

AGENDA
CITY OF STEVENSON COMMUNITY ENGAGEMENT MEETING
CAPITAL IMPROVEMENT PROGRAM WORKSHOP
July 13, 2022
6:00 PM, City Hall

1. Introductions and Protocols-Determine if a quorum of councilmembers or planning commissioners are present.

2. Topic Overview/Background

[a\)](#) Capital Improvement Program background memo and project information.

3. Workshop

4. Wrap-up/Summary

5. Next Steps

6. Adjournment



City of Stevenson

Leana Kinley, City Administrator

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To: Workshop Attendees
From: Leana Kinley, City Administrator
RE: Capital Improvement Program Workshop
Meeting Date: July 13, 2022

Executive Summary:

The cost and extent of upgrades required for the wastewater treatment plant caught the city off-guard. Our focus is on becoming more proactive rather than reactive in terms of planning our infrastructure projects to preserve the assets we have and strategically move forward with improvements. Each department has a plan, and this CIP will overlay each plan to better align projects throughout Stevenson and prevent tearing up a recently paved road.

Overview of Items:

The documents attached are excerpts from each of the city's adopted plans:

- Water System Plan-adopted in 2017
- General Sewer Plan and Wastewater Systems Facility Update adopted in 2018 and updated in 2019
- 6-year Transportation Improvement Program adopted in June 2022

The color-coded worksheet overlaps projects outlined in each of these plans and sections them together to identify the timing of each project and the overall budget for each department. The goal is to get all projects on the list to improve the outcomes.

At the workshop, we will solicit requests for projects to be added, review projects on the list, answer any questions, and brainstorm any additional updates that may be needed.

Action Needed:

Review list, provide feedback, ask questions, and what is missing, help brainstorm updates or revisions to the CIP for the presentation at the August 11th public hearing.

Capital Funding	Type	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2019-2028 CIP		2019-2038 Total CIP
Grand Totals		25,371	241,385	540,000	11,286,055	9,179,511	2,369,000	2,920,000	1,832,000	1,000,000	1,285,000	36,678,322	-	56,413,322
Water		-	28,353	105,000	202,000	1,027,000	688,000	-	132,000	200,000	-	2,382,353	-	2,857,353
Wastewater		25,371	27,032	425,000	10,791,193	5,891,511	441,000	1,050,000	-	-	-	18,651,108	-	21,406,108
Streets		-	186,000	10,000	192,861	2,171,000	1,220,000	1,870,000	1,700,000	800,000	1,285,000	9,434,861	-	25,939,861
Planning		-	-	-	100,000	50,000	20,000	-	-	-	-	170,000	-	170,000
Fire Hall		-	-	-	-	-	-	-	-	-	-	6,000,000	-	6,000,000
Parks		-	-	-	-	40,000	-	-	-	-	-	40,000	-	40,000
Water Treatment Plant	W		28,353	55,000		100,000						183,353		183,353
Hegewald Well	W			50,000								50,000		50,000
Church Reservoir Transmission	W						425,000					425,000		425,000
School St. Waterline Replacement	W						250,000					250,000		250,000
School Street Grind and Inlay	S						440,000					440,000		440,000
Bulldog-School-Kanaka Intersection	S						50,000					50,000		50,000
Loop Road Waterline Replacement	W				100,000							100,000		100,000
Main D Extension (phase 1)	WW				274,704							274,704		274,704
Loop Road Grind and Inlay	S					390,000						390,000		390,000
Loop Rd. Sidewalk Extension	S											-		200,000
Frank Johns PRV	W					157,000						157,000		157,000
Frank Johns South	W					283,000						283,000		283,000
Frank Johns Sidewalk (Loop-Second)	S						25,000	50,000	400,000			475,000		475,000
East SR-14 Improvements-Low Phase	S									50,000	340,000	390,000		390,000
East SR-14 Improvements-Roundabout	S													4,200,000
Frank Johns North	W					237,000						237,000		237,000
Main D Extension (phase 2)	WW													1,230,000
Sheppard-Major-Loop (WW Extension not	WW													No Est
W-SR-14 and Rock Creek Improvements	S								100,000	600,000		700,000		700,000
SW Atwell Rd	W						263,000					263,000		263,000
Rock Creek Drive	W											-		375,000
Rock Creek PRV Relocation	W											-		100,000
WWTP Improvements	WW	25,371	27,032	425,000	8,500,000	4,000,000						12,977,404		12,977,404
Rock Creek PS	WW				1,300,000							1,300,000		1,300,000
Fairgrounds PS-Phase 1 &2	WW				84,489	781,511						866,000		866,000
Cascade Interceptor	WW				512,000							512,000		512,000
Cascade Interceptor Phase 2 (MH CI-4 to 1	WW							1,050,000				1,050,000		1,050,000
Rock Creek Stormwater	S				127,861							127,861		127,861
West SR-14 Improvements Low Phase	S									50,000	340,000	390,000		390,000
West End Roundabout	S													2,500,000
Rock Creek Bridge Replacement	S											-		8,200,000
First Street Overlook	S		186,000			800,000						986,000		986,000
Columbia Ave Realignment	S							625,000	1,200,000			1,825,000		1,825,000
NE Major St (water)	W								132,000			132,000		132,000
Chipseal (Major, Hillcrest, E. Loop Rd.)	S											-		35,000
Vancouver West Waterline (not on plan)	W					62,000						62,000		62,000
Russell Avenue Phase 2 (Van-2nd)	S													400,000

Capital Funding	Type	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2019-2028 CIP	2019-2038 Total CIP
Chipseal Vancouver	S					45,000						45,000	45,000
Vancouver Sidewalk-East End	S											-	125,000
Cascade PS-Phase 1 & 2	WW				40,000	413,000						453,000	453,000
Cascade Avenue Sewer (8-12")	WW						441,000					441,000	441,000
Kanaka PS-Phase 1 & 2	WW				80,000	697,000						777,000	777,000
Kanaka Underpass-Phase 1	S			10,000								10,000	10,000
Kanaka Underpass-Phase 2	S									100,000		100,000	10,000
Foster Creek Waterline	W				40,000							40,000	40,000
Foster Creek Rd/Ryan Allen (WW)	WW												1,525,000
Foster Creek Rd-by int. w/Rock Creek Dr.	WW												No Est.
Foster Creek Rd (TIP aquire additional RO)	S					-						-	No Est.
Lasher Street, Sidewalks & Storm	S						250,000	1,100,000				1,350,000	1,350,000
Lasher to School St-SRTS	S					150,000	800,000					950,000	950,000
Chip Seal McEvoy, Wisteria, Ridgecrest	S					36,000						36,000	36,000
El Paso Road Reconstruction	S											-	No Est.
Roosevelt Street Overlay	S												670,000
Iman Cemetery to Osprey Overlay	S				65,000							65,000	65,000
Iman Loop-Iman Cemetery Sidewalk	S												75,000
Monda Rd	S												200,000
Roselawn Ave Overlay	S					165,000						165,000	165,000
Fire Hall	F											6,000,000	6,000,000
Engineering Standard Updates	P				75,000							75,000	75,000
Sewer SDC Updates	WW					Update							
Shoreline Program Grant-Public Access	P				25,000	50,000						75,000	75,000
GIS	P						20,000					20,000	20,000
Rock Creek Water Intake	W				Plan	Repair						-	-
Parks Plan	PK					40,000						40,000	40,000
Park Plaza	PK											-	-
Walnut Park	PK											-	-
Triangle Park	PK											-	-
Gropper Park	PK											-	-
Paving Gravel Roads	S					145,000	95,000	95,000			380,000	715,000	715,000
Leavens Street, Sidewalks, Storm, etc	S										225,000	225,000	225,000
Water System Plan	W									200,000.00		200,000	200,000

6.3.2 Projects Years 1 to 10

1 – Water Treatment Plant **Controls completed in 2018**

Complete miscellaneous improvements at the water treatment plant including the upgrade of controls to a PLC based system and installing a manual transfer switch at the WTP to allow operation by portable emergency generator in the event of an extended power outage.

2 – Telemetry / SCADA Improvements **Project Completed in 2018**

Replacement and upgrade of telemetry and SCADA systems for the water system. It is assumed the existing telemetry system would be replaced with a cellular-based system. New SCADA panels will be provided for the WTP, Hegewald Well, Base Reservoir / Pump Station 3, Catholic Church Reservoir, and High Zone Reservoir.

3 – Hegewald Well **Initial study completed in 2022, additional testing continues.**

Install chemical addition to adjust the pH of raw water to satisfy the requirements of the Lead and Cooper Rule. Adjustment of the pH will reduce customer complaints when the City uses the well.
4 – New Groundwater Source Study

Investigate a replacement well in either the City-owned LaBong Creek watershed, near the Hegewald Well, or close to the Columbia River. Work will include an initial hydrogeologic investigation, preliminary engineering report, and test well. Assuming completion of a successful test well, development of new groundwater source(s) would include electrical / controls, chemical building, transmission main to distribution system, and water rights.

5 – Base Reservoir Roof **Project completed in 2018**

The existing roof is made of Portland Cement Concrete (PCC) with integral beams and has an overlay of gravel and emulsified asphalt. The asphalt is worn off in several places, leaving the PCC exposed and subject to degradation. The proposed project consists of removing the existing gravel / asphalt overlay and replacing it with a new membrane overlay. The roof and sidewall interface will be constructed to be watertight during replacement of the existing reservoir roof. Deficiencies where the new siding meets the existing roof will be filled with mortar to seal the structure.

6 – Base Reservoir Condition Assessment **Project completed in 2018**

The Base Reservoir is the largest reservoir in the Stevenson Water System and is a vital link in the system. The project will be a high-level assessment of the seismic resilience of the structure. This assessment will be based on materials of construction, age and as-built drawings of the wall thickness, reinforcing, and foundation. Needed future investigations and structural evaluation of the reservoir will be identified.

7 – Zone 1 Distribution Improvements

Three improvement projects are proposed for the PZ 1 distribution system to address existing system deficiencies. Each project is described below.

The first project involves the replacement of the six-inch reservoir transmission main routed along School Street and Russell Avenue. This line is undersized to provide existing and future fire flow goals to the commercial district. Replacing the six-inch main with, at a minimum, an eight-inch main will improve fire flow capabilities to the downtown commercial area. Total length is approximately 1,450 feet.

The second project is the replacement of undersized AC waterlines along SW Atwell Road between Rock Creek Drive. Replacement of this four-inch main with an eight-inch main will increase available fire flow to this area thereby meeting the 2,000 gpm fire flow goal. Total length is approximately 1,000 feet.

The third project is the replacement of undersized AC waterlines along Rock Creek Drive between Ryan Allen Road and Monda Road and along Rock Creek Drive from Monda Road to the intersection with the water main from the Angel Heights PRV. Replacement of these six-inch mains with eight-inch mains will increase available fire flow to this area thereby meeting the 2,000 gpm fire flow goal for future commercial development. Total length is approximately 1,430 feet.

8 – Zone 2-1 Distribution Improvements

Three improvement projects are proposed for the PZ 2-1 distribution system to address existing system deficiencies. Each project is described below.

The first project is the construction of a new PRV station intertie with PZ 3. The PRV would replace a closed valve on Frank Johns Road near Gale Street. Addition of an intertie in this location increases available fire flow to the Frank Johns and Loop Road areas.

The second project is the replacement of undersized AC water mains in Frank Johns Road from Gale Street to Loop Road. Replacing the six-inch water main with an eight-inch main increases available fire flow to the Frank Johns and Loop Road areas. Total length is approximately 900 feet.

The third project is the replacement of undersized AC water mains in Frank Johns Road from Loop Road to just north of Highway 14. Replacing the six-inch water main with an eight-inch main satisfies available fire flow to the lower reaches of Frank Johns Road. Total length is approximately 1,000 feet.

In addition to the projects described above, it is recommended that the remaining AC water mains in the zone be upsized to eight-inch when they are replaced as part of the City's AC pipe replacement program. Opportunities to transfer lower elevation portions of this area to PZ 1 should be explored as new development is proposed east of the downtown area.

9 – Zone 3-1 Distribution Improvements

One improvement project is proposed for the PZ 3-1 distribution system to address existing system deficiencies. The project is described below.

Replacement of an undersized AC water main in Hillcrest Avenue and NE Major Street. Replacing the four-inch water main with an eight-inch main satisfies available fire flow to the lower reaches of NE Major Street. Total length is approximately 500 feet.

6.3.3 Projects Years 11 to 20

10 – Water System Plan Update

This project includes funds to complete two updates to this Water System Plan over the 20-year horizon.

11 –Zone 1 Distribution Improvements

Two improvement projects are proposed for the Zone 1 distribution system to accommodate future growth. Each project is described below.

The first project includes an extension of 12-inch main along SR-14 to the easternmost limits of the Urban Growth Area. This extension will satisfy the 2,000 gpm fire flow goal for potential development at the eastern end of PZ 1. Total length of pipe is approximately 3,280 feet.

A second project includes the extension of a 12-inch main west on Rock Creek Drive and SR-14 to the westernmost limits of the Urban Growth Area. This project will also satisfy the 2,000 gpm fire flow goal for potential developments at the west end of PZ 1. Total length is approximately 3,200 feet.

12–Zone 2 Distribution Improvements

Two improvement projects are proposed for the PZ 2 distribution system to accommodate future growth. Each project is described below.

The first is the relocation of the existing pressure reducing station near the Interpretive Center to restructure the service zone for this area. Relocating this pressure reducing station from Rock Creek Drive to just north of the intersection of Ryan Allen Road and Foster Creek Road will benefit this area by transferring existing waterlines on both roads from PZ 2 to PZ 1.

A second improvement for PZ 2 is to provide looping at the west end of the system by extending the 12-inch water mains adjacent to Skamania Lodge to the proposed PZ 1 waterline extension at the west end of the system. This improvement will require the installation of a pressure reducing valve to connect the two zones. Total length is approximately 2,500 feet.

13 – Zone 3 Distribution Improvements

Two improvement projects are proposed for the Zone 3 distribution system to accommodate future growth. Each project is described below.

The first project includes an extension of an eight-inch main north on Maple Way Road from the intersection with Gropper, and an extension of eight-inch main along West Loop Road. Total length of pipe is approximately 5,700 feet.

The second project is a eight-inch main on Maple Way Road between West Loop and Kanaka Creek Road that will provide the backbone for future development. Total length of pipe is approximately 1,700 feet.

14 – Pressure Zone 4 Improvements

A single project is identified for Zone 4 and will be dependent upon development extending into this higher elevation area. This project includes construction of a 500,000-gallon reservoir, booster pump station, PRV intertie, and extension of a 12-inch water main north along Kanaka Creek Road to the future PZ 4 reservoir site. Total length of pipe is assumed to be approximately 4,600 feet for cost estimating purposes. Because this is outside of the Retail Service Area, a water system plan amendment will be needed to expand the boundary.

There are two alternatives for upgrading the distribution system to supply water to the proposed Zone 4 reservoir. These alternatives are described below and represented graphically in **Figure 6-1**.

Alternative A - Install a booster pump station to supply the proposed PZ 4 reservoir from the PZ 3 distribution system. PZ 4 reservoir construction will include the construction of a new lift station and PRV intertie within PZ 3. The construction of a future PZ 4 reservoir and pressure reducing intertie will supplement PZ 3 fire storage deficiencies.

Alternative B - Upgrade the Zone 3 booster pump station with higher head pumps and transfer the Gropper Road / Kanaka Creek Road transmission main to directly serve the proposed Zone 4 reservoir. This alternative would require that the High Zone reservoir be fed directly from the proposed PZ 4 reservoir and isolating PZ 3 distribution system connections to the Gropper Road / Kanaka Creek Road transmission main, or installing pressure reducing connections between the high-pressure transmission main and PZ 3 distribution system.

For developing this plan, the Alternative A improvements will provide the basis of future capital improvements. However, the potential to implement both alternatives will be evaluated during the review of development proposals and design of critical infrastructure components.

The City completed a preliminary siting study for the proposed PZ 4 reservoir which was summarized in the August 2003 Water System Plan Amendment. This study included a geotechnical investigation by Squier & Associates which resulted in the identification of four

potential reservoir sites with relatively favorable conditions in respect to landslide hazards. The following is a summary of the potential sites as presented in the Squier report (see **Appendix J**).

Site A - This site is located east of Loop Road in a debris flow zone with a designated "moderate" hazard characterization. While deep seated landslide hazards do not appear to present a significant threat, upslope failures could result in rapidly moving debris flows, though the potential for upslope landslide debris reaching the site is considered low.

Site B - This site is located on a high bluff upslope of Baker Road with a designated "low" hazard characterization. Steep escarpments bound this area with older landslide deposits below. Siting a reservoir in this area will require careful evaluation of slope stability for the site, including evaluation of the stability of the escarpments. Siting a reservoir in this area will also require the City to verify available properties as the general location is currently being developed.

Site C - This site is located near the existing Zone 3 Reservoir at the upper extent of Bone Road with a designated "low" hazard characterization. This site is located on a ridge line that parallels an apparently dormant landslide area where the existing reservoir is located.

Site D - This site is located on the nose of a long northwest trending ridge upslope of the Williams gas pipeline at the eastern limits of the growth boundary with a designated "low" hazard characterization. Roadway access to this area does not presently exist.

In comparing the reservoir site alternatives, consideration was given to transmission main routing, vacant properties, areas of current and future development, and total infrastructure and land costs. Based on these considerations, it was concluded that Site B and C are the preferred sites. These sites are centrally located within the service area, reside within "low" landslide hazard ratings, and provide the lowest cost for installing transmission main to the site from the existing PZ 3 distribution system. If unanticipated future development occurs primarily in the eastern or western fringes of PZ 4, Site A or Site D may warrant further investigation. Once the preferred site has been selected, a site-specific preliminary engineering report, including reservoir foundation investigation, should be conducted at the site. For developing capital improvement projects and costs, the proposed PZ 4 reservoir is shown near Site B.

6.4 Ongoing Pipe Replacement

The City does not currently maintain an annual budget for the replacement of smaller diameter and poor condition pipe. However, they recognize the need to replace older water mains, especially those constructed of asbestos cement pipe because this material has been the primary source of leaks and water main breaks in the system. On average, the City replaces approximately 400 feet of water main each year. Most of this replacement work has been self-performed by City crews which allows for more pipe to be installed, per dollar invested, when compared to using a contractor.

With most of the water system being installed since the 1960's, the City has a head-start on maintaining a 100+/- year cycle on its pipe. The City is working to develop an annual pipe

replacement budget while recognizing that the budget will likely need to be leveraged for other system projects such as fire flow improvements and coordination with street or other infrastructure system improvements.

Zone restructuring to reduce the extent of high pressure areas and reliance of individual pressure reducing valves has been examined during previous water plan updates. However, given the challenging topography as previously discussed and length of time many areas have been adequately served by existing facilities, it is difficult to justify the construction of upgrades during a period when the resources of the City are limited. Opportunities to transfer existing waterlines or service areas to an “ideal” pressure zone will be examined in additional detail when future waterline projects make such a project feasible.

6.4.1 Leak Reduction Program

The City’s Water Loss Control Action Plan (WLCAP) outlines actions the City will take to reduce its leakage rate to below 10%. These efforts include leak detection surveys, calibration of large service meters, replacement of outdated water mains, and having pressure reducing valves serviced regularly. The WLCAP in **Appendix C** discusses how these activities will be paid for.

Current pipe replacement priorities include 1) replacing approximately 2,000 feet of six-inch AC mains with eight-inch ductile iron on Ryan Allen Road between Foster Creek Road and SW Rock Creek Drive and 2) replacing approximately 1,300 feet of six-inch AC mains with eight-inch ductile iron on Upper School Street between Hot Springs Alameda Road and Kanaka Creek Road.

6.5 Summary

Recommended projects are divided across two-time periods, those recommended within 10 years and those in years 11 through 20. Projects are intended to address system deficiencies projected during these time periods but should be evaluated annually through City reviews of demand growth, available budget and system development pressure. Within each time period, the projects are not placed in any particular order. **Table 6-1** summarizes the recommended system improvements for years 1 through 10. **Table 6-2** summarizes the recommended system improvements for years 11 through 20. The proposed improvements are shown on **Figure 6-2** and **Figure 6-3**.

Table 6-1
10-Year Capital Improvement Projects

Project ID	Project Name	Project Components	Description	Source (S)	Deficiency Addressed ¹			Cost ²
					Pressure (P)	Fire Flow (FF)	Other	
1	Water Treatment Plant	WTP	Complete miscellaneous improvements ▪ Upgrade controls to a PLC based system ▪ Install manual transfer switch for portable generator ³	S2		Completed controls for \$6k	Treatment	\$100,000
2	Telemetry / SCADA Improvements	All	Upgrade of telemetry and SCADA systems ▪ Replace audio tone system with radio based system ▪ WTP, Hegewald Well, Base Reservoir/BPS 3, High Reservoir, Catholic Church Reservoir			Completed for \$30k	Telemetry	\$300,000
3	Hegewald Well	Well	Install chemical addition for pH adjustment	S2				\$50,000
4	New Groundwater Source Study	Well	Investigate a new well to replace the WTP ▪ Hydrogeologic investigation ▪ Test well ▪ Preliminary engineering report	S2				\$250,000
5	Base Reservoir Roof	Tank	Replace existing gravel / asphalt covering with membrane overlay	S2		Completed for \$50k		\$50,000
6	Base Reservoir Condition Assessment	Reservoir	High-level assessment of structure seismic resiliency ▪ Based on materials of construction, age, as-built drawings ▪ Assumes involvement of Civil, Structural, and Geotechnical engineers			Completed for \$2,500	Resiliency	\$20,000
7.1	Church Reservoir Transmission	Pipe	Downtown area fire flow through upsized piping ▪ Install 1,450 feet of new 12" pipe			FF1	Undersized pipe	\$425,000
7.2	SW Atwell Road	Pipe	PZ 1 fire flow through upsized piping ▪ Install 1,000 feet of new 8" pipe			FF1	Undersized pipe	\$263,000
7.3	Rock Creek Drive	Pipe	PZ 1 fire flow through upsized piping ▪ Install 1,430 feet of new 8" pipe			FF1	Undersized pipe	\$375,000
8.1	Frank Johns PRV	PRV / Pipe	Intertie PZ 3 with PZ 2 with new 6" PRV station ▪ Open existing closed valve ▪ Install 8" pipe to connect the PRV station to the existing water main			FF2	Undersized pipe	\$157,000
8.2	Frank Johns North	Pipe	PZ 2 fire flow through upsized piping ▪ Install 900 feet of new 8" pipe			FF2	Undersized pipe	\$237,000
8.3	Frank Johns South	Pipe	PZ 2 fire flow through upsized piping ▪ Install 1,000 feet of new 8" pipe			FF2	Undersized pipe	\$283,000
9	NE Major Street	Pipe	PZ 3-1 fire flow through upsized piping ▪ Install 500 feet of new 8" pipe			FF3	Undersized pipe	\$132,000
Years 1 to 10 Total								\$2,642,000

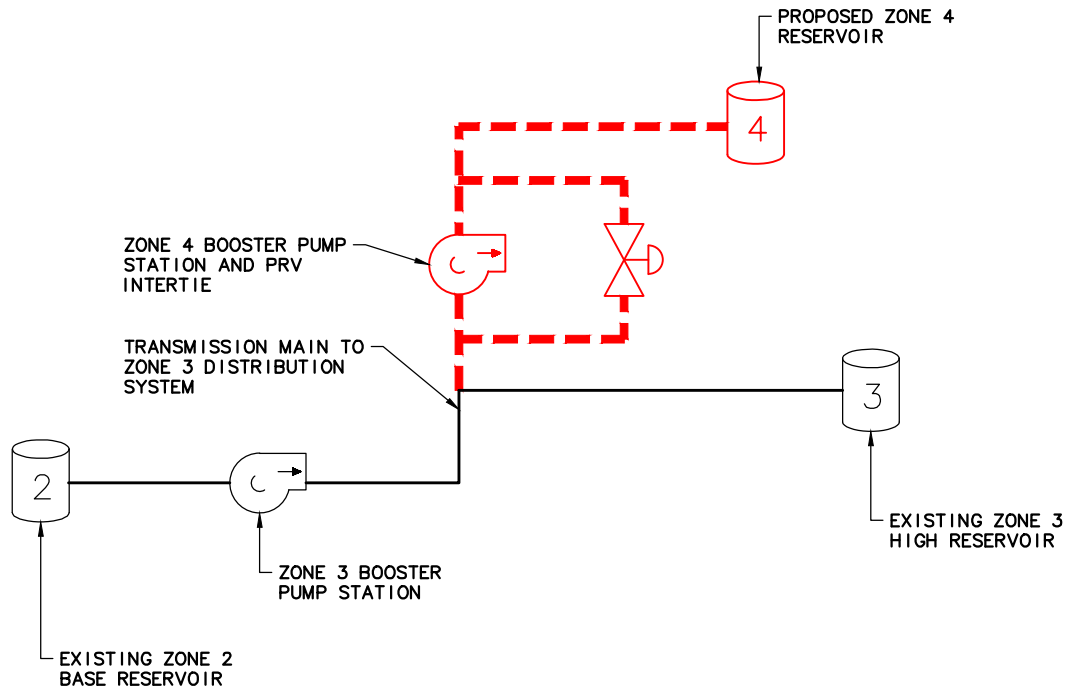
- Notes:
1. Capital projects are identified by what type of deficiency is addressed and in which pressure zone.
 2. All costs are in 2016 dollars.
 3. Portable generator to be purchased separately.

Table 6-2
20-Year Capital Improvement Projects

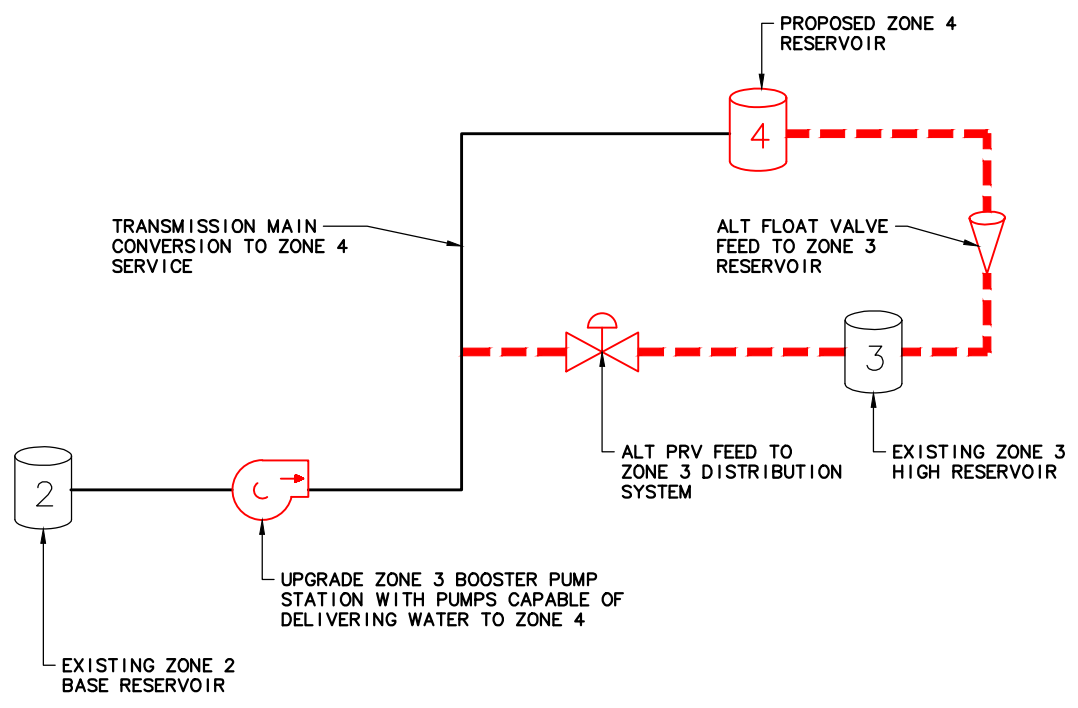
Project ID	Project Name	Project Components	Description	Deficiency Addressed ¹				Cost ²
				Facility Deficiency	Pressure Deficiency	Fire Flow Deficiency	Other	
10	Water System Plan Update	Facility Plan	Update the WSP every 10 years <ul style="list-style-type: none"> ▪ Once 10 years from year of approval ▪ Once 20 years from year of approval 				Planning	\$150,000
11.1	SR-14 East	Pipe	PZ 1 improvements to accommodate future growth <ul style="list-style-type: none"> ▪ Install 3,280 feet of new 12" pipe 				Growth	\$960,000
11.2	SR-14 West	Pipe	PZ 1 improvements to accommodate future growth <ul style="list-style-type: none"> ▪ Install 3,200 feet of new 12" pipe 				Growth	\$937,000
12.1	Rock Creek PRV Relocation	PRV / Pipe	Relocate pressure zone break from Rock Creek Drive to Ryan Allen and Foster Creek Road <ul style="list-style-type: none"> ▪ Install new 6-inch PRV station ▪ Abandon existing PRV station ▪ Miscellaneous water lines as required 		P2			\$100,000
12.2	West-End Looping	Pipe	PZ 2 improvements to accommodate future growth <ul style="list-style-type: none"> ▪ Install 2,500 feet of new 12" pipe 				Growth	\$657,000
13.1	Maple Way East	Pipe	PZ 3 improvements to accommodate future growth <ul style="list-style-type: none"> ▪ Install 5,700 feet of new 8" pipe 				Growth	\$1,323,000
13.2	Maple Way West	Pipe	PZ 3 improvements to accommodate future growth <ul style="list-style-type: none"> ▪ Install 1,700 feet of new 8" pipe 				Growth	\$412,000
14.1	Zone 4 Predesign	Tank / Booster / PRV / Pipe	Preliminary design investigation for Zone 4 Improvements <ul style="list-style-type: none"> ▪ Identify tank location and configuration ▪ Identify pump station location and configuration ▪ Identify transmission main routing 				Planning	\$75,000
14.2	Zone 4 Improvements	Tank / Booster / PRV / Pipe	Develop new pressure zone 4 <ul style="list-style-type: none"> ▪ Build new 500,000-gallon tank ▪ Build new booster pump from PZ 3 to PZ 4 ▪ Electrical and telemetry improvements to connect the new facilities to existing SCADA ▪ Install approximately 4,600 feet of 12" pipe ▪ <i>Land acquisition costs are not included</i> 				Growth	\$4,038,000
							Years 11 to 20 Total	\$8,652,000

- Notes:
1. Capital projects are identified by what type of deficiency is addressed and in which pressure zone.
 2. All costs are in 2016 dollars.

c:\PDX_Projects\16\1828 - Stevenson Water System Plan Update\05.CAD\Figures\16-1828-WA-FIGURE 6-1.dwg FIGURE 6-1 11/6/2017 2:23 PM DKH 2.1.0s (LMS Tech)



ALTERNATIVE A



ALTERNATIVE B

FIGURE 6-1

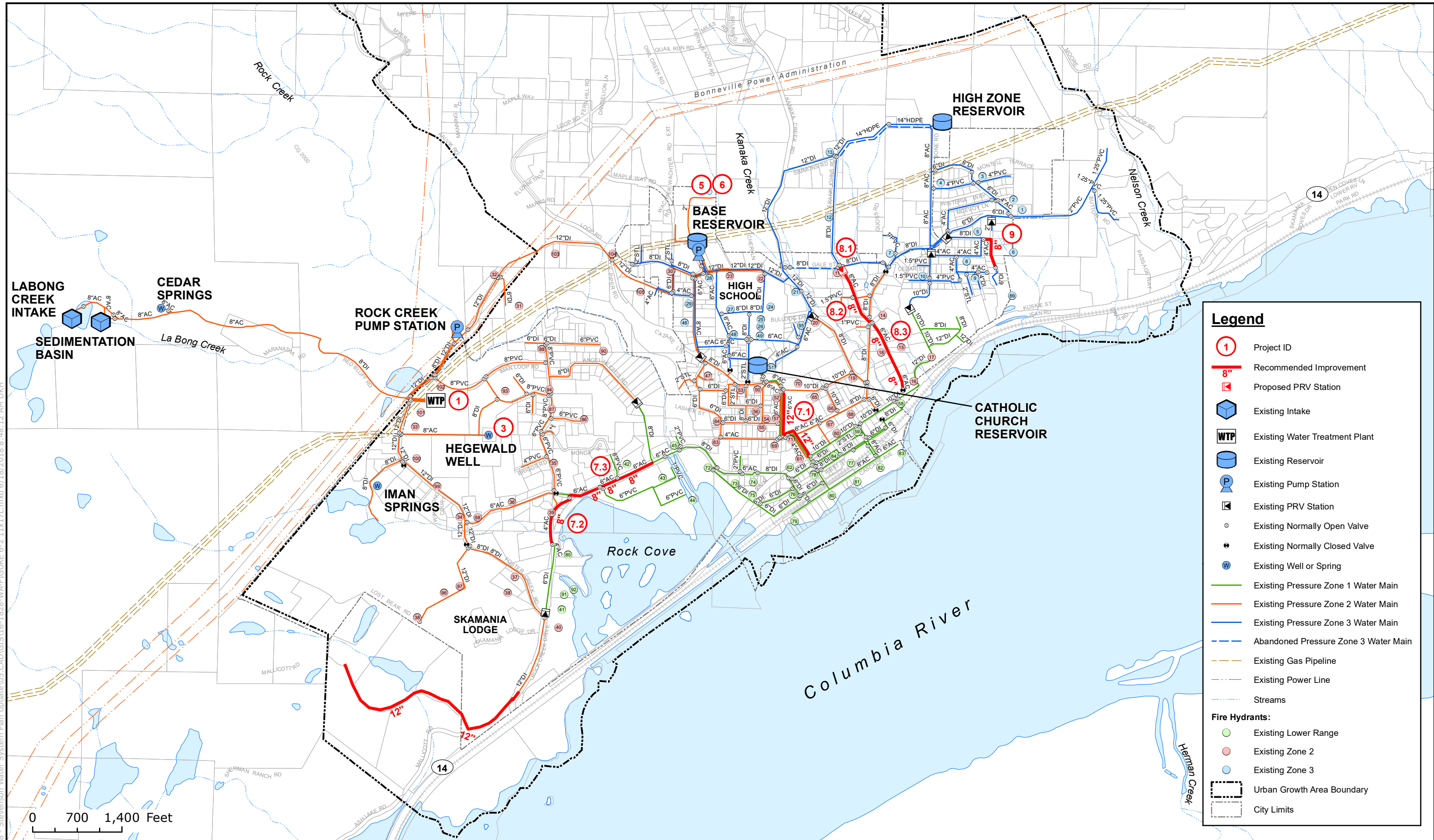


STEVENSON WATER SYSTEM PLAN UPDATE
ZONE 4 RESERVOIR SUPPLY
ALTERNATIVES

November 2017



G:\PDX_P\Projects\161828 - Stevenson Water System Plan Update\05_CAD\GIS\16-1828-WA-FIGURE 6-2 11x17L.mxd 6/18/2018 8:48:12 AM DKH



Legend

- 1 Project ID
- Recommended Improvement
- P Proposed PRV Station
- I Existing Intake
- WTP Existing Water Treatment Plant
- R Existing Reservoir
- P Existing Pump Station
- Existing PRV Station
- Existing Normally Open Valve
- Existing Normally Closed Valve
- W Existing Well or Spring
- Existing Pressure Zone 1 Water Main
- Existing Pressure Zone 2 Water Main
- Existing Pressure Zone 3 Water Main
- Abandoned Pressure Zone 3 Water Main
- Existing Gas Pipeline
- Existing Power Line
- Streams

Fire Hydrants:

- Existing Lower Range
- Existing Zone 2
- Existing Zone 3
- Urban Growth Area Boundary
- City Limits

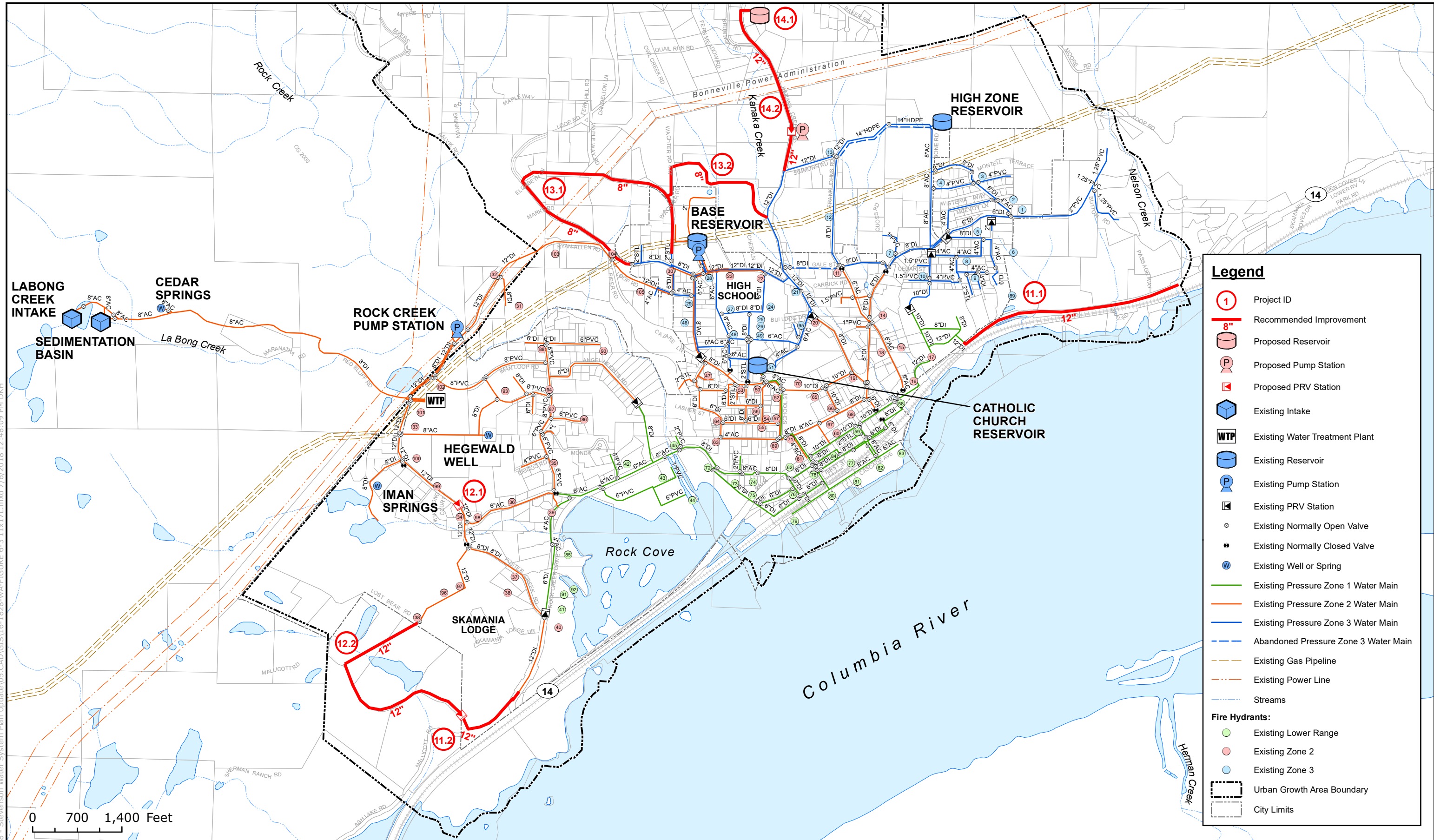


Stevenson Water System Plan Update



**Figure 6-2
Recommended Improvement
Projects: Years 1-10**

G:\PDX_P\Projects\161828 - Stevenson Water System Plan Update\05_CAD\GIS\16-1828-WA-FIGURE 6-3 11x17L.mxd 7/16/2018 12:48:09 PM DKH



Legend

- 1 Project ID
- Recommended Improvement
- 8" Proposed Reservoir
- P Proposed Pump Station
- PRV Proposed PRV Station
- I Existing Intake
- WTP Existing Water Treatment Plant
- R Existing Reservoir
- P Existing Pump Station
- PRV Existing PRV Station
- NOV Existing Normally Open Valve
- NCV Existing Normally Closed Valve
- W Existing Well or Spring
- Existing Pressure Zone 1 Water Main
- Existing Pressure Zone 2 Water Main
- Existing Pressure Zone 3 Water Main
- Abandoned Pressure Zone 3 Water Main
- Existing Gas Pipeline
- Existing Power Line
- Streams

Fire Hydrants:

- Existing Lower Range
- Existing Zone 2
- Existing Zone 3

- Urban Growth Area Boundary
- City Limits

0 700 1,400 Feet



Stevenson Water System Plan Update



**Figure 6-3
Recommended Improvement
Projects: Years 11-20**

5. COLLECTION SYSTEM IMPROVEMENTS

The collection system improvements recommended in this section are covered in two phases. Phase 1 covers the period from 2017 through 2025, and Phase 2 covers the period from 2025 through 2040. Estimated overall capital costs are provided for each project. A detailed estimate of overall cost and description of work items that make up the recommended improvements is included in Appendix D.

5.1 GRAVITY SEWER CAPACITY UPGRADES

The following improvements are needed to address capacity deficiencies identified by collection system modeling. Figure 5-1 shows the locations of the proposed collection system improvement projects.

5.1.1 Cascade Avenue Sewer—Phase 1 (Project S-01)

The existing 8-inch sewer in Cascade Avenue, east of Russell Avenue between MH CI-13 and CI-15 is undersized for existing and future peak flows. This line should be upsized prior to any capacity upgrades to the Kanaka Pump Station. The project consists of replacing 920 feet of 8-inch sewer pipe with new 12-inch pipe. The estimated capital project cost is \$441,000.

5.1.2 Cascade Interceptor—Phase 1 (Project S-02) Currently under construction

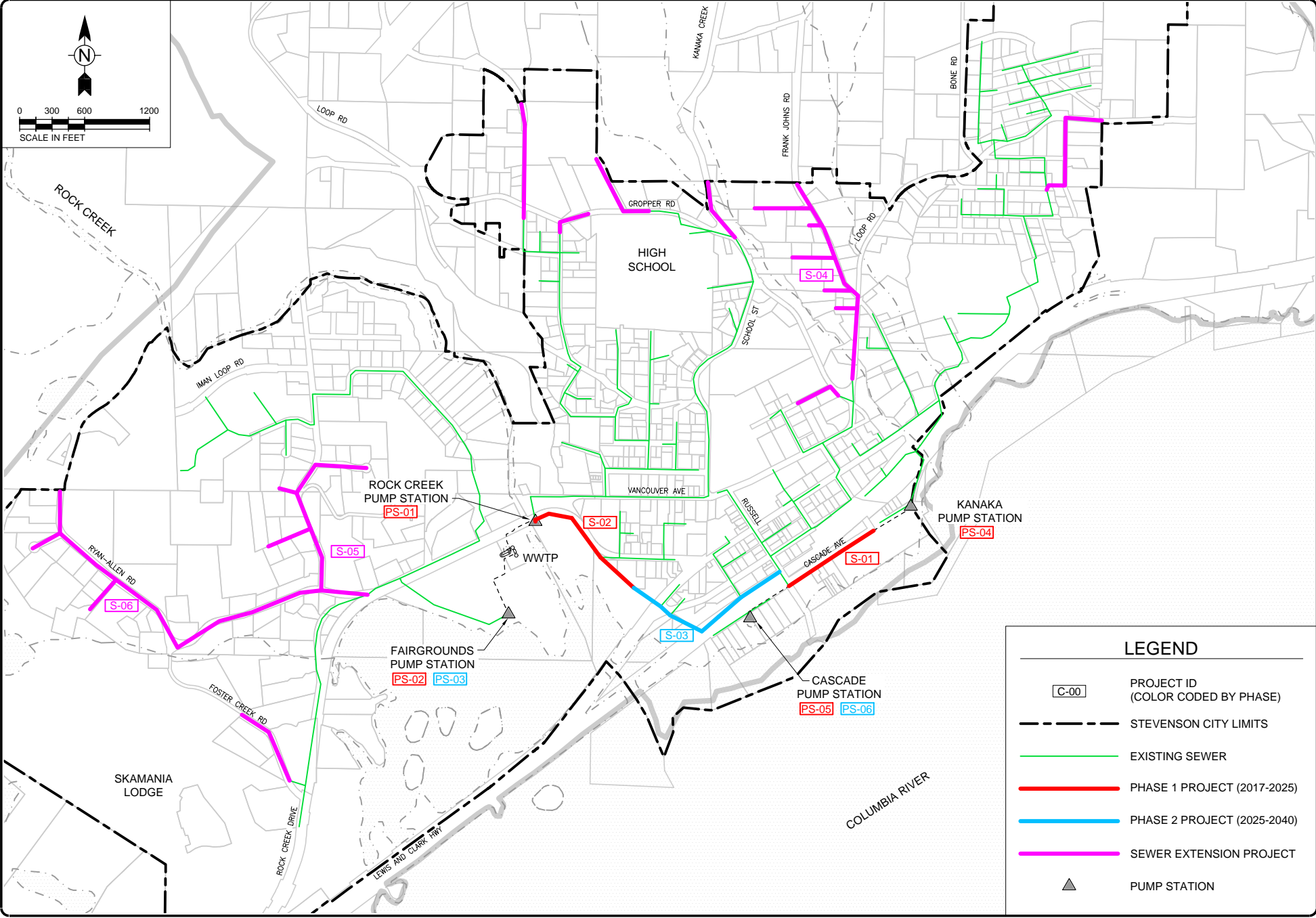
This portion of the existing 12-inch Cascade Interceptor is undersized for both existing and future peak flows, located in Rock Creek Drive starting at the Rock Creek Pump Station and continuing upstream to MH CI-4. The project consists of replacing 1,250 feet of 12-inch sewer pipe with new 18-inch pipe. The estimated capital project cost is \$682,000.

5.1.3 Cascade Interceptor—Phase 2 (Project S-03)

This portion of the existing 12-inch Cascade Interceptor is undersized for year 2040 peak flows. It starts at MH CI-4 and continues upstream to MH CI-12 at the intersection of Russell Avenue and Railroad Street. The project consists of replacing 1,650 feet of 12-inch sewer pipe with new 18-inch pipe. The estimated capital project cost is \$1,050,000.

5.2 EXTENSIONS TO UNSEWERED AREAS

It is expected that the collection system eventually will be extended to provide service to all currently unsewered development within the city limits. The system also will be extended into any parts of the Urban Area that become annexed to the city in response to requests associated with proposed development. The following projects will facilitate conversions of existing septic systems as well as allow future extensions to potential development. These projects can be constructed in Phase 1 or Phase 2, depending on availability and type of funding, rates of septic failures, and development trends within the City and adjoining Urban Area. Costs assume installation of service laterals to the property line. Installation of sewer laterals on private property and septic system conversions are not included in the costs. These projects are not included in the CIP plan as it is assumed they will be primarily private funded.



7/13/2017 1:24:04 PM - P:\48600135-48600-16001\CAD\SHEET\FIGURE-1.DWG

5.2.1 Main D Extension (Project S-04)

Section from Kanaka intersection to up a block on Frank Johns completed.

This project will extend Sewer Main D north along East Loop Road and Frank Johns Road to provide an available sewer to connect to for properties currently on septic. Spur lines will be provided to serve properties on Thomas Street, Jordan Street, Carrick Road, and Gale Street. It would also allow for future extension north on Frank Johns Road beyond current city limits to serve new development. The project consists of installing 3,500 feet of 8-inch sewer pipe. It will provide possible sewer connection for 31 properties currently on septic as well as future service to undeveloped properties located near the line. The estimated capital project cost is \$1,330,000.

5.2.2 Iman Cemetery Road (Project S-05)

This project will extend sewer closer to properties within city limits that are currently on septic to allow conversion to the sewer system. The new sanitary sewer will start at Rock Creek Drive and Ryan Allen Road, continuing north on Iman Cemetery Road. Spur lines will be provided to serve properties on SW Briggs Road, NW Kaspar Road, and Nicklaus Court. The project consists of installing 2,800 feet of 8-inch sewer pipe. It will provide a possible sewer connection to 20 properties currently on septic as well as future service to undeveloped properties located near the line. The estimated capital project cost is \$1,045,000.

5.2.3 Foster Creek Road (Project S-06)

This project will extend sewer closer to properties within city limits that are currently on septic to allow conversion to the sewer system. The new sanitary sewer will start from the intersection of Ryan Allen Road and Iman Cemetery Road, continue east to Foster Creek Road, and then continue north to the intersection of Foster Creek Road and Hollstrom Road. Spur lines will be provided to serve properties on Lakeview Road and SW Jayden Lane. The project consists of installing 4,000 feet of 8-inch sewer pipe. It will provide a possible sewer connection to 24 properties currently on septic as well as future service to undeveloped properties located near the line. The estimated capital project cost is \$1,525,000.

5.2.4 Other Extension Projects

Additional extension projects are shown on Figure 5-1, but not assigned a project ID. These projects would likely be privately funded as part of future development. All of these proposed pipes will likely only need to be 8" diameter given the steep terrain and relatively small service areas. Pipe sizing should be verified by the developer during the design review process.

5.3 PUMP STATION UPGRADES

All pump stations need to be outfitted to allow bypass pumping systems to be installed in case of extended power outage or failure of the pump or control systems. Needed modifications would include suction connection, appropriate pump selection, and a discharge connection to the force main.

5.3.1 Rock Creek Pump Station—Phase 1 (Project PS-01)

Currently under construction

Modeling indicates that the Rock Creek Pump Station is undersized for both existing and future flows. Pump run-time data and staff observations corroborate the model results. Therefore, full pump station replacement is recommended. This project consists of constructing a new 1,500-gpm firm capacity duplex or triplex submersible pump station with new control panel, auxiliary standby power, and new 12-inch force main to the WWTP. The estimated capital project cost is \$1,226,000.

5.3.2 Fairgrounds Pump Station—Phase 1 (Project PS-02) In Design Phase

Modeling indicates that this pump station is adequately sized for current flows, but might be slightly undersized for 2040 flows. It is recommended that flows to this pump station be monitored to verify modeling assumptions and allow for more accurate predictions of existing and future peak-hour flows. In the interim, the following improvements are recommended:

- Provide provision for bypass pumping.
- Install new flow meter on the force main discharge piping.
- Integrate new flow recorder into existing controls.
- Relocate portion of force main if necessary for WWTP expansion.

The estimated capital project cost is \$111,000.

5.3.3 Fairgrounds Pump Station—Phase 2 (Project PS-03) In Design Phase

The following Phase 2 work items are recommended at the Fairgrounds Pump Station:

- Replace pump station with new submersible pumps in new wet well.
- Provide a new control panel and instrumentation.
- Provide new electrical equipment, including standby generator and automatic transfer switch.

The estimated capital project cost is \$917,000.

5.3.4 Kanaka Pump Station—Phase 1 (Project PS-04) In Design Phase

Modeling indicates that this pump station is undersized for both existing and future flows. Average weekly pump run-times of 14.5 hours per day were observed in December 2015, which is high for systems with large peaking factors, as is suggested by WWTP flow records.

At a minimum, a flow meter should be installed at the pump station to verify modeling assumptions and allow for more accurate predictions of existing and future peak-hour flows. However, full pump station replacement is recommended, given the potential near-term additional flows from development of the Chinidere Mountain subdivision as well as the station deficiencies listed in Section 4.1.2.

Pump station replacement will consist of constructing a new 500-gpm firm capacity duplex submersible pump station with new control panel and auxiliary standby power. The existing 6-inch force main installed in 2015 will not need replacement as it is adequately sized for projected flows. The estimated capital project cost is \$770,000.

5.3.5 Cascade Pump Station—Phase 1 (Project PS-05) In Design Phase

The Cascade Pump Station is adequately sized for existing and future flows. The following improvements are recommended:

- Provide provision for bypass pumping.
- Upgrade controls to include an auto-dialer or remote telemetry unit to notify operations staff of high wet well level or equipment malfunction.

The estimated capital project cost is \$37,000.

5.3.6 Cascade Pump Station—Phase 2 (Project PS-06) In Design Phase

The following Phase 2 work items are recommended at the Cascade pump station:

- Replace pump station with new submersible pumps in new wet well.
- Provide a new control panel and instrumentation.

The estimated capital project cost is \$509,000.

5.4 IMPROVED OPERATION AND MAINTENANCE

5.4.1 Sewers

Sewer Inspection and Cleaning

In annual budget

It is recommended that all City sewers be systematically inspected by CCTV, with the oldest sewers to be inspected in the first two years and the remaining sewers over 10 years. The inspection should be done to the standards of the Pipeline Assessment Certification Program, with the video and subsequent reports archived. This inspection should identify system defects and help identify sewers that need significant maintenance, rehabilitation and replacement. A system of preventive maintenance should be implemented that includes cleaning and removal of tree roots. For sewers of greater significance or with likelihood of recurring issues, a schedule for preventative maintenance should be set.

It is recommended that the City budget \$5,000 per year for CCTV work.

Pipe and Manhole Rehabilitation

In annual budget

It is recommended that the City begin a yearly program of pipe and manhole rehabilitation in specific areas, including older parts of the collection system and known areas of high I/I, such as School Street and the downtown areas. Pipe rehabilitation can include new pipe, pipe bursting or cured-in-place pipe lining.

It is recommended that the City budget \$80,000 per year for upgrades. Based on results of past I/I repairs, significant reductions in flow are not anticipated. Rather, the control program will likely maintain the collection system's current I/I rate as it ages.

Geotechnical Considerations

It is recommended that a geotechnical engineer be consulted before making I/I repairs in areas of known or suspected slope instability (such as the northeast area of the collection system), because I/I repairs could change subsurface drainage patterns and increase the risk of a landslide.

5.4.2 Flow Monitoring and Data Collection

Collection of flow monitoring data will enable measurement of base flow and I/I in City sewers. It is recommended that the gravity sewer system be visually checked at key locations to estimate dry-weather and wet-weather flows. Combining velocity readings from a portable velocity sensor with estimates of water depth would enable estimates of flow at each location.

Periodic installation of temporary flow monitors at key locations in the network is also recommended. These flow monitors should record both water depth and water velocity, so that total flow can be derived. Installation of the meters should be at locations that have been screened to ensure that poor site hydraulics do not limit the accuracy of the data collection. A typical flow monitor installation would occur during the wet-weather season between September and April. This period may be extended if specific dry-weather flow information is desired.

5.4.3 CMOM Program

It is recommended that the City implement a Capacity, Management, Operation, and Maintenance (CMOM) program following EPA guidance. A CMOM program should incorporate the following elements:

- Level of service
- Performance measurements
- Information systems
- Asset identification and capitalization
- Failure impact evaluation and risk management
- Condition assessment
- Rehabilitation and replacement planning
- Capacity assurance planning
- Maintenance analysis and planning
- Financial management
- Continuous improvement.

5.5 PRELIMINARY COLLECTION SYSTEM CAPITAL COST ESTIMATE

Planning level capital cost estimates for the recommended collection system improvements are presented in Table 5-1. A detailed cost estimate by work item is included in Appendix D. This is a Class 4 cost estimate as defined by the Association for the Advancement of Cost Engineering International. These costs represent planning level cost estimates in 2017 dollars and should be considered accurate in the range of +50 to -30 percent.

Table 5-1. Planning Level WWTP Capital Cost Estimates

Component	Estimated Capital Cost
Phase 1 Projects 2017-2025	
S-01—Cascade Avenue Sewer	\$441,000
S-02—Cascade Interceptor - Rock Cr PS to MH CI-4	Under Construction \$682,000
PS-01—Rock Creek Pump Station	Under Construction \$1,226,000
PS-02—Fairgrounds Pump Station - Phase 1	In Design Phase \$111,000
PS-04—Kanaka Pump Station	In Design Phase \$770,000
PS-05—Cascade Pump Station - Phase 1	In Design Phase \$37,000
Total	\$3,267,000
Phase 2 Projects 2025-2040	
S-03—Cascade Interceptor - MH CI-4 to CI-12	\$1,050,000
PS-03—Fairgrounds Pump Station - Phase 2	In Design Phase \$917,000
PS-06—Cascade Pump Station - Phase 2	In Design Phase \$509,000
Total	\$2,476,000
Extensions to Unsewered Areas	
S-04—Sewer Main D Extension	Portion completed in 2022 \$1,330,000
S-05—Iman Cemetery Road Extension	\$1,045,000
S-06—Foster Creek Road Extension	\$1,525,000
Total	\$3,900,000
Annual Operations and Maintenance	
Annual Pump Station Operation & Maintenance	In Annual Budget \$41,200
Annual Sewer Inspection & Cleaning	In Annual Budget \$5,000
Annual Pipe and MH Rehab	In Annual Budget \$80,000

9. RECOMMENDED PLAN

This chapter summarizes the recommended plan for upgrading the City of Stevenson’s wastewater collection and treatment facilities. The recommended plan covers collection system improvements in two phases and WWTP improvements in one phase.

9.1 RECOMMENDED IMPROVEMENTS

9.1.1 Collection System Improvements

Gravity Sewer Capacity Upgrades

The following projects will upgrade existing gravity sewers to provide additional capacity.

- **Cascade Avenue Sewer, Phase 1 (Project S-01)**—Replace 920 feet of 8-inch sewer pipe in Cascade Avenue with new 12-inch pipe
- **Cascade Interceptor, Phase 1 (Project S-02)**—Replace 1,250 feet of 12-inch Cascade Interceptor located in Rock Creek Drive with new 18-inch pipe
- **Cascade Interceptor, Phase 2 (Project S-03)**—Replace 1,650 feet of 12-inch Cascade Interceptor from Rock Creek Drive to Railroad Avenue and Russell Avenue with new 18-inch pipe

Phase 1 projects (to be completed from 2017 to 2025) are those required to address areas identified by modeling to have inadequate capacity for existing flows. Phase 2 projects (to be completed from 2025 to 2040) are those required to address future capacity issues.

Extensions to Unsewered Areas

The following projects are intended to facilitate conversions of existing septic systems and allow future extensions to developable areas in the City. Phasing is not explicitly defined for these projects because their timing will depend on funding, rates of septic failures, and development trends.

- **Main D Extension (Project S-04)**—Extend Sewer Main D north along East Loop Road and Frank Johns Road by installing 3,500 feet of 8-inch sewer pipe
- **Iman Cemetery Road (Project S-05)**—Extend sewer from Rock Creek Drive and Ryan Allen Road continuing north on Iman Cemetery Road by installing 2,800 feet of 8-inch sewer pipe
- **Foster Creek Road (Project S-06)**—Extend sewer from the intersection of Ryan Allen Road and Iman Cemetery Road and continuing east to Foster Creek Road and north to the intersection of Foster Creek Road and Hollstrom Road by installing 4,000 feet of 8-inch sewer pipe

Pump Station Upgrades

The following projects address deficiencies at existing pump stations

- **Rock Creek Pump Station, Phase 1 (Project PS-01)**—Existing equipment is undersized and full pump station replacement is required. Construct new 1,500-gpm firm capacity duplex or triplex submersible pump station with new control panel, auxiliary standby power, and new 12-inch force main to the WWTP.
- **Fairgrounds Pump Station, Phase 1 (Project PS-02)**—Minor upgrades are required, including provision for bypass pumping, new discharge flow meter, and integration of new flow recorder into existing controls. Relocation of a portion of force main may be required to accommodate WWTP expansion.
- **Fairgrounds Pump Station, Phase 2 (Project PS-03)**—Future increases in flow will require additional capacity upgrades, including new submersible pumps in new wet well, new control panel and instrumentation, and new electrical equipment including standby generator and automatic transfer switch.
- **Kanaka Pump Station, Phase 1 (Project PS-04)**—At a minimum, a flow meter should be installed to verify model results that show pump station to be undersized. Pump station replacement is recommended, consisting of a new 500-gpm firm capacity duplex submersible pump station with new control panel and auxiliary standby power.
- **Cascade Pump Station, Phase 1 (Project PS-05)**—Minor upgrades are required, including provision for bypass pumping and upgrade of controls to include an auto-dialer or remote telemetry unit.
- **Cascade Pump Station, Phase 2 (Project PS-06)**—Future increases in flow will require additional capacity upgrades, including replacement of pumps with new submersible pumps in a new wet well and new control panel and instrumentation.

Phase 1 projects (to be completed from 2017 to 2025) are those required to address current capacity or safety issues. Phase 2 projects (to be completed from 2025 to 2040) are those required to address future capacity issues.

Project Prioritization

Table 9-1 shows the Phase 1 collection system improvements sorted by priority. Design and construction of the Rock Creek Pump Station improvements and Phase 1 Fairgrounds Pump Station Improvements have been scheduled to coincide with the WWTP improvements because standby power for the pump stations is provided by the generator at the WWTP, and because control improvements at the pump stations will need to be linked to new control systems at the WWTP. A second group of collection systems improvements has been scheduled for the following year.

Table 9-1. Phase 1 Collection System Improvements Prioritization

Priority	Project ID	Project Name	Year
1	PS-01	Rock Creek Pump Station	2021
2	PS-02	Fairgrounds Pump Station - Phase 1	2021
3	PS-05	Cascade Pump Station - Phase 1	2022
4	S-01	Cascade Avenue Sewer	2022
5	PS-04	Kanaka Pump Station	2022
6	S-02	Cascade Interceptor - Rock Cr PS to MH CI-4	2022

The Phase 2 collection system improvements will need to be initiated when the capacity of the gravity sewer and/or pump station is no longer adequate or when the age of the equipment is causing excessive operation or maintenance issues. Table 9-2 summarizes the trigger or triggers for each of the Phase 2 projects.

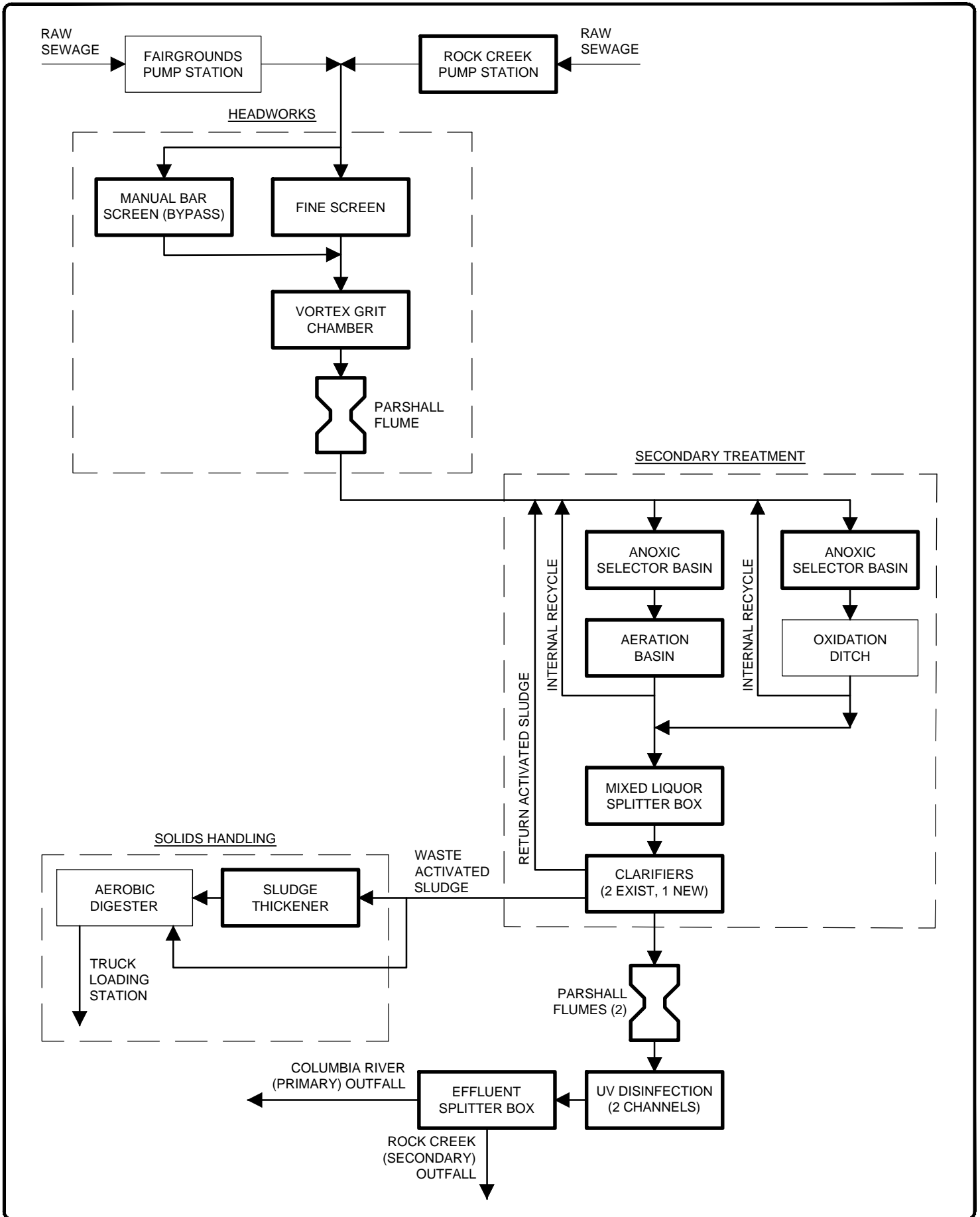
Table 9-2. Phase 2 Collection System Improvements

Project ID	Project Name	Trigger
S-03	Cascade Interceptor - Phase 2	<p><u>Capacity:</u> The trigger for upgrade will be when the pipe reaches full capacity and surcharges during peak-hour flow.</p> <ul style="list-style-type: none"> Existing Pipe Capacity = 650 gpm Existing Peak-Hour Flow = 580 gpm Year 2040 Peak-Hour Flow = 810 gpm <p>Full capacity will be reached when approximately 150 new ERUs are added to the Cascade Interceptor service area.</p>
PS-03	Fairgrounds Pump Station - Phase 2	<p><u>Capacity:</u></p> <ul style="list-style-type: none"> Existing Station Firm Capacity = 280 gpm Existing Peak-Hour Flow = 225 gpm Year 2040 Peak-Hour Flow = 355 gpm <p>Full capacity will be reached when approximately 115 new ERUs are added to the pump station service area.</p> <p><u>Age:</u> The station is 39 years old, whereas the typical design life for pump station mechanical and electrical equipment is 30 years. Increased maintenance time, limited availability of replacement parts, and funding availability are likely triggers for the project.</p>
PS-06	Cascade Pump Station - Phase 2	<p><u>Age:</u> The station is 45 years old whereas the typical design life for pump station mechanical and electrical equipment is 30 years. Increased maintenance time, limited availability of replacement parts, safety issues related to accessing the equipment, and funding availability are likely triggers for the project.</p>

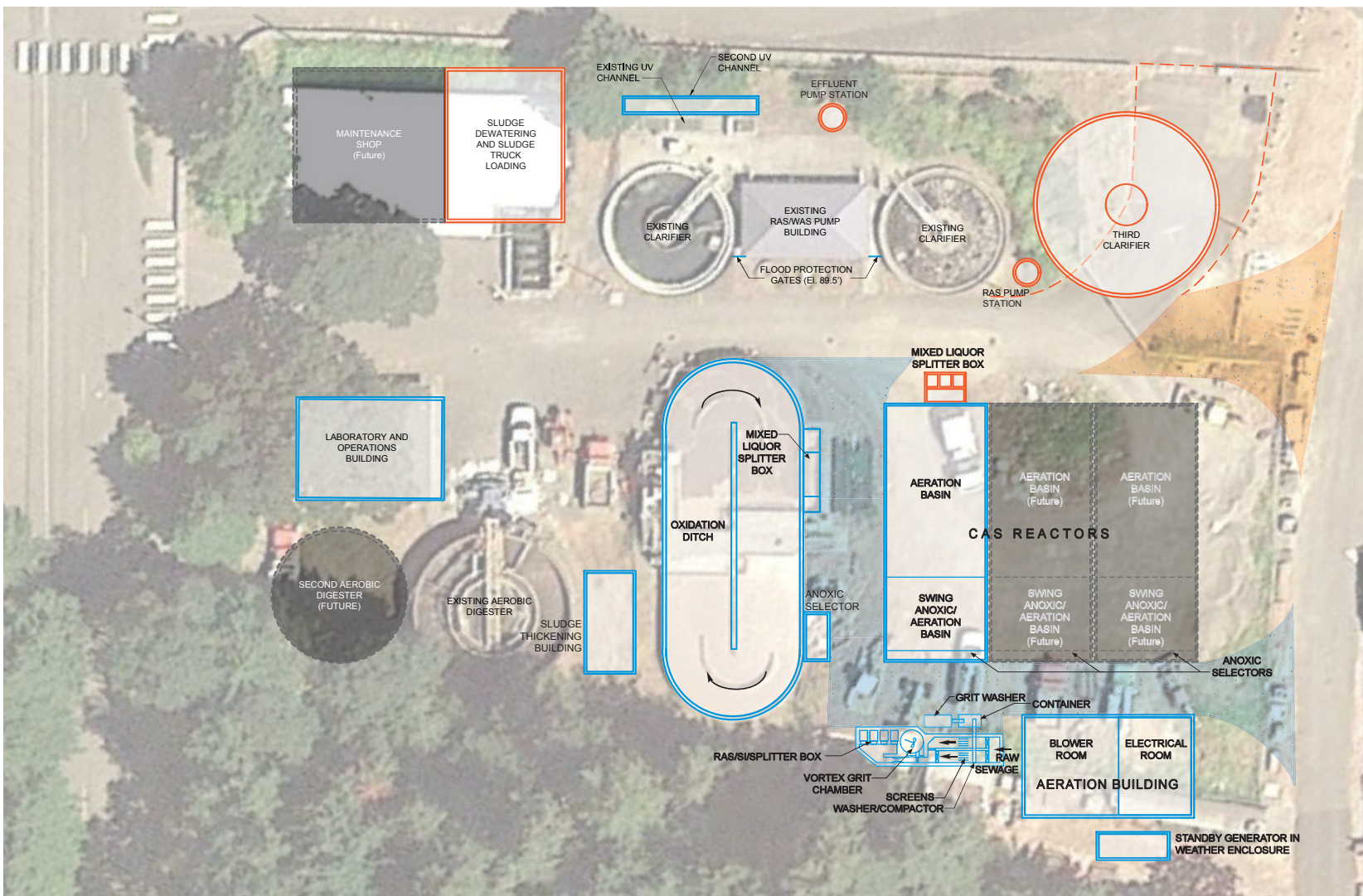
9.1.2 Wastewater Treatment Plant Improvements

Alternative 1B is the recommended alternative. The improvements would increase plant capacity for conditions projected through 2040. Figure 9-1 shows a flow diagram of the recommended WWTP improvements; Figure 9-2 shows a site plan. Specific improvements, to be implemented before 2022, are as follows:

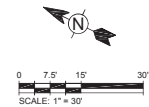
- Headworks**—Construct new headworks southwest of the existing oxidation ditch and abandon the existing headworks. The new headworks facility would be designed to handle a peak-hour flow of 2.7 mgd. It would include a junction box for two interceptors, a new sampling station, flow metering, a new screening facility consisting of one screening channel with a 6-mm fine screen and an emergency bypass channel with a manual bar screen, and a vortex grit chamber with horizontal recessed impeller grit pump and grit cyclone/classifiers.
- Secondary Treatment, Conventional Activated Sludge**—Maintain the existing oxidation ditch in operation and construct one new conventional activated sludge (CAS) biological reactor, with space for two more to be constructed in the future. Provide fine-bubble aeration in the CAS reactors, using blowers to be installed in a new aeration building. Install two 10,000-gallon anoxic selector tanks (one for the oxidation ditch and one for the CAS reactor) equipped with submersible mixers and submersible low-head propeller pumps to circulate mixed liquor between each biological reactor and anoxic selector in each reactor train.
- Secondary Treatment, Clarifier**—Construct new 50-foot diameter clarifier adjacent to existing clarifiers. Provide RAS pumping using two submersible pumps, one duty and one standby, in a wet well next to the new clarifier. Construct a new flow splitter box to route flows to the three clarifiers.
- Disinfection**—Construct a second UV channel parallel to the existing UV channel, with upstream Parshall flumes providing a flow split and flow measurement. Retrofit the existing UV channel with two banks of LPHO UV lamps and provide two matching banks of LPHO UV lamps for the new second channel.



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- LEGEND**
- Phase 1 Upgrades
 - Phase 2 Upgrades
 - Phase 3 Upgrades
 - New Access Road/Pavement (Phase 1)
 - New Access Road/Pavement (Phase 2)
 - Existing Driveway to Be Abandoned in Phase 2



AT18_04/18/2019

<p>TETRA TECH</p> <p><small>www.tetratech.com</small></p> <p><small>15350 SW Sequoia Parkway, Suite 220 Portland, OR 97224</small></p>	<p>CITY OF STEVENSON, WA</p> <p>GENERAL SEWER PLAN UPDATE</p>	<p>Project No.: 200-48600-19001</p>
	<p>RECOMMENDED ALTERNATIVE 1B WITH PHASED IMPLEMENTATION</p>	<p>Date: JANUARY 2019</p>
		<p>Designed By:</p>

Figure 1

Bar Measures 1 inch

The first phase of construction will include the following improvements:

- **Headworks**—Fine screen; washer compactor; grit chamber; grit pump and classifier; shed for equipment
- **Secondary Treatment**—Second aeration basin with selector basin; selector basin for existing oxidation ditch; blowers and blower building
- **Disinfection**—Second UV channel and equipment
- **Solids handling**—Thickeners and pumps; new building
- **Support facilities**—Lab and operations building; standby generator; electrical and control facilities; instrumentation; SCADA upgrade
- **Flood protection**—Site modifications for flood protection

Phase 2 is expected to be required between 2030 and 2040, depending on City growth, particularly the growth of the beverage industry. The effectiveness of BMPs in reducing loading from SIUs will be a major factor in determining how soon the second phase is required. Phase 2 will include the following improvements:

- **Secondary Treatment**—Third secondary clarifier; RAS pump station and splitter box
- **Solids handling**—Dewatering screw press and support equipment; new building
- **Effluent pumping**—Pump station

Planning level cost estimates for Alternative 1B were updated to incorporate the recommended phasing and escalate costs to 2019 dollars, as shown in Table 4. The GSP evaluated two alternatives for improving the Stevenson WWTP: Alternative 1B provided WWTP improvements needed if minimal pretreatment were provided for wastewater from SIUs; Alternative 2 provided improvements needed if SIU wastewater were pretreated to domestic strength. Alternative 1B was selected as the recommended alternative in the GSP due to its higher treatment capacity at the WWTP site and ability to accommodate smaller offsite pretreatment facilities. The 2019 alternatives analysis took a new look at varying levels of pretreatment at the SIUs and concluded that minimal pretreatment (low-effort BMPs) would be more cost-effective than pretreatment to domestic strength. The selection of Alternative 1B is supported by the conclusions of the alternatives analysis, so costs associated with Alternative 2 have not been updated for this Amendment. The capital improvement plan, shown in Table 5, was updated to reflect the modified costs and schedule. The collection system improvements shown have been updated to escalate costs to 2019 dollars.

Table 4. Updated Planning Level WWTP Cost Estimates – Alternative 1B Phase 1

Under Construction			
Component	Capital Project Cost	Annual Operation & Maintenance Cost	20-Year Present Worth
Headworks	\$1,998,000	\$49,104	\$3,079,000
Secondary Treatment	\$2,382,000	\$118,903	\$7,377,000
Disinfection	\$1,164,000	\$26,599	\$1,634,000
Solids Handling	\$1,886,000	\$177,711	\$8,020,286
Support Facilities	\$3,293,000	\$84,605	\$8,594,000
Flood Protection	\$215,000	\$1,771	\$246,000
WWTP Mgt Tasks		\$68,640	\$1,214,056
Lab Labor		\$102,960	\$1,821,084
Pretreatment Program Labor		\$68,640	\$1,214,056
WWTP Total	\$10,938,000	\$698,933	\$34,162,482

Note: This table replaces Table 8-4 from the 2017 GSP.

Table 5. Updated Capital Improvements Plan for the Recommended Alternatives

Item	2019	2020	2021	2022	2023
Const. Wastewater Treatment Plant Improvements (Alt 1B, Phase 1)	\$521,000	\$521,000	\$2,121,000	\$7,776,000	
Const. Rock Creek Pump Station (PS-01)	\$61,000	\$61,000	\$249,000	\$913,000	
Design Fairgrounds Pump Station – Phase 1 (PS-02)	\$6,000	\$6,000	\$23,000	\$84,000	
Design Cascade Pump Station – Phase 1 (PS-05)				\$4,000	\$35,000
Cascade Avenue Sewer – Phase 1 (S-01)				\$44,000	\$413,000
Design Kanaka Pump Station – Phase 1 (PS-04)				\$73,000	\$697,000
Const. Cascade Interceptor - Rock Cr PS to MH CI-4 (S-02)				\$67,000	\$641,000
Total	\$588,000	\$588,000	\$2,393,000	\$8,961,000	\$1,786,000

Note: This table replaces Table 9-4 from the 2017 GSP.

UPDATED FINANCIAL PROGRAM

On the financial side, it is clear to the City that significant changes were necessary to be able to afford the improvements recommended in the GSP and subsequently the updated capital improvements plan shown in Table 5. The City has been evaluating and implementing changes to the financial program in terms of rates and fees to allow for increased maintenance and operations of the system to come into compliance.

Program Changes Already in Place

Increased Monthly Sewer Rates

The City Council adopted multi-year water and sewer rate increases for 2018 and 2019 (Ordinance No. 2017-1112):

- The 2017 single-family residential sewer rate of \$29.95 was increased to \$44.93 for 2018 and \$58.41 for 2019.
- A new downspout/sump pump connection fee of \$10.00 per month was established to encourage property owners to disconnect rain catchment and sump pumps from the sewer system.
- A new BOD surcharge was established with usage rates for non-residential connections with BOD strength higher than residential to help ensure they are paying their share.

Increased Sewer System Development Charges

The City Council updated the system development charge paid by new or upsized connections to the system, from \$2,800 per ERU in 2017 to \$5,607 per ERU in 2018-19 (Ordinance No. 2017-1109). The City has also redesigned when the connection fee is due and plans to update the fee for 2020 when the improvement costs are better known.

Continued Moratorium on Commercial Connections

The City continues the moratorium on accepting commercial applications for sewer connection. New residential sewer connections are allowed.

Maintenance & Operating Expenses

The City has significantly increased the maintenance and operating expenses for both the collection system and the WWTP plant:

**City of Stevenson Wastewater Facility Plan/General Sewer Plan
Collection System Planning Cost Estimates
Tetra Tech Inc.
17-Nov-17**

		Capital Project Cost	Annual O&M	20 yr Present Worth
Phase 1 Projects 2017-2025				
S-01	Cascade Avenue Sewer	\$441,000	\$1,200	\$462,000
S-02	Cascade Interceptor - Rock Cr PS to MH CI-4	\$682,000	\$1,900	\$716,000
PS-01	Rock Creek Pump Station	\$1,226,000	\$13,700	\$1,468,000
PS-02	Fairgrounds Pump Station - Phase 1	\$111,000	\$800	\$125,000
PS-04	Kanaka Pump Station	\$770,000	\$9,800	\$943,000
PS-05	Cascade Pump Station - Phase 1	\$37,000	\$300	\$42,000
	Total	\$3,267,000	\$27,700	\$3,756,000
Phase 2 Projects 2025-2040				
S-03	Cascade Interceptor - MH CI-4 to CI-12	\$1,050,000	\$2,700	\$1,098,000
PS-03	Fairgrounds Pump Station - Phase 2	\$917,000	\$10,700	\$1,106,000
PS-06	Cascade Pump Station - Phase 2	\$509,000	\$7,000	\$633,000
	Total	\$2,476,000	\$20,400	\$2,837,000
Extensions to Unsewered Areas				
S-04	Sewer Main D Extension	\$1,330,000	\$4,100	\$1,403,000
S-05	Iman Cemetery Road Extension	\$1,045,000	\$3,300	\$1,103,000
S-06	Foster Creek Road Extension	\$1,525,000	\$4,600	\$1,606,000
	Total	\$3,900,000	\$12,000	\$4,112,000
Annual Operations And Maintenance				
	Annual Sewer Inspection & Cleaning		\$5,000	
	Annual Pipe and MH Rehab		\$80,000	

Option A-Policy to set minimum standard for all city-owned roads to be paved. Level of standard to be determined.								
6-year Street TIP 2023-2028	Phase	2023	2024	2025	2026	2027	2028	2023-2028
First Street	Design/Engineering Construction	800,000						- 800,000
Loop Road Storm, Grind and Inlay	Design/Engineering Construction	390,000						- 390,000
Iman Cemetery, Overlay	Design/Engineering Construction	65,000						- 65,000
Lasher to School St.-SRTS	Design/Engineering Construction	150,000	800,000					150,000 800,000
Chip seal McEvoy, Wisteria, Ridgecrest	Design/Engineering Construction	36,000						- 36,000
School Street Grind and Inlay	Design/Engineering Construction		440,000					- 440,000
Roselawn Ave Overlay	Design/Engineering Construction		165,000					- 165,000
Frank Johns Sidewalk (Loop-Second)	Design/Engineering Construction		25,000	50,000	400,000			75,000 400,000
Columbia Ave Realignment	Design/Engineering Construction			625,000	1,200,000			625,000 1,200,000
Bulldog-School-Kanaka Intersection	Design/Engineering Construction		5,000 45,000					5,000 45,000
W-SR-14 and Rock Creek Improvements	Design/Engineering Construction				100,000			100,000
East SR-14 Improvements-Low Phase	Design/Engineering Construction					50,000		50,000 340,000
West SR-14 Improvements-Low Phase	Design/Engineering Construction					50,000		50,000 340,000
Leavens Improvements	Design/Engineering Construction						225,000	- 225,000
Paving Gravel Roads:		50,000						50,000
Ash Alley	Design/Engineering Construction		95,000					- 95,000
Del Rey Avenue	Design/Engineering Construction						95,000	- 95,000
Gropper Park Loop	Design/Engineering Construction						95,000	- 95,000
H&H Avenue	Design/Engineering Construction						95,000	- 95,000
Holly Street	Design/Engineering Construction			95,000				- 95,000
Kanaka Creek Underpass	Design/Engineering Construction					100,000		- 100,000
Lakeview Road	Design/Engineering Construction	95,000						- 95,000
Maple Alameda	Design/Engineering Construction						95,000	- 95,000
Total Street CIP by Year		1,586,000	1,575,000	770,000	1,700,000	800,000	1,285,000	7,716,000
Total Grant Funds		1,354,700	1,398,500	588,125	1,504,500	605,500	801,950	6,253,275
Total City Funds		231,300	176,500	181,875	195,500	194,500	483,050	1,462,725



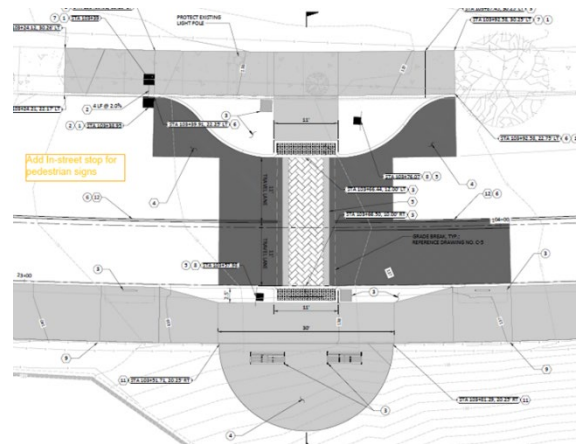
First Street Overlook

Description:

Project consists of crosswalk striping, vegetated curb extensions, new sidewalk, pedestrian overlook, path connecting to existing waterfront path and streetscaping.

The City spent \$166k on the design phase preparing for construction in 2021 when it was discovered WSDOT still owned the First Street right of way. This was paid for with partial grant funds and, due to the delay, the construction portion of those funds were lost. If the project is not constructed by January 1, 2030, those funds would need to be paid back (\$133k).

The City has applied for grant funds through the state (TIB) to construct the project in 2023. If that grant is not successful, we will apply to the original federal program (TAP) and construction would take place in 2024. More information on the project, the right of way issue and complete plans are on the city's website at <https://www.ci.stevenson.wa.us/publicworks/project/first-street-overlook>.



TIP Year: 2023 (const) **Project Type:** Improvement **Project Cost:** \$800k **Funding:** 100% Grant

Average Priority Score from Workshop: 1.2 (low)

Workshop Comment Summary:

- Concerned with number of people who would use this pathway.
- Narrowing streets can make it unsafe for folks to open their car doors. 2nd street as an example.
- Not great views looking down at RR and private backyards.
- Another place to send trail money.
- Like the traffic calming aspect
- What is the value add versus the cost of this project. Safety concern for vehicle pedestrian conflicts. Recommend passing or delaying for higher priority projects.
- Hold off. Low priority. Money better spent elsewhere.
- Overlook to nowhere. Scrap the plan. Waste of \$\$\$. Does not overlook anything the city should be proud of. Much better options for viewing. Traffic calming on the wrong side of road, should be eastbound.
- Traffic is fastest. Narrows road, extends sidewalk, traffic calming



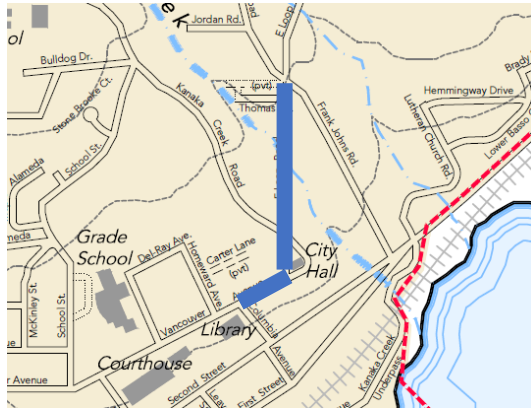
Loop Road Storm, Grind and Inlay

Description:

This project will repair the failing stormwater system (pictures below), grind and inlay the south-bound lane from the intersection with Columbia north to Frank Johns Road.

The sewer infrastructure extension will be completed this year (Main D Extension project).

Water infrastructure improvements to remove a section of AC pipe and address valve clusters will be completed prior to this project (2022 water infrastructure project).



TIP Year: 2023 (const) **Project Type:** Maintenance

Project Cost: \$390k

Funding: 95% Grant

Average Priority Score from Workshop: 3.1 (mid)

Comment Summary:

- Finish what's been started
- Finish recent work

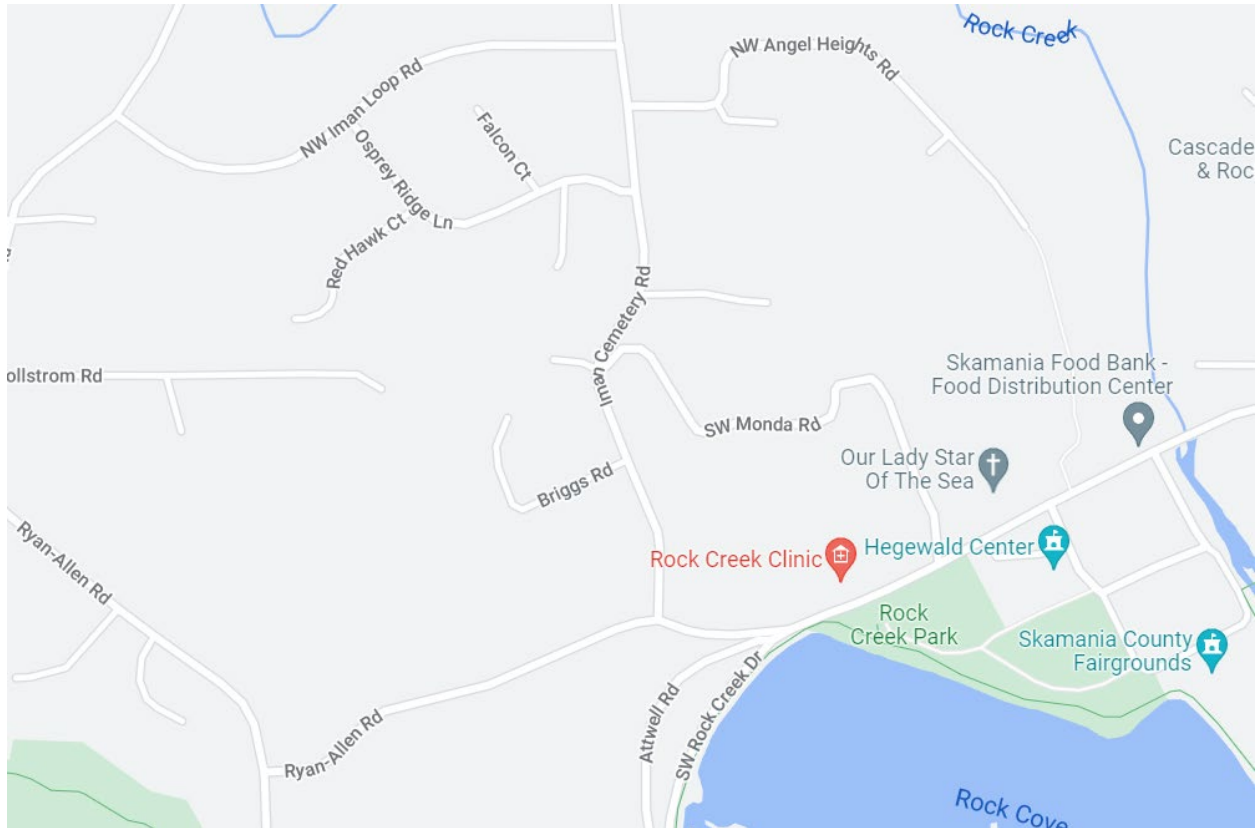


Iman Cemetery Overlay

Description:

This project is to do some minor leveling and overlay of Iman Cemetery Road from Ryan Allen to Osprey Ridge Lane. It was initial slated for 2022, however the County is unable to fit it in their schedule this year. This project will extend the life of the road until future improvements can be made.

Additional improvements will be included in the city’s Capital Improvement Program, which extends past 6-years. This includes extension of the sewer collection system as indicated in the city’s General Sewer Plan, stormwater improvements, and sidewalks.



TIP Year: 2023 (const) **Project Type:** Maintenance **Project Cost:** \$65k **Funding:** 95% Grant

Average Priority Score from Workshop: Not listed/Reconstruct 4 (mid-high)

Workshop Comment Summary:

- Consider adding Iman Cemetery Road - additional development, dump access. No longer a dead-end road. Should be reconstructed - stump was dug out recently. Concerned for safety of bus access. Serves over 100 residences, school bus 4 times/day through fare to Ryan Allen Road.



Lasher to School St - SRTS

Description:

This project adds a sidewalk to the north side of upper Lasher Street, and a crossing with flashing beacons at the intersection of School Street and the Stevenson Elementary School entrance. The application for a Safe Routes to School (SRTS) grant (\$800k limit for 100% grant) was submitted on June 6th and we expect to hear back on the project ranking by the end of the year. Grants are awarded in the summer of 2023.

Additional improvements will be included in funding applications for additional stormwater, street and sidewalk infrastructure for lower Lasher and the south side of Jefferson Avenue. These will be applied for after the SRTS grant is received.

Lasher Street to Stevenson Elementary (Phase 1) 2022 Concept-Level SRTS Grant Proposal Details



TIP Year: 2023-2024 (all) **Project Type:** Improvements **Project Cost:** \$950k **Funding:** 85% Grant

Average Priority Score from Workshop: 4.6 (high)

Workshop Comment Summary:

- Question/concerns about delineators getting ran over by new drivers.
- Gave high scores for kids and safety.
- Should be a high priority.
- Crosswalk at school entrance is the most important item in this TIP. Should be raised.
- 100% state funding
- Heavy traveled roads
- Recommend prioritizing this project.
- Yes, protect the children.
- Looks good! Coordinate with the school district on the option they want.

Additional Comments Received:

"I am writing to you about the proposed sidewalk along Lasher and Jefferson. First, let me thank you for communicating the plan with city residents using the postal mailer.



Lasher to School St - SRTS

I am a home owner and full time city resident on the corner of Jefferson and Lasher. I fully support the sidewalk proposal.

Along with providing safe walking for school children, many of us in the neighborhood walk these streets for exercise and would also benefit from sidewalk access.

As a city resident directly impacted by the proposal, I would like to know if the city would consider additional project requirements:

1. Garbage cans located along Lasher, Vancouver and Jefferson.
2. Plastic bag dispensers for dog owners to use to clean up after their dogs.
3. Speed bump along Lasher.

There is a lot of garbage along Lasher and at the intersection of Vancouver Ave and Lasher. I pick it up monthly. The garbage never stops.

There is also a tremendous amount of dog feces on the east side of Lasher between Vancouver and Jefferson. My neighbors have been picking this up as the feces finds it's way onto the road. With a new sidewalk, if current behavior persists, the sidewalk will be a mess.

And finally, Lasher is a bit of a speedway. Those of us who live next to or along Lasher are keenly aware of this. A speed bump similar to what exists on Rock Creek Dr at the intersection of Skamania Lodge would be very much appreciated.

Given the construction requirements to put in sidewalk, curb and gutter, new storm drains, etc., this is a perfect opportunity to address these other issues that are present in this area at little cost to the overall project, but big impact to those in the immediate vicinity."



Chip Seal McEvoy, Wisteria, Ridgecrest

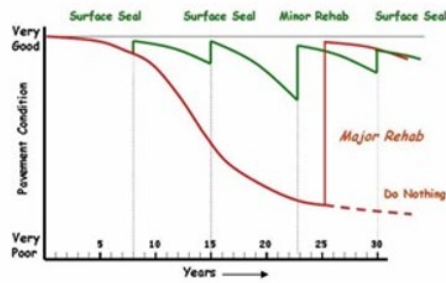
Description:

This chip seal project conditions and extends the life of the pavement on Ridgecrest Drive, Wisteria Way and McEvoy Lane. Maintaining the road is less costly than waiting until the road needs complete reconstruction.



Cost of Maintaining 1 Mile

$$\$28,000 + \$28,000 + \$700,000 + \$28,000 = \sim \$756,000 - \text{Proactive Approach}$$



~\$2,444,000
Opportunity Cost

~\$3,200,000 - Worst 1st Approach

StreetScan streetloix

TIP Year: 2023 (const) **Project Type:** Maintenance **Project Cost:** \$36k **Funding:** 95% Grant

Average Priority Score from Workshop: 2.5 (mid-low)

Workshop Comment Summary: None



School St. Grind and Inlay

Description:

This project will grind and inlay School Street from the intersection with Hot Springs Alameda north to Kanaka Creek Road.

Water infrastructure improvements to remove a section of AC pipe and address an area of multiple water leaks will be completed prior to this project (2023 planned water infrastructure project).

Additional waterline improvements along lower School Street are planned and that section of street, outside of the safe routes to school project, will be addressed later.



TIP Year: 2024 (const) **Project Type:** Maintenance **Project Cost:** \$440k **Funding:** 95% Grant

Average Priority Score from Workshop: 4.2 (high)

Comment Summary:

- Heavy traveled roads.

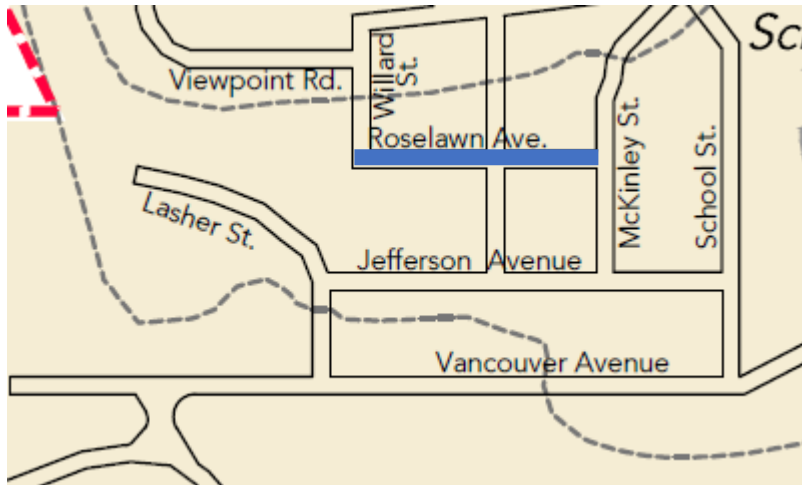


Roselawn Avenue Overlay

Description:

This project will overlay Roselawn Avenue from the intersection with Willard Street east to McKinley Street.

Additional stormwater and sidewalk improvements are planned and will be addressed later.



TIP Year: 2024 (const) **Project Type:** Maintenance **Project Cost:** \$165k **Funding:** 95% Grant

Average Priority Score from Workshop: 2.4 (mid-low)

Comment Summary: None.



Frank Johns Sidewalk

Description:

The city is working with residents along lower Frank Johns Road to improve pedestrian accessibility. This project was identified as early as 2006 and traffic has continued to increase along this corridor.

Concepts are currently being evaluated, engineering is proposed to start in 2024, and construction estimated to break ground in 2026. This project will include water system improvements, identified as a need in the 2017 water system plan update.



TIP Year: 2024-6 (all) **Project Type:** Improvement **Project Cost:** \$475k **Funding:** 95% Grant

Average Priority Score from Workshop: 3.7 (mid-high)

Workshop Comment Summary:

- Move this up in priority. Bump above any changes to Kanaka Underpass. Start sooner.
- Yes, lower priority. Fix bigger safety issues first.
- Move this in priority and start sooner.

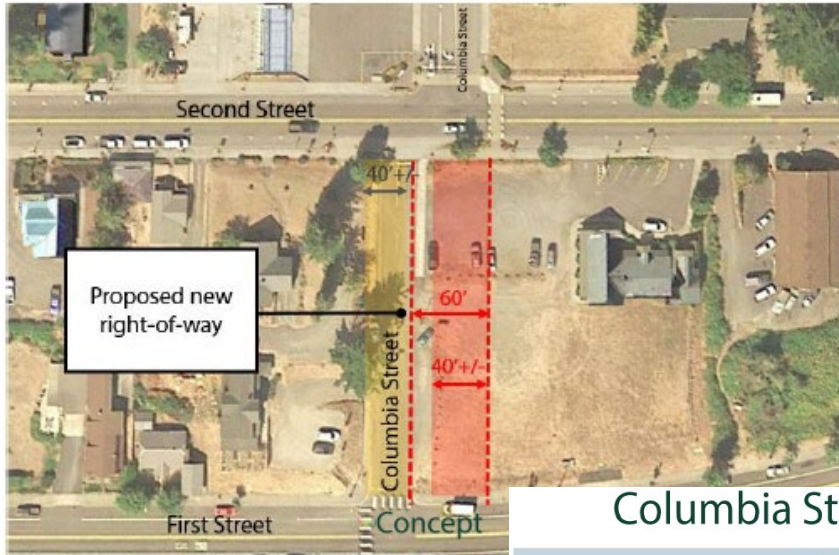


Columbia Realignment

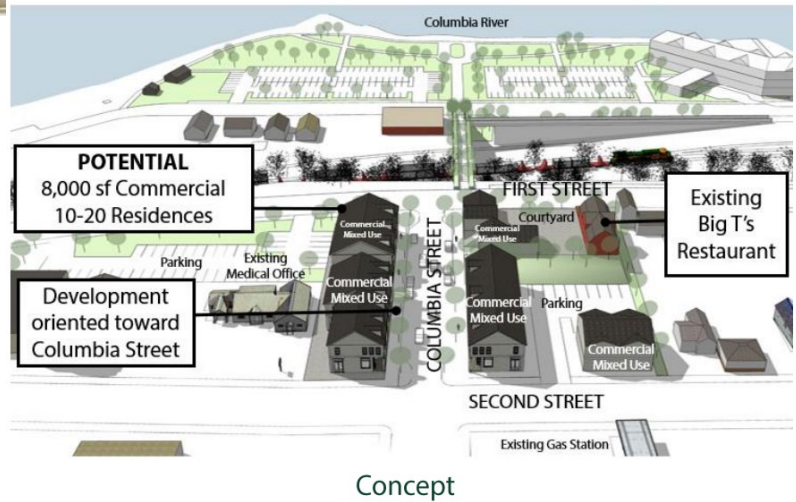
Description:

This project consists of a 2-lane asphalt roadway flanked by unconnected sections of sidewalk. Improvement of this corridor is intended as a catalyst project as outlined in the 2019 Downtown Plan. More information on this project can be found on the city website at <https://www.ci.stevenson.wa.us/planning/project/columbia-realignment>.

The project is currently in the feasibility stage through a \$200k grant with the Department of Ecology.



Columbia Street Catalyst Project



TIP Year: 2025-7 (all) **Project Type:** Improvement **Project Cost:** \$1.8M **Funding:** 85% Grant

Average Priority Score from Workshop: 2.6 (mid-low)

Workshop Comment Summary:

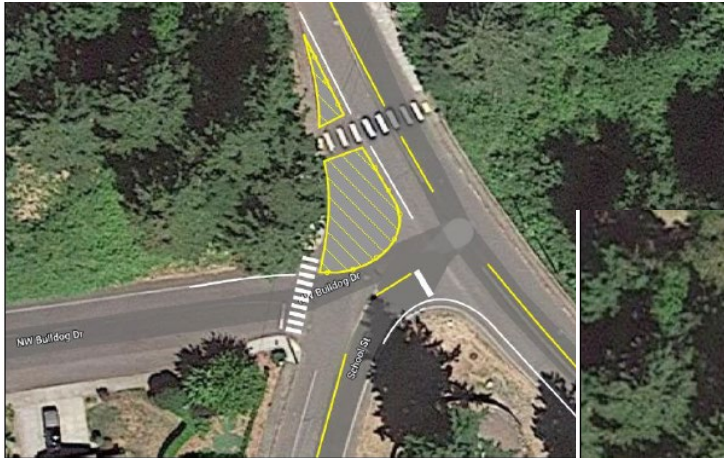
- Can help with safety and overall vision.
- Close road to create parking. Dog park in open area versus moving road.
- Yes, high priority, dangerous intersection.



Bulldog-School-Kanaka Intersection

Description:

Revises the intersection of Kanaka Creek Drive at School Street and Bulldog Drive by extending the northwest corner using striping and flexible post delineators (\$20k option in yellow stripes) or in concrete and adding a pedestrian crossing median island (\$50k option in solid red).



TIP Year: 2024(all)

Project Type: Improvement

Project Cost: \$50k

Funding: 100% City

Average Priority Score from Workshop: 3.7 (mid-high)

Workshop Comment Summary:

- Need to plan for permanent solution-\$50k not short term for \$20k
- Safety for young drivers.
- \$50k option
- Like more permanent \$50k
- Agree
- Yes, lower priority
- Slowing down cars at that intersection is a good idea. Bus barn is on Bulldog-what do bus drivers think? Not sure about median.



W-SR-14 and Rock Creek Improvements

Description:

Construct an eastbound acceleration lane on SR-14 (left photo below) or construct a westbound right-turn deceleration lane on SR-14 at Rock Creek Drive (right photo below).



TIP Year: 2026-7(all) **Project Type:** Improvement **Project Cost:** \$700k **Funding:** 95% Grant

Average Priority Score from Workshop: 2.5 (mid-low)

Workshop Comment Summary:

- Not convinced acceleration lanes or other improvements would be appropriate for the issues/accidents. Seems like there should be plenty of sight distance. Adding signage and using lower MPH to control.
- Accel lane seems too long.
- Lane should be turning to allow folks to turn at Rock Creek - center turn lane.
- Adequate signage prior to the Rock Creek turn for the Lodge/Interpretive Center/Fair - industrial looking.
- Unless shorter rt turn lane only, west bound
- West bound
- Do the alternate plan-veggie & sign
- Acceleration lane westbound-good! Westbound turn lane onto Rock Creek-Good! Eastbound acceleration lane not needed.
- Westbound
- Longish right turn lane
- Agree with this proposal [right turn lane]-wouldn't this be Wash DOT?
- Low priority, outside of town?
- Why would this be a city project? Good idea.



East SR-14 Improvements-Low Phase

Description:

Relocate retaining wall 8 to 10 ft north of current location and regrade and landscape the property adjacent to the sidewalk to improve sight lines. Add a 1 to 2 ft wide ribbon median with post delineators in the gore between SR-14 and First Street to prevent the illegal northbound left-turn movements from SW Cascade Avenue/Kanaka Creek Underpass.



TIP Year: 2027-8(all) **Project Type:** Improvement **Project Cost:** \$390k **Funding:** 95% Grant

Average Priority Score from Workshop: 3 (mid)

Workshop Comment Summary:

- Westbound turn lane
- Focus on roundabout
- Agree-move above Kanaka project. Start sooner
- Wash DOT?
- Yes, dangerous intersection. No good sidewalks.
- I like moving the sidewalk.



West SR-14 Improvements-Low Phase

Description:

Convert to 3-lane cross-section on SR-14 (Second Street) between First Street and SW Rock Creek Drive. This project is expected to be a combination of roadway widening and restriping. Adding the center lane would provide the opportunity to include a median island refuge at the crosswalk east of SW Rock Creek Drive.



TIP Year: 2027-8(all) **Project Type:** Improvement **Project Cost:** \$390k **Funding:** 95% Grant

Average Priority Score from Workshop: 3 (mid)

Workshop Comment Summary:

- Do need some help with this intersection
- ?

Additional Comments Received:

“Concerning the intersection on West End.

I drive that every day, turning from Rock Creek Dr onto SR-14 going East.

Rarely do I have a car in front of me and never is it an issue turning cross traffic and heading east.

So I wonder, why are we proposing a major road construction effort to build a round about?

Does a road engineer think is a fun thing to do?

Do have Taxpayer money we don't know what to do with?

Because it “might” be a problem 20 years from now?

I'm all for improving this wonderful city but let us put or funds towards projects that would make Stevenson a better place, not projects that are disruptive and solve a problem we don't have. We can always improve the intersection if and when it becomes a bottle neck.”



Leavens Overlay

Description:

Leavens Street between First and Second will need leveling, grind and inlay to improve the road surface conditions. Sidewalk and stormwater improvements are also needed. Prior to this work, water/sewer utilities will need to be assessed to support current and potential development and utilities may need to be relocated underground. The plan is to match mid and lower Russell Avenue when completed.



TIP Year: 2028(all) **Project Type:** Improvement **Project Cost:** \$225k **Funding:** 95% Grant

Average Priority Score from Workshop: 3.6 (mid)

Workshop Comment Summary:

- Important to maintain
- Low priority
- Improving downtown streets and alleys should be a high priority.



Paving Gravel Roads

Description:

Option A: Maintains the goal to improve the safety and provide a minimum level of service standard for all city streets, focusing on gravel roads.

- The city's 1972 Austin Grader has been excised as it has exceeded its useful life with a cracked engine and brake failure. Replacement cost and frequency of use were factors in the decision to remove it from the fleet without immediate plans in the equipment management plan for replacement. Any future grading will require a private contract or be included with the other maintenance requests to Skamania County. Road condition improvement and maintenance request for remaining gravel streets, moving forward, will take more time to address, due to the reliance on others for support.
- This option addresses absent or failing infrastructure and will provide all city residents with a minimum level of service.
- To advance this goal, the proposed project for 2023 begins transitioning the eight currently gravel roads by evaluation, designing to a minimum standard, and producing cost estimates for each road.
- The first road proposed to be paved is Lakeview, followed by Ash Alley (downtown core), Holly Street (requested by Cemetery District) and the Kanaka Underpass (to address ongoing maintenance concerns). The remaining streets are to be constructed in later years of this TIP.
- Maintaining all eight currently gravel roads on the TIP allows the city to acquire additional right of way as part of a short plat (SMC 16.02.210(A)), if necessary.

Option B: Does not further the city goal of identifying and progressing a minimum safety and operational standard for currently owned city streets.

- Streets listed for improvement have only been requested by neighboring property owners or users. The timing of design and construction of improvements remain the same as Option A.
 - Ash Alley
 - Holly Street
 - Kanaka Creek Underpass
 - Lakeview Road

TIP Year: 2023-8 (all) **Project Type:** Improvement **Project Cost:** \$815k(all) **Funding:** 100% City

Average Priority Score from Workshop: Scored by individual projects.

Workshop Comment Summary:

- Start downtown. Move outwards.
- Prioritize on residences and safety.
- Set aside budget for this project as a whole. Figure out priorities as infrastructure needs develop.
- Consider public benefit.
- Consider how to develop the policy to complete this project. Keep it open enough to address specific situations.
- Move Forward
- High Priority
- Low Priority
- Yes. Start downtown and move outward as time and \$ allow.



Paving Gravel Roads

Ash Alley (between Russell and Seymore) (.08 miles)

Currently there are multiple infill commercial developments proposed between First and Second street. As part of these projects, we anticipate public infrastructure improvements will be required. By combining improvements into one contract or a series of contracts within a short timeframe, we take advantage of potential cost savings as well as consistent aging of the infrastructure. Ash Alley is a secondary access for 6 residences as well as multiple commercial properties. It is tied for second longest section of unpaved roadway in the city, 0.08 miles. A stormwater catchment basin concern has been recently corrected and the urgency to address this alley is lessened.



Upper Left-Ash Alley at Seymore intersection looking east.

Above-Mid-Ash Alley looking west.

Lower Left-Ash Alley looking east at intersection with Russell.

TIP Year: 2024 (const) **Project Type:** Improvement

Project Cost: \$95k

Funding: 100% City

Average Priority Score from Workshop: 3.4 (mid)

Workshop Comment Summary:

- Near downtown and government buildings
- Downtown/near government offices
- Business activity increase



Paving Gravel Roads

Del Rey (.02 miles)

This section of Del Rey serves two developed properties and provides access to multiple undeveloped properties.



Above – Del Rey (east) looking west

Above – Del Rey (west) looking west

TIP Year: 2028 (const) **Project Type:** Improvement **Project Cost:** \$95k **Funding:** 100% City

Average Priority Score from Workshop: 1.1 (low)

Workshop Comment Summary:

- Not convinced this is a good use of City resources. Landowners on either end do not want this paved.
- Traffic engineer wrote a memo/report on this street. People may think this is a through street and it is not. GPS thinks it is a street and sends people down it.
- Residents do not want a road there.
- No one seems to want this road paved
- Residents don't want it paved
- Unless property is developed

Additional Comments Received:

Written comments have been received from four individuals, owning two lots abutting Del Rey, opposing paving the road, and a verbal comment was received from an additional property owner adjacent to the road opposing paving the road. The written comments are included in the packet as well as their engineer's report on the matter.



Paving Gravel Roads

Gropper Park Loop (.08 miles)

This road provides access to two residential properties, and surrounds Gropper Park. The photos below were taken before the sidewalks were installed along Gropper.



TIP Year: 2028 (const) **Project Type:** Improvement **Project Cost:** \$95k **Funding:** 100% City

Average Priority Score from Workshop: 2.3 (mid-low)

Workshop Comment Summary:

- 2nd most residents
- Property access only



Paving Gravel Roads

H&H Avenue (.05 miles)

H&H Avenue serves 1 developed property and multiple undeveloped properties.



TIP Year: 2028 (const) **Project Type:** Improvement **Project Cost:** \$95k **Funding:** 100% City

Average Priority Score from Workshop: 1.8 (low)

Workshop Comment Summary:

- Less Residents
- Single residence at this time

Additional Comments Received:

"I've mentioned it before, but in case I don't get to the meeting, I prefer not to have H H Ave. paved, although I'm only one voice for the street."



Paving Gravel Roads

Holly Street (.05 miles)

Holly Street is the access to Iman Cemetery. There are undeveloped lots on the east side of the street which may have alternative access on H&H Avenue when developed.



TIP Year: 2025 (const) **Project Type:** Improvement **Project Cost:** \$95k **Funding:** 100% City

Average Priority Score from Workshop: 1.8 (low)

Workshop Comment Summary:

- Less Residents
- Single lane-existing chip seal

Additional Comments Received:

“The Cemetery District is in favor of Holly Street being paved, preferably two lanes wide to accommodate public access to the Iman Cemetery as well as the adjoining lots.”



Paving Gravel Roads

Lakeview Road (.05 miles)

Lakeview Road provides primary access for 5 residences. Paving this currently unpaved City roadway would be the most impactful for residents on unpaved roadways.



TIP Year: 2023 (const) **Project Type:** Improvement

Project Cost: \$95k

Funding: 100% City

Average Priority Score from Workshop: 3.5 (mid)

Workshop Comment Summary:

- Have more developed properties
- Most residents, most concerned



Paving Gravel Roads

Maple Alameda (.08 miles)

There are multiple reasons Maple Alameda should be considered priority in the 6 year TIP. Tied for second longest section of unpaved roadway, at 0.08 miles, Maple Alameda is a primary access (currently) for 3 residences. It is also a secondary access for 2 residences. There are multiple buildable lots for which Maple Alameda is the primary access and property owners have indicated a desire for development. Lastly, the Catholic Church reservoir is one of the City's water reservoirs. Adequate access should be provided for this valuable and critical public asset.



TIP Year: 2028 (const) **Project Type:** Improvement **Project Cost:** \$95k **Funding:** 100% City

Average Priority Score from Workshop: 2.9 (mid)

Workshop Comment Summary:

- Have more properties (developed)
- 2nd most residents



Paving Gravel Roads

Kanaka Creek Underpass (.15 miles)

The longest of the City’s gravel streets (at double the length of the next longest) is 0.15 miles. Roadway surface condition was also evaluated (compared to others) and existing geometry, as it relates to safety. The street that rose to the top as a priority for improvement was Kanaka Creek underpass (aka Cascade Avenue).

The feasibility of reconstruction and realignment of Cascade Avenue to current city standards is being evaluated, however, given the other stakeholders (BNSF and environmental regulators), both planning and construction would take considerable time and expense.

Geometric deficiencies:

- Width (12 ft vs. 22 ft)
- Radius (25 ft vs. 165 ft)
- Sight Distance (210 ft req)

Current Safety Concerns:

- Pedestrian/vehicle conflicts
- Vehicle/vehicle conflicts
- Vehicle/EMS conflicts



TIP Year: 2027 (const) **Project Type:** Improvement **Project Cost:** \$100k **Funding:** 100% City

Average Priority Score from Workshop: 4 (mid-high)

Workshop Comment Summary:

- Safety
- Needs maintenance & potholes fixed. Because of access issue should be high priority to get drivable by all vehicles.
- Safety for residents and workers to get out if railroad crossing is blocked.
- Pave only no rebuild required

Additional Comments Received:

A petition was submitted to the city and as of 6/14/22 the summarized results are on the next page. The detailed comments are included as part of the record.



Paving Gravel Roads

SUMMARY

Total Commenters	148
Total Written Comments	114
Number of Comments saying "what" should happen to the road	36
Maintain/Repair	19
Grade	3
"Improve", generally	6
Mirrors at Underpass	2
Limit SR 14 Speed	2
Pave	1
Improve Underpass	2
Sign	1
Number of Comments saying "why" the road should remain open	71
Safety (including evacuation & first responders)	42
Evacuation Need	8
First Responder Access	7
Livability/Inconvenience	29



Other Projects-Not on TIP

Description:

These projects are identified and may appear as part of the city's Capital Improvement Program, further out than the 6-year TIP.

Chip seal (Major, Hillcrest, E. Loop Road)

TIP Year: Not Listed **Project Type:** Maintenance **Project Cost:** \$35k **Funding:** 95% Grant

Average Priority Score from Workshop: 3 (mid)

Workshop Comment Summary:

- Traffic Justifies

Chip seal Vancouver (needs more)

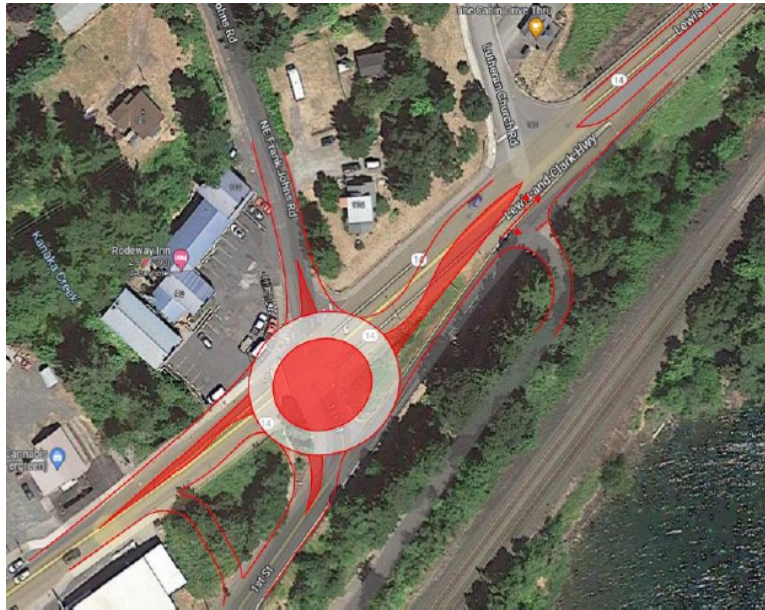
TIP Year: Not Listed **Project Type:** Maintenance **Project Cost:** \$45k **Funding:** 95% Grant

Average Priority Score from Workshop: 3 (mid)

Workshop Comment Summary:

- Traffic Justifies

East End SR-14 Roundabout



TIP Year: Not Listed

Project Type: Improvement

Project Cost: \$4.2M

Funding: 85% Grant

Average Priority Score from Workshop: 3 (mid)

Workshop Comment Summary:

- Traffic Justifies
- Like roundabouts! Needs more engineering. Agree with slowing traffic. Also Wash DOT. Creates safety issue to turn left on Lutheran Church Road over what exists today. Yes, like this. Many new homes 71 in Chinidere

Mtn. Estates. Need traffic control. How do people turn on Lutheran Church Road?

El Paso Road Reconstruction

TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** Unknown **Funding:** 100% City

Average Priority Score from Workshop: 2 (mid-low)

Workshop Comment Summary: None



Other Projects-Not on TIP

Foster Creek Road (acquire additional ROW)

TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** Unknown **Funding:** 100% City

Average Priority Score from Workshop: 4 (mid-high)

Workshop Comment Summary: None.

Iman Loop-Iman Cemetery Sidewalk

TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** \$75k **Funding:** 95% Grant

Average Priority Score from Workshop: 1 (low)

Workshop Comment Summary:

- Property is about to change hands
-

Monda Road (straighten out intersection with Iman Cemetery Road)

TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** \$200k **Funding:** 95% Grant

Average Priority Score from Workshop: 4 (mid-high)

Workshop Comment Summary:

- Reconstruction to be at same time of Iman Cemetery Road reconstruction
-

Rock Creek Bridge Replacement

TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** \$8.2M **Funding:** 95% Grant

Average Priority Score from Workshop: None

Workshop Comment Summary:

- Important to protect infrastructure under the bridge
-

Roosevelt Street Overlay

TIP Year: Not Listed **Project Type:** Maintenance **Project Cost:** \$670k **Funding:** 100% City

Average Priority Score from Workshop: None

Workshop Comment Summary: None.

Russell Avenue Phase 2 (Vancouver-Second)

TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** \$400k **Funding:** 85% Grant

Average Priority Score from Workshop: 1

Workshop Comment Summary: None.



Other Projects-Not on TIP

Overall Stormwater System Repair/Upgrade

TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** \$500k **Funding:** 95% Grant

Average Priority Score from Workshop: 4 (mid-high)

Workshop Comment Summary:

- Should include manhole leveling with pavement

Vancouver Sidewalk – East End (Columbia to City Hall)

TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** \$125k **Funding:** 95% Grant

Average Priority Score from Workshop: 3 (mid)

Workshop Comment Summary: None.

West End Roundabout



TIP Year: Not Listed **Project Type:** Improvement **Project Cost:** \$2.5M **Funding:** 85% Grant

Average Priority Score from Workshop: 3 (mid)

Workshop Comment Summary:

- Like roundabouts! Good to consider slowing traffic, however wouldn't this be Wash DOT? Do East side first. Ok.