction/reuse. Recycling allows waste items to be processed into raw materials to make new products. The FAA guidance expects an airport's recycling, reuse, and waste reduction plan to document, at a minimum, the facility's existing program to recycle paper, plastic bottles, aluminum cans, and plastic cups. The Airport recycles most of these materials as well as cardboard and glass.

PAPER

The Airport is currently recycling paper (printer paper, mail, envelopes, and other items) collected from the administration offices as well as from the terminal (newspapers and magazines). Paper is also recycled from the other Airport buildings (Maintenance and ARFF.) These paper streams are comingled with other recyclables. Bend Waste & Recycling collects shredded paper from the offices under a separate service.

Managing recyclable paper separately from plastic bottles and aluminum cans protects the value of the paper stream and increases its recycling potential by minimizing contamination from liquids and creating a stream that may not need to be sorted. It is recommended that the Airport ask Bend Waste & Recycling about adding non-shredded office paper, newspapers, or magazines to the shredded paper collection.

It is also recommended that the Airport expand the program to additional areas, including the airline and rental car company offices, and encourage increased recycling of paper by employees, tenants, and passengers. Doing so reduces the environmental impacts associated with landfilling this material and manufacturing virgin paper.

Waste magazines and newspapers are generated aboard commercial flights and when they expire on the newsstand; it is recommended that the Airport collaborate and coordinate with the airlines and concession tenant serving RDM to evaluate adding paper items from deplaned waste and newsstands to this program.

Collaborate concession tenant to evaluate adding paper items from newsstands to this program

PLASTIC BOTTLES AND ALUMINUM CANS

The Airport is currently recycling plastic bottles and aluminum cans collected in the terminal, Maintenance, and ARFF buildings. Some plastic bottles and aluminum cans may be collected by employees and tenants for refund under the State's bottle bill. Recycled plastic bottles and aluminum cans are comingled with paper.

It is recommended that the Airport continue the current program and expand to additional areas. It is also recommended that the Airport support return of containers included in the bottle bill refund program as these programs typically have a higher recovery rate than a comingled stream. Whether through recycling or return for refund, increased recovery of plastic bottles by employees, tenants, and passengers reduces the environmental impacts associated with landfilling this material and manufacturing virgin plastic.

Plastic bottles are also generated aboard commercial flights; it is recommended that the Airport collaborate and coordinate with the airlines serving RDM to evaluate adding plastic bottles from deplaned waste to this program.

PLASTIC CUPS

Plastic cups are typically generated aboard commercial flights. It is recommended that the Airport collaborate and coordinate with the airlines serving RDM to evaluate adding plastic cups from deplaned waste to the recycling program.

CARDBOARD

The Airport currently recycles cardboard collected from the terminal food and beverage tenants and the administration offices. This material is collected and managed separately from the comingled recyclable and glass streams; this protects the value of the cardboard material by creating a single material stream (more desirable because it reduced contamination from liquids and requires less processing after collection). It is recommended that the Airport continue to recycle cardboard. It is also recommended that RDM provide feedback to the tenants on the progress and performance of this program and solicit their feedback regarding improvements that could be made to increase or support their participation. Marketing this program to all the terminal tenants could result in additional participation and remind existing participants of the program's specific requirements.

GLASS

The Airport currently recycles glass collected from the terminal restaurant tenant and passengers. This material is collected and managed separately from the comingled recyclable and cardboard streams; this protects the value of the other material by reducing contamination glass. It is recommended that the Airport continue to recycle glass and work to reduce contamination in this material stream. It is also recommended that RDM provide feedback to the tenants on the progress and performance of this program and solicit their feedback regarding improvements that could be made to increase or support their participation.

OTHER RECYCLABLES

As other recyclable materials are identified in RDM's waste stream, it is recommended that the Airport work with the waste hauling contractor to design and implement strategies to separate, collect, and process these materials.

GREEN WASTE

It is recommended that the Airport evaluate how green waste is managed and explore opportunities to align the facility's practices with the waste hierarchy; for example, by reducing the generation of this material at the source (mulching lawnmowers), reusing material where possible (chipped branches as mulch), composting (via the local facility), and disposing of the material on or off site as a last resort.

FOOD WASTE COMPOSTING

According to industry case studies, food waste is typically a major component of the waste stream at an Airport (on average, 35 percent). As described in Section 5, the EPA's food recovery hierarchy assigns priority to composting of food waste over landfill of this material (after using it to feed people as discussed under **Reduce and Reuse**). Composting is the process of decomposing food and other waste into a nutritious soil additive.

Composting of food waste at RDM is largely dependent on the availability of a local composting facility interested in accepting this material. As noted in Section 2, there does not appear to be a commercial composting facility in the area.

If a composting facility is found or established in the area, RDM should evaluate implementing composting at the Airport. In a terminal, pre-consumer food waste (waste generated by food preparation activities) is generally easier to compost because restaurant employees are at a facility more frequently and on a more regular basis than passengers, so they are easier to train and educate on composting practices and requirements. The specific items accepted by a composting facility are dependent on that facility's design and the process used to break down the waste; some facilities accept all food waste (including meat and bones and breads) while others accept only vegetables and fruit.

One option for easing into composting gradually is to first implement a composting program for coffee grounds generated by restaurants in the terminal. Coffee grounds have a pleasant odor, are easily identifiable (therefore easy to separate), are typically uncontaminated by other materials, and are generated in a predicable manner and quantity. Once tenants are comfortable composting coffee grounds, other materials can be added by name (banana peels, apple cores, etc.) and/or by type (fruits, vegetables, etc.) until all food waste appropriate for composting is included.

PAPER PRODUCTS

Once a commercial composting facility is available in the area, the Airport may wish to collect paper towels and other paper products (napkins and tissues) for composting. Composting is environmentally preferred over landfilling this material.

Because the Airport's restrooms are equipped with paper towel dispensers and nearby garbage cans, the waste stream collected in these cans will primarily consist of paper towel. This stream can be expected to contain low contamination and a steady volume of material, making it an attractive material for composting.

No modifications to the paper towel dispensers or garbage bins would be needed to implement paper towel composting. Alternative bins would need to be conveniently located and clearly labeled to accept other waste generated in the restrooms that is not paper towel, and the bins reserved for paper towel should be labeled "Paper Towel Only – Collected for Composting" (or similar) to instruct use and explain how this material is managed. The Airport would also need a dedicated cart for this material and a procedure to collect and store it separately until it was collected by the waste hauling contractor for delivery to the composting facility.

F. EDUCATION AND OUTREACH

Under the existing program, education of and outreach to Airport employees, tenants, contractors and passengers is primarily accomplished through container signage in the terminal.

To supplement these efforts, it is recommended that RDM improve the in-terminal messaging for passengers and provide brief, clear instructions for recycling. Providing clear, instructional signage at the recycling stations or recycling bins can improve passenger participation and reduce contamination. See Section G below for information about signage.

It is recommended that RDM provide simple, on-going training for employees, tenants, and contractors that explains the recycling program, including its purpose and requirements. Such a training program will promote program participation and compliance, resulting in increased recycling and reduced contamination. In addition, training can designate a contact and a mechanism to receive feedback and ideas for improvement.

The format of employee training could take any number of forms, including emails, meetings, posters, etc. The content of such training should include:

- ✓ reminders about the materials that are accepted for recycling at the Airport and the location of the containers to be used for the program,
- ✓ information about purchasing requirements, and
- ✓ information about the positive effect the program is having on RDM's environmental impact.

Information and participation from the waste collection contractor should also be incorporated into the training program. In addition, different stakeholders and organizations involved in collection, housekeeping, recycling, composting, and other waste activities could also be asked to provide content or to be present during training.

It is recommended that the Airport include a brief overview of the recycling program during employee on-boarding training and recurrent refresher training at regular intervals. To use employee time as effectively as possible, waste training could be combined with other trainings or meetings.

RDM should consider providing introductory level information to new tenants and provide training materials such as postings, postcards, etc. to existing tenants for use with their employees. As some airport tenants may experience significant employee turnover, providing this information on a regular basis (for example, annually) will help keep everyone up to date on the program.

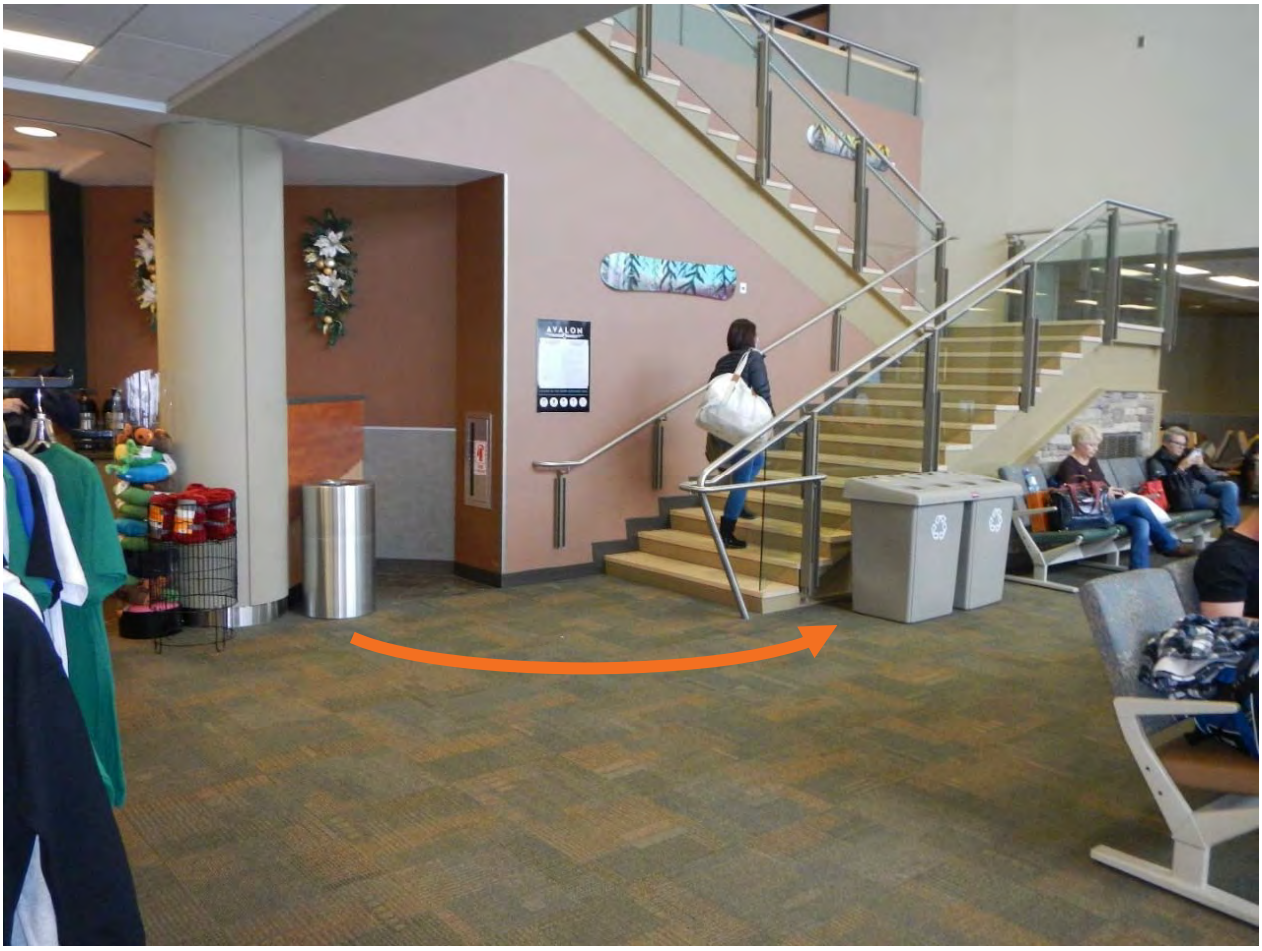
Once a training and education program is implemented, it is recommended that RDM actively maintain such a program to facilitate its continued success. The content of trainings should be updated as the program changes and grows.

G. CONTAINERS AND BINS

The existing recycling stations in the terminal are conjoined units with four compartments, top facing signage, and restrictive lids; no changes to the design of the containers are recommended at this time. Conjoined containers ensure a consistent format at every recycling station location; top facing signage and restrictive lids have also been shown to educate and instruct passengers to separate materials appropriately. It is recommended that RDM install additional recycling stations in high traffic areas of the terminal as resources allow.

The recycling containers in other areas at the Airport are typically blue and have varying sizes and designs. No major changes are recommended to the design of these bins other than to ensure they and their service schedule are rightsized for the existing and future volume of material collected under the program and future improvements.

Collocation of recycling containers with garbage cans has been shown to decrease contamination and increase recycling participation. It is highly recommended that RDM move a garbage can next to any recycling station or container that does not currently have one paired with it (as space allows).



Move garbage cans next to recycling stations and containers

In addition, RDM should consider removing some of the stand-alone garbage cans inside the public areas of the terminal. There are many garbage cans in the terminal, and they are typically closer/more available than a recycling station; therefore, in many cases, it is more convenient for passengers, employees, and tenants to locate and use a garbage can for all materials than to find and use a recycling station. These containers could be repurposed as recycling containers in other spaces for comingled or single stream recyclables (in offices for paper, in breakrooms for bottles and cans, etc.)

The design of the garbage cans varies by location. As these containers are retired or replaced, the Airport may want to consider standardizing the shape and color of the containers to aid in recognition. It is recommended that RDM install additional recycling bins in other areas as the other areas are added to the program and resources allow.

Airport maintenance staff conduct the day to day waste activities, their insight is valuable in improving and maintaining the recycling program at RDM. Their insight on which containers are underused or undersized can help inform changes to the location and size of existing and future recycling stations, recycling containers, and garbage cans.

H. SIGNAGE AND LABELING

The Airport's recycling signage could be expanded and improved. The recycling stations in the terminal are labeled for each accepted material but RDM should consider providing additional signage adjacent to recycling stations that elaborates on the Airport's program and provides direction for passengers.

A key location for additional signage is in the security checkpoint queuing area in the terminal. As described in Section 3, the TSA restrictions compel the generation of waste, and items discovered in passenger luggage must be disposed in accordance with the agency's policies. In addition, restricted items discovered in passenger luggage by TSA can prompt additional security screening that increases congestion and wait times in the security line. Clear signage in this area would help educate passengers on the restrictions as well as their options to comply with the restrictions to reduce wait times and without throwing these items away. Signage pertaining to the emptying of liquids and refill of containers post-security is discussed above.

Signage and labeling for recycling bins in other areas of the Airport is inconsistent or absent and could be improved with color, images, and short, clear, instructive text to improve understanding of which items are recyclable and which should be thrown away.

I. OTHER RECOMMENDATIONS

In addition to the strategies recommended above, the following strategies are recommended for RDM's waste and recycling program.

CONTRACTS AND LEASES

As described in Section 4, contracts are a vehicle through which the Airport can influence tenant behavior, including recycling. As contracts and leases expire, extend, or renew, it is recommended that the Airport consider revising the new contract language to include waste management requirements or preferences, for example, support of the recycling program. This could be a general clause stating a preference that tenants reduce, reuse, and recycle where practicable or specific information about recycling, reuse, or waste reduction objectives and requirements. Two agreements reviewed for this project include language regarding conformance with the State's Opportunity to Recycle law and recycled content purchasing, respectively (see Section 4). Another approach is to update the City's Airport Ordinance to include recycling requirements and preferences and ensure each contract or lease requires adherence to these policies.

PURCHASING POLICIES AND REQUIREMENTS

The Airport's existing purchases may create waste; specific purchase information was not available for this project. It is recommended that the Airport (or City) consider adopting a purchasing policy that prioritizes items that are durable (versus disposable), reusable, recyclable, compostable, and/or made from recycled content. Once established, this policy could be shared with the Airport's tenants to encourage their own adoption of sustainability-minded purchasing practices.

ADDITIONAL FACILITIES AND NEW DEVELOPMENT

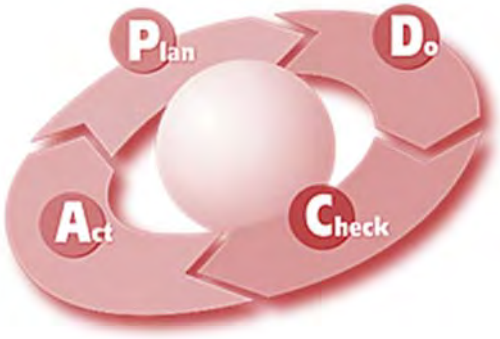
The Airport may wish to consider expanding the recycling program to additional areas, for example, in the buildings and activities that were excluded from this plan. Expanding recycling and waste reduction to areas outside the Airport's control or influence will require cooperation and collaboration with the operators of those areas as well as with their housekeeping and waste hauling contractors. Expansion could be as simple as encouraging these areas to recycle and acting as a resource for their questions or as complex as assisting these areas with an evaluation of their facility and/or container selection and signage design.

As the Airport grows and changes, it is recommended that recycling and waste management be considered as a part of designing and constructing new development projects. This could be accomplished by establishing construction specifications that outline waste management requirements or preferences for Airport projects (for example, any landfill diversion rate requirements or recycled-content material preferences) and involving the waste collection contractor in the design and planning of new facilities. The operation and maintenance of new facilities under the control or influence of RDM, once constructed, should be included in the Airport's recycling program (for example a new general aviation hangar development).

Any expansions of the existing program should be designed with care to maintain consistency and compatibility with the program in the terminal, administration offices, and other established areas.

J. CONTINUOUS IMPROVEMENT

It is recommended that RDM maintains and implements improvements to the recycling program by following the Plan Do Check Act cycle.



PLAN

The recommended strategies and supporting references make up the "plan" portion of the process. Defining success (for example, something like 45 percent recycling by 2020), establishing materials and areas of focus, collecting baseline information (waste audit, surveys, etc.), identifying sub-goals, and identifying strategies are all part of planning. In the future, additional areas of focus, baseline measurements, and goals will likely be needed.

DO

Implementation of strategies included in this plan represents the "do" portion of the process. This involves implementing the recommendations in this plan and making progress toward achieving the goals. In "doing," the Airport will continue developing a culture of awareness for waste management and will begin to shape the practices and processes for improving and optimizing its activities associated with reduction, reuse, recycling, composting, and other waste management elements at the facility.

CHECK

As strategies are implemented, the "check" portion of the process involves reporting that requires regularly tracking and checking the progress toward meeting the goals. The Airport has finite resources (financial, staffing, capital, etc.), therefore, the management and tracking of the plan must not be unnecessarily arduous. If tracking and checking become too difficult or time consuming, the entire plan may suffer. Checking may require the Airport to develop and use tools for measuring success and identifying areas for improvement, including a mechanism for feedback and process for reviewing suggestions.

The following scenarios may trigger re-evaluation of the program and/or the constraints described in this document:

- ✓ New state recycling laws, requirements, or goals
- ✓ New RDM programs or goals
- ✓ New City of Redmond programs or goals
- ✓ New Deschutes County programs or goals
- ✓ New local infrastructure, for example, composting facility
- ✓ Changes within or expiration of franchise agreement with waste hauling contractor(s)

ACT

The "act" portion of the process encompasses taking what has been learned in the previous stages and actively responding. It can be helpful to ask, "What did we learn?" and "How can we do better next time?" By re-evaluating the strategies, activities, goals, and metrics, adjustments can be identified and put into action.

It is recommended that meetings on waste and recycling be held on a regular basis to drive the continuous improvement cycle (review the recycling program and plan and implement improvements/adjustments). It is further recommended that these meetings include a representative from each of the following areas: the waste hauling company, the airlines serving RDM, the restaurant tenant, other terminal tenants, a hangar tenant, the Redmond community, and the traveling public.

K. RECOMMENDATIONS SUMMARY

The recommendations outlined in this document do not require major capital improvements and were designed to be compatible with RDM's in-progress master plan, the existing recycling program, and other airport requirements.

Table 4 summarizes recommendations for the RDM waste and recycling program.

Table 4: Recommendations Summary

RDM Waste and Recycling Program Recommendations

Objectives and Targets
- Set SMART goals (see Section 7).

Tracking and Reporting
- Regularly estimate and track volume of waste to landfill, volume of material collected for recycling, recycling rate, and costs for waste and recycling services.
- Assess waste generation, landfill, recycling, and cost trends for issues or opportunities for improvement.
- Establish a regular reporting schedule; proactively provide information about the program.

Reduce and Reuse
- Substitute disposable items with durable alternatives.
- Reuse items and materials.
- Continue to promote emptying of water bottles in restroom sinks and refilling post security.
  - Lower and supplement water bottle emptying/refilling signs.
  - Revise water bottle emptying/refilling signs to encourage recycling of disposable water bottles.
  - Place a recycling station in immediate proximity of the pre-security restrooms.
- Work with the restaurant tenant to donate edible food.
- Collect and donate unopened food, beverage, and toiletry items.
- Encourage reuse by passengers, tenants, and contractors.

Paper
- Continue the paper recycling program.
- Ask about adding non-shredded office paper, newspapers, and magazines to the shredded paper collection.
- Expand paper recycling program to additional areas, specifically airline deplaned newspapers and magazines and expired items from the newsstand.

Plastic Bottles and Aluminum Cans, Plastic Cups
- Continue the plastic bottle and aluminum can recycling program.
- Expand the program to additional areas, specifically airline deplaned beverage containers.
- Support the return of containers included in the bottle bill refund program.
- Coordinate plastic cup recycling with the airlines serving RDM.

Cardboard
- Continue the cardboard recycling program.
- Provide feedback to tenants on the progress and performance of this program, solicit their feedback, and market the program to all tenants.

Glass
- Continue the glass recycling program.
- Work to address contamination in this material stream.
- Provide feedback to tenants on the progress and performance of this program and solicit their feedback.

Other Recyclables
- Work with the waste hauling contractor to design and implement strategies for other materials as they are identified in the waste stream.

Green Waste
- Evaluate how this material is managed and explore opportunities to align with the EPA hierarchy.

Food Waste
- If a composting facility is established in the area, evaluate composting at RDM.
  - Start with coffee grounds, then expand to other pre-consumer food waste.

Paper Products
- If a composting facility is established in the area, evaluate composting at RDM.

Education and Outreach
- Improve in-terminal messaging for passengers.
  - Provide clear, instructional signage at recycling stations.
- Provide simple, on-going training for employees, tenants, and contractors.

Containers and Bins
- Install additional recycling stations in high traffic areas of the terminal.
- Right-size recycling bins and the service schedule in other areas.
- Collocate recycling bins and garbage cans.
- Remove stand-alone garbage cans in public areas of terminal.
- Standardize recycling bins and garbage cans as they are retired/replaced.
- Install additional recycling bins and garbage cans in other areas, as they are added to program.

Signage and Labeling
- Expand and improve signage to elaborate on the program and provide direction, specifically, in the checkpoint queuing area.

Contracts and Leases
- Revise new contract language or update the City Airport Ordinance to include waste management requirements/preferences.

Purchasing Policies and Requirements
- Adopt a purchasing policy that prioritizes materials that are durable, reusable, recyclable, compostable, and/or made from recycled content.
  - Share with tenants to encourage them to adopt their own similar practices.

Additional Facilities and New Development
- Collaborate with operators of areas excluded from this plan to expand the program.
- Consider recycling and waste management as part of designing and constructing new development.

Continuous Improvement
- Maintain and improve the recycling and waste program according to Plan Do Check Act cycle.

8. CONCLUSION

RDM currently has a simple recycling program in place that includes basic elements and has the potential to be expanded in phases to further reduce the facility's environmental impact. This document has described the existing program and outlined recommended improvements that will allow RDM to potentially increase both landfill diversion and recycling volumes. In addition, this plan documents and supports RDM's compliance with the FMRA of 2012 and FAA guidance for recycling, reuse, and waste reduction.

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APPENDIX D:

IMPLEMENTATION PLAN

Project Title:	Terminal Phase 1A	**Project Number:**	
Project Description:	Environmental, design, and construction of terminal holdroom remodel and reconfiguration.		
Total Cost (2017 Dollars):	$6,160,000	**Funding Sources:**	PE, Discretionary, Local
Year:	2022-2023	**Phased Project**	☒ Yes ☐ No
Project Components	☐	Planning	
	☒	Design	$274,000
	☒	Environmental	$456,000
	☒	Construction	$5,430,000
Enabling Projects:			
Equipment Acquisition	None		
Comments:	Environment and Design phases occur in Year 1 of 2 for Terminal Phase 1B.		
Is project timeline flexible? Are any projects dependent on this project?			

Planning and Zoning

Project Conformity	☒ Conforms to existing zoning ☐ May require rezone/Comprehensive Plan amendment
Project compliance with minimum standards	☒ Yes ☐ No
Any potential controversy based on stakeholder feedback?	Stakeholders generally support the project.
Process description and duration	Phase 1 will renovate existing ground floor holdroom and includes reconfiguring the boarding corridor into extra holdroom space to increase seating capacity.

Environmental

Level of state and federal environmental review required?	The project is AIP funded and will require NEPA process. Expected to be a categorical exclusion (CatEx).
Potential complications?	FAA may potentially ask for an environmental assessment instead of a CatEx.
Cost of mitigation	Mitigation not expected.
Description of mitigation process and uncertainty	Mitigation not expected.
Process description and duration	

Design

Any pre-implementation support facility construction or site prep required?	☐ Yes ☒ No
Potential challenges of site location?	No
Are there financial and operational risks based on project scale?	
Improvement suggestions of design process	
Process description and duration	

Funding

Can the Airport fund the project in its current state?	☐ Yes ☒ No
Fiscal impact of project on immediate and ongoing Airport finances.	Project costs exceed available funds. The Airport will need to issue a bond to cover costs.
How competitive is the improvement for discretionary funding?	
How competitive is the project for FAA priority compared to other Airport CIP projects?	

Operation and Maintenance

Potential impact on airport operating costs?	Project will increase terminal footprint which will impact operating and maintenance costs.
Are additional staff needed?	Project will increase terminal footprint which may require additional maintenance and/or janitorial staff.

Project Title:	Terminal Phase 1B	**Project Number:**	
Project Description:	Environmental, design, and construction phases of the elevated holdroom expansion.		
Total Cost (2017 Dollars):	$11,020,000	**Funding Sources:**	Discretionary, Local
Year:	2022	**Phased Project**	☒ Yes ☐ No
Project Components	☐	Planning	
	☒	Design	$816,000
	☒	Environmental	$490,000
	☒	Construction	$9,714,000
Enabling Projects:			
Equipment Acquisition	None		
Comments:			
Is project timeline flexible? Are any projects dependent on this project?			

Planning and Zoning

Project Conformity	☒ Conforms to existing zoning ☐ May require rezone/Comprehensive Plan amendment
Project compliance with minimum standards	☒ Yes ☐ No
Any potential controversy based on stakeholder feedback?	Stakeholders generally support the project.
Process description and duration	Phase 1B will elevate the ground floor of the holdroom by 5 feet to facilitate Passenger Boarding Bridge (PBBs). This will allow PBBs to reach larger aircraft on the apron.

Environmental

Level of state and federal environmental review required?	The project is AIP funded and will require NEPA process. Expected to be a categorical exclusion (CatEx).
Potential complications?	FAA may potentially ask for an environmental assessment instead of a CatEx.
Cost of mitigation	Mitigation not expected.
Description of mitigation process and uncertainty	Mitigation not expected.
Process description and duration	

Design

Any pre-implementation support facility construction or site prep required?	☐ Yes ☒ No
Potential challenges of site location?	No
Are there financial and operational risks based on project scale?	
Improvement suggestions of design process	
Process description and duration	

Funding

Can the Airport fund the project in its current state?	☐ Yes ☒ No
Fiscal impact of project on immediate and ongoing Airport finances.	A Bond will need to be considered for the greater terminal program. The City can issue a bond that contribute to local funds to cover construction costs.
How competitive is the improvement for discretionary funding?	
How competitive is the project for FAA priority compared to other Airport CIP projects?	

Operation and Maintenance

Potential impact on airport operating costs?	Project will increase terminal footprint which will impact operating and maintenance costs.
Are additional staff needed?	Project will increase terminal footprint which may require additional maintenance and/or janitorial staff.

Project Title:	Terminal Apron Expansion	**Project Number:**	
Project Description:	Environmental, design, and construction phases of Terminal Apron Expansion project		
Total Cost (2017 Dollars):	$1,998,900	**Funding Sources:**	PE, Local
Year:	2022-2023	**Phased Project**	☐ Yes ☒ No
Project Components	☐	Planning	
	☒	Design	$118,000
	☒	Environmental	$73,000
	☒	Construction	$1,808,000
Enabling Projects:			
Equipment Acquisition	None		
Comments:			

Planning and Zoning

Project Conformity	☒ Conforms to existing zoning ☐ May require rezone/Comprehensive Plan amendment
Project compliance with minimum standards	☒ Yes ☐ No
Any potential controversy based on stakeholder feedback?	Stakeholders generally support the project.
Process description and duration	As the Terminal Phase 1B project will allow PBBs to reach larger aircraft on the apron, the apron expansion will increase the overall capacity of the apron.

Environmental

Level of state and federal environmental review required?	The project is AIP funded and will require NEPA process. Expected to be a categorical exclusion (CatEx).
Potential complications?	FAA may potentially ask for an environmental assessment instead of a CatEx.
Cost of mitigation	Mitigation not expected.
Description of mitigation process and uncertainty	Mitigation not expected.
Process description and duration	

Design

Any pre-implementation support facility construction or site prep required?	☐ Yes ☒ No
Potential challenges of site location?	No
Are there financial and operational risks based on project scale?	A Bond will need to be considered for the greater terminal program. The City can issue a bond that contribute to local funds to cover construction costs.
Improvement suggestions of design process	
Process description and duration	

Funding

Can the Airport fund the project in its current state?	☐ Yes ☒ No
Fiscal impact of project on immediate and ongoing Airport finances.	A Bond will need to be considered for the greater terminal program. The City can issue a bond that contribute to local funds to cover construction costs.
How competitive is the improvement for discretionary funding?	
How competitive is the project for FAA priority compared to other Airport CIP projects?	

Project Title:	Mid-term Auto Parking Phase 1	**Project Number:**	
Project Description:	Design and construction of 300 additional parking stalls.		
Total Cost (2017 Dollars):	$5,205,250	**Funding Sources:**	Local
Year:	2024	**Phased Project**	☒ Yes ☐ No
Project Components	☐	Planning	
	☒	Design	
	☐	Environmental	
	☒	Construction	
Enabling Projects:			
Equipment Acquisition	None		
Comments:	This is a Non-AIP project		
Is project timeline flexible? Are there any other projects dependent on this project?			

Planning and Zoning

Project Conformity	☒ Conforms to existing zoning ☐ May require rezone/Comprehensive Plan amendment
Project compliance with minimum standards	☒ Yes ☐ No
Any potential controversy based on stakeholder feedback?	
Process description and duration	Project will require removal of the USDA building.

Environmental

Level of state and federal environmental review required?	
Potential complications?	
Cost of mitigation	
Description of mitigation process and uncertainty	
Process description and duration	

Design

Any pre-implementation support facility construction or site prep required?	☒ Yes ☐ No
Potential challenges of site location?	Project requires removal of USDA building and tenants, potential reconfiguration of traffic circulation, and stormwater considerations.
Are there financial and operational risks based on project scale?	
Improvement suggestions of design process	
Process description and duration	

Scheduled start date	2024
Expected cost	$339,000

Funding

Can the Airport fund the project in its current state?	☐ Yes ☐ No
Fiscal impact of project on immediate and ongoing Airport finances.	
How competitive is the improvement for discretionary funding?	
How competitive is the project for FAA priority compared to other Airport CIP projects?	

Operation and Maintenance

Potential impact on airport operating costs?	
Are additional staff needed?	

Project Title:	Rehab Taxiway G Pavement	**Project Number:**	
Project Description:			
Total Cost (2017 Dollars):	$3,331,333	**Funding Sources:**	PE, Discretionary, Local
Year:	2025	**Phased Project**	☐ Yes ☒ No
Project Components	☐	Planning	
	☒	Design	$203,000
	☐	Environmental	
	☒	Construction	$3,128,000
Enabling Projects:			
Equipment Acquisition	None		
Comments:			
Is project timeline flexible? Are there any other projects dependent on this project?	Project timeline is flexible but needs to happen sooner than later. Ongoing maintenance of existing pavement can keep it in working order, but costs will grow over time as the pavement deteriorates.		

Planning and Zoning

Project Conformity	☒ Conforms to existing zoning ☐ May require rezone/Comprehensive Plan amendment
Project compliance with minimum standards	☒ Yes ☐ No
Any potential controversy based on stakeholder feedback?	Project is not controversial.
Process description and duration	

Environmental

Level of state and federal environmental review required?	The project is AIP funded and will require NEPA process. Expected to be a categorical exclusion (CatEx).
Potential complications?	FAA may potentially ask for an environmental assessment instead of a CatEx.
Cost of mitigation	Mitigation not expected.
Description of mitigation process and uncertainty	Mitigation not expected.
Process description and duration	

Design

Any pre-implementation support facility construction or site prep required?	☐ Yes ☒ No
Potential challenges of site location?	
Are there financial and operational risks based on project scale?	Pavement rehab is a simple project and not considered a risk.
Improvement suggestions of design process	
Process description and duration	
Scheduled start date	2025
Expected cost	$203,000

Funding

Can the Airport fund the project in its current state?	☒ Yes ☐ No
Fiscal impact of project on immediate and ongoing Airport finances.	No major financial impact.
How competitive is the improvement for discretionary funding?	The project's competitiveness depends on what the scale of the project is anticipated to be.
How competitive is the project for FAA priority compared to other Airport CIP projects?	Competitiveness depends on the condition of the pavement and the scale of rehabilitation.

Operation and Maintenance

Potential impact on airport operating costs?	Rehabilitation should reduce maintenance costs in the short term.
Are additional staff needed?	No additional staff needed.

Project Title:	Rehab Taxiway G Lighting	**Project Number:**	
Project Description:			
Total Cost (2017 Dollars):	$453,300	**Funding Sources:**	PE, Local
Year:	2025	**Phased Project**	☐ Yes ☒ No
Project Components	☐	Planning	
	☒	Design	$28,000
	☐	Environmental	
	☒	Construction	$425,000
Enabling Projects:			
Equipment Acquisition			
Comments:			

Planning and Zoning

Project Conformity	☒ Conforms to existing zoning ☐ May require rezone/Comprehensive Plan amendment
Project compliance with minimum standards	☒ Yes ☐ No
Any potential controversy based on stakeholder feedback?	Project is not controversial.
Process description and duration	

Environmental

Level of state and federal environmental review required?	The project is AIP funded and will require NEPA process. Expected to be a categorical exclusion (CatEx).
Potential complications?	FAA may potentially ask for an environmental assessment instead of a CatEx.
Cost of mitigation	Mitigation not expected.
Description of mitigation process and uncertainty	Mitigation not expected.
Process description and duration	

Design

Any pre-implementation support facility construction or site prep required?	☐ Yes ☒ No
Potential challenges of site location?	
Are there financial and operational risks based on project scale?	Light rehabilitation is not considered a risk.
Improvement suggestions of design process	
Process description and duration	
Scheduled start date	2025
Expected cost	$28,000

Funding

Can the Airport fund the project in its current state?	☒ Yes ☐ No
Fiscal impact of project on immediate and ongoing Airport finances.	No major financial impact.
How competitive is the improvement for discretionary funding?	The project's competitiveness depends on what the scale of the project is anticipated to be.
How competitive is the project for FAA priority compared to other Airport CIP projects?	Competitiveness depends on the condition of the lights and the scale of rehabilitation.

Operation and Maintenance

Potential impact on airport operating costs?	Rehabilitation should reduce maintenance costs in the short term.
Are additional staff needed?	No additional staff needed.

Project Title:	Mid-term Auto Parking Phase 2	**Project Number:**	
Project Description:	Design and construction of 200 additional parking stalls.		
Total Cost (2017 Dollars):	$3,695,382	**Funding Sources:**	Local
Year:	2025	**Phased Project**	☐ Yes ☒ No
Project Components	☐	Planning	
	☒	Design	$226,000
	☐	Environmental	
	☒	Construction	$3,469,000
Enabling Projects:	Mid-term Auto Parking Phase 1		
Equipment Acquisition			
Comments:	Non-AIP project		

Planning and Zoning

Project Conformity	☐ Conforms to existing zoning ☐ May require rezone/Comprehensive Plan amendment
Project compliance with minimum standards	☐ Yes ☐ No
Any potential controversy based on stakeholder feedback?	
Process description and duration	
Scheduled start date	
Expected cost	
Is project timeline flexible? Are there any other projects dependent on this project?	

Environmental

Level of state and federal environmental review required?	
Potential complications?	
Cost of mitigation	
Description of mitigation process and uncertainty	
Process description and duration	
Scheduled start date	
Expected cost	
Is project timeline flexible? Are there any other projects dependent on this project?	

Design

Any pre-implementation support facility construction or site prep required?	☐ Yes ☐ No
Potential challenges of site location?	
Are there financial and operational risks based on project scale?	
Improvement suggestions of design process	
Process description and duration	
Scheduled start date	2025
Expected cost	$226,000
Is project timeline flexible? Are there any other projects dependent on this project?	

Funding

Can the Airport fund the project in its current state?	☐ Yes ☐ No
Fiscal impact of project on immediate and ongoing Airport finances.	
How competitive is the improvement for discretionary funding?	
How competitive is the project for FAA priority compared to other Airport CIP projects?	

Operation and Maintenance

Potential impact on airport operating costs?	
Are additional staff needed?	

Project Title:	Northside GA Expansion	**Project Number:**	
Project Description:			
Total Cost (2017 Dollars):	$2,444,692	**Funding Sources:**	PE, Local
Year:	2026-2027	**Phased Project**	☒ Yes ☐ No
Project Components	☐	Planning	
	☒	Design	$100,000
	☒	Environmental	$251,000
	☒	Construction	$2,093,000
Enabling Projects:			
Equipment Acquisition	None		
Comments:			
Is project timeline flexible? Are there any other projects dependent on this project?			

Planning and Zoning

Project Conformity	☒ Conforms to existing zoning ☐ May require rezone/Comprehensive Plan amendment
Project compliance with minimum standards	☒ Yes ☐ No
Any potential controversy based on stakeholder feedback?	Have not received controversial feedback.
Process description and duration	

Environmental

Level of state and federal environmental review required?	Environmental Assessment required.
Potential complications?	
Cost of mitigation	
Description of mitigation process and uncertainty	
Process description and duration	Less than 1 year

Design

Any pre-implementation support facility construction or site prep required?	☒ Yes ☐ No
Potential challenges of site location?	Site will need to be brought to Airport grade, requiring significant earthwork and rock excavation.
Are there financial and operational risks based on project scale?	Return on investment – high costs and potentially low rate of return. Individual tenants are needed to fill spots.
Process description and duration	Less than 1 year

Funding

Can the Airport fund the project in its current state?	☒ Yes ☐ No
Fiscal impact of project on immediate and ongoing Airport finances.	There is risk in finding tenants for new facilities.
How competitive is the improvement for discretionary funding?	Very low
How competitive is the project for FAA priority compared to other Airport CIP projects?	Very low

Operation and Maintenance

Potential impact on airport operating costs?	Increase airport surfaces therefore increased workload for administrative staff.
Are additional staff needed?	No additional staff needed.

APPENDIX E:

COORDINATION AND OUTREACH SUMMARY

APPENDIX E: COORDINATION AND PUBLIC OUTREACH SUMMARY

This appendix documents the coordination and outreach efforts utilized throughout the Master Plan process. Organizations involved, dates of meetings and general feedback are noted below.

PLANNING ADVISORY COMMITTEE (PAC)

A Planning Advisory Committee (PAC) was setup to engage the input and review on working papers, materials and alternatives early in the planning process. The PAC consisted of members from the following organizations:

- ✓ Mayor of the City of Redmond
- ✓ United States Forest Service – Redmond Air Center
- ✓ Redmond Municipal Airport - Fixed Base Operators
- ✓ City of Redmond – Engineering Department
- ✓ City of Redmond – Community Development Director
- ✓ City of Bend – Business Advocate
- ✓ City of Bend – Assistant City Manager
- ✓ Prineville Airport
- ✓ Redmond Economic Development, Inc.
- ✓ Deschutes County – Emergency Services
- ✓ Deschutes County – Planning Department
- ✓ Central Oregon Visitors Association

PAC MEETINGS AND DATES

The following PAC meetings were held:

- ✓ **PAC Meeting #1:** Airport Administration Offices – November 9th, 2016
- ✓ **PAC Meeting #2:** Airport Administration Offices – February 8th, 2017
- ✓ **PAC Meeting #3:** Airport Administration Offices – June 22nd, 2017
- ✓ **PAC Meeting #4:** Airport Administration Offices – October 18th, 2017
- ✓ **PAC Meeting #5:** Airport Administration Offices – March 14th, 2018

PUBLIC OPEN HOUSES

Members of the public were invited to contribute to the planning process at two open house opportunities:

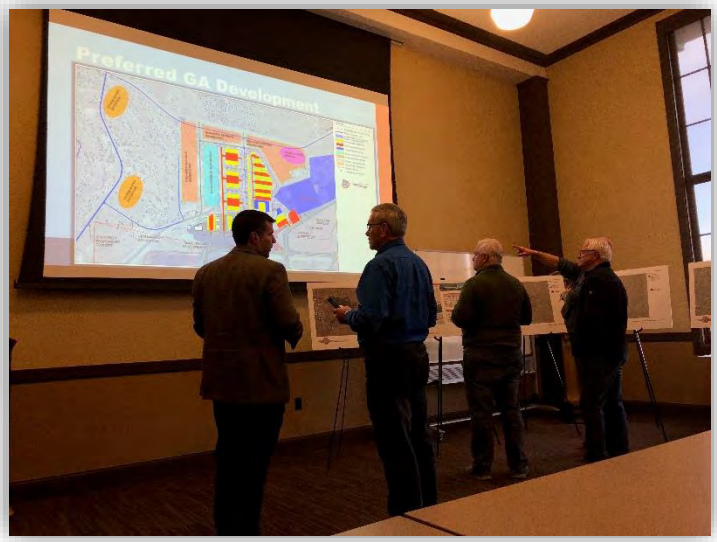
PAC MEETINGS AND DATES

The following public open houses were held:

- ✓ **Public Meeting #1:** Redmond City Hall – October 18th, 2017
- ✓ **Public Meeting #2:** Redmond City Hall – March 14th, 2018

Public Meeting #2 - March 14th, 2018

Public Meeting #2 - March 14th, 2018



ADVERTISEMENTS FOR PUBLIC OPEN HOUSES

The following public postings are examples of the advertisements used to publicize the open houses.


THE REDMOND MUNICIPAL AIRPORT CORDIALLY INVITES YOU TO
AIRPORT MASTER PLAN OPEN HOUSE
OCTOBER 18, 2017
4:30 P.M. TO 6:30 P.M.
REDMOND CITY HALL
The Airport Master Plan guides airport development over the next 20 years. Airport staff and planning consultants will be available to discuss aviation forecasts, needed airport facilities, and ideas for improvements that will help the Airport serve Central Oregon for years to come. We look forward to sharing our ideas with you, and learning what YOUR thoughts are for the future of the Redmond Municipal Airport.
REDMOND OREGON
fly REDMOND
QUESTIONS ABOUT THE MASTER PLAN PROCESS? VISIT WWW.FLYRDM.COM FOR MORE INFORMATION


THE REDMOND MUNICIPAL AIRPORT CORDIALLY INVITES YOU TO
AIRPORT MASTER PLAN OPEN HOUSE
MARCH 14, 2018
5:00 P.M. TO 7:00 P.M.
REDMOND CITY HALL
The Airport Master Plan guides airport development over the next 20 years. Airport staff and planning consultants will be available to discuss aviation forecasts, needed airport facilities, and ideas for improvements that will help the Airport serve Central Oregon for years to come. We look forward to sharing our ideas with you, and learning what YOUR thoughts are for the future of the Redmond Municipal Airport.
REDMOND OREGON
fly REDMOND
QUESTIONS ABOUT THE MASTER PLAN PROCESS? VISIT WWW.FLYRDM.COM FOR MORE INFORMATION

APPENDIX F:

LANDSIDE DEVELOPMENT

APPENDIX F: LANDSIDE DEVELOPMENT AND OTHER SUPPORT FACILITIES

The research and analysis in this appendix identifies the facility requirements for non-aviation businesses that complement the airport operations or are appropriate for the Redmond market, given local economic conditions. Subareas described in this appendix can be viewed on Figure 3-19, contained in Chapter 3 of this Master Plan.

TARGET INDUSTRY SECTORS

Based on an analysis of the Redmond economy, several market sectors were identified as target industries for the area near the airport.

FACTORS INFLUENCING SELECTION OF TARGET INDUSTRIES

The following considerations were used in identifying target industries:

- **Existing Business Clusters.** Businesses have already agglomerated in Redmond and in the vicinity of the airport based on the collective competitive advantages of the community and sites near the airport. Existing business concentrations were inventoried and evaluated in the socioeconomic analysis in **Chapter 2**.
- **Growth Outlook.** The socioeconomic analysis further identified industries and subsectors likely to experience strong growth over the next ten years. This information was derived from Oregon Employment Department data, as well as the third-party data service *Moody's Analytics*.
- **Suitability of Site/Land Inventory.** This assessment considered the suitability of available land among airport area properties to accommodate potential uses.
- **Anecdotal Input/Stakeholder Feedback.** The proposed land use determination considered the economic development goals and objectives of the City of Redmond and the airport, input from stakeholders, and professional insights from the consultant team.

TARGET INDUSTRY SECTORS

Based on the factors identified above, the following target industries have been identified for the airport area:

- ✓ **Accommodation and Food Services.** Both anecdotal and empirical inputs suggest the "airport district" (loosely defined here as land south of OR 126 and east of US 97) would benefit from expanded support services, specifically full-service restaurants serving daytime employment and potentially an airport-oriented hotel. The district has a daytime population of almost 3,000 people (not including airport passenger throughput) and is served by only a handful of full-service restaurants.
- ✓ **Speculative Light Industrial Buildings.** The City of Redmond is almost devoid of speculative industrial space suitable to accommodate small- to medium-sized emerging businesses. Speculative industrial development would face a positive real estate climate and serve a growing need in the market. However, the extent to which this use type could be achievable with a ground lease option is less certain (many businesses would prefer to own their land).
- ✓ **Construction.** Construction is a predominant industry in Central Oregon and is expected to exhibit considerable growth over the next decade. The airport district has had success attracting construction firms. There are at least 20 construction firms in the airport district. Construction firms are also a potentially compatible use for ground lease options, as their permanent capital needs are less intensive than other industrial uses.
- ✓ **Manufacturing.** The airport district has a competitive advantage in attracting manufacturing uses interested in co-locating near Central Oregon Community College and capitalizing on the steady supply of workers coming out of its Redmond campus programs. Specifically, metals, equipment, and transportation equipment manufacturers may find opportunities. These are also uses with an established presence in the district. Food and beverage manufacturing is also a high-growth sector that has a measurable presence east of US 97.
- ✓ **Wholesalers and Warehousing.** Wholesaling is an attractive use for the airport district, given the transportation advantages in Redmond and the airport district—nearly 40 wholesaling firms are already in the airport district. Wholesalers commonly require limited investment in real property, often a simple steel or concrete tilt structure. Wholesalers also typically operate on low margins. Combined, these are factors that may make a ground lease option more attractive for this sector.
- ✓ **Public Administration.** The airport district has a clear agglomeration of institutional and public administrative uses (e.g., U.S. Forest Service). Public entities are solid targets for ground leases due to their creditworthiness, long-term functions/holding periods, and (sometimes) least-cost location selection.
- ✓ **Gas Station and Convenience Store.** Per the City of Redmond request, a gas station and convenience store is desirable to serve customers utilizing the airport, including rental car returns.

LAND USE CHARACTERISTICS OF TARGET INDUSTRY SECTORS

This section describes the range of typical building and site sizes and outlines the parking requirements for the target industry sectors.

Typical Building and Site Sizes for Target Industry Sectors

Table 1 below shows an approximate range of building and site sizes for the target industry sectors listed above. This information was derived based on the sizes of similar existing uses in the Redmond and Bend areas. Hotels generally require large buildings on lots of 2 or 3 acres to accommodate parking. The size needs of food services vary widely depending on the restaurant and building type; restaurants in strip malls, for instance, generally require less space than what is shown below for stand-alone restaurants. Large lots are typically not required for food services. Speculative light industrial buildings for emerging small- or medium-sized businesses would generally require smaller spaces than the other industrial uses, though some light industrial uses in the area require large buildings and lots of over an acre. Warehouse, wholesale, and manufacturing uses require large buildings, ranging from just over 10,000 square feet to upwards of 100,000 square feet or more in some cases, though the average size for available properties in the Redmond/Bend area falls between 10,000 and 20,000 square feet. These industrial uses require site sizes ranging from several acres to over 100 acres for large regional warehouses, distribution centers, and heavy industrial manufacturing. Public administration size requirements also vary widely depending on the use. Some public administrative uses do not require large buildings or lots, but institutional campuses may require large buildings on multi-acre properties.

Table J-1. Target Industry Typical Building and Site Sizes

Target Industry	Typical Building Size (square feet)	Typical Lot Size (acres)
Accommodation (hotels)	30,000-50,000	2-3
Food Services (stand-alone)	2,000-8,000	0.1-0.25
Speculative Light Industrial Buildings	8,000-16,000	0.5 - 1.5
Construction	4,000-15,000	1-2
Manufacturing	10,000-30,000	3-100+
Wholesalers and Warehousing	10,000-170,000	2-100+
Public Administration	4,000-50,000	0.3-2
Gas Station & Convenience Store	800-2,400	0.5-1.5

Automobile Parking for Target Industry Sectors

Parking requirements are established in the City of Redmond Development Code section 8.0500. The City requires developments to provide minimum parking spaces based on land use. **Table J-2** summarizes parking requirements for land uses that fall within the target industry sectors. Note that some land uses demand more parking than the code minimum to meet operational needs.

Table J-2. City of Redmond Parking Requirements	
Land Use	**Minimum Parking Ratio**
Commercial Service and Repair	1 space per 600 square feet (sf) retail floor area
Contractor's Yard	1 space per employee or 1 space per 200 sf of office area
Eating and Drinking Establishment	1 space per 100 sf of net floor area
Equipment Rental, Sales, and Service	1 space per 600 sf of retail floor area
Espresso Stand or Booth	1 space per employee
Industrial, General, or Service Related	1 space per 800 sf
Manufacturing and Assembly	1 space per 600 sf
Motel, Hotel	1 space per room, plus 1 space for manager
Office	1 space per 300 sf net office floor area
Retail, General	1 space per 200 sf of retail floor area
Utility Facility	1 space (regardless of facility size)
Warehouse	1 space per 1,000 sf

TRANSPORTATION NEEDS FOR TARGET INDUSTRY SECTORS

All of the target industries need to provide adequate transportation access for passenger vehicles and to varying intensities of truck traffic. Efficient routes to the highway system are necessary to support freight movement associated with the target industries. The existing street network within the study area includes several minor arterial and major collector streets that provide access to the highway system. Turn lanes are generally present at major intersections, but additional turn lanes on major streets may be necessary to serve future development, and local streets may need to be widened to accommodate trucks (see Recommended Upgrades section).

UTILITY DEMANDS FOR TARGET INDUSTRY SECTORS

The target industries listed above comprise a wide range of demands on the utility systems. **Tables J-3** through **J-7** summarize minimum recommended available utility service to support industrial development.

Table J-3. Water Service Requirements for Target Industries				
Target Industry	Main Line Size[1]	Fire Line Size	High Pressure Dependency	Flow Rate[2]
Accommodation and Food Services	6”	6”	Not Required	1200 GPD / acre
Speculative Light Industrial Buildings	6”	8”	Not Required	1500 GPD / acre
Construction	6”	6”	Not Required	500 GPD / acre
Manufacturing[3]	6”	10”	Not Required	1850 GPD / acre
Wholesalers and Warehousing	6”	8”	Not Required	500 GPD / acre
Public Administration	6”	6”	Not Required	1200 GPD / acre
Gas Station & Convenience Store	6”	8” [4]	Not Required	500 GPD / acre

[1] Minimum recommended main size for domestic or process use. Utility providers typically do not install water mains smaller than 6” diameter.
[2] GPD / acre: Gallons per day per acre, based on gross property area
[3] Excludes high water users such as food processors, etc.
[4] Small-footprint buildings often do not include fire sprinklers. The fire line size listed applies to on-site hydrant service.

Table J-4. Sewer Service Requirements for Target Industries		
Target Industry	Main Line Size[1]	Flow Rate[2]
Accommodation and Food Services	8”	1200 GPD / acre
Speculative Light Industrial Buildings	8”	1500 GPD / acre
Construction	8”	500 GPD / acre
Manufacturing[3]	8”	1850 GPD / acre
Wholesalers and Warehousing	8”	500 GPD / acre
Public Administration	8”	1200 GPD / acre
Gas Station & Convenience Store	8”	500 GPD / acre

[1] Minimum recommended main size for sanitary sewer. Utility providers typically do not install sewer mains smaller than 8” diameter, so this is the smallest recommended line size.
[2] GPD / acre: Gallons per day per acre, based on gross property area
[3] Excludes high water users such as food processors, etc.

Table J-5.Telecommunications Service Requirements for Target Industries		
Target Industry	Major Communications Dependency	Fiber Optic Dependency
Accommodation and Food Services	Preferred	Preferred
Speculative Light Industrial Buildings	Preferred	Required
Construction	Preferred	Not Required
Manufacturing	Required	Preferred
Wholesalers and Warehousing	Preferred	Preferred
Public Administration	Preferred	Preferred
Gas Station & Convenience Store	Preferred	Preferred

Table J-6. Natural Gas Service Requirements for Target Industries	
Target Industry	Main Line Size
Accommodation and Food Services	2”
Speculative Light Industrial Buildings	4”
Construction	2”
Manufacturing	4”
Wholesalers and Warehousing	2”
Public Administration	2”
Gas Station & Convenience Store	2”

Table J-7. Electrical Service Requirements for Target Industries			
Target Industry	Minimum Service Demand[1]	Close Proximity to Substation	Redundancy Dependency
Accommodation and Food Services	0.5 MW	Preferred	Not Required
Speculative Light Industrial Buildings	0.5 MW	Preferred	Not Required
Construction	0.5 MW	Not Required	Not Required
Manufacturing	0.5 MW	Preferred	Not Required
Wholesalers and Warehousing	1 MW	Not Required	Not Required
Public Administration	0.5 MW	Preferred	Not Required
Gas Station & Convenience Store	0.2 MW	Not Required	Not Required
[1] ***MW: Megawatts***			

Stormwater at the Redmond Airport is generally managed and contained on site. Swales and ditches are generally used to direct runoff to localized low spots or subsurface infiltration galleries to be discharged via infiltration to the soil. Based on nearby existing facilities and development, we do not expect any issues for the proposed developments. All development will need to meet City of Redmond stormwater treatment regulations and Oregon Department of Environmental Quality requirements for underground injection control discharge, as applicable.

EVALUATION OF LAND SUPPLY FOR TARGET INDUSTRIES

This section assesses each landside development subarea to determine whether the existing zoning permits some or all of the target industries; characterizes parcel sizes for developable land; and identifies FAA leasehold restrictions. All subareas are depicted on **Figure 1-15** in **Chapter 1** of this Master Plan.

In all affected subareas, sites with leasehold restrictions may be less attractive to developers who prefer to own their own sites or who require a long-term lease for financing.[1] Those subareas closest to the runway are also subject to FAA Part 77 height and use restrictions that could affect future development.

[1] According to Redmond Planning Division staff, parcels denoted as having leasehold restrictions are those acquired by the City and/or County from the FAA that may not be sold. Therefore, any third-party users would need to lease the property.

North Development Parcel Subarea

The North Development Parcel Subarea consists of 134 developable acres of City-owned land, including 17 acres zoned Light Industrial (M1) land, 60 acres zoned Tourist Commercial (C5) accessible from OR 126, and 57 acres zoned Open Space Park Reserve (OSPR) at the southern end. The entire subarea is subject to leasehold restrictions. As noted above, ground leases may be viable options for wholesalers and warehouse uses, as well as construction firms. The M1 zone allows both of these uses, but light industrial users may be disinclined to develop a property that can only be leased, not purchased. The C5 and M1 areas, especially off OR 126, could be developed as restaurants (sit-down or drive-through), cafes, or diners. Brew pubs are allowed outright in C5 areas, but other bars and taverns would be a conditional use. Hotels and motels are allowed outright in the C5 zone and would be well-suited to these areas due to proximity to the highway and airport. Options are limited for the large area of OSPR land, but public facilities are permitted outright in this zone when approved in the comprehensive plan or other public facilities plans for this zone. The City has had preliminary conversations with emergency response agencies regarding use of this area for a future emergency training facility.

North Business Park Subarea

This subarea consists of 94 developable acres, with 44 acres zoned Light Industrial (M1), 17.2 acres zoned Tourist Commercial (C5), and 57 acres zoned Open Space Park Reserve (OSPR). The same potential uses would apply for the North Business Park Subarea as the North Development Parcel Subarea above. The entire subarea is subject to leasehold restrictions, so some industrial uses such as wholesale and warehouse might be viable options, while light industrial users may be less inclined to develop these properties through a ground lease. Construction firms could be a viable use for the M1 zones. Food services could be developed on M1 and C5 lots, though bars and taverns would be a conditional use in the C5 zone. As with the North Development Parcel Subarea, accommodation would be well-suited for the C5 areas because of convenient access to the highway and airport. Development options are limited in the OSPR zone, but there may be potential for public facilities in these areas. The southern portion of this subarea is being contemplated for future airport-compatible development (possible corporate, executive, and general aviation facilities) with the northern portion by OR 126 targeted for future commercial development due to its Tourist Commercial (C5) zoning designation.

South Apron Subarea

The South Apron Subarea contains 19 acres zoned Airport, and 5.8 acres zoned Light Industrial (M1), with approximately 25 acres of developed land excluding right-of-way. Twenty-three acres of this subarea, including both Airport and M1 zoned land, is part of a much larger lot owned by the City and subject to leasehold restrictions. A two-acre lot at the southwest corner of the subarea, privately owned and zoned M1, could be used for speculative Light Industrial, Warehouse, or Manufacturing that do not require large lot sizes, or food services uses, though the site is currently developed. In the Airport zone, development options are limited to uses that support and complement the airport.

West Business Park Subarea

The West Business Park contains 225 acres of land, including 193 acres zoned Light Industrial (M1), 24 acres zoned Public Facility, and 8 acres zoned Park. There are approximately 93 acres of developable land, including several vacant M1 parcels, and several acres of vacant area in the Park and Public Facility zoned lots. Most of the City-owned property is subject to leasehold restrictions (33 acres), while the remaining 8 acres is the Park-zoned property home to two City water storage tanks. There are several large vacant privately-owned Light Industrial (M1) zoned lots that could be potential sites for speculative light industrial, wholesale, warehouse, or manufacturing. Portions of these sites could also be used for accommodation, food services, or construction-related business. The PF-zoned lot along the eastern edge of the subarea could be suitable for public administration uses.

Airport Way Subarea

The Airport Way Subarea area contains 55 acres zoned Light Industrial (M1), including approximately 9 acres of developed land (City-owned but leased to Peterson Caterpillar) and 46 acres of developable land owned by the City. The City-owned property is subject to leasehold restrictions. Four of the vacant city-owned lots are over 8 acres and could be ideal spaces for wholesale warehouse uses or large construction firms that could operate under a ground lease. With several relatively large vacant lots adjacent or in close proximity to each other, this subarea could also be an opportunity for a regional warehouse distribution facility. Proximity to the railroad and surrounding industrial uses makes this area unappealing for accommodations such as hotels. Food services could be a viable option to serve employment in the area, as the area currently lacks food options, if it could be demonstrated that sufficient demand exists.

Fairgrounds Industrial Subarea

The Fairgrounds Industrial Subarea consists of 56 acres zoned Light Industrial (M1), including 41 developable acres. There are several privately-owned vacant lots of approximately 1-2 acres in size that could be used for small light industrial uses, construction firms, or food services uses to support the surrounding area. At the north end of the site is a larger vacant privately-owned site (8.8 acres) which, due to its size and zoning could be appealing for use as light industrial, wholesale warehouse, or manufacturing. The southernmost lot in this subarea is an 8-acre City-owned lot subject to leasehold restrictions. Wholesale and warehousing could be viable options for this relatively large site with a ground lease option.

DESCRIPTION OF EXISTING UTILITIES AND ROADWAYS SERVING LANDSIDE SUBAREAS

This section evaluates the existing public utilities and transportation network serving each subarea. Illustrations of existing utilities are found in ___.

North Development Parcel Subarea

- Water: This subarea is currently served by a 10-inch main along the northern boundary in Lake Road, and by a 12-inch main along the southern boundary in Veterans Way. Public mains do not traverse the interior of the subarea.
- Sewer: This subarea is currently served by an 8-inch main which transitions to a 10-inch main within Lake Road to the north, and an 8-inch main within Veterans Way to the south. Public mains do not traverse the interior of the subarea.
- Transportation: This subarea currently has no existing transportation infrastructure within its boundaries. Although OR 126 runs along a portion of the subarea, no existing connections are present. No connections to Veterans Way south of the subarea exist. To accommodate the Airport Runway Extension, plans to relocate the Airport Way/Veterans Way intersection and realign several network streets are under development by the City. These plans currently show a realignment of Veterans Way into the subarea and an extension of 9th Street southward from OR 126 through the subarea to connect with Airport Way. The 9th Street extension will be a minor arterial street that should include a three-lane cross section. Veterans Way will remain a major collector and should have a two-lane cross section with possible turn lanes at major intersections.

North Business Park Subarea

- Water: This subarea is currently served by an 18-inch main within OR 126 to the east, and within Veterans Way to the south. Public mains do not traverse the interior of the subarea.
- Sewer: This subarea is currently served by an 8-inch main within Veterans Way to the south, and a 12-inch main within OR 126 to the north.
- Transportation: This subarea is bisected by Veterans Way, which connects to OR 126 on the northern border of the subarea and US 97 to the west. Veterans Way is a major collector between Airport Way and OR 126. It has two travel lanes with a shoulder bike lane west of the intersection with Sisters Avenue, but no paved shoulders northeast of that intersection. No turn lanes are present on any portion of Veterans Way between Airport Way and OR 126. The subarea also includes local street connections to OR 126 with 10th Avenue connecting on the west side, and Sisters Avenue to Ochoco Way connecting on the east side. None of these local streets has been improved beyond a narrow two-lane paved section.

South Apron Subarea

- Water: This subarea is currently served by a 12-inch main within Airport Way, and a 10-inch main connecting to the terminal loop.
- Sewer: This subarea is served by 8-inch mains within Airport Way and the on-site access roads.
- Transportation: This subarea is served by Salmon Avenue, which connects to Airport Way. Salmon Avenue is a two-lane local street with no sidewalks, with the exception of one short segment. This site has direct access to the airport taxiways.

West Business Park Subarea

- Water: This subarea houses the existing water reservoirs at the north end of 6th Street. These reservoirs supply mains ranging from 10 to 18 inches within the subarea.
- Sewer: This subarea is served by 8-inch mains within the streets throughout the subarea.
- Transportation: This subarea has minor arterial streets along its northern boundary (Veterans Way) and eastern boundary (Airport Way). Veterans Way connects to both US 97 and OR 126 and has been constructed with a two-lane cross section that includes bike lanes but almost no sidewalks. It has no left-turn lanes at any of the local street intersections into the subarea. Airport Way connects to US 97 and has been constructed primarily with a two-lane cross section augmented with left-turn and right-turn lanes at intersecting streets. Bike lanes are part of the roadway, but pedestrian facilities only exist along some developed parcels. This subarea also includes Salmon Street, a major collector, and a local street network that serves existing development. To accommodate the Airport Runway Extension, plans to relocate the Airport Way/Veterans Way intersection and realign several network streets are under development by the City. A railroad spur from the BNSF tracks extends to the western boundary of this subarea.

Airport Way Subarea

- ✓ Water: This subarea is currently served by an 18-inch main within Airport Way.
- ✓ Sewer: This subarea is currently served by a 12-inch main within Airport Way to the east and south. Sewer flows from this subarea appear to be split between two separate main lines running north and west from the site.
- ✓ Transportation: This subarea is served by Airport Way, a minor arterial that connects southward to US 97 and northward to Veterans Way and OR 126. Airport Way has been constructed with a three-lane cross section (including bike lanes) with right-turn lanes at some intersections, but sidewalks are present on only some segments. Mt. Hood Drive was constructed as a four-lane local street eastward from Airport Way to the Fairgrounds but does not currently extend to the west, although a street stub has been constructed. The intersection of Wickiup Avenue (a local street) at Airport Way has been constructed, but no existing roadway connects to the intersection. The BNSF railroad tracks run along the western boundary, but has no existing rail spurs in this subarea.

Fairgrounds Industrial Subarea

- ✓ Water: This subarea is currently served by a 12-inch main within 19th Street, and 8-inch mains elsewhere throughout the subarea.
- ✓ Sewer: This subarea is currently served by a 12-inch main within 19th Street, and 8-inch mains elsewhere within the subarea.
- ✓ Transportation: This subarea is currently served by 19th Street, a minor arterial that connects to Airport Way approximately one-quarter mile from US 97. 19th Street has been fully constructed with a three-lane cross section, with sidewalks and bike lanes on both sides from Airport Way to Elkhorn Avenue. A network of new local streets west of 19th Street serve existing development. The BNSF railroad tracks run along the western boundary, but BNSF has no existing rail spurs in this subarea.

RECOMMENDED UPGRADES

The following recommendations are offered based on a comparison of the existing utility and transportation facilities and the corresponding demands of the target industries. In all subareas, sewer lines would need to be extended from nearby mains and stormwater management facilities would need to be constructed in conjunction with site development. Local streets should be constructed to the local industrial street standard (40-foot paved width with sidewalks) to accommodate necessary truck access for most of the target industry sectors. Improved access to OR 126 will eventually be required to accommodate future growth with any of the target industry sectors and will likely include added turn lanes and traffic signals. Turn lanes at major intersections may also be needed to serve future development.

Necessary improvements would be identified with the preparation of traffic impact studies for specific development proposals.

Specific upgrade requirements for each subarea are noted below.

- North Development Parcel Subarea: The existing water lines between Lake Road and Veterans Way are not well-connected. We recommend installing a loop system throughout the subarea to maintain necessary flows for high-demand industrial users. This subarea currently has no existing transportation infrastructure and will need to rely on the construction of new streets. Transportation improvements associated with the Airport Runway Extension will eventually provide access through the subarea. Local streets that provide direct site access will need to be constructed to the local industrial standard (40-foot paved width with sidewalks).
- North Business Park Subarea: The existing water lines between Veterans Way and OR 126 are not well-connected. We recommend installing a loop system to supply necessary flows for high-demand users. The local streets (10th Street, Sisters Avenue, Ochoco Way) need to be upgraded to the current local industrial standard (40-foot paved width with sidewalks). Veterans Way needs to be upgraded to meet the major collector standard (36-foot paved width with sidewalks). At the Veterans Way intersection with OR 126, an eastbound right-turn deceleration lane on OR 126 may be necessary as volumes increase, and separate left- and right-turn lanes may be necessary on the Veterans Way approach. Left-turn lanes on Veterans Way at other intersecting roadways may also be needed.
- South Apron Subarea: Salmon Avenue needs sidewalks on the north side of the street.
- West Business Park Subarea: Airport Way and Veterans Way need sidewalk infill, primarily along undeveloped property.
- Airport Way Subarea: Airport Way needs sidewalk infill on both sides of the street. Mt. Hood Drive needs sidewalks along both sides of the street. Wickiup Avenue needs to be constructed/upgraded to the current local industrial standard (40-foot paved width with sidewalks).
- Fairgrounds Industrial Subarea: Airport Way needs sidewalks on the south side of the street.

APPENDIX G:

NOISE INPUTS

NOISE INPUT APPENDIX

Existing (2016) and Future (2036) noise contours were generated with the FAA's Aviation Environmental Design Tool (AEDT) version 2d. Inputs were obtained from a variety of sources including, Chapter 2 *Aviation Activity Forecasts* of this Master Plan, Airport personnel, Air Traffic Control Tower personnel, published instrument procedures and traffic patterns and institutional knowledge.

The following information formed the basis of the noise contour development.

Table G-1 Activity Table 2016 Itinerant Operations Category	Modeled Aircraft	Modeled Operations
Air Carrier	Q400	5,688
	CRJ-700	506
Commuter / Air Taxi	CRJ-200	4,556
Air Cargo and Forest Service	Beech 99	965
	Cessna Caravan 208	965
	BAE 146	250
	Ayres T34 Thrush	250
General Aviation	Citation II	330
	Citation V	330
	GLF6	330
	Pilatus PC-12	330
	Cessna Conquest	330
	CJ1	330
	Piaggio Avanti	330
	TBM850	330
	Lancair	2,087
	Lancair Turbine	2,087
	GASEPV	2,087
	GASEPF	2,087
Helicopter	SH-60	500
	R22	0
Military	P-3	114
	King Air 90	114
	C-130	114
TOTAL ITINERANT OPERATIONS		**25,010**

Local (touch-and-go) Operations Category	Modeled Aircraft	Modeled Operations
General Aviation		
	C-172	5,267
	Piper Seminole	5,267
	King Air 90	5,267
	Lancair	2,104
	Lancair Turbine	2,104
	GASEPV	2,104
	GASEPF	2,104
Helicopter		
	R22	4,200
Military		
	P-3	90
	King Air 90	83
	C-230	83
TOTAL TOUCH-AND-GO OPS		28,673
TOTAL AIRPORT OPERATIONS*		**82,356**
*Airport operations include a 2x multiplier for touch-and-go operations as one touch-and-go represents two operations for counting purposes		

Table G-2 Activity Table 2036 Itinerant Operations Category	Modeled Aircraft	Modeled Operations
Air Carrier	Q400	1,000
	E175	1,000
	CRJ-900	1,000
	MRJ-90	2,400
	737-700A319	4,350
	737-700	1,800
	737-800	750
	737-900	300
	CRJ-700	0
Commuter / Air Taxi	CRJ-200	0
Air Cargo and Forest Service	Beech 99	1,050
	Cessna Caravan 208	1,050
	BAE 146	250
	Ayres T34 Thrush	250
General Aviation	Citation II	420
	Citation V	420
	GLF6	420
	Pilatus PC-12	420
	Cessna Conquest	420
	CJ1	420
	Piaggio Avanti	420
	TBM850	420
	Lancair	2,660
	Lancair Turbine	2,660
	GASEPV	2,660
	GASEPF	2,660
Helicopter	SH-60	1,000
	R22	0
Military	P-3	100
	King Air 90	100
	C-130	100
TOTAL ITINERANT OPERATIONS		30,500

Local (touch-and-go) Operations		
Category	**Modeled Aircraft**	**Modeled Operations**
General Aviation	C-172	5,330
	Piper Seminole	5,330
	King Air 90	5,330
	Lancair	2,363
	Lancair Turbine	2,363
	GASEPV	2,363
	GASEPF	2,363
Helicopter	R22	4,250
Military	P-3	83
	King Air 90	83
	C-230	83
TOTAL TOUCH-AND-GO OPS		29,939
TOTAL AIRPORT OPERATIONS*		**90,377**

*Airport operations include a 2x multiplier for touch-and-go operations as one touch-and-go represents two operations for counting purposes

Table G-3 Time of Day	
Air Carrier	
Day	**Night**
82%	18%
Commuter / Air Taxi	
Day	**Night**
82%	18%
Air Cargo	
Day	**Night**
50%	50%
Forest Service	
Day	**Night**
100%	0%
General Aviation - Itinerant	
Day	**Night**
93%	7%
General Aviation - Local	
Day	**Night**
95%	5%
Helicopter	
Day	**Night**
100%	0%
Military	
Day	**Night**
95%	5%

Table G-4 Runway Use Distribution			
Commercial Arrivals			
Runway			
11	29	5	23
5%	5%	30%	60%
Commercial Departures			
Runway			
11	29	5	23
5%	5%	60%	30%
General Aviation Arrivals			
Runway			
11	29	5	23
60%	30%	5%	5%
General Aviation Departures			
Runway			
11	29	5	23
60%	30%	5%	5%

Appendix G:

Tumalo Community Plan Active Transportation Update/Sisters Country Vision Action Plan Trails Outreach Update