Homer City Hall
491 E. Pioneer Avenue
Homer, Alaska 99603
www.cityofhomer-ak.gov

City of Homer
Agenda

Parks, Art, Recreation & Culture Advisory Commission Regular Meeting
Thursday, March 18, 2021 at 5:30 PM
City Hall Cowles Council Chambers
Webinar ID: 965 6129 9938 Password: 307724
Dial: 1 669 900 6833 or 1 253 215 8782 or Toll Free 877 853 5247 or 888 788 0099

CALL TO ORDER, 5:30 P.M.

AGENDA APPROVAL

PUBLIC COMMENTS UPON MATTERS ALREADY ON THE AGENDA (3 minute time limit)

VISITORS/PRESENTATIONS (10 minutes)

A. Karin Marks, Creating a Pocket Park on Pioneer Avenue

RECONSIDERATION

CONSENT AGENDA All items on the consent agenda are considered routine and non-controversial by the Parks Art Recreation & Culture Advisory Commission and are approved in one motion. There will be no separate discussion of these items unless requested by a Commissioner or someone from the public, in which case the item will be moved to the regular agenda and considered in normal sequence.

A. Minutes for the Special Meeting on January 21, 2021

B. Meeting Minutes for the February 18, 2021 Regular Meeting

STAFF & COUNCIL REPORTS / COMMITTEE REPORTS (20 minute limit)

A. Staff Report - Recreation Manager Illg

B. Staff Report - Public Works Director Keiser

C. Staff Report - Parks Superintendent Steffy

PUBLIC HEARING

PENDING BUSINESS (15 minute limit)

A. Beach Policy Review and Updates

Beach Policy with Amendments and revisions

Memorandum from PARCAC to Port & Harbor Advisory Commission

Draft Ordinance Prohibiting Motorized Watercraft

NEW BUSINESS (15-20 minute limit)

A. Memorandum from Public Works Director re: Karen Hornaday Park Proposed Parking Improvements

B. Memorandum from Public Works Director re: Allowing Mobile Food Vendors in City Parks

Draft Ordinance to Amend Homer City Code

C. Memorandum from Public Works Director re: Mariner Park Lagoon Dredging

INFORMATIONAL MATERIALS

A. City Manager's Report for February 22, 2021 City Council Meeting

B. City Manager's Report for the March 8, 2021 City Council Meeting

C. 2021 Commissioner Annual Calendar and Attendance at City Council Meetings

D. Roads Assessment Report Summer 2020

COMMENTS OF THE AUDIENCE (3 minute limit)

COMMENTS OF THE CITY STAFF

COMMENTS OF THE CITY COUNCILMEMBER (if present)

COMMENTS OF THE CHAIR

COMMENTS OF THE COMMISSION

ADJOURNMENT

Next Regular Meeting is Thursday, April 15, 2021, at 5:30 p.m. All meetings scheduled to be held in the City Hall Cowles Council Chambers located at 491 E. Pioneer Avenue, Homer, Alaska.

Session 20-01, a Special Meeting of the Parks, Art, Recreation and Culture Advisory Commission was called to order by Chair David Lewis at 5:41 p.m. on January 21, 2021 via Zoom Webinar from the City Hall Cowles Council Chambers located at 491 E. Pioneer Avenue, Homer, Alaska. Due to some minor technical issues the meeting start time was delayed.

PRESENT: COMMISSIONERS ARCHIBALD, LEWIS, ROEDL, FAIR, HARRALD, GALBRAITH, AND STUDENT REPRESENTATIVE BLANTON-YOURKOWSKI

ABSENT: COMMISSIONER LOWNEY (EXCUSED)

STAFF: PARKS SUPERINTENDENT STEFFY
COMMUNITY RECREATION MANAGER ILLG
DEPUTY CITY CLERK KRAUSE
PUBLIC WORKS DIRECTOR KEISER

AGENDA APPROVAL

Chair Lewis requested a motion to approve the agenda.

ARCHIBALD/FAIR MOVED TO APPROVE THE AGENDA.

There was no discussion.

VOTE: NON-OBJECTION: UNANIMOUS CONSENT.

Motion carried.

PUBLIC COMMENTS UPON MATTERS ALREADY ON THE AGENDA

VISITORS/PRESENTATIONS

A. Mike Miller, Executive Director, Homer Foundation

Mr. Miller presented to the Commission on the Homer Foundation and services that they provide. He made the following points:

- Special IRS designation not a private foundation, tax exempt, 501© (3) non-profit
- Broad based, region specific and locally governed
- Donation pooled for investments and earnings distributed
- First Community foundation in Alaska
- Over $4.2 million in assets
- Investments managed by Vanguard Investments
- Endowed funds are in perpetuity. They are forever.
- Assets are managed with a focus on income and stability
- Quarterly Financial reports
- Emphasis on transparency and accountability

- Endowed Funds are created with 70% Stock and 30% Bonds
- Non-endowed Funds are 50% Stocks and 50% Bonds
- Types of funds are Donor Advised, Field of Interest such as the City Fund and LAB Funds, Opportunity Fund, Agency Funds, Pass through funds such as the Community Chest
- Legacy Society
- Ways of Giving – simple and easy, online or in person

Mr. Miller explained what the Library created and that the process is easy, minimum donation of starting an endowed fund is $10,000 and is given within the confines of the agreement. The earnings from that fund are then available for charitable works and in this case, parks.

The members of the Commission, Staff and Mr. Miller addressed or commented on the following:

- On an annual basis funds may be expended up to 4% of the earnings of an endowed fund
- Endowed Funds are a long term funding plan which can be augmented by various multiple donations which then increases the earnings, this can be compared to a savings account, not intended for routine maintenance or expenditures.
- Establishing an Endowed Fund provides opportunities to have endowed gifts from the public, which the average gift across the country is $40,000
- Having a different platform to efficiently use specific small amounts of money donated by individuals for specific purposes such as park benches, Skateboard Park improvements, etc.
- Funds remaining in the HoPP fund and the Boathouse Fund could, if approved by the Homer Board and those groups, be used to start a Parks/Recreation Endowment Fund. Funds in those accounts is approximately $19,000.
- There are non-endowed funds for more accessible funding options but the Foundation is not to be used as a checking account, and you cannot assure donors that their donation will be forever because a non-endowed fund has no restrictions on the principal.
- The initial $10,000 starting amount can come from donors.
- The City of Homer provides funding annually to the Foundation and then the Foundation distributes to applicants in the form of grants for various things.
- Funding for short term is needed but setting up and Endowment would be a good thing for the future and for a donor that would provide them an opportunity to provide a meaningful way to carry on their passions.
- Un-endowed funds allow the principle to be below the minimum level required to start the fund and can be depleted as well.
- Donations of real estate would be liquidated with the funds received put into the endowed fund principle which would then provide larger earnings that could be used annually.
- The Commission has the ability to put requirements or guidelines on the endowed or non-endowed fund. This can be used as a “selling point” for the interested donor.
- There is the aspect of the integrity of the Foundation in representing that the donors gift is used towards the intended use such as parks and recreation and not something like roads.
- Non-endowed funds do have minimum distributions as well as limits on the number of distributions.
- Non-endowed funds can be turned into endowed funds
- There is no difference in tax implications for a non-endowed fund over an endowed fund.

RECONSIDERATION

CONSENT AGENDA All items on the consent agenda are considered routine and non-controversial by the Parks Art Recreation & Culture Advisory Commission and are approved in one motion. There will be no separate discussion of these items unless requested by a Commissioner or someone from the public, in which case the item will be moved to the regular agenda and considered in normal sequence.

A. Meeting Minutes for November 19, 2020

Chair Lewis called for a motion to approve the consent agenda.

ARCHIBALD/FAIR MOVED TO APPROVE THE CONSENT AGENDA.

There was no discussion.

VOTE: NON OBJECTION: UNANIMOUS CONSENT.

Motion carried.

STAFF & COUNCIL REPORT/COMMITTEE REPORTS

A. Memorandum from Parks Superintendent Steffy re: January Staff Report

Parks Superintendent Steffy provided a synopsis of his written report that was provided to the Commission. He noted the following:

- Still waiting on the ATV Sanding Unit and orders are backlogged currently they are hand sanding with a bucket
- Trail counters have been purchased and will be placing them on Reber and Poopdeck Trails to see the usage
- Work is continuing on the Homer Non-motorized Trails and Transportation Plan
- New Fire Rings are in the process and first placement will be the seasonal campsites
- Fireworks Celebration has outgrown Mariner Park and consideration is being given to relocating the annual event to further down on the Homer Spit. This will provide more viewing options
- Updates to the Social Media Policy is needed but will not be updated until the key personnel in Administration is available.
- The big hole at Bishop's Beach has been filled.
- Met with Friends of the Homer Library and are discussing some options for the space between Hazel and the upper property line to create some outside space to perform activities that are typically held indoors.

Parks Maintenance Superintendent Steffy facilitated questions and answers to the following:

- Providing assistance to the Friends regarding application and support letters for Land & Water Conservation Grants

- Creation and location of the proposed 18 hole Disc Golf Course and possible amenities such as campgrounds in the Diamond Creek Recreation Area and dealing with moose interactions and the impact to the habitat that is visited by moose.
- Woodard Creek Trail status update and funds received from a local non-profit Friends of Woodard Creek
- Adding an agenda item to offer a recommendation of support to the Friends for a Landowner Agreement with the Land & Water Conservation

B. Memorandum from Recreation Manager Illg re: January Staff Report

Recreation Manager Illg noted that his written report was provided in the packet and he highlighted the items that City Council passed since they last met in November that were parks or recreation related. He reported that the City Manager Reports from the Council meetings will be included as informational items for each meeting going forward. Mr. Illg then reported on the following:

- City Council approved the Ordinance to purchase the parcel next to Bishop's Beach so that is currently under negotiations
- Park Pavilions Fees are being waived and that resolution will be going before City Council at the upcoming meeting.
- Reminder about the worksession on February 4, 2021 at 5:30 to discussion restrooms and the City Manager has requested that we add the topic of Personal Watercraft (PWC) to that agenda.
- Since the Commission will be reviewing the Beach Policy the subject of Personal Watercraft has been added for the Commission to submit their recommendations
- Parks and Recreation Software status update
- The Sports Equipment Library is up and running, it is limited at this time but hopefully the "library" can grow and it takes off.
- The status of the High School gym roof
- With his remaining budget last year he purchased some Frisbees

Commissioner Archibald asked if Mr. Illg knew anything about the Alaska State Comprehensive and Outdoor Recreation Plan update and that they were considering breaking it up into areas and that SCORP needs to be in effect before any funding can be received by Land & Water Conservation.

Mr. Illg responded that he was not aware of it and will bring it before the Alaska Parks & recreation Association.

Chair Lewis inquired about regulations regarding launching boats from the city beaches and opined that PWC's are a type of boat so it would stand that they would not be allowed to launch either.

Staff facilitated questions from the Commission and responded to the following:

- Existing regulations outlined in the Beach Policy regarding vehicles
- What the city can or cannot mandate as it relates to the use of city beaches
- Additional signage and education needed
- Enforcement of any new or existing regulations
- This item is going to be on the regular meeting in February

PUBLIC HEARING

PENDING BUSINESS

A. Establishing an Endowment Fund for Parks, Art, Recreation & Culture

Chair Lewis introduced the item by reading of the title and open the floor to discussion.

Public Works Director Keiser stated the differences in having an endowment fund for the library versus an endowment fund for the parks and recreation. She noted that the list of deferred maintenance needs for parks facilities and equipment is massive. She believed that the costs to replace the aging equipment and infrastructure is upwards of $20 million and they are starting to look at developing a ADA Transition Plan for Parks and Trails that is expected to add greatly to that list of needs. Creating an endowment fund with a spend rate of 4% will take beyond her lifetime to get enough funding available to do anything.
Ms. Keiser believed that they will still be reliant upon the good graces of City Council in order to get the big chunks of funding required for large projects such as the restrooms. She advocated for the Commission to consider this while they deliberate since there are short and long term needs that are massive because of deferred maintenance and aging facilities and equipment.

Discussion was facilitated between staff and commissioners regarding the following:

- Making it easier for people to give money to parks and recreation without all the process that it takes to be able to accept money for minor projects such as park benches
- There are long term benefits to establishing an endowment fund and maybe that is what is needed to accept a donation of $50,000 or $100K
- The immediate needs should be considered as well as the long term goals.
- If an endowment fund is established City Council should still bear the responsibility of the operational cost requirements and capital costs and not think that because they have an endowment fund that burden has been lifted from the city.
- Establishing the guardrails or parameters that are used to guide the expenditure of funds from a non-endowed and or endowed fund account that limit the uses of the earnings that will provide guidance for future members of the Commission, Foundation Board and Council.
- There was support for establishing a non-endowed and endowed and fees
- Fees for the management of these funds is currently none for the Foundation but Vanguard charges 4/10th of a percent
- City Code does allow the Commission to solicit donations, there is a fund established where donations can be deposited and then the Commission can annually submit budget requests which are then approved during the budget cycle/approval period. Purchases are then charged to that account. Funds are carried over to the following year. Donations are accepted and appropriated by Council through a resolution or ordinance. It is required for accounting processes and transparency.
- Comparison of having the HART Fund for Roads and Trails and how projects can be funded by those accounts are just by ordinance and two meetings. Where if there is no funding source for an expenditure such as banners or other smaller parks related expenditures they have to go hat in hand before City Council hoping they will grant the funds from the general fund.

- Establishing a similar fund such as the HART program for roads and trails is possible but there is the chance that the majority will not agree to funding another tax but it could be put before the voters
- Asking the voters if a certain percentage of the already established tax could be dedicated to parks & recreation like was done with trails and road repairs
- Having a discussion with Finance & Administration on what is possible and what is not should be conducted to facilitate the easiest way to facilitate people giving or performing services for or to the city.
- There are members of the public that would be hesitant to give money to the City and would prefer giving money to the Foundation.
- Recreational Service Area, compensation from non-city residents who use the amenities just as much as the City residents.
- Suggesting an increase of sales tax to round off to 8% which can be facilitated for the October 2021 election
- City is entering into working on a new two year fiscal budget and the Public Works Director and Parks Superintendent can work on a concept plan for the next meeting with needs and numbers before decisions are made on
- ReCreate Rec group efforts a few years back to request the HART Funds be reallocated to cover parks and recreation; revenue stream for a new multi-use recreational facility and support for resident and non-resident user fees.
- Not appropriating the HART Fund Trails for other projects that are not trails related

NEW BUSINESS

A. Commission Funds FY2021 - Discussion and Uses

Chair Lewis deferred to Parks Superintendent Steffy.

Parks Superintendent Steffy spoke to the $1,500 Commission funds were to be spent but all shipping was delayed and the event for skating was postponed and postponed so they were not expended by the end of the year. This year since the fiscal year was amended the budget is $750 to be expended by June 30, 2021. He requested input on what the Commission would like to expend the funds available.

Discussion was facilitated by staff on ideas that they could expend the $750 on. The following was offered:

- Dog Park
    - Section off area up by the HERC building
- Swag, Shirts or hats

Deputy City Clerk Krause will provide history for the Budget Requests at the next meeting.

B. Memorandum from Public Works Director re: Main Street Sidewalk Project Design Update

Chair Lewis introduced the item by reading of the title and requested Public Works Director Keiser to provide her report to the Commission.

Public Works Director Keiser provided a status update on the Main Street Sidewalk Design and was available for any questions.

There were no questions from the Commission.

INFORMATIONAL MATERIALS

A. 2021 Commission Annual Calendar
B. 2021 Commission Attendance at City Council Meetings

Chair Lewis requested a volunteer to speak at the upcoming Council meeting.

There were no volunteers forthcoming and deputy City Clerk Krause noted that the Mayor is implementing some changes to reduce the length of the meeting so there will be only one meeting per month that would be available.

Commissioner Harrald volunteered to speak.

C. Resolution 20-128, 2021 Regular Meeting Schedule for Advisory Bodies
D. City Manager's Report for the City Council January 11, 2021 Regular Meeting

COMMENTS OF THE AUDIENCE

COMMENTS OF THE CITY STAFF

Recreation Manager Illg commented it was good meeting.

Parks Superintendent Steffy commented that he is always so excited to attend the meetings and speak with the Commissioners, he expressed that it was a great meeting and apologized for adding to the time consumption. He wished everyone a great evening.

Public Works Director Keiser commented that they are starting the process to demolish the Karen Hornaday restroom and they will begin the process to develop a ADA Transition Plan for Parks and Trails.

COMMENTS OF THE COMMISSION

Commissioner Fair commented that if they were going to look into creating an endowment fund that they should invite Dave Berry from the Library to comment on the process as the library has some big things that they want to do to, not quite as big as parks though.

Commissioner Archibald expressed his thanks to Matt for doing what he did as parking director for the vaccination clinic and offered Commissioner Harrald assistance with notes for speaking points to Council. He noted that he did speak at the last Council meeting but there wasn't much to say since the commission had not met in December.

Commissioner Galbraith expressed his appreciation for getting the hole filled in at Bishops Beach entrance as his dog fell in to it and his daughter fell on the ice down there the last time they visited so hopefully this will help the situation.

Student Commissioner Blanton-Yourkowski expressed her thanks for getting that hole filled in also at the entrance to Bishop's Beach and her appreciation for everything that Staff does.

Commissioner Roedl had no comments.

Commissioner Harrald expressed her thanks to Matt, Mike and Jan and that they are doing an awesome job and so much is being accomplished. As always she will reach out to Robert, Dave and Deb before the Council meeting.

COMMENTS OF THE CHAIR

Chair Lewis commented about getting off to a rough start and it was a good meeting.

ADJOURNMENT

There being no further business to come before the Commission the meeting adjourned at 7:56 p.m. A worksession is tentatively scheduled for February 4, 2021 at 5:30 p.m. The next regular meeting is scheduled for Thursday, February 18, 2021 at 5:30 p.m. at the City Hall Cowles Council Chambers located at 491 E. Pioneer Avenue, Homer, Alaska.

_____
RENEE KRAUSE, MMC, DEPUTY CITY CLERK

Approved:_____

Session 20-02, a Regular Meeting of the Parks, Art, Recreation and Culture Advisory Commission was called to order by Chair David Lewis at 5:38 p.m. on February 18, 2021 via Zoom Webinar from the City Hall Cowles Council Chambers located at 491 E. Pioneer Avenue, Homer, Alaska. Due to connections issues the meeting start time was delayed.

PRESENT: COMMISSIONERS ARCHIBALD, LEWIS, ROEDL, LOWNEY, HARRALD, GALBRAITH, AND STUDENT REPRESENTATIVE BLANTON-YOURKOWSKI

ABSENT: COMMISSIONER FAIR (EXCUSED)

STAFF: PARKS SUPERINTENDENT STEFFY
COMMUNITY RECREATION MANAGER ILLG
DEPUTY CITY CLERK KRAUSE
PUBLIC WORKS DIRECTOR KEISER
PORT DIRECTOR/HARBORMASTER HAWKINS

The Commission held a scheduled worksession on February 4, 2021 at 5:30 p.m. On the agenda were discussions on public restrooms and personal watercraft usage.

AGENDA APPROVAL

Chair Lewis requested a motion to approve the agenda.

ARCHIBALD/ROEDL MOVED TO APPROVE THE AGENDA.

There was no discussion.

VOTE: NON-OBJECTION: UNANIMOUS CONSENT.

Motion carried.

PUBLIC COMMENTS UPON MATTERS ALREADY ON THE AGENDA

Penelope Hass, Kachemak Bay Conservation Society, referenced the materials that she has forwarded to the Commission in regards to the Personal Watercraft. She noted that there were not that many people in the audience attending the meeting but that she knew there were a lot of members of the public who would like to weigh in on this particular issue. Ms. Haas stated that they collected 800 signatures of people who live in Homer who were really opposed to ban reversal and she was pretty sure that those same 800 people have concerns about what will happen around the city tidelands. She expressed that the fact of the matter is that data shows that personal watercraft are a distinct danger and threat to other users not just wildlife

because of the way they are used on average they hit people and push animals out of their homes. DNR is onboard to support the education component of the proposed ordinance. They realize that there is limited funding with the city to manage Personal Watercraft and so the logical thing would be to close the waters to these things. Otherwise the city is going to have problems and since they own the tidelands it would be their responsibility to keep the public safe at all times. She further encouraged the Commission to forward the Ordinance to the City Council as a lot of people want to weigh in on this subject and that is the appropriate place.

Tom Zitzmann, city resident, spoke about the impact of vehicles on the beach, regarding the beach policy in relation to the critical habitat and the degradation of the intertidal zone at Bishop's Beach in particular. He expressed his concerns regarding the protection of this critical web of the ecosystem. He was not sure who would have jurisdiction over the tidal flats and the beach, it may not be within the city's purview or control but it is important to the public to know who is able to provide oversight, guidance and control the vehicular traffic. Mr. Zitzmann opined that prohibiting vehicles all year would be a mistake but the problem is the racing and high rates of speed driving on the mud flats and critical habitat areas by the summer traffic. There is no policy or statement with regard to the traffic or rate of speed. This also applies to ATV's and motorcycles on the beach and you rarely see an ATV unless they are gathering coal now. He advocated for the Commission to consider restricting vehicles and how they use them on the beach in the summer months when they were deliberating the Beach Policy.

Patricia Cue, non-resident, commented that she wanted to reiterate what Ms. Haas stated previously and move the proposed ordinance to City Council she further encourage the Commission to limit the launching of personal watercraft from Bishop's Beach and other areas that are critical habitat areas for bird nesting and wildlife. She further noted the large number of people that are walking and viewing the wildlife too. Ms. Cue stated that the origination of the Beach Policy was erosion that was occurring due to the vehicular traffic in some areas of Bishop's Beach and Beluga Slough. She continued by saying that vehicles promote erosion and more and more vehicles that drive upland will increase the erosion. She does not live in the city limits any longer and hope that they do not discount her comments or observations since she is not a city resident, there are many people who have lived here over the years and have made contributions to the Community through a variety of arenas and we have historical observations that she believed provided some benefit to this process and that they utilize city services and businesses so please do not discount their observations or testimony.

VISITORS/PRESENTATIONS

RECONSIDERATION

CONSENT AGENDA All items on the consent agenda are considered routine and non-controversial by the Parks Art Recreation & Culture Advisory Commission and are approved in

one motion. There will be no separate discussion of these items unless requested by a Commissioner or someone from the public, in which case the item will be moved to the regular agenda and considered in normal sequence.

A. Minutes for the Special Meeting on January 21, 2021 - Laydown

B. Memorandum from City Clerk re: Advisory Body Reports to City Council

C. Memorandum from Deputy City Clerk re: Letter to the Editor

Chair Lewis introduced the the items listed on the Consent Agenda and requested a motion to approve.

Deputy City Clerk Krause called a point of order noting that the minutes were not provided as a laydown so an amendment is required.

Commissioner Archibald requested further clarification.

Deputy City Clerk Krause explained that she was unable to complete the minutes timely to provide as a laydown for the meeting so the Consent Agenda needed to be amended.

Chair Lewis called for a motion to amend the Consent Agenda.

ARCHIBALD/LOWNEY MOVED TO APPROVE THE CONSENT AGENDA MINUS ITEM A MINUTES FOR THE JANUARY 21ST MEETING.

There was no further discussion.

VOTE. NON OBJECTION. UNANIMOUS CONSENT.

Motion carried.

STAFF & COUNCIL REPORT/COMMITTEE REPORTS

A. Public Works Director Report - Jan Keiser

Chair Lewis invited Public Works Director Keiser to provide her report to the Commission.

Public Works Director Keiser reported on the following:
- Items on the agenda at the February Council meeting
- Working on budget priorities for the FY22/23 biennial budget
- Using the CARMA fund to fund improvements at Karen Hornaday Park

- Requesting funding to dredge the Mariner Slough area

B. Community Recreation Report - Mike Illg, Recreation Manager

Chair Lewis invited Recreation Manager Illg to provide his report to the Commission.

Recreation Manager Illg provided a written report for the packet and highlighted the following items:

- HERC is open to the Public on a reservation only basis, it is working quite well, and the public is very happy.
- He will be requesting additional staffing again in his budget even though they are not operating as they normally would since this will be a two year budget.
- He has been assisting in the local vaccination clinics and the venue will be changing from the Church on Bartlett Street to the High School.
- They are hoping to have a soft opening launch for the reservation and online payment software by mid-March.

Recreation Manager Illg responded to questions regarding the status of the gym roof repairs noting that a temporary repair was completed as the cost to replace the roof is $8 million dollars and the Borough Mayor has recommended a phased approach to the repair. He does not have any details on the plan but as long as it is not raining, there are no leaks. The gym is currently being used.

C. Parks Report - Parks Superintendent Steffy

Chair Lewis invited Parks Superintendent Steffy to provide his report.

Parks Superintendent Steffy noted that he provided a written report in the packet and provided highlights on the following:

- The restroom at Karen Hornaday Park was demolished. Portal toilets will be provided for the public use until a new facility is constructed.
- The concession shack is also gone, the new restroom facility is proposed to have concession space.
- A flood light has been installed in the park to provide increased visibility.
- Successful ongoing vaccination clinic participation.
- Special Use Camping Policy that was implemented last season by City Council and requesting input on that regarding whether they should request variance on the fee schedule, which is later on the agenda.
- The Parks is not going to pursue a Task Force but work with organizations on homelessness.

Parks Superintendent Steffy addressed questions from the Commissioners regarding use of Karen Hornaday Park for the Special Use Camping program and how they implemented it last year.

Chair Lewis noted that the Special Use Camping will be discussed later on the agenda.

PUBLIC HEARING

PENDING BUSINESS

A. Discussion on Personal Watercraft Use
   - Boundary Lines and Enforcement
   - Jurisdiction on the Water but within City Limits
   - Priorities for Sensitive Areas, Beaches and Harbor Entrance
   - Review of regulations imposed by other Communities
   - Existing Regulations that Apply to Personal Watercraft
   - Review and Recommendation on the Draft Ordinance Submitted by KBSC

Chair Lewis introduced the item by reading of the title.

Commissioner Archibald declared that he has a conflict since he was involved in the writing the proposed ordinance.

Chair Lewis requested a motion.

LOWNEY/ROEDL MOVED THAT COMMISSIONER ARCHIBALD HAS A CONFLICT.

There was a brief discussion.

VOTE. NO. LOWNEY, ROEDL, HARRALD, GALBRAITH, LEWIS.

Motion failed.

Chair Lewis opened the floor to discussion.

Recreation Manager Illg requested clarification citing that at the previous worksession the Commission determined that they should forward motions to the city Manager for review by the city attorney. He believed that they were going to wait until they received a response from the city attorney before further discussion.

Port Director Hawkins reported that the City Manager did forward to the City Attorney but they have not been able to carve out time to review it as yet. The City Manager wanted to the

commission to be aware of that it is on the list but they just haven't had time to address it before this meeting.

Chair Lewis recommended that the Commission should make a policy that personal watercraft have to be launched at the harbor and cannot be launched from beaches or any place else, just like regular boats.

Commissioner Archibald noted that was stated in the proposed language of that ordinance and he would support that recommendation.

LOWNEY/HARRALD MOVED TO RECOMMEND THAT PERSONAL WATERCRAFT BE LAUNCHED FROM THE HARBOR ONLY.

ARCHIBALD/LOWNEY MOVED TO AMEND THE MOTION TO DESIGNATE THE LOAD AND LAUNCH RAMP.

Discussion ensued on clarifying that personal watercraft should only be launched and or retrieved from the Load and Launch Ramp in the Harbor and if they should also include land such as landing on the beach for a respite as an example. It was determined that landing could be addressed in the recommendations.

LOWNEY/MOVED TO AMEND THE MOTION TO DESIGNATE THE LOAD AND LAUNCH RAMP FOR LAUNCHING AND RETRIEVING OF PERSONAL WATERCRAFT.

Discussion ensued on the language in the amendment should be clear that personal watercraft are to be launched or retrieved from the Load and Launch Ramp in the Harbor.

VOTE. (Amendment) NON-OBJECTION. UNANIMOUS CONSENT.

Motion passed.

Chair Lewis asked for any further discussion on the main motion as amended.

VOTE. (Main) NON-OBJECTION. UNANIMOUS CONSENT.

Motion passed.

There was a brief discussion on submitting all recommendations regarding personal watercraft forwarded to the Port & Harbor Advisory Commission for them to review at their next meeting. It was determined that due to agenda deadlines this would be on the Port &

Harbor Commission's March agenda for review and recommendations. It was noted that advice from the City Attorney may be available by that time.

NEW BUSINESS

A. Memorandum from Public Works Director re: Special Use Camping 2021

Chair Lewis introduced the item and invited Public Works Director Keiser to speak on the topic.

Public Works Director Keiser reported that Parks Superintendent Steffy actually co-authored the memorandum and requested that he take the lead giving the briefing.

Parks Superintendent Steffy provided information on the intent to implement some controls this year, working with a camp host, providing some privacy but still maintaining oversight. He then provided some historical background on the issues experience with the transient populations and what is allowed or required by law and what was done previously.

Public Works Director Keiser reported that a recommendation of forming a task force is not really necessary and the City Manager is reluctant to forma city task force but if they can get the conversation on the table. She noted the issues they experienced last year by parks staff becoming social workers and they would like to work with local resources to get support.

Further discussion ensued on reaching out to various persons and organizations that can provide the necessary resources and take the lead to schedule meetings, etc. with a representative of the city sitting in on those meetings, including and establishing a fund or account with the Homer Foundation, effects on the camp host dealing with the variables of because of homelessness.

Commissioner Harrald reported that there is already a Homeless Coalition that deals with this issue and many of the organizations that were mentioned prior are involved and suggested that the Coalition could take charge of some of the issues instead of the Camp Host dealing with them, such as the Food Pantry or the Salvation Army.

Commissioner Lowney commented on the discussions over the last few months being conducted on the Facebook pages regarding where people can camp and expressed concern regarding camping gear and personal items being abandoned at the parks and sometimes on private property and having to deal with it all and that there should be a process to retrieve it or deal with it so it doesn't become someone else's trash.

Commissioner Archibald expressed concerns on having a high concentration of homeless people at Karen Hornaday Park since there were several ballfields, the playground and then regular campers and if they don't want them spread out to other campgrounds. He also inquired how many campsites that would be allocated to the Special Use camping program. He noted the use of the park by children.

Parks Superintendent Steffy responded that due to the decrease in the use by visitors camping and such things as ball games it was determined that use of the campgrounds was better than no use. He then proceeded to described the process and reporting that was undertaken in the 2020 Camping Season. He responded to concerns regarding the possibility of sex offenders and having them located near a heavily used playground.

Further discussion between staff and commissioners ensued on the following:

- Background checks versus inquiries of previous experience within the community
- Valid searches of official registries
- Homeless Coalition involvement and partnership with the city to engage with indigent campers
- Trying to not compromise the beauty of Karen Hornaday Park and selectively placing the campsites used and available for the Special Camping program
- Continuous improvements to clean up and mitigation measures for open but semi private campsite
- Waiving the camping fees will require Council approval will need to be approved for through June 30the then for the next fiscal year. This will be affecting approximately 10-15 campsites and approximately $30,000 in revenue loss.

Parks Superintendent Steffy requested a motion of support for the Special Use Camping.

HARRALD/LOWNEY – MOVED THAT THE PARKS ART RECREATION & CULTURE ADVISORY COMMISSION SUPPORTS CONTINUING THE SPECIAL USE CAMPING PROGRAM FOR THE 2021 CAMPING SEASON.

There was no discussion.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

B. Beach Policy Review

Chair Lewis introduced the item by reading of the title and requested any amendments to the policy that would relate to the use of personal watercraft, noting the recommendations

previously made under that topic earlier in the agenda. He opened the floor to discussion. Seeing no hands raised to comment, Chair Lewis then opened discussion by offering the following amendment for consideration:

No personal watercraft allowed on city beaches.

Discussion was facilitated between staff and Commissioners on the following:
Banning Personal Watercraft from city beaches
Defining exactly where city limits were to the right of the Bishops Beach Access
Applying the same methods used to control vehicles on Mariner Beach to Bishops Beach
Clarification with the City Attorney if they can block vehicle access west of Bishops Beach Access March 1 to September 30th
Previous complaints from property owners regarding the vehicles, partiers, and trash on the beach
Difficulties in enforcing no vehicle access past West Hill, but maybe limiting it to a road bed and keep vehicles from the mud flats
Recommended prohibition of landing motorized watercraft on beaches within city limits

LOWNEY/ARCHIBALD – MOVED THAT MOTORIZED WATERCRAFT ARE PROHIBITED FROM BEING LAUNCHED, LANDED OR RETRIEVED FROM ANY CITY BEACH WITH THE EXCEPTION OF OFFICIAL BUSINESS USE.

Discussion ensued on the language being used is appropriate but allowing emergency responders, Coast Guard, etc. to be able to access the beaches as needed. IT was noted that there was existing language that could be used.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

Recreation Manager Illg pointed out the following:
Typographical error on page 16, item 3 title, should read, "…for all Homer Beaches."
Budget $500 per year for sign repair, updating and replacement, Item B on page 17
Develop and distribute brochures with a coordinated public relations campaign
Budget $500 per year for advertising the beach rules and etiquette , Item E on page 17
To discourage the use of driftwood maybe we should issue and RFP or something similar

Recreation Manager Illg wanted to make sure that the staff and commission are following the recommendations outlined in the policy regarding public education and information. He can work with Parks Superintendent Steffy on developing a brochure if they do not have one.

Parks Superintendent Steffy reported on previous attempts with regard to supplying firewood and the lack of success. He recommended a vending machine style firewood supply with a money drop box or swipe machine that the customer then takes product. He then provided an example of the bike rentals that they had last year which was a success. He then noted that they would like to allow third party operations in the city parks which are currently not allowed but with expectations of a percentage of revenue being paid to the city as the rental or lease fee.

Commissioner Lowney requested the commission to address the beach clean-up through establishing a day or supplies such as bags and promoting or building energy within the community for beach clean-up. She then requested reviewing and analyzing the beach access points to determine if they are feasible as an access point to the beach. Commissioner Lowney suggested that they may even want to vacate those access points due to the proximity to private property, steepness of the access, etc.

Commissioner Archibald supported the statements made by Commissioner Lowney and then commented on the proposed easement on page 23 of the packet and noted that there is a berm that is walkable but access is difficult when the tide comes in and a person could get stuck in that area of Louie's Lagoon, but it should be pursued by the Commission.

Parks Superintendent Steffy continued reporting on the idea to allow mobile food vendors in city parks which is currently prohibited and will be bringing forward for further discussion.

Public Works Director Keiser reported that she has noticed that one item that she believes is very important is maintaining natural flow of tidal waters where appropriate and in review of the policy this is not addressed. She the reported being asked by several people regarding dredging work to open up the Mariner Beach slough and Beluga Slough areas. She recommended adding on page 18 a section that addressed the requirement to perform dredging efforts to maintain the natural tidal flow into the inland area.

Chair Lewis requested a motion to make that recommendation.

Commissioner Archibald commented on the verbiage used in a motion, since it was natural tidal efforts that closed off those waterways and why those channels must be maintained and opened mechanically.

Parks Superintendent Steffy recommended contacting the Kachemak Bay Research Reserve to get some technical specifications in order to make informed decisions on recreational and ecological function of the two areas.

Commissioner Archibald noted that there is a private property owner that dredges their property and it may be a good idea to contact them to see how often they perform dredging.

Parks Superintendent Steffy noted that he would like to get the information to properly manage those openings before implementing more prescriptive language.

Chair Lewis turned the gavel over to Vice Chair Archibald noting he needed to depart the meeting for a few minutes.

Vice Chair Archibald requested additional recommendations. Hearing none from the Commission he stated that he would like to address motorcycles/dirt bikes, loud vehicles and unlicensed vehicles on the beach. He noted that they spoke about prohibiting unlicensed vehicles on the beach it would prohibit the use of dirt bikes on the beach.

Parks Superintendent Steffy recalled a previous conversation, during the last Beach Policy review, with Chief Robl indicating that laws of the road apply to the beach so if someone was on the beach spinning “brodies” that would be considered reckless driving and they could be cited. But he then noted that he recalled reading that if you are not operating a vehicle on a state maintained road there were some exceptions, so he would need to get some clarification on that issue. He then noted that if they are having issues again then they need to encourage reporting of incidents to the Police Department.

Further discussion made points on enforcement issues and staff resources and creating or marking a dedicated road bed and installation of signage to ensure that vehicles stay out of the mud flats.

The item was requested to be on the March agenda for further review to discuss beach access and recommending that the Commissioners visit the accesses shown so that they can see if there are any that could be developed better so that Bishop’s Beach does not get too crowded. It was suggested that the commissioners visit the beach easement behind the property with all the derelict vessels also before the next meeting.

Recreation Manager Illg suggested that the Commission schedule a worksession since they are representatives to the Homer Community and some of them have no idea where these access locations are collectively.

Chair Lewis stated that they could schedule worksessions in April when the weather is better.

Parks Superintendent Steffy noted that they can schedule the Spring Park Walk Through.

Deputy City Clerk Krause confirmed with the Commission that a worksession will be scheduled prior to the April regular meeting.

INFORMATIONAL MATERIALS

A. 2021 Commission Annual Calendar
B. 2021 Commissioner Attendance at City Council Meetings

Chair Lewis requested a volunteer to speak at the upcoming Council meeting.

Public Works Director Keiser noted that there will be an ordinance introduced requesting funding for ADA improvements on Main Street project for the Bayview Park.

Commissioner Archibald volunteered to report and Commissioner Roedl offered to submit written comment to the City Council.

Public Works Director Keiser will provide talking points to the Clerk to forward to Commissioners.

C. City Manager's Report from February 8, 2021 City Council Meeting

COMMENTS OF THE AUDIENCE

COMMENTS OF THE CITY STAFF

Parks Superintendent Steffy commented that it was a great meeting, he appreciated the input from the Commission and was able to refocus on parks and camping is just right around the corner if it would just stop snowing.

Recreation Manager Illg commented that this commission was his favorite, he provided a shout out to Matt and Jan and all the work they do and the City Manager as he is very supportive of Parks and Recreation and we are very fortunate to have him in a leadership role. Great things all coming and this Commission will be a part of it.

Public Works Director Keiser commented it was a great meeting.

COMMENTS OF THE COMMISSION

Commissioner Harrald commented that it was a good meeting apologized for being quiet tonight but she had a headache. She expressed appreciation for the work of the others.

Commissioner Galbraith thanked Robert for attending Council meeting and acknowledged that he needs to volunteer to attend a upcoming council meeting. It was a good meeting.

Commissioner Roedl thanked everyone and it was a good meeting and he will be writing a letter tonight.

Commissioner Archibald expressed similar sentiments on getting so much done and appreciated the efforts of staff.

COMMENTS OF THE CHAIR

Chair Lewis noted that this was fun as usual and adjourned the meeting.

ADJOURNMENT

There being no further business to come before the Commission the meeting adjourned at 7:40 p.m. The next regular meeting is scheduled via Zoom on Thursday, March 18, 2021 at 5:30 p.m. at the City Hall Cowles Council Chambers located at 491 E. Pioneer Avenue, Homer, Alaska.

_____
RENEE KRAUSE, MMC, DEPUTY CITY CLERK

Approved:_____

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(f) 907-235-8933

Memorandum

TO: Parks, Arts, Recreation & Culture Advisory Committee

FROM: Mike Illg, Recreation Manager

DATE: March, 11, 2021

SUBJECT: Staff Report

Homer City Council Action:

February 22nd City Council Meeting

Memorandum 21-028 from Deputy City Planner Re: Wayfinding and Streetscape RFP. Recommend approval.

Ordinance 21-08, An Ordinance of the City Council of Homer, Alaska Amending the 2021 Capital Budget and Authorizing Additional Expenditure of $113,353.33 from the HART Road Fund for the Woodard Creek Rehabilitation Project. City Manager/Public Works Director. Recommended dates Introduction February 22, 2021 Public Hearing and Second Reading March 8, 2021 **ADOPTED with recommendations without discussion**

Ordinance 21-12, An Ordinance of the City Council of Homer, Alaska, Amending the 2021 Capital Budget and Authorizing Expenditure of $ 12,700 from the HART-Road Fund for the Design of a Betterment to the Main Street Storm Drain and Sidewalk-Pioneer Avenue North Project that will provide for an ADA Access to Bayview Park and Associated Storm Drain Improvements. City Manager/Public Works Director. Recommended dates Introduction February 22, 2021 Public Hearing and Second Reading March 8, 2021 **ADOPTED with recommendations without discussion**

Resolution 21-018, A Resolution of the City Council of Homer, Alaska Supporting the Friends of the Homer Library Application to the National Park Service Alaska Rivers, Trails, and Conservation Assistance Program to Plan Improvements to the Library Properties, Tracts A and B, Glacier View No. 26. Venuti. Recommend adoption. **ADOPTED with recommendations without discussion**

March 8th City Council Meeting

Ordinance 21-08, An Ordinance of the City Council of Homer, Alaska Amending the 2021 Capital Budget and Authorizing Additional Expenditure of $113,353.33 from the HART Road Fund for the Woodard Creek Rehabilitation Project. City Manager/Public Works Director. Introduction February 22, 2021 Public Hearing and Second Reading March 8, 2021 *Ordinance 21-08(S)*, An Ordinance of the City Council of Homer, Alaska Amending the 2021 Capital Budget and Authorizing Additional Expenditure of up to $463,353.33 from the HART-Road Fund for the Woodard Creek Rehabilitation Project. City Manager/Public Works Director. **ADOPTED substitute without discussion.**

Ordinance 21-12, An Ordinance of the City Council of Homer, Alaska, Amending the 2021 Capital Budget and Authorizing Expenditure of $ 12,700 from the HART-Road Fund for the Design of a Betterment to the Main Street Storm Drain and Sidewalk-Pioneer Avenue North Project that will provide for an ADA Access to Bayview Park and Associated Storm Drain Improvements. City Manager/Public Works Director. Introduction February 22, 2021 Public Hearing and Second Reading March 8, 2021 Memorandum 21-034 from Public Works Director as backup **ADOPTED without discussion**

Ordinance 21-05, An Ordinance of the City Council of Homer, Alaska Amending the FY21 Capital Budget and Authorizing an Expenditure in an Amount up to $79,000 for Payment of the Water and Sewer Assessments for Lot 4, Hodnik Subdivision KPB Parcel No. 17936032 when Property Ownership Transfers to Kachemak Bay Moose Habitat, Inc and a Deed Restriction has been Recorded Regarding Conservation and Public Access on the Property. City Manager. Introduction January 25, 2021, Public Hearing and Second Reading February 8, 2021. **POSTPONED to April 12, 2021 with discussion.**

Homer Community Recreation Update:

Budget

The Community Recreation Division within the Administration Department will be again requesting one full time employee (FTE) for FY22 and FY23 to assist with overall operations addressing supervision, liability concerns, safety concerns and overall improvement with the comprehensive program that takes place in 4 different physical locations at once. The ability to offer programs post COVID will require the additional supervision and expectations of safety/communication through detailed mitigation plans requirements once we re-open back into the schools and expand into the HERC. I would appreciate support for this request.

Upcoming Safe & Healthy Kids Fair

We are excited to announce that we have identified a date for the upcoming Safe & Healthy Kids Fair for Saturday, May 15th! This will be a COVID Safe outdoor event pending approval of the mitigation plan that will be submitted soon. This community wide collaborative event takes place under the umbrella and coordination of the Community Recreation program and we are very pleased to bring this event back that will include informational booths, bicycle rodeo, bike raffle, sporting games, etc.

Use of School Facilities

The use of the local school facilities (indoor use for recreational/educational programs) still remain to be unavailable until further notice. A friendly reminder that value of still having access to the HERC for minimal programmatic opportunities.

Possible Outdoor Programs

I am continuing to discuss with school administration about the possibility of having outdoor programs at the schools (fields and turf) for youth and adults. This would include existing Community Recreation programs, new programs and potential partnerships. We may be asking for additional funding for outdoor portable toilets. More on this as information becomes available.

Vaccination PODS

The vaccination PODS continue to run smoothly with a significant amount of time, energy and effort from city staff in assisting South Peninsula Hospital. The events have shifted to Homer High School and school staff has been very helpful and supportive towards the events so far. The next scheduled events will take place on March 12, 19 and April 10 with other possible events to be determined.

Parks and Recreation Software Update

The training and set up for the MyRec software/website is still a work in progress. We are anticipating an official launch hopefully by early April.

HERC Use and Reservations

Community members have expressed excitement and appreciation in having the ability to have access to the HERC for indoor recreational opportunities. Participants are required to wear masks at all times and have been very supportive with our mitigation plan. The city manager recently approved expanding the maximum number of participants from 10 to 12.

Since the HERC has been open for reservations starting on February 1st:

- 89 reservation requests
- 178 hours of play time
- 344 visitors (up until 2/10)
- 57 individuals participating
- Activities so far include pickleball and youth open gym

City of Homer
Beach Policy
~~March 13, 2017~~

Table of contents **Page**

1. Purpose and Intent

This document is an update to the Beach Policy Task Force Final Recommendations, adopted June 25th 2001 and the Parks, Art, Recreation and Culture Commission recommendations in 2007 and 2016. Since 2001, the City of Homer has annexed more land and beaches, and implemented parts of the original plan. The purpose of this document is to update the Beach Policy and make recommendations for future actions. The intent of the Beach Policy is to keep Homer's beaches safe and enjoyable for all users,and preserve natural environment. **Recommend updating this section.**

Goals

Education

Educate beach users by providing signage and beach information at convenient locations.

Prevention

Limit conflicts between motorized users and pedestrians by encouraging courtesy and common sense.

Protect sensitive beach habitat and wildlife from inappropriate use of beaches - e.g., keep motorized vehicles **and watercraft** out of lagoon areas.

Enforcement

Ensure adequate staffing on holiday weekends. Ensure regulatory signage is installed where needed so laws can be enforced. **Installation of gates to prevent or limit access to sensitive areas.**

2. Definitions

a. "Berm" means a natural, linear mound or series of mounds in a beach area composed of sand, gravel, or both, generally paralleling the water at or landward of the elevation of mean high water.

b. "Storm berm" - means a berm formed by the upper reach of storm wave surges or the highest tides. Storm berms generally include an accumulation of seaweed, driftwood, and other water-borne materials. A beach area may have more than one storm berm.

Example: Grassy areas of Mariner Lagoon and Beluga Slough where highest tides and storm deposit logs and driftwood. Tall grasses and other plants grow there most of the time, and only at the highest tides and largest storms are logs thrown up on this area of the beach.

c. "Submerged land" means land covered by tidal water from the elevation of mean low water seaward to the corporate boundary of the city.

d. "Tideland" means land that is periodically covered by tidal water between the elevation of mean high water and mean low water.

e. "Beach area" means all of the following, whether publicly or privately owned: submerged land, tideland, and the zone of sand, gravel and other unconsolidated materials that extends landward from the elevation of mean high water to the place where there is a marked change in material or physiographic form.

f. "Motor vehicle" means a device in, upon, or by which a person or property may be transported or drawn upon or immediately over land, that is self-propelled except by human or animal power.

3. General Recommendations for all ~~Horner~~ Homer Beaches

A. Identify and improve beach access points. Heavy impacts are created by a large number of people accessing the beach at a small number of places. By finding, improving and publishing all public beach access points, ~~we~~ **this** will diffuse the impacts and provide a more enjoyable experience to all.

1. Improve Access via: Main Street, Ocean Dr., Spit, Kachemak Dr.
2. Provide signage at all public access points.

a. Specifically, signage shall be maintained at Bishop's ~~b~~**B**each ~~p~~**P**ark, Ocean Drive Loop, the parking areas on the east side of the Homer Spit, on the Airport Beach Access Road, and Kachemak Drive.

b. Appendix A documents other public access points and the pros and cons of

their development. The appendix should be expanded to include Homer Spit public access points, particularly on the east side of the spit.

B. Install and maintain signage as needed. Signage should be positive and informative to encourage courtesy to pedestrians, appropriate pet control and clean up, and indicate where vehicles are permitted. Interpretive signage about the berm building process, shore zone wildlife habitat, etc. should be developed and installed. Ensure signs are installed to meet the needs of law enforcement.

1. Work with USFW on a uniform interpretative signage plan that can be used in all City beach parks. Adjust signage language over time to meet changing needs. Include the project in the annual budget.

2. Budget at least $500 a year for sign repair, updating, and replacement.

C. Be aware of seaward property boundaries when making municipal decisions. Although many ~~people~~ believe property lines stop at a water boundary, it has become apparent this is not always the case in Kachemak Bay. Normal property lines next to the ocean are established at mean high tide, and slow erosion does change boundaries. The 1964 earthquake caused the sinking of the Spit and Homer area. The sea flowed over the lowered land. This sudden change is called avulsion and legally does not change land boundaries. However, avulsion does have to be proven which can be difficult without adequate historical records. Usually in Alaska, the area below mean high tide is owned by the State of Alaska, and this is true in a few spots in Homer. But generally speaking, the City owns the tidelands below mean high tide.

D. Encourage better enforcement of applicable existing state and local laws. Examples of applicable laws include: HCC 19.08 Campgrounds, HCC 7.16 Vehicles in Beach Areas; HCC18.28.200 Waste or injury to land, and Alaska State Traffic Regulations regarding: DWI, Reckless Driving, Negligent Driving, Basic Speed, and Littering.

1. Encourage more evening enforcement in City campgrounds and encourage/post quiet hours.

2. Encourage more enforcement of city driving laws in ~~c~~**C**ity beach parking areas and on west Bishop's Beach where driving is permitted.

3. Ensure adequate City signage is installed so that violators of city laws on City beaches may be ticketed

E. Develop and distribute brochures with a coordinated public relations campaign. It is important to enlist the public in the campaign to keep our beaches enjoyable for all, to limit the human damage to fragile areas and to minimize friction between user groups. ~~We~~ **The City requires** ~~need~~ everyone's help.

1. Prior to major holiday weekends, advertise beach rules and etiquette in the local newspapers. Consider a public services announcement on local radio stations. Budget at least $500 annually for this advertising.

2. Provide beach maps and brochures on beach etiquette at ~~c~~**C**ity campground facilities.

F. Perform an annual assessment of beach health and developing impacts.

1. Provide City Council with copies of the annual CoastWalk Report, from the Center for Alaskan Coastal Studies. Host on City Website.
2. On a biannual basis, take photographs of sensitive areas or places and keep a photo record of changes. This could be hosted on the City website.

G. Driftwood from berm areas should not be removed. Testimony by scientists emphasized the importance of the natural berm building process to protect the spit, lagoon and slough. The berms also provide important wildlife habitat. It was found that driftwood plays an important role in building and stabilizing berms. Thus, it is hoped that providing an alternate source of campfire wood for campers serves the important function of protecting the berms. Driftwood was also described as an important esthetic enhancement to the beach and a material resource.

1. Prohibit the burning of driftwood from berm areas ~~and direct City Administration to investigate providing firewood to beach users or allowing firewood concessions in city campgrounds~~. *(This was done, not successful, look into or provide alternative options)*

H. Find ways of supporting beach cleanup.

1. Support the efforts of spring cleanup day to include Homer beaches. The City should actively continue to support theefforts of volunteers by providing trash bags for the event and dumpsters or trash removal at locations such as Bishop's Beach.
2. Support the efforts of the Center for Alaskan Coastal Studies for their annual CoastWalk and beach trash removal. Support may be in the form of providing trash bags, dumpster service at beach parks, and city funding for newspaper advertising for CoastWalk educational and beach cleanup activities.

I. Keep cars from encroaching onto beach berms and beaches in city campgrounds, parks, and along the Homer Spit Road. Define parking lots so they do not spread onto the beach.

4. **Recommendations by Area** (Following the beach line, East to West)

Area 1 - **Miller's Landing to just east of the Airport Access Road.**

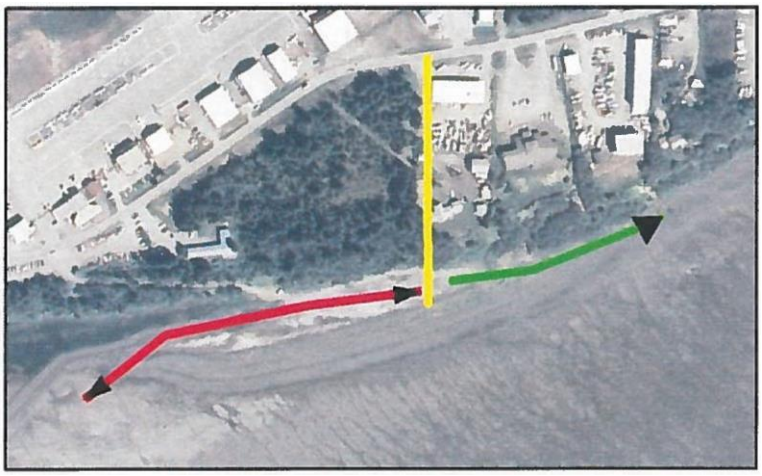
A. Miller's Landing. Create a public viewing spot in the Beach Access Road Right of Way off of Kachemak Drive, by posting a sign stating the location of the public access. In the future, as use warrants, create a small parking area, and use boulders to discourage

trespassing on adjacent properties.

B. Airport Access Road. Support state efforts to place signage or interpretive displays.

C. Vehicle use at the bottom of airport beach access road on the beach is not allowed. Referred to HCC 7.16.020 for exceptions.

D. Vehicles are allowed on the beach east of the vacated easement formerly known as Shirlene Circle (refer to map), under the terms of HCC 7.16



Vehicles are not allowed on the beach at the bottom of the airport beach access road. Vehicles are allowed east of that area, but there is no public vehicle access point to get to that part of the beach. Land owners or those with land owner permission may access the beach from private vehicle access points. Once on the beach, nothing in City laws or policy condones trespassing on adjacent private lands.

Area 2 - Airport Beach Access Road to North End of Berm outside of Louie's Lagoon and Louie's Lagoon.

A. Due to expert testimony, it was agreed ~~by the BPTF~~ that limiting vehicle use in this area was necessary to protect the fragile habitats from Mud Bay to Louie's Lagoon.

B. Vehicles are prohibited in this entire area - outside of access driveways and parking.

C. Maintain signage identifying public pedestrian access points and vehicle parking areas.

D. Complete Conservation zoning for all public lands in this area. Much of Area 2 has a conservation easement and zoning.

E. Designate the platform area as a park and initiate cleanup of surface debris in Louie's Lagoon. A layer of dredge spoils to cover debris and more grass around the platform is also recommended. Investigate potential as a bird viewing platform. Should this be cleaned up and removed as a potential safety hazard or funds designated and or requested?

F. Long term goal: Acquire a pedestrian easement as shown on the map, for access to

the outer beach without going through the mudflats. The current section line easement goes across the mud flat in the bird sanctuary. A new easement would provide better access to the beach and protection for the sanctuary. See attached map. Was the easement acquired? Is it still a long term goal or should be updated?

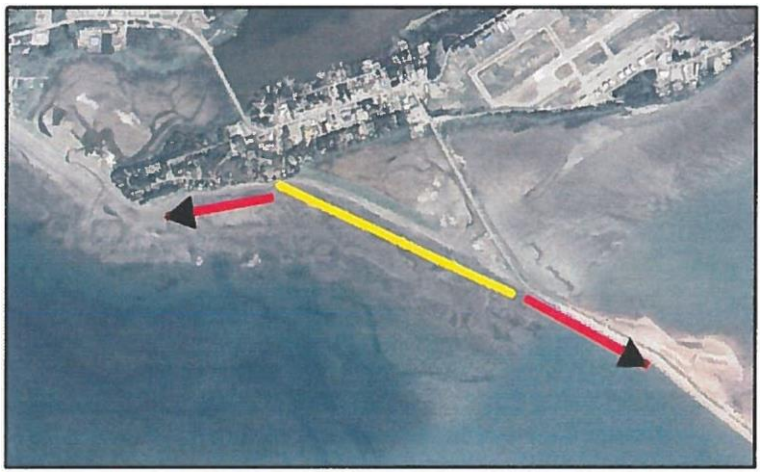
G. Preserve subsistence fishing access through the northern portion of the English Bay property, which traditionally has included pedestrian and vehicle access.

Area 3-From Louie's Lagoon-South to end of Homer Spit and then North to the South end of Mariner Park.

A. Encourage the elimination of unsightly waste on properties near the beach by working with landowners.

Area 4 - From the south end of Mariner Park to the East End of the Seawall

A. Vehicles are allowed between the south end of Mariner Park beach and the east end of the seawall from October 1 through March 31st solely for the purpose of gathering sand and coal. The beach is closed to vehicles at all times for any other purpose. The area in front of the sea wall west to the Beluga Slough outfall is closed to vehicles.



Red= No vehicles
Yellow = Vehicles only under the terms of HCC 7.16, paraphrased in C, above.

B. Define limits to Mariner Park campground by utilizing logs, rocks or other means to restrain vehicles from entering the lagoon while creating a beach access point that can be gated seasonally to control vehicle access to the beach. This would also help protect the berm in the park, which sees heavy seasonal use from campers. Create a phased cost estimate and include the project in the annual budget in the near future. Update this to reflect the gate and work done to delineate campsites, etc.

Area S - Mariner Park Lagoon including the storm berm

A. Vehicles are not allowed in this area.

B. Add in recommendation on dredging opening on a biennial period and funding to be included in Fiscal year budget

Area 6 East End of Seawall to Bishop's Beach Park

A. Vehicles are not allowed in this area.

B. Maintain the gate and rocks at Bishop's Beach Park to physically block access to vehicles

C. Support USFS~~S~~**W** efforts to protect berm and promote rye grass and driftwood buildup.

D. Support USFS~~S~~**W** work to develop a plan to maintain the ecological integrity of their educational reserve, including possible conservation zoning.

E. Improve and identify with signage the Ocean Drive Loop beach and Beluga Slough access.

Area 7 - **Bishops Beach Park access, west to Homer city limits.** This is a heavily used area, and has the greatest potential for conflicts between user groups.

A. Increase parking at Bishop's Beach Park and in the area. Increase wayfinding signage directing people to nearby public parking (e.g., Chamber of Commerce, Island and Ocean Visitor Center) may be needed.

B. This area is open to vehicles, following the laws under HCC 7.16.

Vehicles are allowed west from Bishop's Beach Park access, and prohibited to the east.

A. Improve erosion control and access at Crittenden Drive and at Main Street. Use seeding, of native grasses and other low impact techniques to control erosion in the right of way at the end of Main Street. ~~fustall~~ **Install** a stairway so pedestrians may access the beach safely and without treading on the eroding bluff face.

B. Work with property owners and interested volunteers to remove the remaining junk cars from the beach near the bottom of West Hill. Are we still interested in doing this or has mother nature hidden the vehicles?

5. History

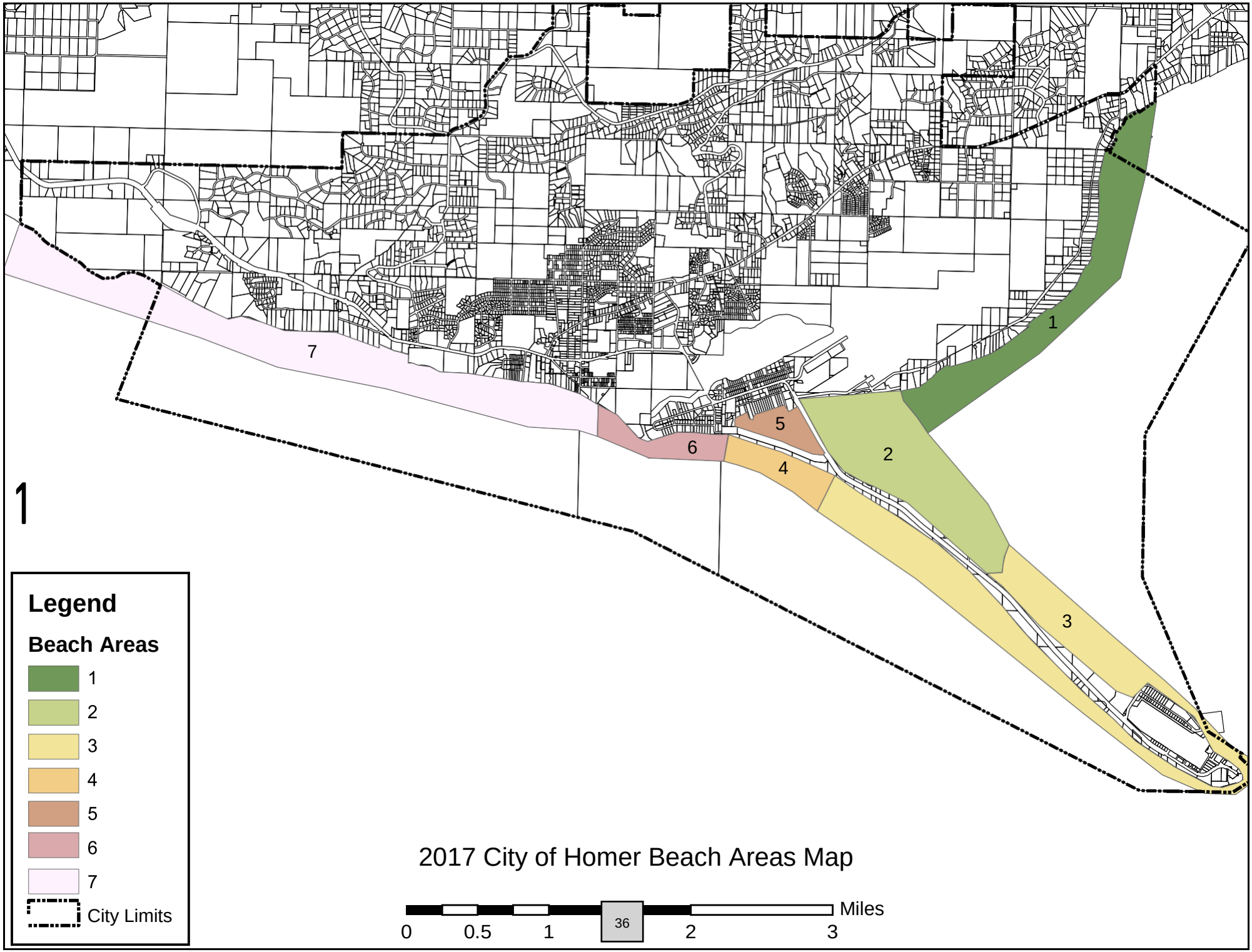
This section should be provided in the beginning as an introduction to the policy.

The original Beach Policy Task Force was established in 2000 and completed the beach policy in 2001. The City adopted it on June 25, 2001. In 2003, Ordinance 03-27, the city was awarded a

$75,000 Coastal Impact Assessment grant to fund beach access restriction improvements, regulatory signage, a GIS coastal erosion and beach habitat information mapping project and funds for the 2004 United States Geological Survey sediment transport study camera operation.

The Task Force made further recommendations in 2005, in Memorandum 2005-78, and concluded their work. In 2007, the City Council added advising on public beaches to the duties of Parks and Recreation Advisory Commission (Ordinance 2007-0l(A)). The Commission formed a Beach Committee to update the Beach Policy, which resulted in this document.

In fall of 2014 the Parks and Recreation Advisory Commission was directed by Council to review and recommend revisions to the Beach Policy. The Commission worked on the policy the first six months of 2015 and made recommendations via Memorandum 15-102. Council adopted Ordinance 16-05 (S-2)(A-2) on February 23, 2016. Ordinance 16-13 then made minor amendments. The Beach Policy was amended to reflect these revisions through Resolution 16- 029(S-2). (Resolution 17-021).


1
7
6
5
4
2
3
1
Legend
Beach Areas
1
2
3
4
5
6
7
City Limits
2017 City of Homer Beach Areas Map
0
0.5
1
2
3
Miles


Proposed Easement and Pedestrian Access to Outer Beach Area
Outer Beach
TIDE ST.
Proposed easement
Kevin Bell Arena
1
Legend
City Lands
Feet
0
250
500
37

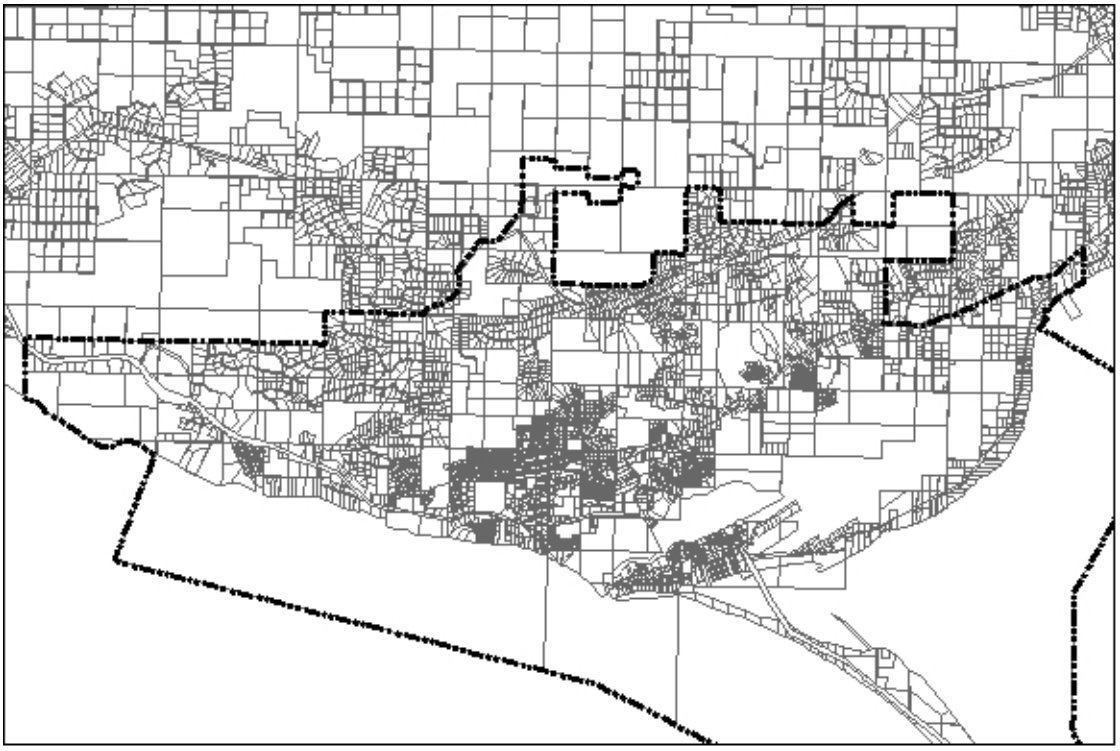
Appendix A: Beach Access Notes

Public access points

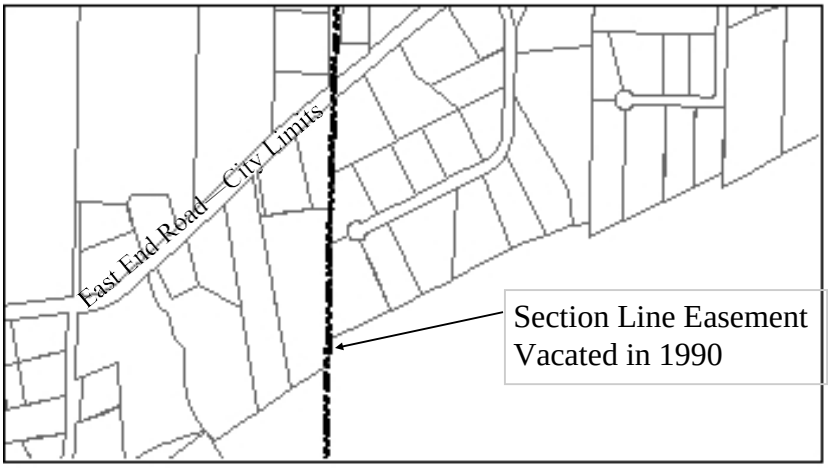
	Pros	Cons	Comments
Miller's Landing Beach Road	Nice picnic spot Difficult trek down to the beach	No defined parking area	
Airport Access Road			State owned land. Gate and key system installed in 2016.
Spit			
Mariner Park	Large parking area for campers and day users	Occasionally motor vehicles drive around in the lagoon.	Need more enforcement here Need more education here/kiosk
Lake Street		Constructed road ends at the Seawall. It will be expensive and difficult to create beach access that will withstand the wave energy at this point. Most of the land below is private property.	There may be other better pedestrian access points that are currently not public, along Ocean Drive Loop
Oscar Munson/Bell		Some public access points must cross the seawall, and most of the beach area is private property.	Neighborhood Access Point
Bishop's Beach	Flat beach access, public parking	High user conflicts	
Main Street	Section line easement access	Highly erosive, very steep trail	
Crittenden	Right of way access	No parking. Tends to be a party spot.	City constructed trail in conjunction with Crittenden/Waddell Road Improvements. There is also an adjacent private access from Ocean Shores Motel. Landowner allows neighborhood use of his trail to the beach.

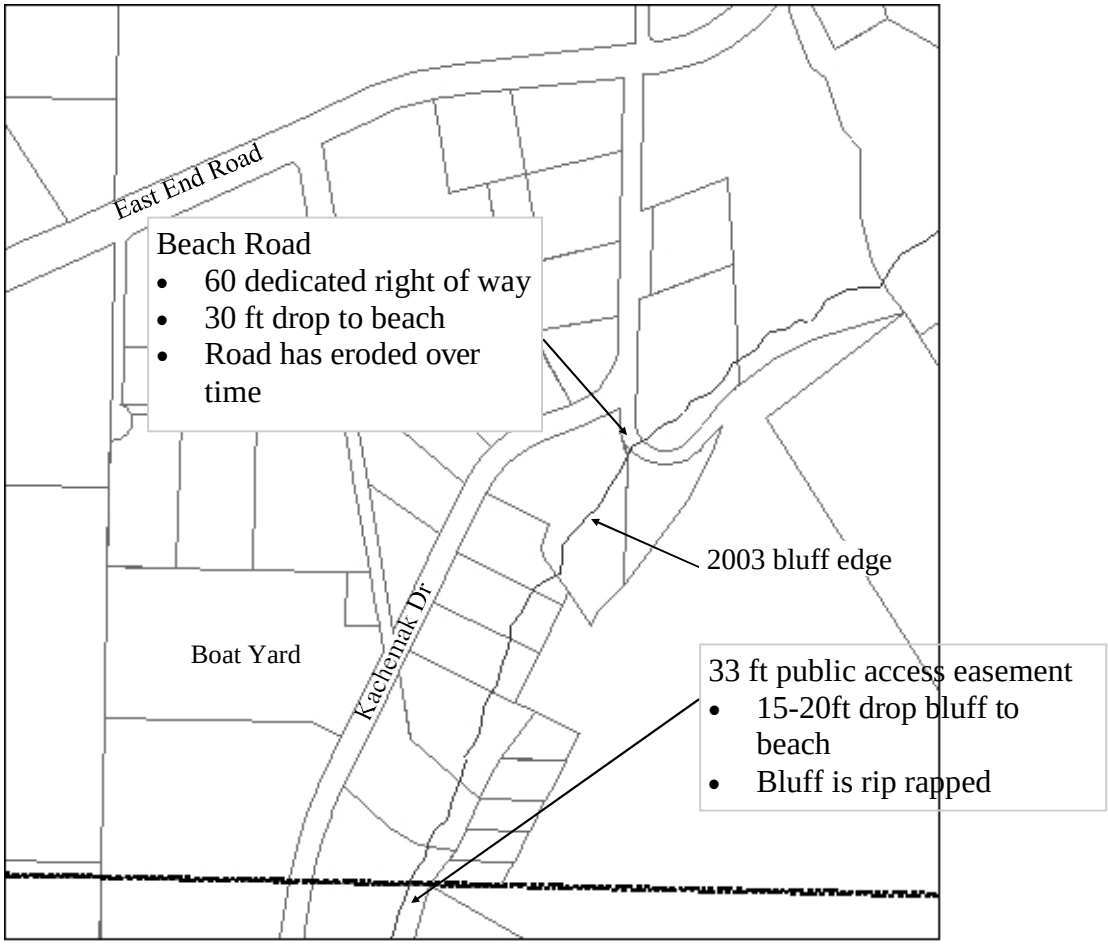
Updated 6/2016

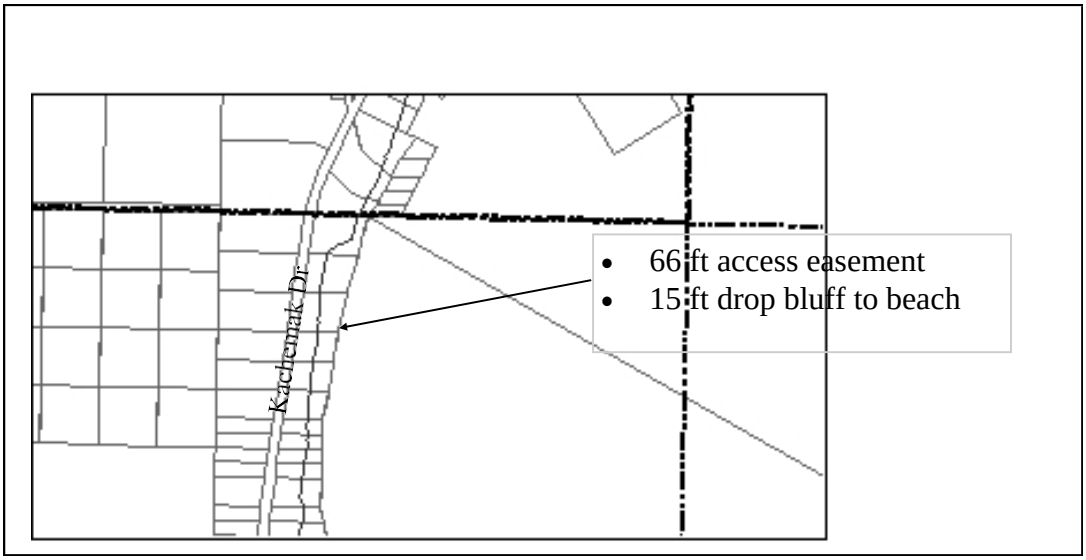
Beach Policy Appendix: B
Mainland Public Access Points to Kachemak Bay
2017

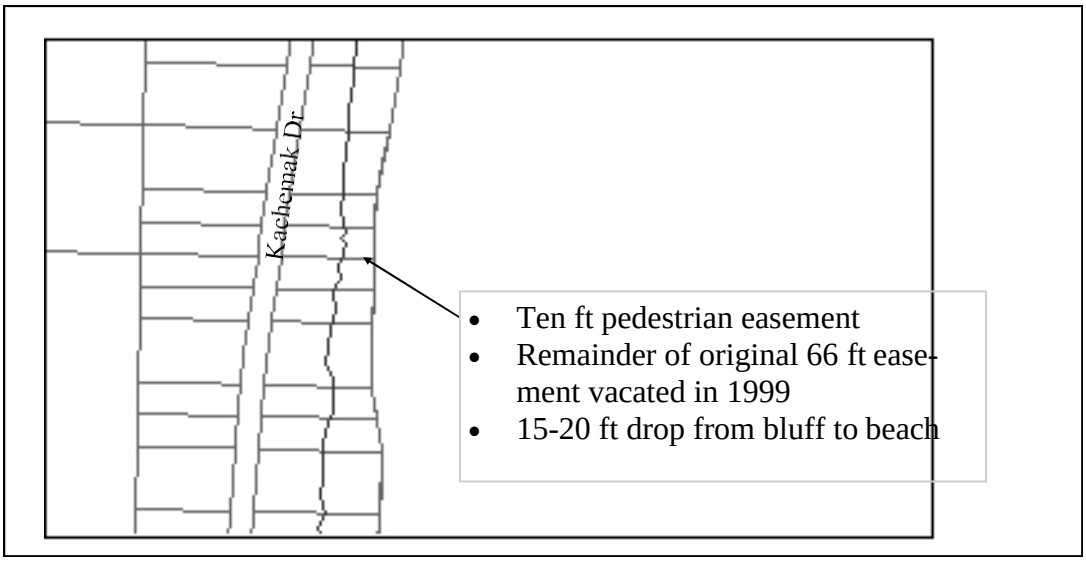


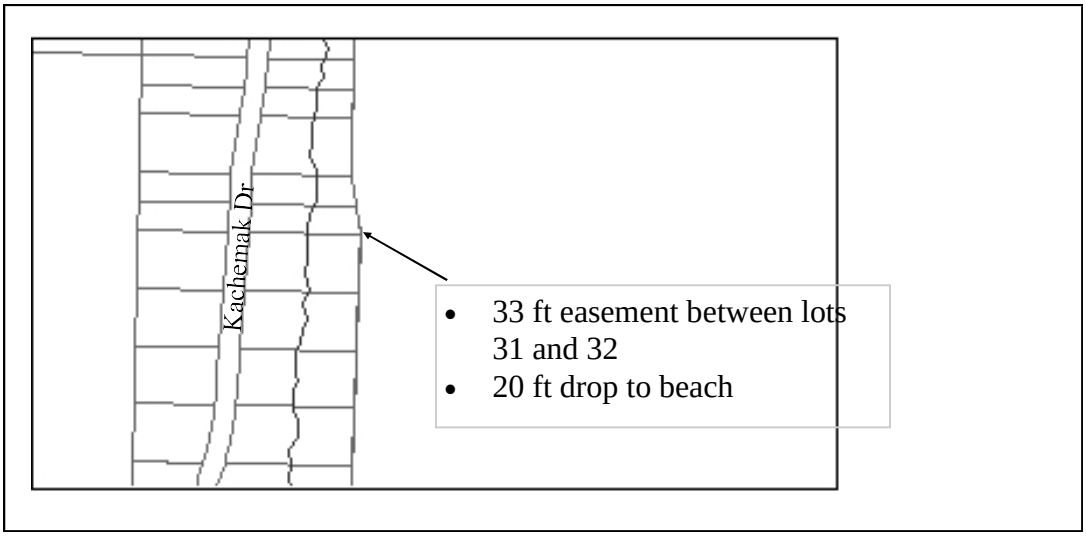
Prepared by the City of Homer Planning and Zoning Office. Erosion data from KBRR 2004 coastal erosion study. Easement data from plat research, and from 1982 Homer and Vicinity othrotopographic map by Walker and Associates.

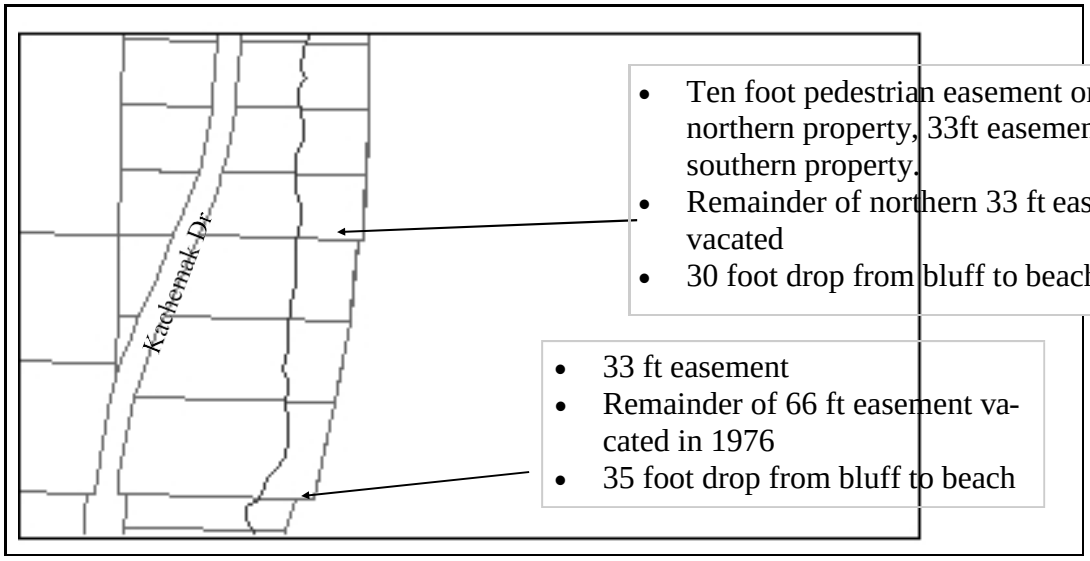

East End Road—City Limits
Section Line Easement
Vacated in 1990


East End Road
Beach Road
60 dedicated right of way
30 ft drop to beach
Road has eroded over time
2003 bluff edge
Boat Yard
Kachemak Dr
33 ft public access easement
15-20ft drop bluff to beach
Bluff is rip rapped


Kachemak Dr
66 ft access easement
15 ft drop bluff to beach


Kachemak Dr
Ten ft pedestrian easement
Remainder of original 66 ft ease-ment vacated in 1999
15-20 ft drop from bluff to beach


Kachemak Dr
33 ft easement between lots 31 and 32
20 ft drop to beach

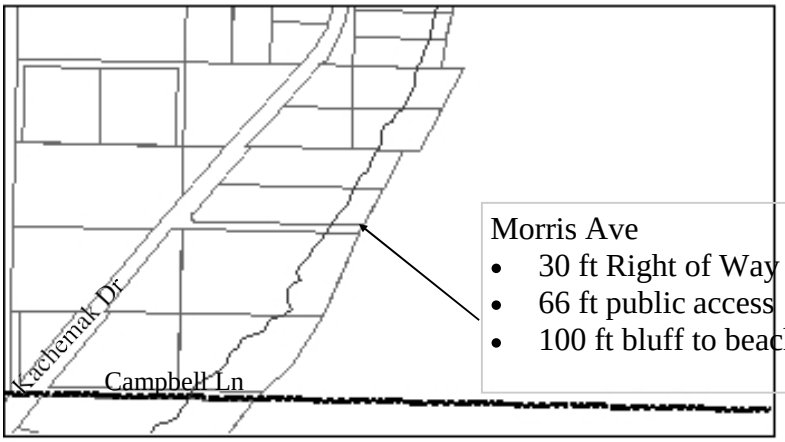


- Ten foot pedestrian easement on northern property, 33ft easement on southern property.
- Remainder of northern 33 ft easement vacated
- 30 foot drop from bluff to beach

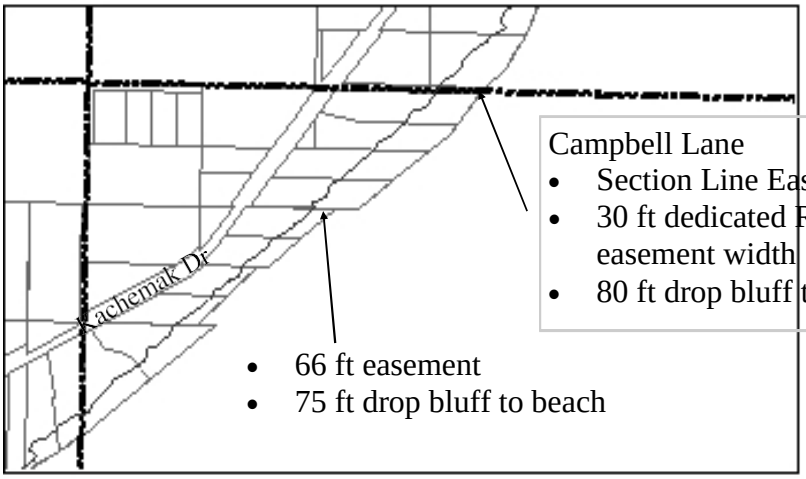
- 33 ft easement
- Remainder of 66 ft easement vacated in 1976
- 35 foot drop from bluff to beach

- 33 ft access easement
- 65 foot drop from bluff to beach

- 33ft access easement
- 75 foot drop from bluff to beach

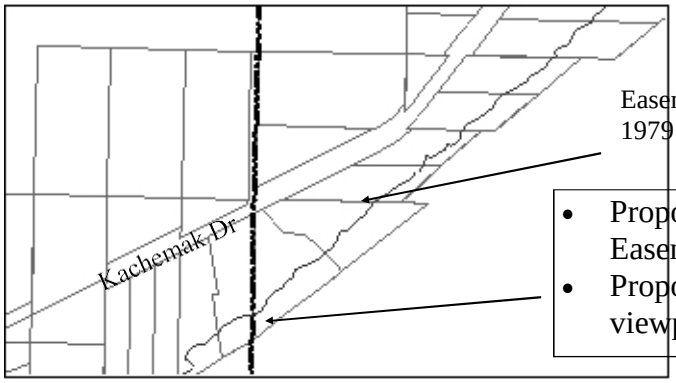


Morris Ave
- 30 ft Right of Way
- 66 ft public access
- 100 ft bluff to beach drop



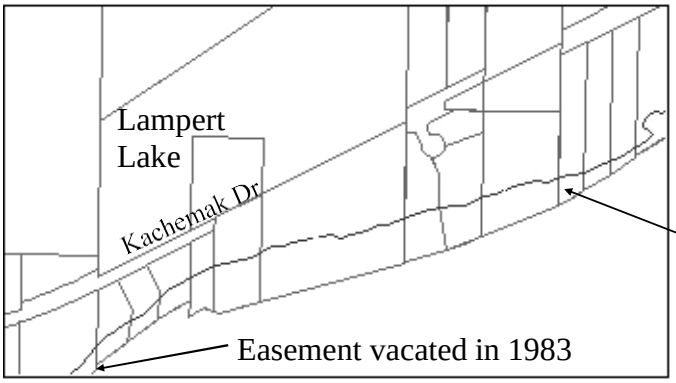
Campbell Lane
- Section Line Easement
- 30 ft dedicated Right of Way, 66 ft total easement width
- 80 ft drop bluff to beach

- 66 ft easement
- 75 ft drop bluff to beach



Easement vacated in 1979

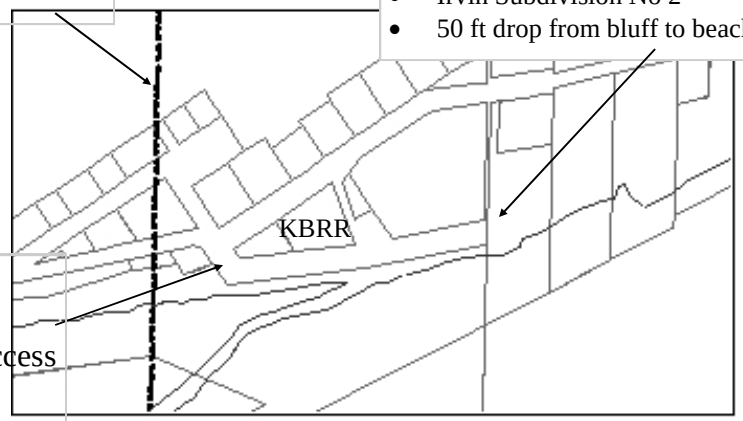
- Proposed Section Line Easement Vacation 2007.
- Proposed public access viewpoint.



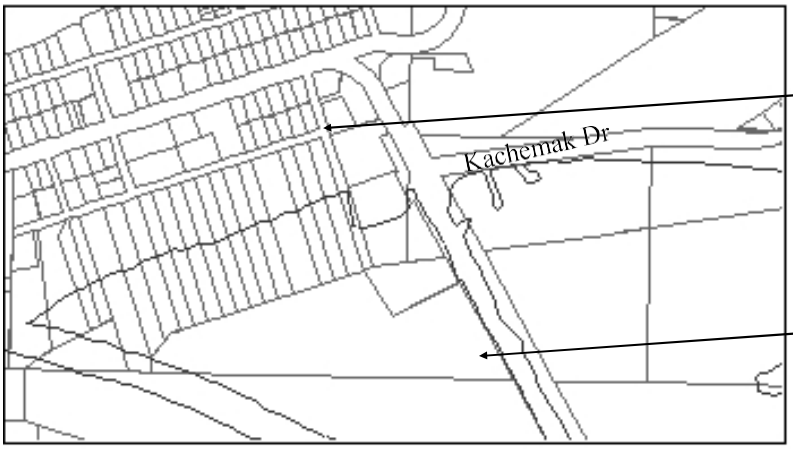
Easement vacated in 1984

Public Access Easement
- 33ft wide access easement
- Irvin Subdivision No 2
- 50 ft drop from bluff to beach

Section Line Easement



Airport Road
- Part of airport?
- Main public beach access point



B Street
- Dedicated Right of Way
- Ends in Mariner Lagoon

Mariner Park
City and State Land

Lake Street
- Dedicated 60 ft Right of Way
- Sea wall crosses the Right of Way

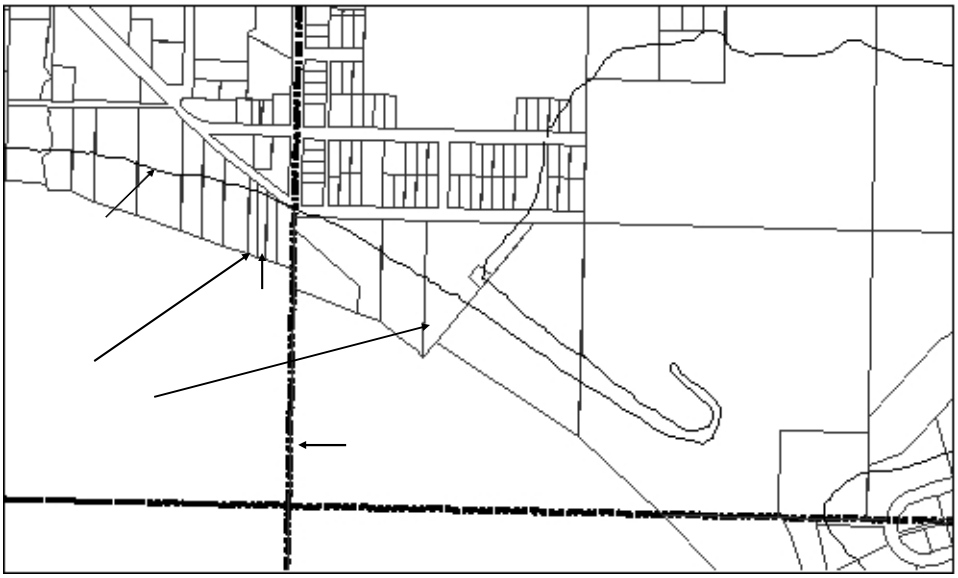
Section Line Easement
- 66 ft wide
- 30 ft drop from bluff to beach

Oscar Munson Subdivision

Victoria Place
- 50 foot Right of Way
- Not constructed

Section Line Easement/Right of Way
- 30 ft Right of Way, 33 ft section line
- Exact width of possible public access not know, but probably about 60 ft

Parson Lane
- 30 ft Right of Way
- About a 30 ft drop from street level to the beach
- Seawall runs along the bluff



Ohlson Lane Property
- 15-20 ft drop from street level to the beach
- City of Homer owns one lot; the state owns another

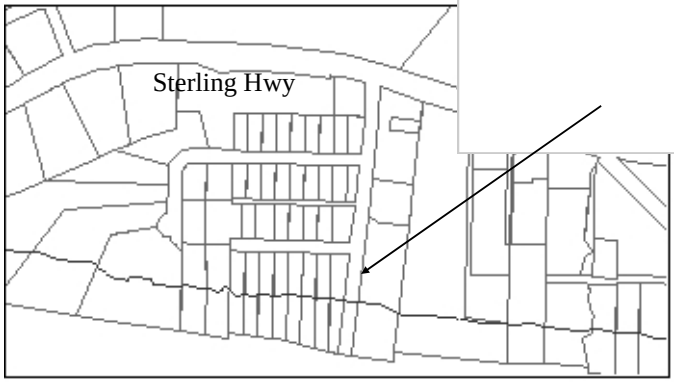
Section Line Easement
- Main Street is on a section line easement
- 15-20 ft drop from street level to the beach

Bishops Beach
- One of the few easy access point to the beach

This is an area of moderate long term erosion, averaging about 2 and a half feet per year.

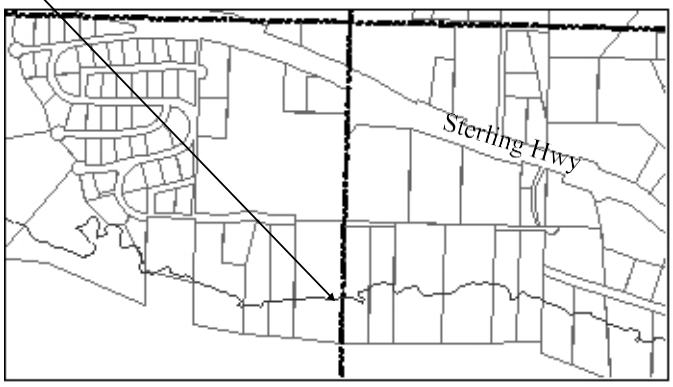
Crittenden Dr

- 60 ft Right of Way
- New trail is steep and is eroding.
- 60 ft drop from Hidden Way to the beach



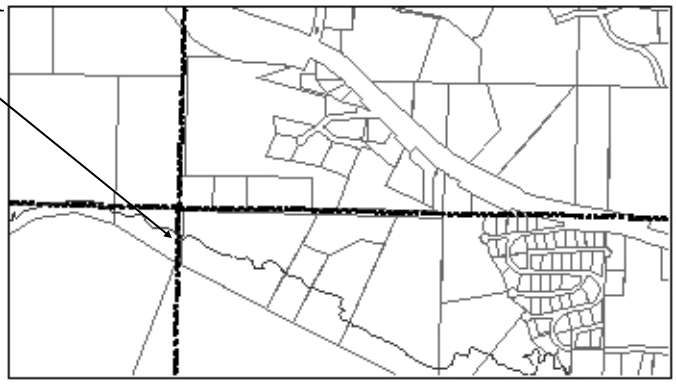
- Section Line Easement
- 120 ft drop from bluff to beach

- Section Line Easement
- 230 ft+ drop from bluff to beach



Leber Street

- 30 Right of Way Leber St
- Section Line Easement
- 25 foot drop from upland to beach.



- Section Line Easement, north-south along city limit boundary
- 60 foot bluff from beach to upland plateau
- EVOS and other public lands shown

City of Homer
www.cityofhomer-ak.gov

Community Recreation
HHS/600 East Fairview Avenue
Homer, Alaska 99603
communityrecreation@cityofhomer-ak.gov
(p) 907-235-6090
(f) 907-235-8933

Memorandum

TO: PORT & HARBOR ADVISORY COMMISSION

CC: ROB DUMOUCHEL, CITY MANAGER

FROM: PARKS ART RECREATION & CULTURE ADVISORY COMMISSION

THRU: MIKE ILLG, COMMUNITY RECREATION MANAGER

DATE: MARCH 8, 2021

SUBJECT: RECOMMENDATIONS ON USE OF PERSONAL WATERCRAFT

Background

The regulations regarding the use of personal watercraft in Kachemak Bay and the Fox River Flats (5 AA 93.310) was repealed by the State of Alaska and became effective on January 9, 2021. This has brought concern from the public and city personnel on the how this use may and or will affect Homer city beaches and harbor areas.

The Parks, Art, Recreation & Culture Advisory Commission (PARCAC) entertained a discussion at a worksession on February 4, 2021 and then at a regular meeting on February 18, 2021. Following are the recommendations that were developed and requested to be forwarded to the Port & Harbor Advisory Commission (PHC) for consideration. These recommendations will be forwarded to City Council after further discussion by the PARCAC during their biennial review and update to the beach policy scheduled for the March 18, 2021 regular meeting. It is understood that the PHC will have the proposed recommendations on their agenda for review on March 24, 2021. The proposed timeline would be to incorporate the recommendations into the Beach Policy which would be adopted by City Council via resolution at the April 26, 2021 meeting. Also additional actions could be implemented to introduce an ordinance to amend Homer City Code Chapter 19.20.020 General Rules which would be introduced at that same meeting and possibly approved at the May 10, 2021.

Recommended Regulations:

1. Personal Watercraft can only be launched and or retrieved from the Load & Launch Ramp in the Harbor; and
2. Motorized Watercraft are prohibited from being launched, landed or retrieved from any City beach with the exception of official business use.

The excerpt of the unapproved minutes of the February 18, 2021 PARCAC meeting are attached for your consideration.

Recommendation:

Review and provide recommendations or amendments to proposed policy language regarding the use and operation of personal watercraft.

February 18, 2021 Regular Meeting Minutes Excerpt
Parks, Art, Recreation & Culture Advisory Commission

PENDING BUSINESS

A. Discussion on Personal Watercraft Use
   - Boundary Lines and Enforcement
   - Jurisdiction on the Water but within City Limits
   - Priorities for Sensitive Areas, Beaches and Harbor Entrance
   - Review of regulations imposed by other Communities
   - Existing Regulations that Apply to Personal Watercraft
   - Review and Recommendation on the Draft Ordinance Submitted by KBSC

Chair Lewis introduced the item by reading of the title.

Commissioner Archibald declared that he has a conflict since he was involved in the writing the proposed ordinance.

Chair Lewis requested a motion.

LOWNEY/ROEDL MOVED THAT COMMISSIONER ARCHIBALD HAS A CONFLICT.

There was a brief discussion.

VOTE. NO. LOWNEY, ROEDL, HARRALD, GALBRAITH, LEWIS.

Motion failed.

Chair Lewis opened the floor to discussion.

Recreation Manager Illg requested clarification citing that at the previous worksession the Commission determined that they should forward motions to the city Manager for review by the city attorney. He believed that they were going to wait until they received a response from the city attorney before further discussion.

Port Director Hawkins reported that the City Manager did forward to the City Attorney but they have not been able to carve out time to review it as yet. The City Manager wanted to the commission to be aware of that it is on the list but they just haven't had time to address it before this meeting.

Chair Lewis recommended that the Commission should make a policy that personal watercraft have to be launched at the harbor and cannot be launched from beaches or any place else, just like regular boats.

Commissioner Archibald noted that was stated in the proposed language of that ordinance and he would support that recommendation.

LOWNEY/HARRALD MOVED TO RECOMMEND THAT PERSONAL WATERCRAFT BE LAUNCHED FROM THE HARBOR ONLY.

ARCHIBALD/LOWNEY MOVED TO AMEND THE MOTION TO DESIGNATE THE LOAD AND LAUNCH RAMP.

Discussion ensued on clarifying that personal watercraft should only be launched and or retrieved from the Load and Launch Ramp in the Harbor and if they should also include land such as landing on the beach for a respite as an example. It was determined that landing could be addressed in the recommendations.

LOWNEY/MOVED TO AMEND THE MOTION TO DESIGNATE THE LOAD AND LAUNCH RAMP FOR LAUNCHING AND RETRIEVING OF PERSONAL WATERCRAFT.

Discussion ensued on the language in the amendment should be clear that personal watercraft are to be launched or retrieved from the Load and Launch Ramp in the Harbor.

VOTE. (Amendment) NON-OBJECTION. UNANIMOUS CONSENT.

Motion passed.

Chair Lewis asked for any further discussion on the main motion as amended.

VOTE. (Main) NON-OBJECTION. UNANIMOUS CONSENT.

Motion passed.

There was a brief discussion on submitting all recommendations regarding personal watercraft forwarded to the Port & Harbor Advisory Commission for them to review at their next meeting. It was determined that due to agenda deadlines this would be on the Port & Harbor Commission's March agenda for review and recommendations. It was noted that advice from the City Attorney may be available by that time.

NEW BUSINESS

A. Beach Policy Review

Chair Lewis introduced the item by reading of the title and requested any amendments to the policy that would relate to the use of personal watercraft, noting the recommendations previously made under that topic earlier in the agenda. He opened the floor to discussion. Seeing no hands raised to comment, Chair Lewis then opened discussion by offering the following amendment for consideration:

No personal watercraft allowed on city beaches.

Discussion was facilitated between staff and Commissioners on the following:

- Banning Personal Watercraft from city beaches
- Defining exactly where city limits were to the right of the Bishops Beach Access
- Applying the same methods used to control vehicles on Mariner Beach to Bishops Beach

    - Clarification with the City Attorney if they can block vehicle access west of Bishops Beach Access March 1 to September 30th
- Previous complaints from property owners regarding the vehicles, partiers, and trash on the beach
- Difficulties in enforcing no vehicle access past West Hill, but maybe limiting it to a road bed and keep vehicles from the mud flats
- Recommended prohibition of landing motorized watercraft on beaches within city limits

LOWNEY/ARCHIBALD – MOVED THAT MOTORIZED WATERCRAFT ARE PROHIBITED FROM BEING LAUNCHED, LANDED OR RETRIEVED FROM ANY CITY BEACH WITH THE EXCEPTION OF OFFICIAL BUSINESS USE.

Discussion ensued on the language being used is appropriate but allowing emergency responders, Coast Guard, etc. to be able to access the beaches as needed. IT was noted that there was existing language that could be used.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

Recreation Manager Illg pointed out the following:

- Typographical error on page 16, item 3 title, should read, "…for all Homer Beaches."
- Budget $500 per year for sign repair, updating and replacement, Item B on page 17
- Develop and distribute brochures with a coordinated public relations campaign
- Budget $500 per year for advertising the beach rules and etiquette , Item E on page 17
- To discourage the use of driftwood maybe we should issue and RFP or something similar

Recreation Manager Illg wanted to make sure that the staff and commission are following the recommendations outlined in the policy regarding public education and information. He can work with Parks Superintendent Steffy on developing a brochure if they do not have one.

Parks Superintendent Steffy reported on previous attempts with regard to supplying firewood and the lack of success. He recommended a vending machine style firewood supply with a money drop box or swipe machine that the customer then takes product. He then provided an example of the bike rentals that they had last year which was a success. He then noted that they would like to allow third party operations in the city parks which are currently not allowed but with expectations of a percentage of revenue being paid to the city as the rental or lease fee.

Commissioner Lowney requested the commission to address the beach clean-up through establishing a day or supplies such as bags and promoting or building energy within the community for beach clean-up. She then requested reviewing and analyzing the beach access points to determine if they are feasible as an access point to the beach. Commissioner Lowney suggested that they may even want to vacate those access points due to the proximity to private property, steepness of the access, etc.

Commissioner Archibald supported the statements made by Commissioner Lowney and then commented on the proposed easement on page 23 of the packet and noted that there is a berm that is walkable but access is difficult when the tide comes in and a person could get stuck in that area of Louie's Lagoon, but it should be pursued by the Commission.

Parks Superintendent Steffy continued reporting on the idea to allow mobile food vendors in city parks which is currently prohibited and will be bringing forward for further discussion.

Public Works Director Keiser reported that she has noticed that one item that she believes is very important is maintaining natural flow of tidal waters where appropriate and in review of the policy this is not addressed. She the reported being asked by several people regarding dredging work to open up the Mariner Beach slough and Beluga Slough areas. She recommended adding on page 18 a section that addressed the requirement to perform dredging efforts to maintain the natural tidal flow into the inland area.

Chair Lewis requested a motion to make that recommendation.

Commissioner Archibald commented on the verbiage used in a motion, since it was natural tidal efforts that closed off those waterways and why those channels must be maintained and opened mechanically.

Parks Superintendent Steffy recommended contacting the Kachemak Bay Research Reserve to get some technical specifications in order to make informed decisions on recreational and ecological function of the two areas.

Commissioner Archibald noted that there is a private property owner that dredges their property and it may be a good idea to contact them to see how often they perform dredging.

Parks Superintendent Steffy noted that he would like to get the information to properly manage those openings before implementing more prescriptive language.

Chair Lewis turned the gavel over to Vice Chair Archibald noting he needed to depart the meeting for a few minutes.

Vice Chair Archibald requested additional recommendations. Hearing none from the Commission he stated that he would like to address motorcycles/dirt bikes, loud vehicles and unlicensed vehicles on the beach. He noted that they spoke about prohibiting unlicensed vehicles on the beach it would prohibit the use of dirt bikes on the beach.

Parks Superintendent Steffy recalled a previous conversation, during the last Beach Policy review, with Chief Robl indicating that laws of the road apply to the beach so if someone was on the beach spinning “brodies” that would be considered reckless driving and they could be cited. But he then noted that he recalled reading that if you are not operating a vehicle on a state maintained road there were some exceptions, so he would need to get some clarification on that issue. He then noted that if they are having issues again then they need to encourage reporting of incidents to the Police Department.

Further discussion made points on enforcement issues and staff resources and creating or marking a dedicated road bed and installation of signage to ensure that vehicles stay out of the mud flats.

The item was requested to be on the March agenda for further review to discuss beach access and recommending that the Commissioners visit the accesses shown so that they can see if there are any that could be developed better so that Bishop’s Beach does not get too crowded. It was suggested that the commissioners visit the beach easement behind the property with all the derelict vessels also before the next meeting.

Recreation Manager Illg suggested that the Commission schedule a worksession since they are representatives to the Homer Community and some of them have no idea where these access locations are collectively.

Chair Lewis stated that they could schedule worksessions in April when the weather is better.

Parks Superintendent Steffy noted that they can schedule the Spring Park Walk Through.

Deputy City Clerk Krause confirmed with the Commission that a worksession will be scheduled prior to the April regular meeting.

CITY OF HOMER
HOMER, ALASKA

Sponsor

ORDINANCE 21-xx

AN ORDINANCE OF THE CITY COUNCIL OF HOMER, ALASKA AMENDING HOMER CITY CODE 19.20.020 GENERAL RULES, ADDING LAUNCHING, LANDING OR RETRIEVING OF MOTORIZED WATERCRAFT IS PROHIBITED FROM CITY OWNED BEACHES EXCEPT FOR OFFICIAL BUSINESS USE.

WHEREAS, On January 9, 2021, the State of Alaska Department of Fish and Game repealed the prohibition for the use of Personal Watercraft in the Kachemak Bay and Fox River Flats Critical Habitat Area; and

WHEREAS, Much of the tourism economy of Homer is associated with ecologically rich resources of Kachemak Bay, which include the Critical Habitat Area and the Western Hemispheric Shorebird Reserve Network Site; and

WHEREAS, The Parks, Art, Recreation & Culture and Port & Harbor Advisory Commissions have discussed the use and impact of personal watercraft to the areas of the harbor and city owned beaches at multiple meetings; and

WHEREAS, It is in the best interest of the City of Homer to limit where motorized watercraft may be launched, landed or retrieved from tidal waters within city limits; and

WHEREAS, Limiting the launching, landing and or retrieving of motorized watercraft to specific areas will insure public safety and protect sensitive habitat and wildlife.

NOW, THEREFORE, The City of Homer Ordains:

Section 1. Homer City Code Section 19.20.020 General Rules. Is hereby amended as follows:

a. No person may deface, disfigure, damage, tamper with, or displace or remove any building, structure, table, bench, fireplace, sign, notice, vegetation, or placard in a park.
b. No person may cut, pick or damage trees, flowers or other vegetation in a park.
c. No person may camp in a park except in an area and at a time designated for that purpose by the City Manager.
d. No person may light, build, use or maintain an open fire or portable camp stove in a park except in a receptacle or area designated for that use. No person may leave an open fire or operating portable camp stove unattended. No person may use a flammable liquid other than charcoal lighting fluid to start or accelerate a fire.

e. No person may operate, or stop, stand or park, a motorized vehicle in a park except:
1. In an area designed for the use, and in a manner permitted by the designation; or
2. Construction, enforcement, maintenance or emergency vehicles operated by the State, the Kenai Peninsula Borough, the City or their respective contractors.
f. Where the operation of motor vehicles is permitted in a park, motor vehicles shall be operated in accordance with posted speed limits, in a prudent and safe manner, and at a speed not exceeding 10 miles per hour in parking areas.
g. A person having control or supervision of an animal that excretes feces in a park shall immediately collect and properly dispose of the feces.
h. No person may dump, deposit, or leave any bottles, broken glass, ashes, paper, boxes, cans, dirt, rubbish, waste, garbage or refuse, or other trash, or water, sewage or effluent from sinks, portable toilets or other plumbing fixtures, directly upon the surface of land or water in a park.
i. Dumpsters provided at park facilities are intended for park use only.
j. No person may launch, load or retrieve a motorized watercraft from city owned beaches except for official business use.

Section 2. This ordinance is of a permanent and general character and shall be included in Homer City Code.

ENACTED BY THE CITY COUNCIL OF HOMER, ALASKA, this ___ day of _____, 2021.

CITY OF HOMER

_____
KEN CASTNER, MAYOR

ATTEST:

_____
MELISSA JACOBSEN, MMC, CITY CLERK

YES:
NO:
ABSTAIN:
ABSENT:

First Reading:
Public Hearing:
Second Reading:
Effective Date:

City of Homer
www.cityofhomer-ak.gov

Public Works
3575 Heath Street
Homer, AK 99603
publicworks@cityofhomer-ak.gov
(p) 907- 235-3170
(f) 907-235-3145

Memorandum

TO: PARCAC

FROM: Janette Keiser, Director of Public Works

DATE: March 4, 2021

SUBJECT: Karen Hornaday Park Renovation

Issue: At its June 2009 meeting, the Homer City Council adopted Resolution 09-59, a Master Plan for the redevelopment/restoration of the Karen A. Hornaday Hillside Park (Master Plan). Since then, very little has been done to implement this Master Plan. The purpose of this memo is to lay out an implementation strategy for moving forward with the Master Plan. Public Works will be presenting this strategy to the Planning Commission and the EDC at their next meetings. Also, we will be presenting it to the City Council at its April 12 meeting and asking for some appropriations that will allow us to move forward.

Background: The Master Plan was developed by a team, including: the City of Homer Planning Commission. It involved hours of work and collaboration with a wide variety of local stakeholders, including the Little League, the Friends of Woodard Creek, the Alaska State Parks and Outdoor Recreation Division and many others. The purpose of the Master Plan was to *"establish a vision for a standard of quality…to project an image of the park [as] a special place."* Specific objectives included addressing traffic, parking, pedestrian safety, capitalizing on outstanding views, embracing the stewardship of Woodard Creek, improving maintenance efficiency and *"installing pride in the park"*. The Master Plan was to provide a long range view (7-10 years) for uses and activities at the Park. It was intended to serve as a *"roadmap for the City to protect and enhance the park's natural values, provide appropriate recreation facilities and manage the land and facilities for the safety and enjoyment of the community."*

The Park suffered from deferred maintenance and ill-advised decisions about the dumping of off-site excavation next to Woodard Creek at the time the Master Plan was developed. These issues triggered the development of the Master Plan! However, since its adoption, little has been done to implement most of the recommendations that were set forth in the Master Plan and thus, the bad conditions have become worse. This Park has the capacity to serve as an economic engine and the recreational heart of the City, if we treat it as such. The time for procrastination is over. We need to take action now and we have begun to do so.

The Master Plan laid out 3 concepts: Concept A, Concept B and Concept B-2, with Concept B-2 being the most feasible for a variety of reasons. It shows a new access road routed more to the east so that all the parking would be on the west side of the road. This improves pedestrian safety because you

don't have people running across the road to get to the playground and ball fields. I wondered if it was still possible to use Concept B-2, considering the possible changes in topography that may have occurred since 2009. We commissioned Steve Smith, Geovera Inc., a local survey firm to do a field survey and ascertain whether Concept B-2 could be accommodated over the existing conditions. We found, that with some adjustment, it could!

Concept B-2 calls for a new restroom in a different location. This was fine with us because the existing restroom had been condemned due to its seriously deteriorating condition. We deployed the Public Works Crew to demolish it and take its remains to the local landfill. The Kenai Borough graciously waived tipping fees for the demolition waste. The concrete slab remains, but we will take this out in the spring. This will leave an open slate for renovation. The question is: How do we pay for this?

Following is a plan for financing the development of Concept B-2:

New Access Road	HART Road Fund
New Pedestrian Path paralleling road	HART Trails Fund
Reconfigured Parking Area	Parks CARMA Fund
New Restroom	HAWSP Fund
Water line for new Restroom	Water CARMA Fund
Sewer line for new Restroom	Sewer CARMA Fund

We are in the process of developing cost estimates for these elements. My main purpose was to introduce the idea of a multi-pronged approach to financing the development. When we present this plan to the City Council, we will be asking for specific appropriations for these elements.

Conclusion:

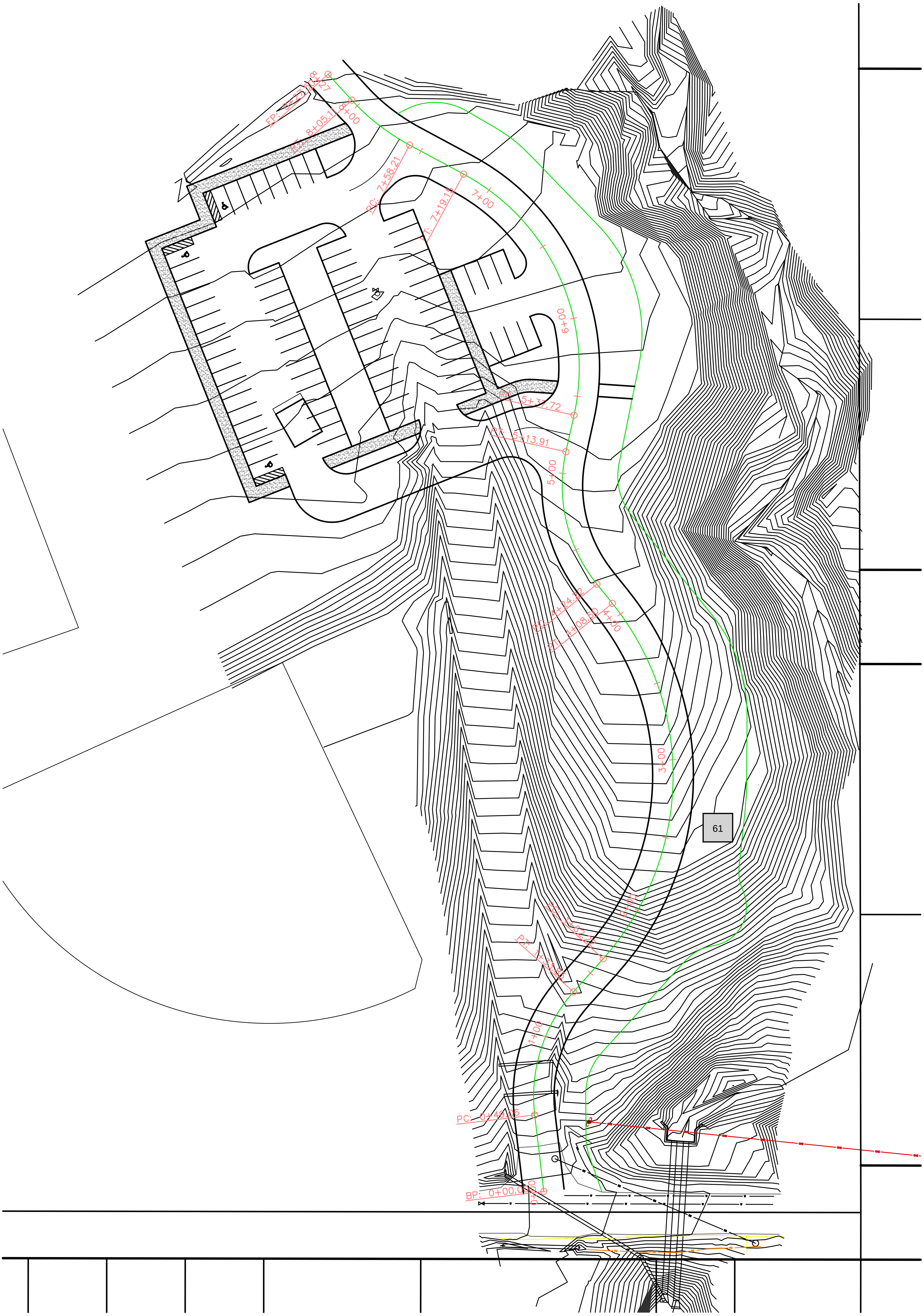
Funding the renovation of the Karen Hornaday Park with a multi-pronged approach is a viable strategy. This strategy would allow the City to enjoy the fruits of a 12+ year old Master Plan, which would make the Park the Homer centerpiece it was meant to be.

Bleachers built into earth berm

Master Development Plan

CONCEPT - B2

Revised 03/12/09 BE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8+27
PT: 8+05.11
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PC: 7+58.21
PT: 7+19.15
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PT: 5+13.91
5+00
PC: 4+24.22
PT: 4+08.60
4+00
3+00
2+00
PC: 1+62.22
PT: 1+33.85
1+00
PC: 0+49.06
BP: 0+00.000
0+00
61

		1st 6 months 2021 Rating 9-10	FY 22 Rating - 11	FY 23 (Rating - 12)	FY 24 (Rating - 13)	FY 25 (Rating - 14)	FY 26 (Rating - 15)	FY 27	FY 28	FY 29	FY 30
Fleet Replacement		$ 272,200.00	$ 670,000.00	$ 235,000.00	$ 250,000.00	$ 250,000.00	$ 250,000.00	$ 250,000.00	$ 250,000.00	$ 250,000.00	$ 250,000.00
Grind & Repave											
	Bay Avenue	$ 177,895.00									
	Klondike Ave		$ 70,784.00								
	W. Bayview Ave			$ 100,000.00							
	Lakeside Circle			$ 100,000.00							
	E Street				$ 120,000.00						
	Svedlund Circle				$ 120,000.00						
	Island View Court					$ 120,000.00					
	B Street					$ 120,000.00					
	Pine Terrace Circle						$ 120,000.00				
	Tulin Terrace Blvd						$ 120,000.00				
	Spruce Terrace Circle							$ 120,000.00			
	A Street								$ 120,000.00		
Road base reconstruction											
	Karen Hornaday Park Road	$ 120,000.00									
	Rangeview Ave	$ 120,000.00									
	Ohlson Lane		$ 120,000.00								
	Sprucewood Dr		$ 120,000.00								
	Shelford Street			$ 120,000.00							
	W. Bunnell Ave			$ 120,000.00							
	Lampert Lane				$ 120,000.00						
	Mission Road				$ 120,000.00						
	Pleasant Way					$ 120,000.00					
	Rainbow Place					$ 120,000.00					
	Kalalock Ct.						$ 120,000.00				
	Meadow Drive						$ 120,000.00				
	Spruce Lane							$ 120,000.00			
	Wright Street							$ 120,000.00			
	Paintbrush Court								$ 120,000.00		
	Paintbrush Street								$ 120,000.00		
	Woodside Ave									$ 120,000.00	
	Bayview Court									$ 120,000.00	
	Calhoun Court										$ 120,000.00
	W City View Ave										$ 120,000.00
	Spruce Circle										$ 120,000.00
Dig out Frost Boils	Crossman Ridge Road - Skyline to Gate	$ 5,000.00									

		1st 6 months 2021 Rating 9-10	FY 22 Rating - 11	FY 23 (Rating - 12)	FY 24 (Rating - 13)	FY 25 (Rating - 14)	FY 26 (Rating - 15)	FY 27	FY 28	FY 29	FY 30
	Eagle View Drive - Diamond Willow to Garden Park	$ 5,000.00									
	Garden Park Road - at 1630	$ 5,000.00									
	Sprucewood - near west entrance by Roger's Loop	$ 5,000.00									
	Sprucewood - 2200- 2240	$ 5,000.00									
	Emerald Place - 135 LF	$ 5,000.00									
	Bay Vista Pl. and Bay Vista Court	$ 5,000.00			Projects in Blue will be repaired with funds from the Small Works Roads Repair Program						
	Fireweed Lane	$ 5,000.00									
	Fireweed Avenue	$ 5,000.00									
Add Gravel	E. Fairview Ave	$ 10,000.00									
	Saltwater	$ 10,000.00									
	Alder Lane	$ 10,000.00									
	Dewberry Lane	$ 10,000.00									
	Eagle Pl	$ 10,000.00									
	Hanso Ave	$ 10,000.00									
	Dehel Ave		$ 10,000.00								
	Hidden Way		$ 10,000.00								
	Kalalock Ct				$ 10,000.00						
	Orion Circle					$ 10,000.00					
	Emerald Road					$ 10,000.00					
	Diamond Creek PL						$ 10,000.00				
	Queets Circle						$ 10,000.00				
Sidewalks	Main Street Sidewalk		$ 900,000.00								
	Ben Walters Way Sidewalk			$ 1,000,000.00							
	Svedlund/Herndon to Senior Citizens Center				$ 750,000.00						
	Kachemak Way Sidewalk					$ 1,100,000.00					
Total Projected Expenditures		$ 795,095.00	$ 1,900,784.00	$ 1,675,000.00	$ 1,490,000.00	$ 1,850,000.00	$ 750,000.00	$ 610,000.00	$ 610,000.00	$ 490,000.00	$ 610,000.00
Revenues		$ 250,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00	$ 500,000.00
Balance	$ 6,472,383.26	$ 5,927,288.26	$ 4,526,504.26	$ 3,351,504.26	$ 2,361,504.26	$ 1,011,504.26	$ 761,504.26	$ 651,504.26	$ 541,504.26	$ 551,504.26	$ 441,504.26

Paved Roads	Developed Parcels Served	Parcel Rating	Road Condition - Rating	Impact on Traffic circulation	Impact on economic development	Repairs are beyond the scope of normal maintenance	Overall Rating
BAY AVE	24	1	3	2	2	1	**9**
KLONDIKE AVE	30	1	4	1	2	1	**9**
OHLSON LN	5	5	2	1	1	1	**10**
W BUNNELL AVE	5	5	3	1	1	1	**11**
ISLAND VIEW CT	11	3	3	3	3	1	**13**
BAYVIEW CT	7	4	3	3	3	1	**14**
PINE TERRACE CIR	4	5	2	3	3	1	**14**
TULIN TERRACE BLVD	3	5	2	3	3	1	**14**
WOODSIDE AVE	3	5	2	3	3	1	**14**
A ST	4	5	4	3	2	1	**15**
CALHOUN CT	7	4	4	3	3	1	**15**
SPRUCE TERRACE CIR	2	5	4	3	3	1	**16**

Key to Rating System

Parcel Rating Based on Parcel Development Density Along Roadway - Very low-5, low-4, Med-3, High-2, Very high-1	Road Condition: Failed - 1; Very Poor - 2; Poor - 3; Fair - 4; Food - 6; Very Good - 7;	Impact on Traffic Circulation - Low -3, Medium-2, High-1	Imact on Economic Development - Low 3, Medium-2, High-1	Repairs are beyond the scope of normal maintenance - No - 2; Yes - 1

Gravel Road	Developed Parcels Served	Parcel Rating	Road Condition - Rating	Impact on Traffic circulation	Impact on economic development	Repairs are beyond the scope of normal maintenance	Overall Rating
RANGEVIEW AVE	23	1	2	2	3	2	**10**
SPRUCEWOOD DR	17	2	2	2	3	2	**11**
LAMPERT LN	6	4	2	2	2	2	**12**
SHELFORD ST	7	4	2	3	1	2	**12**
MISSION RD	18	2	2	3	3	2	**12**
HIDDEN WAY	12	3	2	3	3	2	**13**
MEADOW DR	8	4	2	3	2	2	**13**
OHLSON LN	5	5	2	2	2	2	**13**
EAGLE PL	10	4	2	3	2	2	**13**
CROSSMAN RIDGE RD	0	5	1	3	3	2	**14**
HANSEN AVE	1	5	2	3	2	2	**14**
PAINTBRUSH CT	7	4	2	3	3	2	**14**
QUEETS CIR	4	4	2	3	3	2	**14**
EMERALD RD	6	4	2	3	3	2	**14**
WRIGHT ST	2	5	2	2	3	2	**14**
ALDER LN	5	5	2	3	2	2	**14**
PAINTBRUSH ST	8	4	2	3	3	2	**14**
BAY VISTA CT	5	5	2	3	3	2	**15**
PLEASANT WAY	3	5	2	3	3	2	**15**
ORION CIR	4	5	2	3	3	2	**15**
WYTHE WAY	5	5	2	3	3	2	**15**
SPRUCE LN	3	5	2	3	3	2	**15**

Key to Rating System

Parcel Rating Based on Parcel Development Density Along Roadway - Very low-5, low-4, Med-3, High-2, Very high-1	Road Condition: Failed - 1; Very Poor - 2; Poor - 3; Fair - 4; Food - 6; Very Good - 7;	Impact on Traffic Circulation - Low -3, Medium-2, High-1	Imact on Economic Development - Low 3, Medium-2, High-1	Repairs are beyond the scope of normal maintenance - No - 2; Yes - 1

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Memorandum

TO: City Council

THROUGH: Rob Dumouchel, City Manager

FROM: Jan Keiser, PE, JD, Director of Public Works

DATE: February 25, 2021

SUBJECT: Food Trucks at designated City Parks

Issue: The current provision in the Homer City Code about the operation of mobile restaurants in City parks is ambiguous. The purpose of this memorandum is to propose clarifying language.

Background: The current Homer City Code language says:

> *"No person may operate a mobile restaurant inside the boundaries of a municipal park or campground unless such operation is permitted under ordinance, regulation or other lawful authority."* HCC 8.11.070(c)

We don't know what this means and thus, we're unsure about whether we can allow mobile restaurants to operate in City parks or not. There are instances (1) when it would be very appropriate and desirable to have food service at a City park and (2) where, for a variety of reasons, a food truck would be the best way of providing such service. For example, the Little League Softball program will start up at Karen Hornaday Park on May 22. In past years, the Little League sponsors/fans set up a BBQ/picnic at a park pavilion and served potluck style refreshments to ball players, parents and fans. This year, they don't want to do this because of Covid 19 concerns. It would be safer and more convenient if Little League could partner with a local food truck to sell refreshments. Similar situations will arise at Jack Gist Park when baseball season starts.

There would be economic benefits as well – the City would collect sales tax on food sales and it's possible arrangements could be established whereby the sponsoring organization, such as the Little League, could partner with the food truck, to aid in fund raising. Further, the City needs to provide new restrooms at Karen Hornaday Park and Jack Gist Park. These facilities will not be cheap, but they would be even more expensive if they had to include concession areas. Allowing food trucks at these parks would reduce the pressure for the more expensive installations and create an opportunity for local entrepreneurs.

There are currently no food concession facilities or services at City parks and no brick & mortar food service establishments in the nearby vicinity of any of City's parks. Thus, there is little competition between the

food trucks servicing the parks and permanent establishments. We would like the clear ability to permit food trucks to operate inside designated City parks when it is appropriate and safe to do so.

Recommendations:

We recommend the City Council amend HCC 8.11.070(c) to read as follows:

> *A mobile restaurant may be operated inside the boundary of a municipal park or campground so long as such operation, in addition to being licensed as provided in this chapter, receives a Mobile Food Service Permit from the Parks Department and operates in compliance with such Permit.*

CITY OF HOMER
HOMER, ALASKA

City Manager/
Public Works Director

ORDINANCE 21-xx

AN ORDINANCE OF THE CITY COUNCIL OF HOMER, ALASKA, AMENDING THE HOMER CITY CODE 8.11.070 TO ALLOW OPERATION OF MOBILE RESTAURANTS IN CITY PARKS UNDER DESIGNATED CIRCUMSTANCES.

WHEREAS, Current Homer City Code states:
"No person may operate a mobile restaurant inside the boundaries of a municipal park or campground unless such operation is permitted under ordinance, regulation or other lawful authority"; and

WHEREAS, This language is ambiguous, making it challenging to know whether the operation of mobile restaurants are allowed in City parks or not; and

WHEREAS, There are times when it would be appropriate and desirable to have food service at City parks and where a mobile restaurant would be a viable way of providing such service; and

WHEREAS, It would be beneficial to allow mobile restaurants to operate inside designated City parks when it is appropriate and safe to do so; and

WHEREAS, There are currently no food concession facilities or services at City parks and no brick/mortar food service businesses near most City's parks, meaning there would be little competition between mobile restaurants at parks and permanent establishments; and

WHEREAS, Allowing mobile restaurants to operate in City parks would provide economic benefits through sales tax on food sales, possible fund raising partnerships, and creating opportunities for local entrepreneurs; and

WHEREAS, Allowing mobile restaurants to operate at City parks mean there would be less pressure on the City to build expensive concession facilities at such parks.

NOW, THEREFORE, the City Council of Homer ordains:

Section 1. Homer City Code shall be amended to delete the existing language in HCC 8.11.070(c) and to substitute the following language:

A mobile restaurant may be operated inside the boundary of a municipal park or campground so long as such operation, in addition to being licensed as provided in this chapter, receives a Mobile Food Service Permit from the Parks Department and operates in compliance with such Permit.

ENACTED BY THE CITY COUNCIL OF HOMER, ALASKA, this ___ day of _____, 2021.

CITY OF HOMER

_____
KEN CASTNER, MAYOR

ATTEST:

_____
MELISSA JACOBSEN, MMC, CITY CLERK

YES:
NO:
ABSTAIN:
ABSENT:

First Reading:
Public Hearing:
Second Reading:
Effective Date:

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Memorandum

TO: Parks, Art, Recreation & Culture Advisory Commission

FROM: Janette Keiser, Director of Public Works

DATE: March 4, 2021

SUBJECT: Mariner Lagoon "Dredging"

Issue: The Mariner Park Lagoon becomes landlocked as naturally deposited sand/gravel build a "storm berm" on the western side of the Lagoon. This prevents tidal water from washing into the Lagoon and degrades it as habitat for many types of birds. Public Works will be asking for funding to "dredge" a portion of the storm berm, to allow some water to enter. However, the Lagoon will not be fully restored to the mudflat it once was. This memorandum explains the history of the Lagoon so you can better understand and explain the rationale behind this policy, particularly considering the upcoming Shorebird Festival.

Background:

Before the Spit Road was built, Mud Bay Flats at the base of the Spit included the area on the west side of the Spit, now known as Mariner Park Lagoon. It was a rich biological area, which supported a wide variety of organisms and birdlife. When the permanent Spit Road was built in the 1940's, storms and tidal action deposited sand/gravel into a "storm berm", which built up on the far western shore. These natural processes largely cut off the western area from the sea. Consequently, the western area developed into an intertidal lagoon, only periodically flushed by a narrow channel in the storm berm. Left alone, the channel becomes completely blocked. This interruption in tidal flushing caused the rich biotic communities associated with the mud flat environment to be degraded considerably.

In May of 2000 Dames and Moore, Inc. produced an environmental assessment of the Mariner Park Lagoon. The purpose was to develop alternatives for restoring or rehabilitating the site in terms of improving shorebird feeding habitat without disrupting sediment transport along the shore. The assessment evaluated the physical and biological environment, as well as the social environment; that is, the impact of people on the Lagoon and *vice versa*. Comprehensive field studies were conducted in conjunction with literature reviews, local history research and examination of historical imagery and maps. Extensive public outreach was also conducted.

During the investigation, the FAA, and other parties expressed concern about restoring the Lagoon; it lies directly in the flight path of the Homer Airport. The concern was that if the Lagoon were fully restored, it would attract larger birds, which would become a flight hazard.

Dames and Moore offered multiple alternatives, of which Alternative 1 was adopted by the City, primarily because it does not fully restore the Lagoon and thus, minimizes the risk of becoming an attractive nuisance to birds. This alternative involves periodic "dredging" of the storm berm to allow some tidal action to flow into the lower parts of the Lagoon. It also allows for the area to be preserved from development, such as an expansion of Mariner Park, through conservation easements. This alternative was not intended to restore Mariner Lagoon to its pre-road mud flat condition, but was intended to prevent the area from drying out completely. The storm berm needs to be "dredged" every 3-4 years.

Conclusion:

The opening in the "storm berm" is almost closed, making it time to "dredge" the area again. Public Works will be requesting an appropriation from the City Council for this work. The estimated cost is $3000-$5000.

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Memorandum

TO: Mayor Castner and Homer City Council

FROM: Rob Dumouchel, City Manager

DATE: February 17, 2021

SUBJECT: City Manager's Report for February 22, 2021 Council Meeting

FY22/23 Budget

I have asked staff to begin thinking about the fee schedule and planning any necessary consultations with boards/committees/commissions for input in the coming month. The City Clerk and Finance Director will be my leads on this topic.

At the last Council meeting there were requests for an increased number of work sessions as we prep the budget. I have sketched out a plan for a series of work sessions which will focus on specific topics and departments. The draft series could include the following meetings: Overhead and Admin Fees; Reserves; Fleet and Capital Projects; Administration and Finance; Police and Fire; Public Works (including Water and Sewer); and Harbor. I haven't set any dates yet, but we will look to do a mix of on- and off-cycle work session meetings during the months of March and April. The Clerk will coordinate with Council on availability and scheduling.

On a related topic, we have been prepping for the next audit and are actively working with BDO to confirm a schedule for FY2020 audit services.

Sidewalks, Trails, and Pedestrian Connectivity

A group of staff from Planning and Public Works have joined up with Councilmembers Lord and Smith to develop solutions which would improve safety and connectivity for pedestrians in Homer. This project will look at both road-adjacent pedestrian facilities (i.e., sidewalks) and alternative connections (i.e., trails). For the first phase of this project, I have staff conducting a geospatial analysis of existing facilities and identifying gaps. Once we have a clear vision of where the opportunities and needs are, we will conduct a public engagement event to get feedback from the public. Expect regular updates on this project in future reports.

Potential Updates to the Special Event Code

Since arriving, I have noticed that HCC Chapter 19.02 doesn't seem to fit the unique situations or scale of events in Homer very well. I would like to investigate potential improvements to this chapter of the code and possibly others that have an impact on events. I will be building a team to review and propose ideas for improving the code and I am looking for interested Councilmembers to join this effort.

Pioneer Avenue Water Main

On February 3rd a water main break was identified on Pioneer Avenue in front of the Independent Living Center Building. Public Works planned a response t[illegible]ay and started at 4am the next morning to excavate

and repair the problem. The water main break was repaired by lunchtime. The crew creatively used our Vactor Truck to strategically dewater the excavation and "dig" closer to the water pipe, thereby minimizing the size of the open hole which allowed our crew to access the break without disturbing the pavement on Pioneer. A piece of the concrete curb and sidewalk was removed, but has since been replaced by a contractor. No customers lost access to water during the repair operation.

The photo above shows Paul Raymond (at street level), Jason Hanenberger, and Mike Szocinski working on the Pioneer Avenue water main break.

Public Works Project Updates

Director Keiser has written memos providing updates to Council on various ongoing projects. See attached for updates regarding the Tasmania Court Water and Sewer Improvement Projects, Alder Lane Water Extension Project, and Mt. Augustine Road Drainage Improvement Project.

Hornaday Park Demolition Project

Demolition of the restroom and concession stand facilities at Hornaday Park began on February 10th. The facilities are being demolished because they have exceeded their useful life, don't meet ADA or building code standards, and have major deficiencies which have led to them being closed to the public and the interim use of portable toilets. All demolition work is being done by City staff and the transfer station has waived tipping fees for disposal of the building debris.

Share the Road Signage

The Public Works Department has procured some share the road signage (modeled below by Asset Management Specialist Owen Meyer) to test in areas around town where conflicts between different types of road users may occur. Look for signs to be installed on Bartlett Street, Kachemak Way, and Ben Walters Way.

Small Boat Station
Looking to the future, the Port of Homer would be an ideal location for a US Coast Guard small boat station. See the attached memo from the Harbormaster for more information on the history and path forward for this potential project.

Lobbying Update
Staff met with State Senator(s) Bishop and Stevens to discuss issues affecting the City of Homer and the Southern Kenai Peninsula region. Topics included the Homer DMV and expansion of the Port & Harbor.

Noise on Beluga Lake
I have had a few Councilmembers reach out to discuss noise issues in the City. I have started a conversation with the City Planner and the Police Chief to get a better view of the history of this issue in Homer as well as what rules and regulations we have available to the City to mitigate excessive noise. I will report back at a future meeting with more information.

Lt. Browning Completes Northwestern University Police Staff and Command Program
Lt. Ryan Browning of the Homer Police Department has successfully completed the Northwestern University Center for Public Safety's School of Police Staff and Command program. The program provides upper-level college instruction in a total of twenty-seven core blocks or instruction and additional optional blocks during each session. The major topics of study include: leadership; human resources; employee relations; organizational behavior; applied statistics; planning and policy development; and budgeting and resource allocation. Congratulations Lt. Browning!

COVID-Related Updates

COVID Risk Status
On February 1st I moved the City from the "Red" to "Orange" level on our COVID risk framework. We remain in orange. The return of activities to the HERC and the Library by appointment has gone well so far with a minimal number of individuals refusing to comply with City masking regulations.

Enclosures:

1. Memo from PW Director Keiser regarding Tasmania Court
2. Memo from PW Director Keiser regarding Alder Lane
3. Memo from PW Director Keiser regarding Mt. Augustine Road
4. Memo from Harbor Master Hawkins regarding USCG Small Boat Station

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Memorandum

TO: City Council

Through: Robert Dumouchel, City Manager

FROM: Janette Keiser, PE, Director of Public Works/Acting City Engineer

DATE: February 3, 2021

SUBJECT: Tasmania Court Water and Sewer Improvement Projects

Issue: The design for the Tasmania Court Water Improvement Project is complete. The process of creating a Tasmania Court Sewer Improvement Special Assessment District is underway. The purpose of this Memorandum is to provide updated information about these projects. No action is needed at this point.

Background:

A. Water Main Extension.

The City Council, via Ordinance 20-68, dated October 26, 2020, appropriated $234,105 for the design and construction of a water main extension on Tasmania Court, in conjunction with the Special Assessment District created by Ordinance 20-083.

The City issued a contract to design the Tasmania Court water main extension to Bishop Engineering, a Homer firm with extensive experience in local development projects. The survey work was provided by Geovera LLC, another local firm. Bishop has completed the design and it has been submitted to the AK Department of Environmental Conservation for statutorily required plan review.

The water main extension project includes installation of 930 feet of 8" HDPE pipe, two fire hydrants and 11 water service stub-outs. The estimated cost for the construction work is $152,119, which includes a 10% construction contingency. The actual cost of the design/survey effort is $13,800, bringing the total expected project cost for the water portion to $165,919.

We are in the process of applying for a long-term, low-interest loan from the AK Dept. of Environmental Conservation's Drinking Water Revolving Loan Fund to finance the water side project. No Council action is needed at this time. In the near future, we will come back to Council for formal action related to the ADEC loan.

B. Sewer Main Extension

The City Council, via Ordinance 20-091(A), dated September 28, 2020, initiated the process of creating a Special Assessment District that would extend the sewer mains so the properties, which would be receiving City water service, could also be served with City sewer service. We created several alternative sewer extension configurations, with a cost estimate and preliminary assessment roll for each alternative. We then held a neighborhood meeting, as provided in the Homer City Code, to discuss the various alternatives with the property owners.

One of the alternatives was to use an "effluent only" system, which would connect the existing septic tanks, so long as they are in good repair, to a small diameter gravity main. The City has been successfully using this configuration for some of its customers, particularly those residing in Kachemak City. One of the other alternatives was to use a traditional gravity collection system, which would avoid existing septic tanks. Many of the property owners told horror stories about the problems they've been having with their septic tank/leachfield systems. Most of them wanted nothing more to do with septic tanks!

We realized we needed to evaluate each property individually to get a better understand of how to lay out sewer mains that would serve the whole neighborhood effectively. Jean Hughes, PW Inspector, visited with each property owner to see what their existing systems looked like and how we could connect them to a neighborhood collection system. We are using that information to update the conceptual design, cost estimate and preliminary assessment roll. Once we do that, we will have another neighborhood meeting. Our intent is to move the process along so that we can construct the sewer main portion of the project at the same time we install the water main portion.

No Council action is required at this point. As the Sewer Special Assessment District process moves forward, we will come back for applicable action.

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Memorandum

TO: City Council

Through: Robert Dumouchel, City Manager

FROM: Janette Keiser, PE, Director of Public Works/Acting City Engineer

DATE: February 3, 2021

SUBJECT: Alder Lane Water Improvement Project – 35% Design

Issue: The design for the Alder Lane Water Improvement Project is complete. The purpose of this Memorandum is to provide updated information about the project. No action is needed at this point.

Background: The City Council, via Ordinance 20-83, dated November 9, 2020, appropriated $253,193 for the design and construction of a water main extension on Alder Lane, in conjunction with the creation of a Special Assessment District by Ordinance 20-095.

The City issued a contract to design the Alder Lane water main extension to Bishop Engineering, a Homer firm with extensive experience in local development projects. The survey work was provided by Geovera LLC, another local firm. Bishop has completed the design and it has been submitted to the AK Department of Environmental Conservation for statutorily required plan review.

The project includes installation of 1,220 feet of 8" HDPE pipe, three fire hydrants and nine water service stub-outs. The estimated cost for the construction work is $187,671, which includes a 10% construction contingency. The actual cost of the design/survey effort is $13,220, bringing the total expected project cost to $200,891.

Further, we are in the process of applying for a long-term, low-interest loan from the AK Dept. of Environmental Conservation's Drinking Water Revolving Loan Fund to finance the project. We will come back to Council for formal action related to this loan in the future.

CITY OF HOMER
ALDER LANE
WATER MAIN EXTENSION
JANUARY 30, 2021

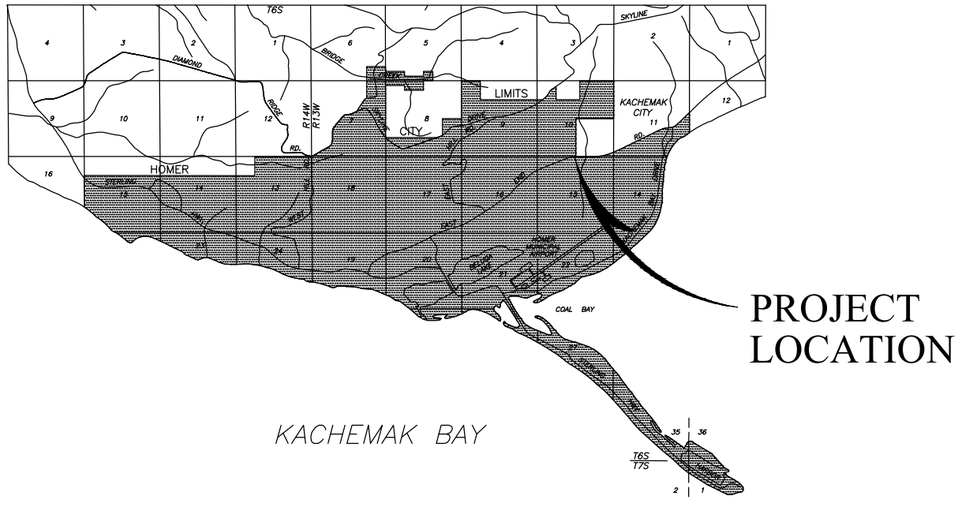
LOCATION MAP

Homer City Council

Mayor
Ken Castner

Councilmembers
Donna Aderhold
Joey Evenson
Storm Hansen–Cavasos
Rachel Lord
Heath Smith
Caroline Venuti

Public Works Director
Janette Keiser, PE

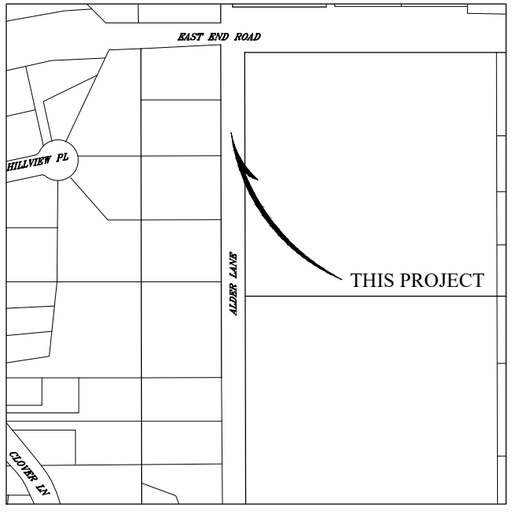


HOMER AREA MAP
SCALE: 1" = 1 MILE

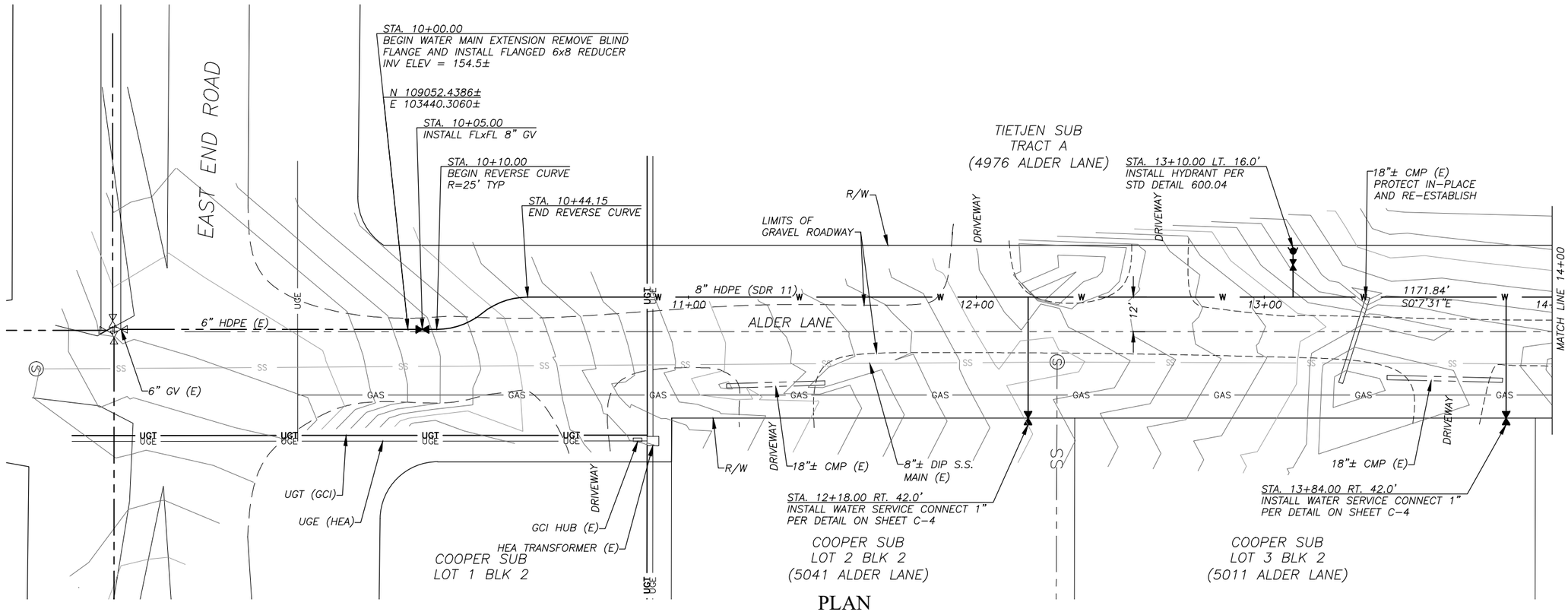
INDEX TO DRAWINGS

Notes:

1. Before performing any excavations, call Alaska Digline at: 811, (800) 478–3121, or (907) 278–3121.
2. These plans shall be used in conjunction the City of Homer "Standard Construction Details" in adoption on January 30, 2021.



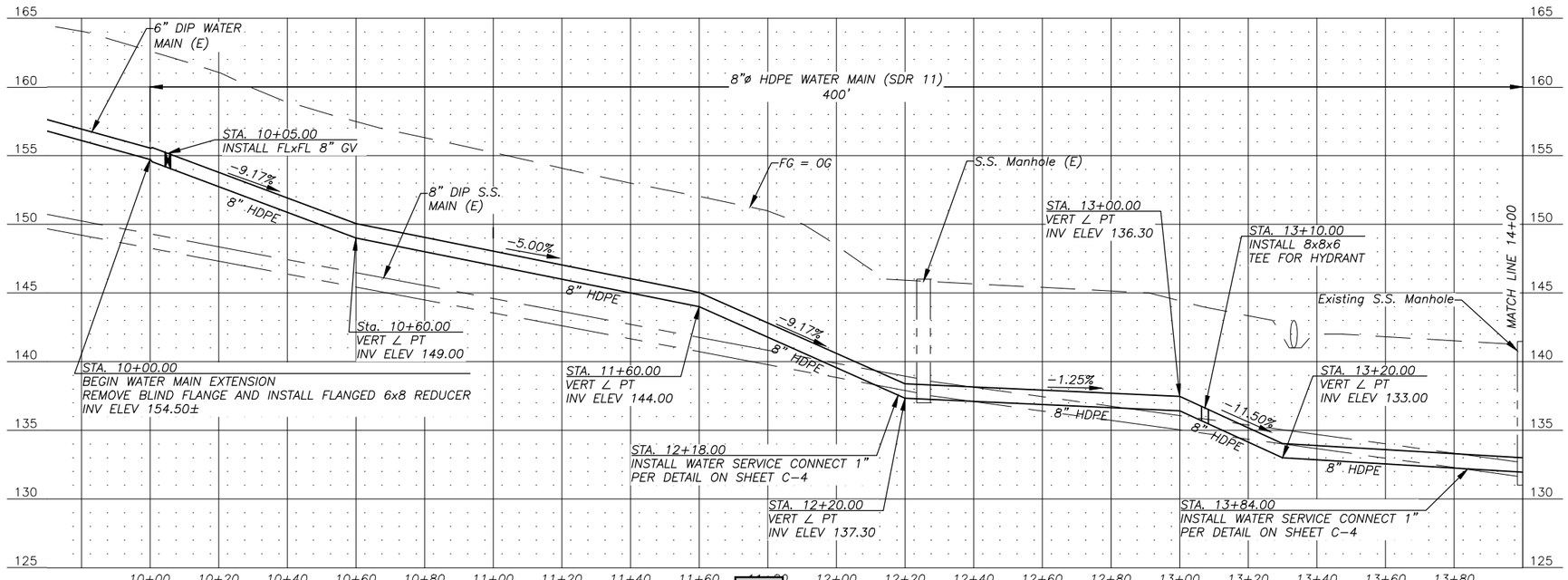
VICINITY MAP
SCALE: 1" = 400'



PLAN

0 40 80 120 160

GRAPHIC SCALE



PROFILE

NOTES:

1. Before performing any excavations, call Alaska Digline at 811, (800) 478-3121, or (907) 278-3121.

ALDER LANE WATER MAIN EXTENSION

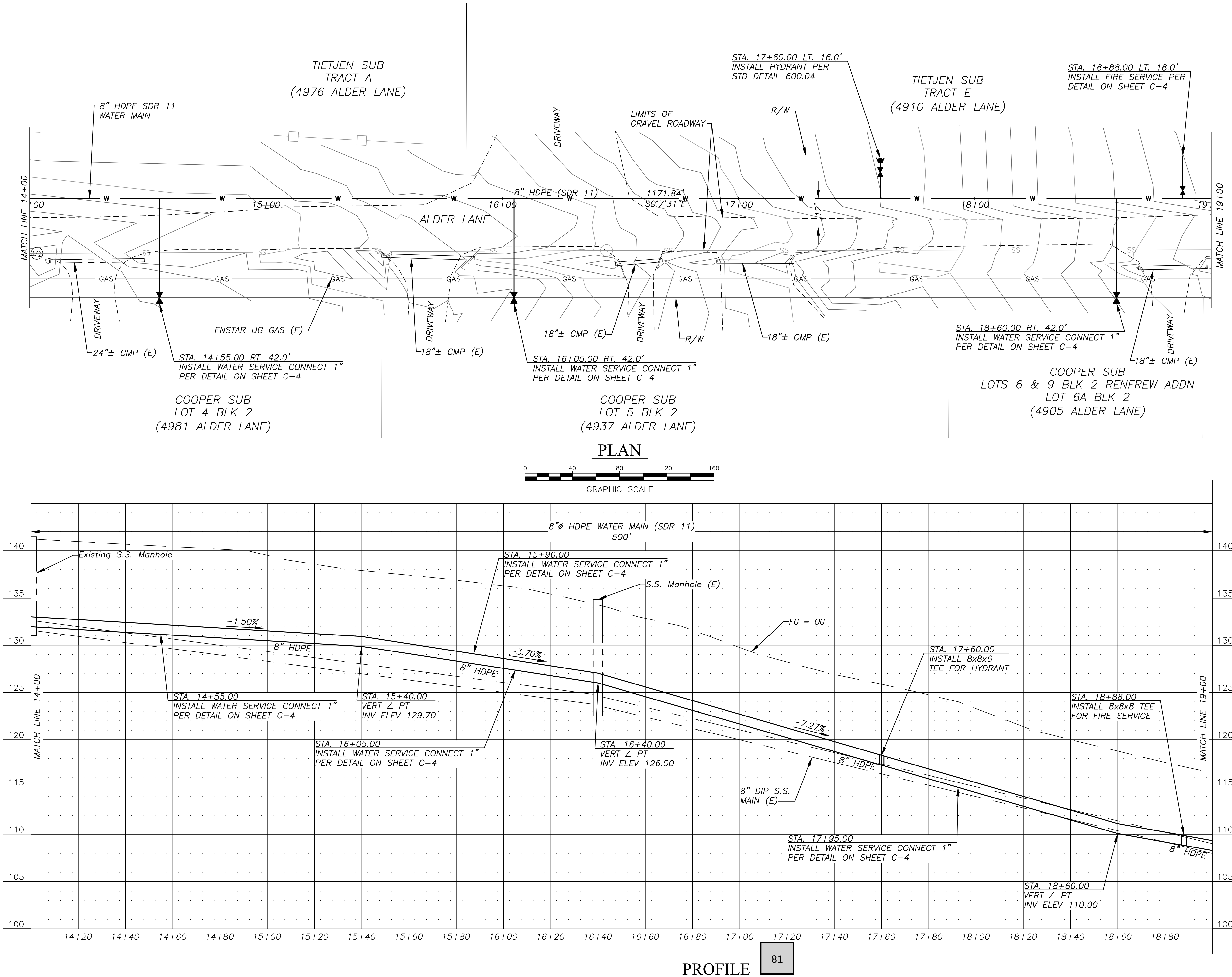
WATER MAIN PLAN + PROFILE

STA 10+00.00 to 14+00.00

BISHOP ENGINEERING, LLC
PO BOX 2501, HOMER, ALASKA 99603
(907) 299-7609

DATE: 1/30/2021
CHK'D: JSB
SCALE: AS NOTED
PROJ. NO.: 2021002

SHEET NO.:
C-1



NOTES:

1. Before performing any excavations, call Alaska Digline at 811, (800) 478-3121, or (907) 278-3121.

ALDER LANE WATER MAIN EXTENSION

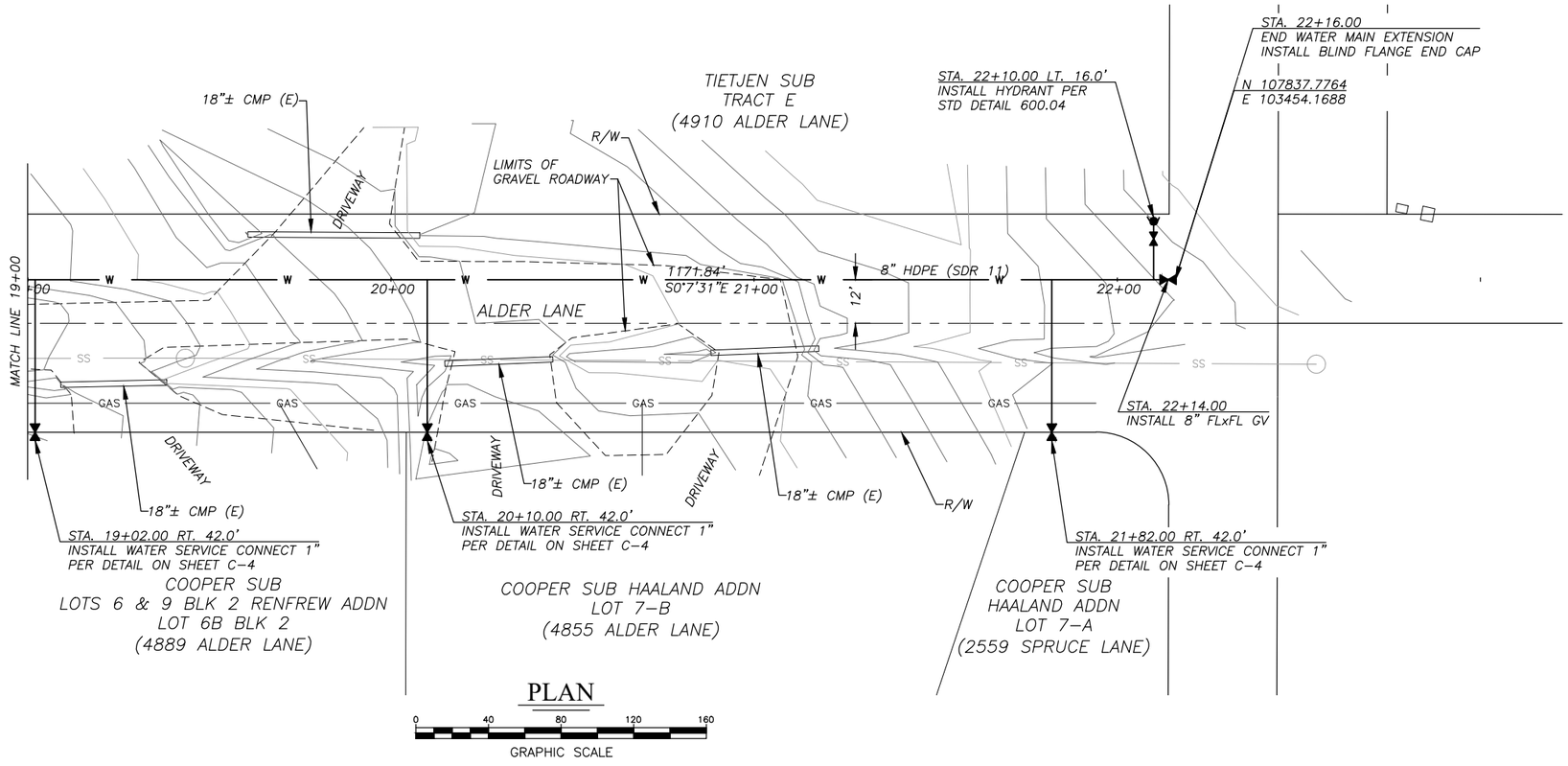
WATER MAIN PLAN + PROFILE
STA 14+00.00 to 19+00.00

BISHOP ENGINEERING, LLC
PO BOX 2501 HOMER, ALASKA 99603
(907) 299-7609

DATE: 1/30/2021
CHK'D: JSB
SCALE: AS NOTED
PROJ. NO.: 2021002

SHEET NO.:

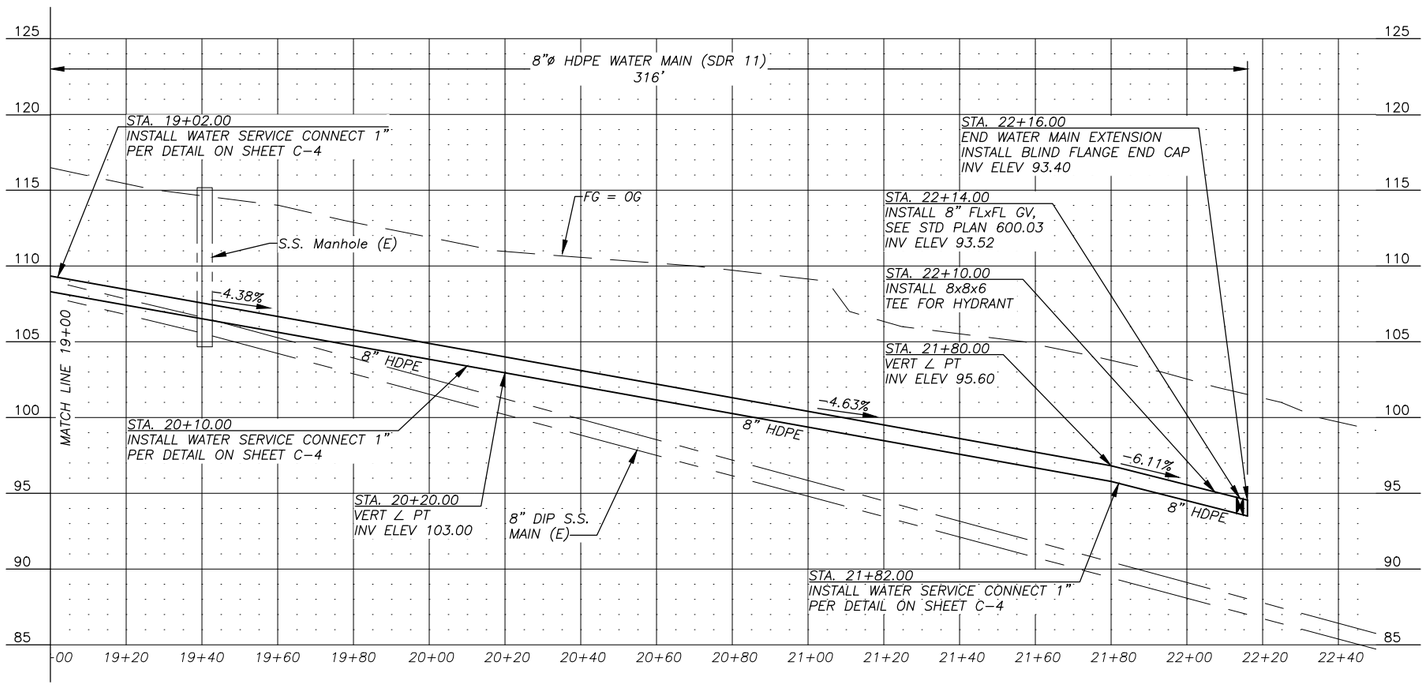
C-2



PLAN

0 40 80 120 160

GRAPHIC SCALE



PROFILE

NOTES:

1. Before performing any excavations, call Alaska Digline at 811, (800) 478-3121, or (907) 278-3121.

ALDER LANE WATER MAIN EXTENSION

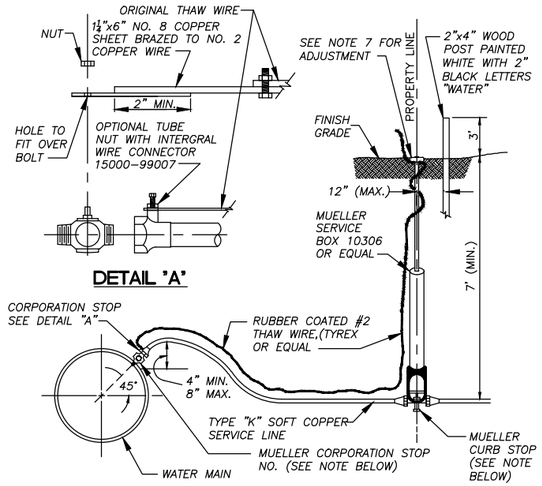
WATER MAIN PLAN + PROFILE

STA 19+00.00 to 22+16.00

BISHOP ENGINEERING, LLC
PO BOX 2501 HOMER, ALASKA 99603
(907) 299-7609

DATE: 1/30/2021
CHK'D: JSB
SCALE: AS NOTED
PROJ. NO.: 2021002

SHEET NO.: C-3

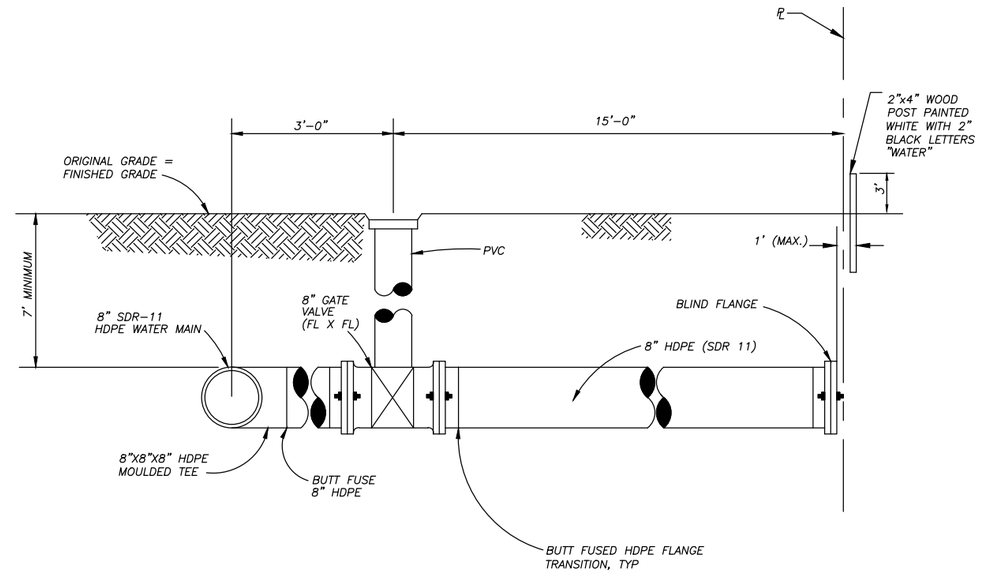


NOTES:

1. USE MUELLER CORPORATION STOP NO. 15025 FOR PIPE–THREAD SADDLES.
2. USE MUELLER CORPORATION STOP NO. 15000 FOR STEEL PIPE.
3. USE MUELLER CURB STOP NO. H–15204 OR EQUAL FOR COPPER TO COPPER CONNECTIONS.
4. ROD TO BE ATTACHED TO CURB STOP WITH NO. 6 GAUGE COPPER WIRE, NO SUBSTITUTIONS.
5. MUELLER SERVICE CLAMPS TO BE USED ON ALL PLATIC PIPE, DOUBLE STRAP OR EQUAL.
6. HDPE MAINLINES SHALL UTILIZE A SIDEWALL BRANCH SADDLE WITH INTEGRAL BRASS CC THREAD INSERT TO RECEIVE CORPORATION STOP.
7. CURB BOX FINISH ELEVATION SHALL BE AS FOLLOWS:
   - PAVED AREA 0.5" BELOW FINISH GRADE
   - GRAVEL AREA 1" TO' 3" BELOW FINISH FRADE
   - YARD/UNDEVELOPED AREA 0" TO 3" ABOVE FINISH GRADE

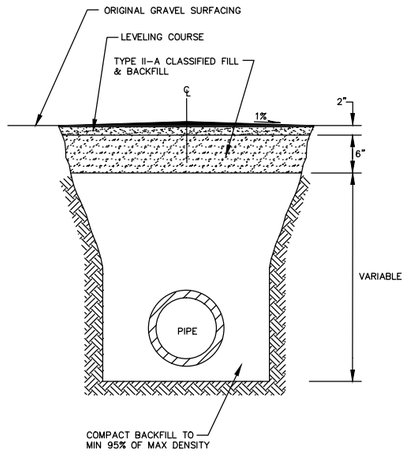
WATER SERVICE CONNECT 1"ø

NOT TO SCALE



FIRE SERVICE

NOT TO SCALE

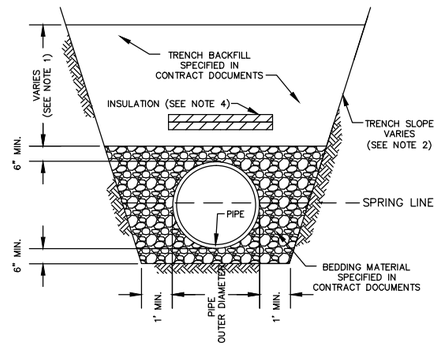


NOTE:

1. CONTRACTOR SHALL CONSTRUCT A 1% CROWN WITH THE PEAK CENTERED OVER THE CENTERLINE OF THE EXCAVATION.

RESURFACING DETAIL GRAVEL SURFACE

NOT TO SCALE



NOTES:

1. TRENCH BACKFILL MATERIAL PLACED AND COMPACTED TO DEPTHS SHOWN IN THE DRAWINGS OR AS DETERMINED BY ENGINEER. COMPACT TRENCH BACKFILL TO A MINIMUM OF 95% MAXIMUM DENSITY.
2. TRENCH WALL SLOPES WILL VARY WITH SOIL STRENGTH AND CHARACTER. SLOPES SHALL CONFORM TO OSHA SAFETY STANDARDS.
3. BACKFILL SHALL BE FREE OF CLAYS AND ORGANIC MATERIALS.
4. WHEN SPECIFIED IN CONTRACT DOCUMENTS, SEE STANDARD DETAIL 20–9 FOR INSULATION DETAILS.

TRENCH BACKFILL AND BEDDING LAYOUT

NOT TO SCALE

NOTES:

1. *Before performing any excavations, call Alaska Digline at 811, (800) 478–3121, or (907) 278–3121.*

STATE OF ALASKA
JOHN S. BISHOP
CE 10993
REGISTERED PROFESSIONAL ENGINEER
1/30/2021

ALDER LANE WATER MAIN EXTENSION

CONSTRUCTION DETAILS

BISHOP ENGINEERING, LLC
PO BOX 2501 HOMER, ALASKA 99603
(907) 299–7609

DATE: 1/30/2021
CHK'D: JSB
SCALE: AS NOTED
PROJ. NO.: 2021002

SHEET NO.:
C–4

CITY OF HOMER STANDARD DRAWINGS INDEX

200.03	STANDARD LOCATION FOR NEW UTILITIES
200.04	TYPICAL UTILITY LOCATIONS
200.05	TYPICAL WATER AND SEWER LOCATIONS
200.06	COMPACTION OF BACKFILL WITHIN RIGHT-OF-WAY
200.07	CLASS B AND C BEDDING
200.08	TRENCH BACKFILL
400.02	RESURFACING DETAIL TYPICAL GRAVEL SECTION
600.03	TYPICAL VALVE BOX
600.04	SINGLE PUMPER "L" BASE HYDRANT ASSEMBLY
600.05	HYDRANT GUARD POSTS
600.06	FIRE HYDRANT ACCESS PAD
600.10	GATE VALVE EXTENSION ROD

LEGEND & SYMBOLS

EDGE EXISTING GRAVEL	
CUT CATCH LINE	
FILL CATCH LINE	
CENTERLINE	7+00
UNDERGROUND ELECTRIC	UGE
OVERHEAD ELECTRIC	OHE
UNDERGROUND TELEPHONE	UGT
WATER MAIN	W
SANITARY SEWER	SS
CONTOURS MAJOR	85
CONTOURS MINOR	
TEST PIT LOCATION	TP-1
SIGN	
PIPE CULVERT W/ END SECTION	
FIRE HYDRANT	
VALVE OR RISER	
EXISTING VALVE OR RISER	
PRESSURIZED SEWER SERVICE POLY VALVE	▼

NOTES:

1. *Before performing any excavations, call Alaska Digline at 811, (800) 478-3121, or (907) 278-3121.*

ABBREVIATIONS

AKDOT&PF	ALASKA DEPT. OF TRANSPORTATION & PUBLIC FACILITIES
ASDS	ALASKA SIGN DESIGN SPECIFICATIONS
APDES	ALASKA POLLUTION DISCHARGE ELIMINATION SYSTEM
Δ	DELTA / CENTRAL ANGLE OF CURVE
BP	BEGIN PROJECT
C/L	CENTERLINE
CMP	CORREGATED METAL PIPE
CO	CONTRACTING OFFICER
COH	CITY OF HOMER
CY	CUBIC YARD
DIA	DIAMETER
DIST	DISTANCE
E	EASTING
EL	ELEVATION
ELEV	ELEVATION
EP	END PROJECT
ESMT	EASEMENT
(E)	EXISTING
FL	FLANGE
FT	FOOT
GV	GATE VALVE
HDPE	HIGH-DENSITY POLYETHYLENE
IN	INCH
INV	INVERT
L	LENGTH OF CURVE
LF	LINEAR FOOT
LT	LEFT
MIN	MINIMUM
MAX	MAXIMUM
MJ	MECHANICAL JOINT
MPH	MILES PER HOUR
MSF	1000 SQUARE FEET
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
N	NORTHING
OHE	OVERHEAD ELECTRIC
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PRC	POINT OF REVERSE CURVATURE
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PT	POINT OF TANGENCY
R	RADIUS
RT	RIGHT
R/W	RIGHT-OF-WAY
SEC	SECTION
SI	STREET INTERSECTION
SF	SQUARE FOOT
SMH	SEWER MANHOLE
S.S.	SANITARY SEWER
STA.	STATION
STD	STANDARD
SY	SQUARE YARD
UGE	UNDERGROUND ELECTRIC
UGT	UNDERGROUND TELEPHONE
UTIL	UTILITY
TYP.	TYPICAL
W	WATER MAIN OR SERVICE

CONSTRUCTION NOTES

1. CONTRACTOR SHALL COMPLETE CONSTRUCTION IN ACCORDANCE WITH THE CITY OF HOMER STANDARD SPECIFICATIONS 2011 EDITION INCLUDING ITEMS. DRAWINGS, TECHNICAL SPECIFICATIONS, AND SPECIAL PROVISIONS TAKE PRECEDENCE OVER THE STANDARD SPECIFICATIONS.
2. THE CONTRACTOR SHALL ADHERE TO ALL REQUIREMENTS CONTAINED IN LOCAL, STATE AND FEDERAL PERMITS OBTAINED BY THE CITY FOR CONSTRUCTION OF THIS PROJECT. COPIES OF THE PERMITS SHALL BE MAINTAINED AT THE JOB SITE.
3. CONTRACTOR SHALL MAINTAIN "REDLINE" RECORD DRAWINGS ON A CLEAN SET OF CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL MAINTAIN THE "REDLINES" CURRENT ON A DAILY BASIS WHICH SHALL BE AVAILABLE TO THE ENGINEER FOR INSPECTION ON THE JOB SITE. CONTRACTOR SHALL RECORD SURVEY NOTES FOR SUBMITTAL WITH RECORD DRAWINGS, INCLUDING HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED IN THE FIELD.
4. ALL IMPORTED MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T 180.
5. LOCATIONS DEPICTED FOR THE UTILITIES AND OTHER EXISTING FEATURES ARE APPROXIMATE. SOME UTILITIES HAVE BEEN LOCATED FROM RECORD DRAWINGS AND UTILITY COMPANY LOCATES. CONTRACTOR SHALL LOCATE AND VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION.
6. UNDERGROUND ELECTRICAL AND TELECOMMUNICATIONS LINES OCCUR WITHIN THE PROJECT AREA: CONTRACTOR SHALL COORDINATE WORK ACCORDINGLY. ALL WORK IN CLOSE PROXIMITY TO EXISTING UNDERGROUND LINES SHALL COMPLY WITH THE APPLICABLE FEDERAL, STATE AND LOCAL STATUTES, CODES AND GUIDELINES, AND THE ELECTRICAL FACILITY CLEARANCE REQUIREMENTS OF THE GOVERNING UTILITY. CONTRACTOR SHALL HAND DIG WITHIN TWO FEET OF BURIED ELECTRICAL CABLE.
7. THIS PROJECT IS REQUIRED TO BE CONSTRUCTED IN ACCORDANCE WITH THE APDES GENERAL CONSTRUCTION PERMIT FOR STORM WATER POLLUTION. THE CONTRACTOR SHALL ADHERE TO THE REQUIREMENTS OD THE PERMIT.
8. ALL DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET.
9. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY ENGINEER FOR APPROVAL AT LEAST TWO WEEKS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.
10. LIMITS OF EXCAVATION AND BACKFILL SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
11. CONTRACTOR SHALL CONSTRUCT EROSION CONTROL DEVICES AS SHOWN IN THE PLANS AND PROCEDURES AND REQUIREMENTS DOCUMENTED IN THE SWPPP PERMIT.
12. IF CONTAMINATED SOIL, GROUNDWATER, OR FREE-PRODUCT ARE ENCOUNTERED, THE CONSTRUCTION CONTRACTOR SHALL IMMEDIATELY CONTACT THE ENGINEER WHO WILL IMMEDIATELY CONTACT THE ADEC PREVENTION AND EMERGENCY RESPONSE (PERP) OFFICE STAFF AT (907) 465-5340 / FAX (907) 465-2237 IN ACCORDANCE WITH SPILL REPORTING REQUIREMENTS UNDER 18 AAC 75.300, AND COORDINATE MANAGEMENT OF ALL CONTAMINATED MEDIA WITH EMERGENCY RESPONSE PERSONNEL.
13. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION THAT DEMONSTRATES THE PIPE MATERIAL IS CERTIFIED TO CONFORM TO ANSI/NSF STANDARD 61.
14. THE CONTRACTOR SHALL REDUCE THE CONCENTRATION OF RESIDUAL CHLORINE IN THE FLUSHED WATER BY NEUTRALIZATION BEFORE THE WATER IS RELEASED OVERLAND OR TO ANY CREEKS, STREAMS, AND TEMPORARY OR PERMANENT DRAINAGE SWALES OR DITCHES. THE RESIDUAL CHLORINE LEVEL BEFORE RELEASE SHALL NOT EXCEED 19 PPB (PARTS PER BILLION). THE PROCEDURE USED TO ADD AND MIX THE NEUTRALIZING AGENT INTO THE FLUSHED WATER SHALL ACHIEVE A THOROUGHLY AND EVENLY MIXED SOLUTION. MEASUREMENTS OF RESIDUAL CHLORINE SHALL BE TAKEN AT THE POINT OF RELEASE FROM THE NEWLY INSTALLED WATER SYSTEM INTO THE NEUTRALIZING CHAMBER AND AT THE POINT OF RELEASE FROM THE CONTRACTOR'S CONTROL AT 10 MINUTE INTERVALS OR MORE FREQUENTLY AS DIRECTED BY THE ENGINEER. ACCEPTABLE AGENTS FOR NEUTRALIZATION INCLUDE:

    A. CALCIUM THIOSULFATE,

    B. ASCORBIC ACID, OR

    C. SODIUM ASCORBATE.

    THE CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S INSTRUCTIONS ON THE AMOUNTS OF AGENT ADDED TO THE FLUSHED WATER BASED ON THE RESIDUAL CHLORINE CONCENTRATION MEASURED AT THE POINT OF RELEASE FROM THE NEWLY INSTALLED WATER SYSTEM INTO THE NEUTRALIZING CHAMBER.
15. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION THAT DEMONSTRATES THE CHEMICAL ADDITIVE FOR DISINFECTION IS CERTIFIED TO CONFORM TO ANSI/NSF STANDARD 60.
16. DISCHARGES OF EFFLUENT FROM HYDROSTATIC TESTING AND DISINFECTION SHALL CONFORM SECTIONS 4.0 "CONTROL MEASURES", 5.1 "LAND DISPOSAL DISCHARGES OF HYDROSTATIC TESTING", AND 6.0 "REPORTING AND RECORDKEEPING" OF THE ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM "GENERAL PERMIT FOR HYDROSTATIC AND AQUIFER PUMP TESTING" PERMIT NUMBER AKG003000.

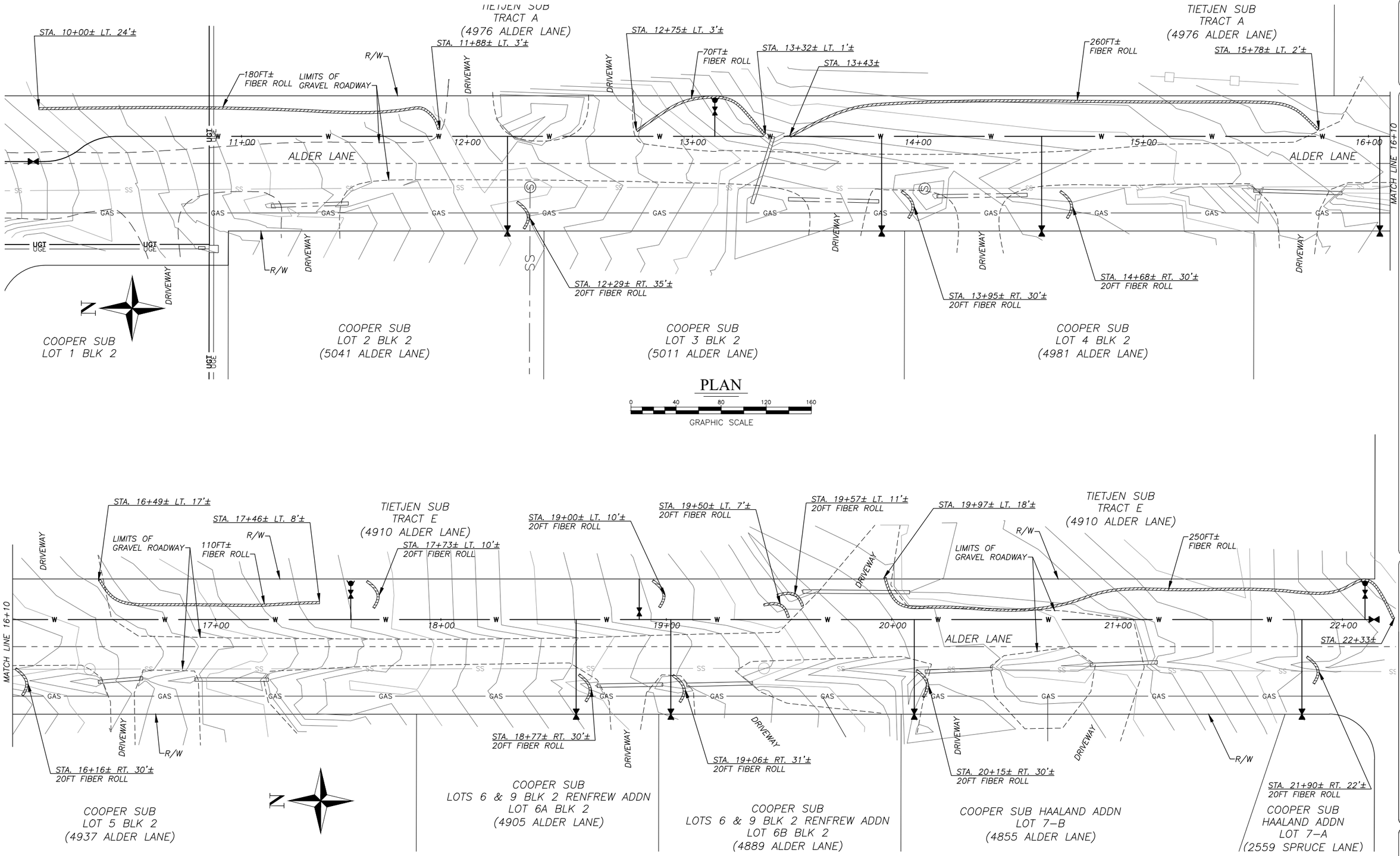
ALDER LANE WATER MAIN EXTENSION

CONSTRUCTION NOTES1

BISHOP ENGINEERING, LLC
PO BOX 2501 HOMER, ALASKA 99603
(907) 299-7609

DATE: 1/30/2021
CHK'D: JSB
SCALE: AS NOTED
PROJ. NO.: 2021002

SHEET NO.: C-5



NOTES:

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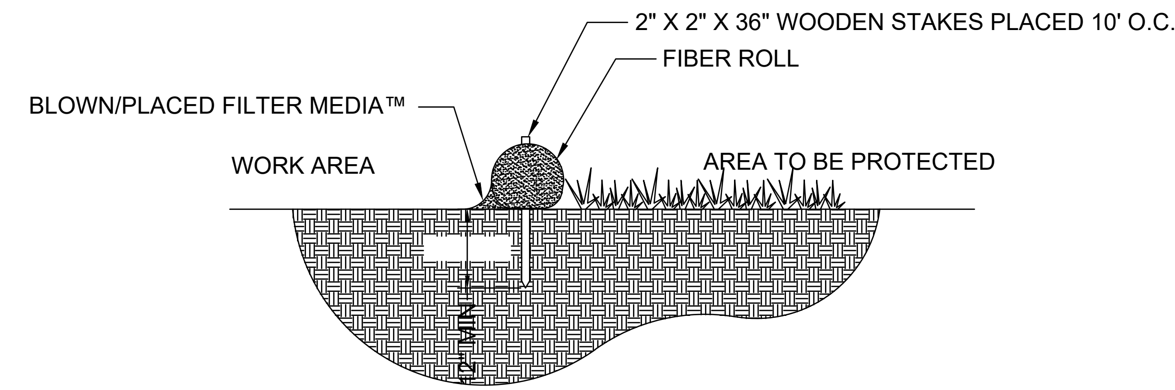
ALDER LANE WATER MAIN EXTENSION

EROSION CONTROL PLAN

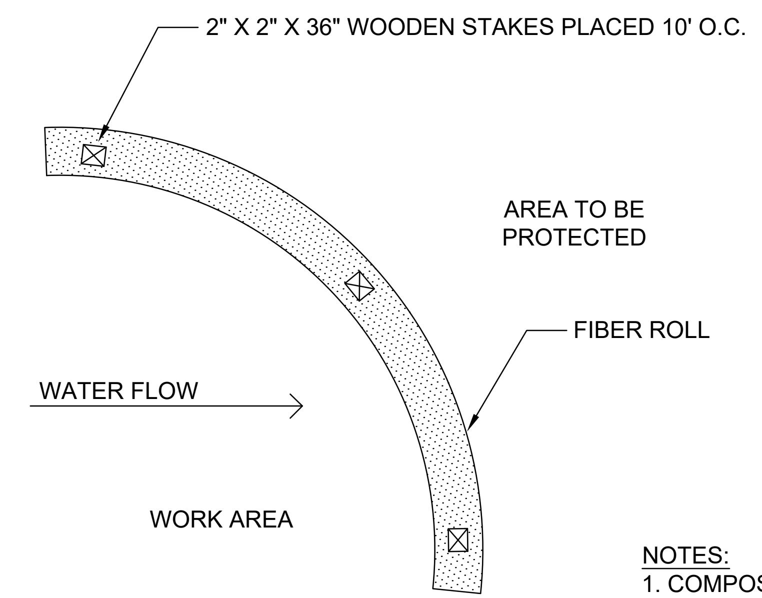
BISHOP ENGINEERING, LLC
PO BOX 2501, HOMER, ALASKA 99603
(907) 299–7609

DATE: 1/30/2021
CHK'D: JSB
SCALE: AS NOTED
PROJ. NO.: 2021002

SHEET NO.: C–6



SECTION NTS



NOTES:
1. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

PLAN NTS

FIBER ROLL SEDIMENT CONTROL

NTS

NOTES:

1. Before performing any excavations, call Alaska Digline at 811, (800) 478-3121, or (907) 278-3121.

ALDER LANE WATER MAIN EXTENSION

EROSION CONTROL DETAILS

BISHOP ENGINEERING, LLC
PO BOX 2501 HOMER, ALASKA 99603
(907) 299-7609

DATE: 1/30/2021
CHK'D: JSB
SCALE: AS NOTED
PROJ. NO.: 2021002

SHEET NO.: C-7

ENGINEER'S CONSTRUCTION ESTIMATE

	AS-BUILT ESTIMATE		95% PLAN ESTIMATE	X	GENERAL PLAN ESTIMATE (35%)

IN EST:	
OUT EST:	

PROJECT NAME:	Alder Lane Water Main Extension
DESCRIPTION:	Install 8" HDPE main extension along Alder Lane, three hydrants, and 9 services.
PRICES BY :	Quiet Creek Sub Estimate base with 3 yr cost inflation
QUANTITIES BY:	John S. Bishop
CHECKED BY:	

LOCATION:	Homer, AK
DEPTH	N/A
LENGTH	1220 LF
WIDTH	N/A
AREA	N/A
DATE:	1/22/2021
DATE:	1/22/2021
DATE:	

	CONSTRUCTION ITEM (FURNISH AND INSTALL UNO)	QUANTITY	UNIT PRICE	UNIT	ITEM COST
1	8" HDPE SDR 11 pipe furnish and install	1,220	$ 80.00	LF	$ 97,600.00
2	Single Pumper Hydrant	3	$ 9,000.00	EA	$ 27,000.00
3	1" Water Service Connection (near side)	1	$ 2,500.00	EA	$ 2,500.00
4	1" Water Service Connection (far side)	8	$ 3,500.00	EA	$ 28,000.00
5					$ -
6					$ -
7					$ -
8					$ -
9					$ -
10					$ -
11					$ -
12					$ -
13					$ -
14					$ -
15					$ -
16					$ -
17					$ -
18					$ -
19					$ -
20					$ -
21					$ -
22					$ -
23					$ -
24					$ -
25					$ -
26					$ -
27					$ -
28					$ -
29					$ -
30					$ -

Comments

SUBTOTAL		$	155,100.00
MOBILIZATION	10%	$	15,510.00
CONTIGENCIES	25%	$	38,775.00
TOTAL		$	209,385.00

	DESCRIPTION	PRICE	UNIT	COST
DEMOLITION				

City of Homer
www.cityofhomer-ak.gov

Public Works
3575 Heath Street
Homer, AK 99603
publicworks@cityofhomer-ak.gov
(p) 907- 235-3170
(f) 907-235-3145

Memorandum

TO: City Council

Through: Robert Dumouchel, City Manager

FROM: Janette Keiser, PE, Director of Public Works

DATE: February 3, 2021

SUBJECT: Mt. Augustine Road Drainage Improvement Project – 35% Design

Issue: The design for the Mt. Augustine Road Drainage Improvement Project Woodard Creek Culvert Project is currently at 35% development. The purpose of this Memorandum is to discuss the progress and identify issues.

Background: The intent of the project is to capture water flowing near the intersection of Mt. Augustine Road and the Sterling Highway and convey it to a *"naturally occurring ravine, gully, watercourse or runnel"*, pursuant to Resolution 20-098, adopted October 12, 2020. The City Council appropriated $97,000 from the HART Roads Fund for this project, via Ordinance 20-85, adopted November 9, 2020.

The City issued a contract to design the project Nelson Engineering, a Kenai firm with extensive experience in road and drainage improvement design, including projects for the City of Homer. Nelson has progressed the design the 35% level, which is not enough to build from, but enough to envision what the project will look like, get a more reliable cost and identify issues. For example, this level of design allows us to understand the probable downstream impacts of the proposed drainage.

As part of their scope of work, Nelson Engineering investigated the hydraulic conditions at the intersection of Mt. Augustine Rd. and the Sterling Highway, identified one or more naturally occurring drainage way(s), which could receive the water coming from this intersection, and explored the probable downstream impacts of using said drainage way(s). Then, Nelson Engineering designed a system including 243 feet of culvert and two storm drain manholes to covey the drainage from the intersection to the naturally occurring drainage way selected to receive the drainage. Nelson Engineering also followed the water downstream and made recommendations for downstream improvements that would be needed to accommodate the extra water flow. Finally, Nelson Engineering updated the cost estimate for the culvert/storm drain system.

The estimated cost to construct the culvert/storm drain system is $100,055. The cost of the design/survey effort is $15,639, bringing the total expected project cost to design and construct the basic project to $115,694. Part of the extra cost is due to the need to go around an existing light pole and electrical utilities, which requires us to extend the culvert and install an additional storm drain manhole. This exceeds the amount appropriated by Ordinance 20-85 by $18,694.

This does not include what we may need to do to address downstream impacts, which we are exploring in more detail. We know at least four privately-owned culverts will need to be up-sized and some ditches will need to be deepened and re-graded. It's possible we could do this work in-house using the Small Works Drainage Repair Program, which Council established last year. Further, we want to engage Coble Geophysical Services to investigate the relationship between groundwater flows and the surface drainage in this area, particularly as this relationship affects downstream impacts down to the bluff.

At this point, we are providing information, not asking for additional funds. When we've more thoroughly explored the downstream issues, we will come back to Council to seek direction and if Council wants to proceed, additional funds.

Engineer's Cost Estimate - Mt. Augustine Drive Drainage 35% Review

BID SCHEDULE

Item Number	Pay Item Description	Unit	Estimated Quantity	Unit Bid Price	Amount Bid
101	Mobilization and Demobilization	Lump Sum	1	$ 10,000.00	$ 10,000.00
102	Construction Surveying	Lump Sum	1	$ 5,000.00	$ 5,000.00
103	Traffic Maintenance	Lump Sum	1	$ 5,000.00	$ 5,000.00
203a	Removal of Obstructions (Culvert Pipe)	Linear Foot	85	$ 16.00	$ 1,360.00
203b	Removal of Obstructions (Storm Drain Manhole)	Each	1	$ 1,500.00	$ 1,500.00
204(2)	Ditch Excavation	Linear Foot	50	$ 5.00	$ 250.00
205.00	Type III Classified Backfill	CY	20	$ 40.00	$ 800.00
206	Leveling Course	Ton	15	$ 45.00	$ 675.00
208	Compaction Control by the Contractor	Lump Sum	1	$ 2,000.00	$ 2,000.00
212	Rip Rap, Class I	Ton	30	$ 150.00	$ 4,500.00
219	Remove Existing Pavement	Square Yard	100	$ 10.00	$ 1,000.00
401	2" Asphalt Pavement (Type II), For Roadway	Ton	12	$ 160.00	$ 1,920.00
708	Seeding (Type I)	Lump Sum	1	$ 1,000.00	$ 1,000.00
710	Topsoil (4")	Lump Sum	1	$ 1,000.00	$ 1,000.00
711	Relocate Utilities (Electric)	Lump Sum	1	$ 2,000.00	$ 2,000.00
802a	Corrugated HDPE Pipe 18 Inch	LF	35	$ 120.00	$ 4,200.00
802b	Corrugated HDPE Pipe 24 Inch	LF	210	$ 145.00	$ 30,450.00
802c	Culvert End Section, 24 Inch	Each	1	$ 400.00	$ 400.00
804	Storm Drain Manhole (Type I)	Each	3	$ 9,000.00	$ 27,000.00
	Contractor's Name:			Total Est.:	$ 100,055.00

City of Homer
www.cityofhomer-ak.gov

Port and Harbor
4311 Freight Dock Road
Homer, AK 99603
port@cityofhomer-ak.gov
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Memorandum

TO: ROB DUMOUCHEL, CITY MANAGER

FROM: BRYAN HAWKINS, HARBORMASTER

DATE: FEBRUARY 11 2021

SUBJECT: FUTURE COAST GUARD SMALL BOAT STATION PLANS FOR HOMER

Informational for City Manager Report-

Two years ago we began talking to Admiral Bell about the future plans for the Coast Guard and Homer. We know that their 110' Cutter Naushon will be decommissioned eventually and we're concerned that we would be losing the asset and 16 jobs out of the community. At that time, with a strategic look at the vessel traffic and needs of the area, the Admiral suggested that it's time for Homer to have a small boat station, which sounds small because of the word "small" but in fact it's kind of a big deal! This would mean faster response vessels for search and rescue and an established permanent station with 24 hour staffing capability.

(Examples of the new 45' fast response type cutters that would be stationed at the small boat station)

Last February, when down in Juneau for the legislative Fly-In, the Homer delegation met with the Admiral and his staff to discuss the Port Expansion project and the small boat station. At that time he committed his team to work on the small boat station justifications and application so that he could submit it to Command for consideration.

In our latest correspondence with D17 Juneau it was reported that the project has been approved and signed off on by the Pacific Area Commander, and it will be distributed to whatever other departments are going to have a hand in its establishment. Funding is the problem for a quick resolution to this. As of now, the earliest the funding will be available is 2028, and dates for when construction will begin, or when it will be complete haven't yet been set. Once this project continues through the chain of hands that need visibility on it, it's reported that they will get a clearer picture of the absolutes such as construction dates.

We have forwarded this information on to our lobbyists and plan to ask for support and follow up in our meetings with our Federal Delegation.

Recommendation

Continued Council and City support for the project and the Coast Guard's presence in Homer, keeping it in the forefront of legislative representative's priorities and any applicable funding or grant opportunities.

Informational

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Memorandum

TO: Mayor Castner and Homer City Council

FROM: Rob Dumouchel, City Manager

DATE: March 4, 2021

SUBJECT: City Manager's Report for March 8, 2021 Council Meeting

FY22/23 Budget
The Clerk's office has reached out to Council members regarding possible work session dates. They were not set at the time of this report, but may be set before we meet on the 8th.

Climate Action Plan – Draft Report
In 2020, the City Council set an updated Climate Action Plan as a Council-Initiated priority. While COVID slowed that project down a bit, staff was able to review years of climate data during 2020 in order to produce a progress report document. Aaron Yeaton from the Public Works Engineering Division was the primary staff champion for this project and did an excellent job analyzing data and preparing the report. The progress report is included as an attachment. The next phase of the Climate Action Planning process will be to work on an update to the original Climate Action Plan from 2007. We will be working on this in the coming months and anticipate opportunities for public engagement at some point later this year.

Kachemak Moose Habitat
On February 8th, Council adopted ordinance 21-05 which authorized an expenditure of up to $79,000 for the payment of water and sewer assessments for Lot 4, Hodnik Subdivision KPB Parcel No. 17936032 when the property ownership transferred to Kachemak Moose Habitat, Inc. and a deed restriction had been recorded regarding conservation and public access on the property. The deed restriction was recorded on February 24th and the assessments have been paid ($71,769). Thank you to Deputy City Planner Julie Engebretsen and Controller Jenna deLumeau for bringing this project to a successful conclusion!

Fire Update
Fire Chief Kirko and I went to Kachemak City to talk about fire issues in general, but specifically spent some time discussing land clearing fires with two of their elected officials and the City Clerk. We are looking at ways we can collaborate as neighbors to educate contractors and reduce the amount of smoke created by land clearing fires in both of our cities. This will be an ongoing process.

Alder Lane Water Special Assessment District
Update provided by Public Works Director Keiser:

> *The plans for the Alder Lane Water Line Extension are complete. The updated cost estimate shows the project is within budget. Because we will be using low-interest financing from the AK Dept. of Environmental Conservation (ADEC), we need to have an ADEC-compliant bid package and approval from the ADEC before we go to bid. We will be working on these steps.*

Derelict Vessel North Pacific

Update provided by Harbormaster Hawkins:

On February 23rd, on duty Harbor staff moved the North Pacific to the Fish Dock using the harbor tug and skiff. The local dive and salvage operation, C&C Diving, worked with harbor staff for the next two days to remove and demolish the dredging equipment, crane, and anchor winch from the vessel while Port Maintenance worked to remove the ballast water and secured all hatches. We estimate that we took off between 90,000 - 100,000 pounds of weight from the vessel and raised her waterline by almost 2 feet at the stern. On February 26th Harbor staff moved the North Pacific back to B transit moorage.

Next Steps for the North Pacific:

- Vision Subsea will perform a remote underwater survey of the hull using their observation class ROV (ARIS Delivery Vehicle), looking for anything that may puncture a haul out airbag as precautionary preparation for the upcoming haul out.
- Harbor staff will move the vessel to the beach haul out site on March 20th and hand her over to Fortune Sea Marine Services for haul out and removal to the lot between Outer Dock and Freight Dock Roads. Alaska Scrap will break her down into scrap steel and dispose of all waste product from the process in July 2021.

4th Quarter Sales Tax

The numbers from the Borough are in, and they're up a little bit! Year over year we saw a 4% increase in the amount of sales tax reported by KPB in the 4th Quarter. This number does not include remote sales tax collected by the Alaska Remote Sellers Sales Tax Commission. See attached for more information.

Homer Seed Library

The Homer Seed Library (HSL) is a new community initiative, run entirely by volunteers. Homer Public Library is proud to host the HSL's collection of seeds, which are displayed in the file drawers near the main entrance of the building. Members of the public who are interested in starting their own gardens, or trying out new plants in an existing garden, are invited to browse through the seeds on offer or add some seeds of their own. The HSL is purely a community effort and no library card is needed to check out seeds.

Employee Updates

On March 5, the Public Works Department waved good-bye to Brandon Moyer, Mechanic II, who relocated to Montana after five years of City service. We wish Brandon and his family well as they begin their new journey. A few days later, we welcomed Michael Parish as the new Mechanic II. Michael, who has a BS in Biology, fell in love with mechanical things while doing fisheries-related field work for the AK Dept. of Fish & Game. Along his over-20 year career, Michael became a master mechanic, working with heavy diesel equipment and picking up certifications from the California Fire Mechanics Academy to work on firefighting equipment. In

particular, Michael spent seven years working with the City's PW Department as a mechanic in the Motor Pool. So, he knows the job and does it well.

Jessica Roper's last day with HPD was March 1st. Jessica has been a Public Safety Dispatcher at HPD for almost three years, after having worked as a Temporary ESS at HVFD and in a volunteer capacity. She's Moving up the road and will dispatching for the Kenai Police Department. HPD celebrated her departure with cake and Facebook posts. Good luck in Kenai Jessica!

COVID-Related Updates

COVID Risk Status

On February 1st I moved the City from the "Red" to "Orange" level on our COVID risk framework. We remain in orange. The return of activities to the HERC and the Library by appointment continues to go well and I'm told our local pickleball enthusiasts are particularly excited about being back in the HERC.

Enclosures:

1. March Employee Anniversaries
2. Climate Action Progress Report
3. 4th Quarter Sales Tax Information
4. Thank you letters from Kachemak Heritage Land Trust, Homer Hockey Association, and Center for Alaskan Coastal Studies
5. Memo from Public Works Director Keiser re: Update to Skyline Water Tank Aeration Project

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Memorandum

TO: MAYOR CASTNER AND CITY COUNCIL

FROM: Andrea Browning

DATE: March 8, 2021

SUBJECT: March Employee Anniversaries

I would like to take the time to thank the following employees for the dedication, commitment and service they have provided the City and taxpayers of Homer over the years.

Matt Clarke	**Port**	**20**	**Years**
Elton Anderson	**Port**	**15**	**Years**
Renee Krause	**Clerks**	**14**	**Years**
Angie Kalugin	**Finance**	**6**	**Years**
Elizabeth Walton	**Finance**	**4**	**Years**
Kurt Read	**Port**	**4**	**Years**
Matt Smith	**Library**	**3**	**Years**
Matt Steffy	**Public Works**	**3**	**Years**
Mike Pettit	**Public Works**	**2**	**Years**
Lillian Hottmann	**Fire**	**1**	**Year**
Jan Keiser	**Public Works**	**1**	**Year**

CITY OF HOMER
CLIMATE ACTION PLAN:
PROGRESS REPORT

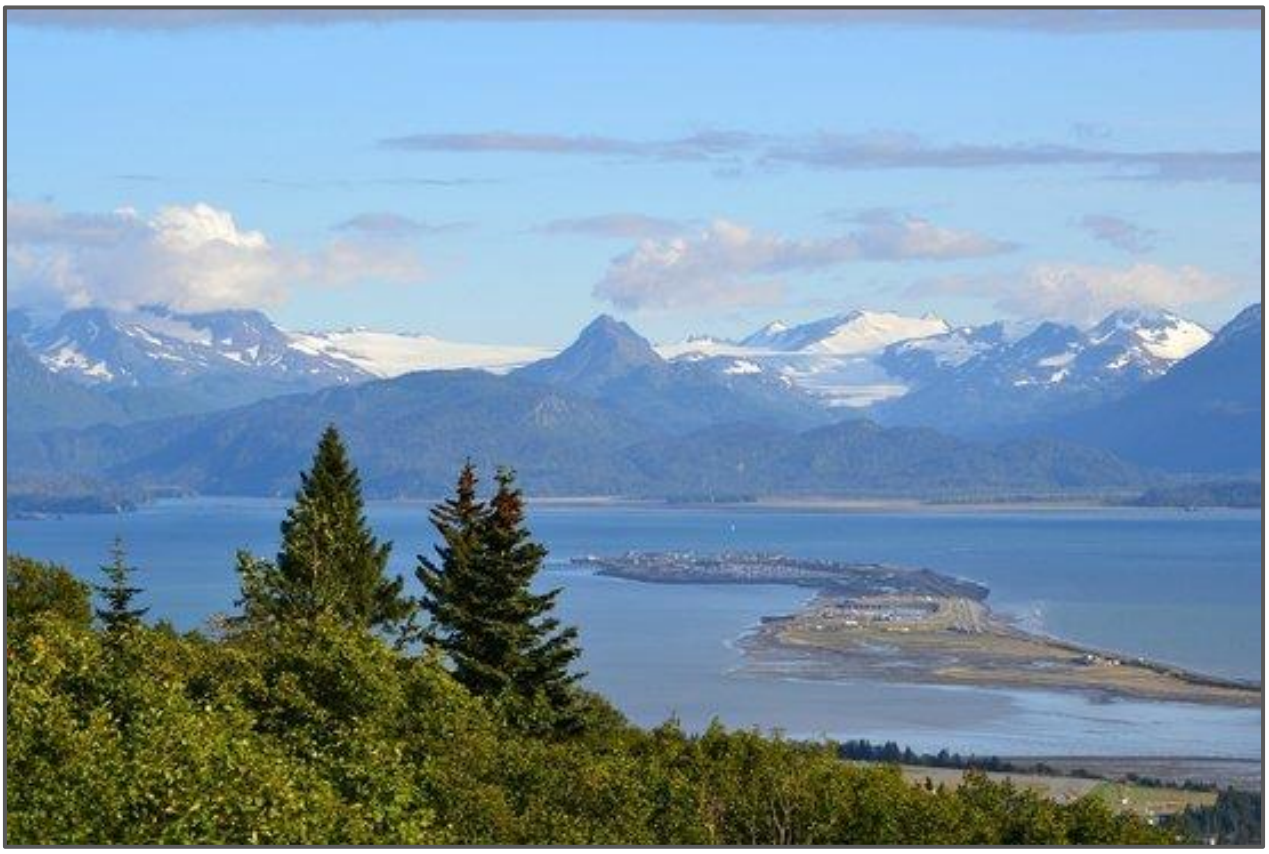


Photo Credit: Homer Chamber of Commerce

Prepared by the City of Homer

February 2021

Contents

Executive Summary

In 2009 The City of Homer adopted a Climate Action Plan (CAP) to battle the deleterious effects of climate change. The plan established a blueprint to analyze and improve the ways in which the local government utilizes energy in its operations. The greenhouse gas (GHG) reduction strategy outlined in the plan has been implemented in steps from the time of plan adoption through to the present. This report - organized in scientific format - provides a summary of methods, results and recommendations related to Homer's CAP based on a comparison of data from 2010 and 2019.

Homer is a small Alaskan community situated on Kenai Peninsula's Kachemak Bay. With a relatively remote location and small population of 5,709[1], this unlikely yet ambitious community became the first Alaskan municipality to develop a CAP. Since then, City Government (and therefore City priorities) have changed, but implementation of the plan has persisted.

To determine progress relative to the plan's goal, the City maintained a comprehensive energy use inventory for 15 years. 2010 was chosen as the baseline year because it provides~~d~~ the most robust and earliest set of data. The inventory covers all energy consuming sectors of City operations. Acquiring, organizing, and quantifying these data comprises the bulk of work to produce greenhouse gas emission quantities. A comparison of values with the baseline year reveals whether positive gains were achieved since implementation of the CAP.

Results show that reductions in total City GHG emissions were achieved between years 2010 and 2019. With the exception of the vehicle fleet, all sectors experienced reductions in GHG output. More reductions were made in the electricity energy source than the City's stationary fuels sources (i.e. heating oil, propane and natural gas).

For context, results were examined in relation to increases in building square footage, warming winter temperatures, and differences in electricity emission factor sets. GHG reductions in stationary fuel use at first seemed very promising considering the increase in square footage and, correspondingly, heating demands. Yet, comparing these data to recent spikes in winter temperatures indicate that demand for heating decreased during the same period of square footage increases. This revelation has a moderating effect on the positive difference in stationary fuel GHG comparisons.

For electricity, a moderating variable on reduction achievements is the fact that the electricity source in 2010 was more energy intensive than in 2019. In effect, a more energy intensive electricity source makes that emission factor set more CO2 rich and, thusly, the GHG output higher. In conclusion, GHG reductions were made since CAP implementation, but external variables suggest positive gains may be more limited than inventory results indicate.

This report concludes with recommendations for future CAP efforts. These include community outreach and messaging to restart the climate action discussion, investigating new and improving energy saving measures, and improving energy use tracking and reporting. CAP advancement will likely be based on the level of community response and its willingness to commit to climate action.

[1] US Census Bureau: *2019 American Community Survey 5-year Estimates*

Background & Purpose

In 2006, then Mayor Jim Hornaday attended a national climate change conference in Girdwood, Alaska. Inspired by the event, he tasked the City of Homer to take a proactive position regarding the current and foreseeable impacts of human induced climate change. As there were a number of concerned community members willing to champion this cause, the Homer City Council passed Resolution 06-141(A) establishing a Global Warming Task Force in January 2007. The purpose of the Task Force was to solicit ideas and information from the public and other sources and prepare recommendations to forward to the Mayor and Council for a CAP. In March the City became a member of the International Council on Local Environmental Initiatives (ICLEI) - an organization that assists local governments in establishing a framework for measuring energy use and emissions, producing climate/societal related forecasts, and planning mitigation strategies. In December of that year City Council approved the City of Homer CAP, effectively completing the Task Force's mission. After the CAP was adopted, City Council authorized funds for a Climate Action Plan Implementation Report, which was completed by Deerstone Consulting between July 2008 and December 2009.

Local governments have been developing and implementing CAPs independent of larger state and federal governments for many years now. For example, ICLEI has provided assistance to international cities concerned with climate change since 1990. Due to the failure of larger government organizations to take meaningful action, CAPs are being produced by local government or community organizations who realize the importance of sustained climate action to protect their communities from the most severe environmental, social and economic effects of global warming.

The City of Homer's CAP provides mitigation strategies to improve and develop energy management practices which would decrease emissions of greenhouse gases (GHG) in all sectors of City operations. The CAP also provides ideas for public outreach and engagement, recommendations to ensure GHG reduction goals are met, and expectations that momentum to carry out CAP implementation goals is sustained. Additionally, the CAP establishes a sustainability fund, whereby loans used for CAP implementation are repaid based on savings accrued by energy conservation measures.

Specifically, the CAP sought to accomplish 12 tasks:

- Maintain a comprehensive compilation of energy use data in all city sectors
- Outsource energy audits for all facilities
- Investigate alternative energy sources
- Reduce vehicle fleet emissions
- Incentivize GHG reduction efforts among employees
- Incorporate GHG reduction strategies in City Planning/Land Use
- Produce an Employee Sustainability Handbook for GHG reduction in everyday operations
- Act as liaison in all scales of government and organizations to champion GHG reduction efforts
- Sponsor community events/campaigns associated with global warming awareness/mitigation
- Draft any and all forms of communication for public relation purposes relating to CAP implementation
- Maintain up to date climate change information on City website
- Prepare/submit grant applications for CAP funding, and provide oversight of grant-funded projects

CAP implementation has been in effect since 2009, with the most recent improvements being conversion to LED lighting for most major municipal facilities. While many of these tasks have been partially or fully accomplished, some haven't been realized, or require improvement. Limited staff and time deveoted to CAP implementation contributes to these shortcomings. Be that as it may, recommendations not implemented were at least evaluated regarding their efficacy and practicality.

The City's zeal for dealing with climate change has fluctuated over the years. The Global Warming Task Force disbanded after the CAP was approved in 2007, and membership to ICLEI was allowed to lapse after Deerstone Consulting completed its report in 2010. While attention to climate change has waned in the intervening years, the momentum for completing the more conservative mitigation goals has been sustained. The quiet persistence of this effort may be best exemplified by the fact that City-wide energy consumption data has been maintained on a monthly basis from 2006 to the present. This comprehensive record of energy use is the critical foundation for making climate mitigation policy decisions.

Over the past two years inquiries by City Council members about the efficacy of CAP implementation has revitalized interest in The City's role in climate change action. Specifically, in 2019, Council sought a narrative report on quantifiable GHG reduction achievements, failures, and insights. The report was accompanied by an inventory quantifying energy use and associated GHG emissions from the original baseline year of 2006 through the end of 2018. Results from this analysis, however, fell short of accurately telling Homer's climate action story. Questions arose regarding the relationship between GHG outputs, and it didn't account for City facility growth and recent temperature trends. These shortcomings led to production of a second inventory in early 2020.

This inventory evaluated the same range of years with the addition of year 2019. The graphs and charts were consolidated into broader categories to more easily convey information. Increases in building square footage and warmer winter temperatures were included to add more context to the results. Unfortunately, (or fortunately) a city staff member noticed a discrepancy between GHG outputs from Deerstone Consulting's report and this latest effort. As the 2020 analysis is mostly based on an iterative process of the 2010 analysis, GHG outputs for years prior to 2010 were expected to be the same in both reports. This was not the case. The fact that different results were occurring for the same categories in the same year indicated discrepancies in methodology.

The GHG evaluation methods within the 2019 and 2020 reports were roughly modeled after the practices used by Deerstone Consulting in 2010. Unfortunately, the ICLEI protocol used to produce the 2010 report was abandoned in favor of an apparently less reliable method, which upon investigation, used emission factor sets from an unknown source to calculate emission totals within an excel spreadsheet. The most error prone aspect of this approach is that the annual fluctuation associated with electricity emission factors was not accounted for. Instead, a static emission factor value was used for every electricity inventory year. Given these problems, the 2019 and 2020 reports are only useful for displaying approximate trends and total energy usage. Following these disappointing attempts, City Council decided a more rigorous and defendable methodology was needed to properly ascertain whether the City of Homer had achieved appreciable reductions in GHG emissions since the implementation of the CAP. This report is an accounting of that process.

Description of Homer

The City of Homer is located on the northern shore of Kachemak Bay - a 40-mile long arm of Cook Inlet that extends east into the southwestern tip of the Kenai Peninsula (**Figure 1**). This area's amenities include valuable fisheries, natural beauty, and marine-centric recreational opportunities. Being situated between two large bodies of water, Homer has a mild (relative to Alaska) maritime climate. The average low temperature is 32 degrees Fahrenheit, the average high is 45 degrees Fahrenheit. The Homer side of the Kenai Peninsula is just outside the temperate rainforest climate regime present in the coastal regions to the east and southeast. Therefore, annual average rainfall is a relatively moderate 24.34 inches, while the average snowfall is 48 inches.

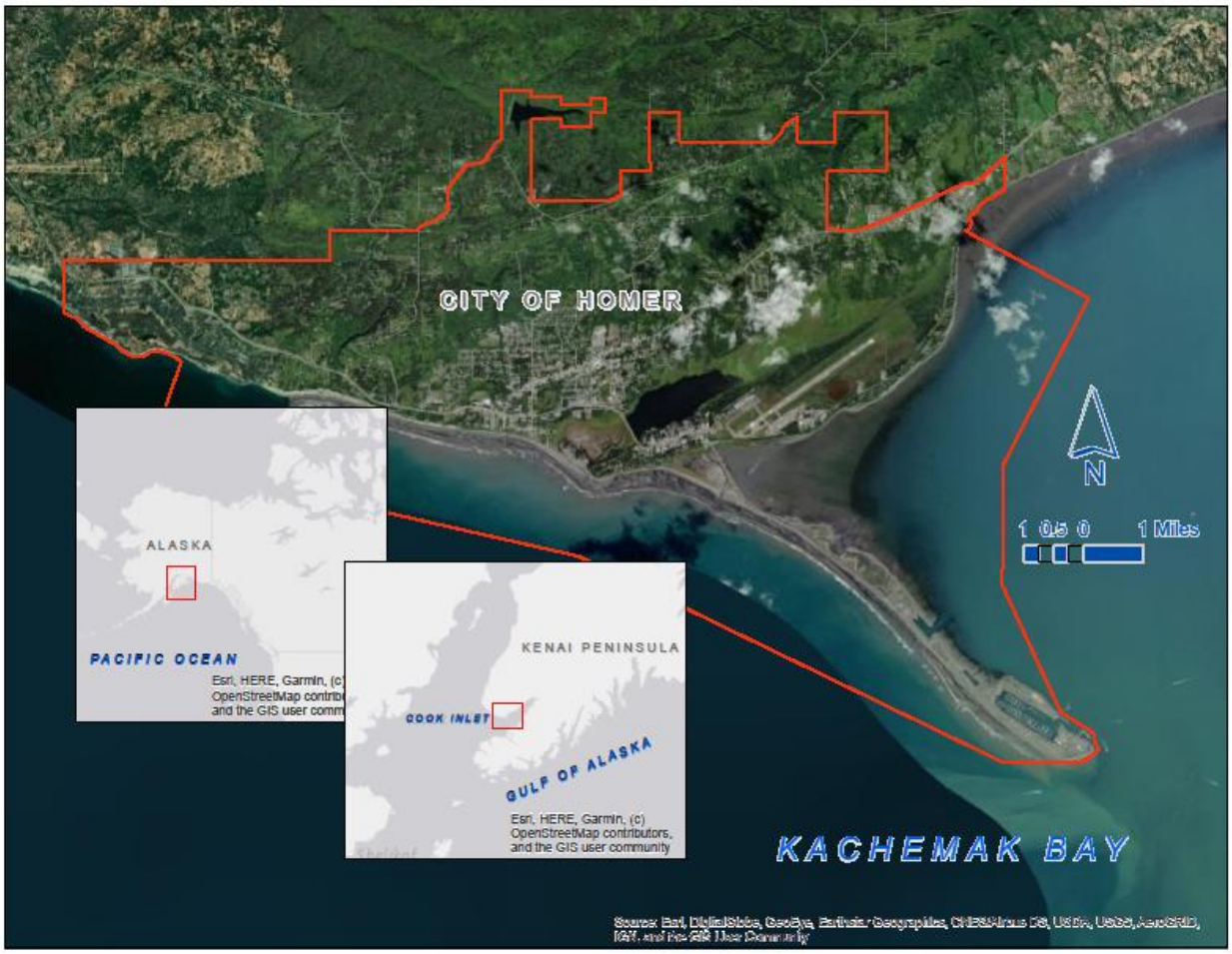


Figure 1. *City of Homer Location*

Excluding the portion extending into the Kachemak Bay, City limits encompass an area of approximately 15 square miles. As of 2019, Homer's population numbered 5,709. However, the larger Homer service area (the communities and residents relying on Homer as the commercial core) stretches from the confluence of the Kachemak Bay and Cook Inlet West to the head of the Bay. These periphery residents live in communities such as Kachemak City, Fritz Creek, Anchor Point, and others. The number of people relying on Homer's amenities is approximately 12,500.

Homer's municipal government currently employs over 100 full time employees across six departments:

- Administration
- Finance
- Police
- Fire
- Public Works
- Port & Harbor

The City maintains approximately 214,076 square feet of facility space, of which Public Works and Port & Harbor make up the most energy intensive portion. Electricity, provided by Homer Electric Association (HEA), and natural gas, provided by ENSTAR, comprise the two primary sources of energy consumption. The City maintains a fleet of 89 light vehicles, most of which are gasoline-powered, and 16 pieces of heavy equipment as well as a fleet of fire trucks, ambulances, and other special purpose rolling stock. Public Works and Port & Harbor regularly utilize diesel-powered heavy equipment to perform road maintenance, water and sewer repair, and snow removal.

Methods

Methodology

GHG inventories were created to evaluate the City of Homer's emission outputs for years 2010 and 2019. The years 2010 and 2019 were chosen for emission output comparison, because the year 2010 was the earliest year that reliable emission factors for electricity can be obtained, and the year 2019 is the latest year with a full record of City energy use. The 2010 and 2019 inventories examined all credibly sourced City GHG producing activities. The methodology for producing these GHG inventories involved four major steps:

- Acquiring data from energy providers
- Creating and organizing relational tables of energy data in excel
- Acquiring/producing emission factor sets
- Processing relational table results in ICLEI Clear Path Software

Raw Data Sources

HEA has provided electricity consumption data since the beginning of CAP implementation. HEA delivers data in an Excel relational table format on a monthly basis. Information on the tables includes dates, energy consumption, facilities, and energy costs. A few table adjustments are required to achieve consistency with previous data.

Stationary fuel use for the City is sourced through invoices from fuel and natural gas providers: Petro Marine and Enstar, respectively. These invoices contain information about how much fuel of what type is delivered to which facility. As fewer facilities use stationary fuel rather than electricity, these tables are not maintained on a monthly basis, but as time allows.

Relational Tables

The City's energy use is recorded using Excel relational tables. These tables have been maintained for over a decade and reflect the City's changing energy use patterns. The energy use tables are extensive and can be sorted by a variety of organization schemes, but for the purpose of monitoring GHG emissions, and to reduce table information into manageable format, two organizing iterations are required. The first iteration sorts information by three criteria:

1. Type of energy consumed
2. Two energy consuming sectors: Facilities and vehicle fleet
3. Energy use by each facility and vehicle fleet

This organization allows calculations of total energy use for each facility by energy type. Electricity, natural gas, and heating oil consumption are all summarized separately by month, then aggregated to produce an annual total for each facility. Because measures of energy units vary by energy source - i.e., electricity is KWh, natural gas is ccf, fuel is gallons - it is important that the type of energy consumed be the first level in organization. All City buildings rely on both electricity and stationary fuels in daily operations.

The second iteration groups facilities into the following City sectors:

- Airport
- Buildings & Facilities[2]
- Port Facilities
- Streetlights and Traffic Signals
- Wastewater Facilities
- Water Delivery Facilities

This broad grouping follows the organizational precedent established in the 2010 GHG report and provides an orderly way to evaluate total annual energy use by major energy consuming sectors. Additionally, this organization aligns with ICLEI's Clear Path inventory management system providing a comprehensive and clear overview of energy use and GHG emission status among these sectors. Energy totals from these tables are used in the Clear Path calculators to determine GHG emissions.

Table 1 *Monthly KWH by City sector*

Sector	KWH												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL
Airport	14840	13880	11920	11000	13040	11000	10760	10560	11000	11480	11800	10680	**141960**
Buildings & Facilities	83856	74944	64557	59073	55954	49009	43554	43400	45402	49215	52760	62487	**684844**
Port Facilities	219687	200407	213151	200364	191680	207760	186103	258680	235357	195368	230883	210003	**2549054**
Streetlights & Traffic Facilities	16576	12788	11194	9548	6980	5222	4926	5638	8943	10786	15961	15099	**125311**
Wastewater Facilities	105372	99083	94543	99643	94324	97958	100863	102087	119584	103920	105445	105372	**1229172**
Water Delivery Facilities	58710	61246	56369	55821	53993	57501	56142	53799	54111	52474	50546	54211	**671214**

Emission Factor Sets

Emission factors are ratios necessary to calculate the amount of GHG produced by unit of energy used; expressed as lbs. of CO2/KWh, for example. To account for all emissions, factors are needed for CO2, CH4, and N2O. Alaska's electric utilities monitor GHG outputs and are therefore able to provide emission factors associated with electricity consumption. For Homer, these factors vary from year to year because the community's electricity source is a fluctuating combination of hydro-power and natural gas. These varying values are averaged to produce a singular emission factor for a given year. Conversely, emission factors associated with stationary fuel consumption are static and are already built into the Clear Path calculators. Vehicle fleet emission factors are a product of fuel type, vehicle type, manufacture year, and model fuel economy.

Clear Path Software

Clear Path software provides a means for organizing complex energy and emissions inventories and for calculating GHG outputs from a wide variety of energy sources. Inventories for 2010 and 2019 were

[2] This category refers to all energy consuming structures not operating under Water/Wastewater, Port & Harbor, or Airport

created with this software. The inventories default to general categories, four of which helped model the organizational scheme of the Excel relational tables:

- Buildings & Facilities
- Street Lights & Traffic Signals
- Vehicle Fleet
- Water &Wastewater Treatment

Within these categories are emission calculators for grid electricity, stationary fuel combustion, vehicle emissions, and ancillary emissions related to wastewater treatment. Each calculator is provided with the appropriate emission factor and amount of energy consumed. Clear Path creates detailed reports for each inventory year based on emission calculator inputs and outputs for the above categories. The information from these reports is used to evaluate and generate tables and charts.

Inventory Specifics – 2010

Category – Buildings and Facilities**:**

This category covers electricity and stationary fuel consumption for all City buildings and facilities. Sub-categories include the Airport and Port and Harbor.

Electricity

As HEA was an all-requirements customer of Chugach Electric Association (CEA) in 2010, meaning that Chugach Electric provided HEA with most of its energy, factor sets for electricity were obtained from CEA. They are as follows:

- CO2 lbs/KWh: 1.19
- CH4 lbs/KWh: 0.00002
- N20 lbs/KWh: 0.000002

As Clear Path factors have to be in lbs /MWh for CO2, and kg/GWh for CH4 and N2O, the factors had to be converted accordingly, producing:

- CO2 lbs/MWh: 1190
- CH4 kg/GWh: 20
- N2O kg/GWh: 2

Factors and Kwh totals are then entered into the Clear Path electric grid calculator. Additional information such as daily operating hours and total square footage of all facilities was added to report detailed energy use. Figure **2** shows an example of the results of electric grid calculator inputs and outputs for a City sector.

Inputs

	Value	Units
Is This a Direct Entry Record?	No	
Electricity Used	1089190	kWh
Daily Occupancy (optional)		People
Daily Operating Hours (optional)	8	Hours per Day
Building Square Footage (optional)	107578	Square Feet
Is this a Scope 3 Record?		

Outputs

Name	Value
Electricity Energy Equivalent (MMBtu)	3717.4
CO2 (MT)	587.92
CH4 (MT)	0.0098810
N2O (MT)	9.8810×10^{-4}
CO2e (MT)	588.46
Energy per Square Foot (MMBtu)	0.034555
CO2e per Square Foot (MT)	0.0054700
Energy per Occupant (MMBtu)	Infinity
CO2e per Occupant (MT)	Infinity
Energy per Operating Hour (MMBtu)	464.67
Scope	Scope 2
CO2 Emissions Factor	0.15815
CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	2.6581×10^{-6}
CH4 Emissions Factor Units	MT/MMBtu
N2O Emissions Factor	2.6581×10^{-7}
N2O Emissions Factor Units	MT/MMBtu

***Figure 2**. ICLEI Clear Path calculator for grid electricity*

Stationary Fuels

In 2010, the two stationary fuels consumed were heating oil and propane. Calculations for stationary fuel require two values – amount of fuel consumed and type of fuel. Supplemental information includes facility square footage and facility hours of operation. Emission factors for stationary fuels are built into Clear Path calculators.

The subcategories of Airport and Port & Harbor followed the same process for calculating electricity and stationary fuel emissions. All emission totals for electricity and stationary fuel consumption are combined to produce a GHG grand total for the Building & Facility category.

Category – Streetlights and Traffic Signals

This is an electricity-based category that utilizes the same emission factors of Buildings and Facilities. Included with Streetlights and Traffic Signals is the tsunami warning system sirens. Total KWh per unit were used to calculate GHG totals.

Category – Vehicle Fleet

The 2010 vehicle mileage and equipment hours were obtained from a fleet vehicle report produced in that year. A relational table organized by vehicle type (i.e., light truck, heavy diesel, passenger car, etc.) and miles traveled, or hours metered, depending on equipment type, was created to produce required values for use in the Clear Path calculator. Emission factors for vehicles are a function of vehicle fuel economy by vehicle type and year. Fuel economy values were obtained through U.S. Energy Information Administration and U.S. Department of Transportation open data sources. Fuel consumption is based on deliverys to the Public Work's fuel island with the assumption that fuel delivered is fuel consumed.

The Clear Path calculator was set up to evaluate vehicle fleet emissions based on three variables related to fuel type:

- Total volume of gasoline or diesel purchased
- Total Fleet miles traveled by fuel type
- Percentage vehicle miles traveled (VMT) by vehicle type

VMT percentage is a ratio of the sum of total miles travel by vehicle type - passenger car, light truck, etc. – over total fleet miles traveled by fuel type. A gasoline example is as follows:

- Total miles traveled by light truck: 266,498
- Total fleet miles traveled for gasoline vehicles: 330,282
- Light Truck VMT %: 226,498/330,282 *100 = **80.68 %**

This process was repeated for all gasoline and diesel consuming vehicles with values computed in GHG calculator to produce emission totals.

Category – Water & Wastewater Treatment Facilities**.**

As with the previous categories, the primary energy sources for Water & Wastewater Treatment Facilities are electricity and heating oil. The wastewater treatment facility also consumed 2,000 gallons of propane. These records were calculated for GHG using the same methods and emission factors as the previous electricity and stationary fuel consuming categories.

In addition to electricity and stationary fuels, N2O emissions from aerobic processing of waste, and N2O from effluent discharge are measured. The calculation for N2O emissions from waste treatment is based on community population for the given year, which in 2010 was 5,049 people. N2O for effluent discharge is based on daily Nitrogen load in kilograms released to the environment. The daily nitrogen load was

derived from a ratio of average wastewater treatment plant flows and monthly average NH3 readings for 2010.

All electricity and stationary fuel use for water and wastewater facilities was combined with N2O emissions from waste treatment to produce a GHG emissions grand total for this category.

Inventory Specifics – 2019

Category – Buildings and Facilities

As in 2010, energy sources for this category are electricity and stationary fuels. Unlike 2010, the primary stationary fuel consumed is natural gas rather than heating oil. City infrastructure growth in the intervening period necessitated creation of additional records for evaluation in relational tables. All subcategories within Buildings and Facilities remain the same.

Electricity

HEA provided the city with a relational table containing formulas to convert annual KWh into emission factors for CO2, NH4, and N2O. Monthly KWh totals were organized by City sector, then input into HEA's table to obtain emission factors (Table 2). As with the 2010 factors, additional conversions were required to get values into the appropriate units for use in the clear path calculators.

A singular Emission factor per GHG type is required to calculate inventory records. To obtain this value, emission grand totals are divided by the grand total of City electricity use, as illustrated in Table 3.
This method was repeated to produce the following GHG emission factors for 2019 electricity consumption

- CO2 lbs/MWh: 876.67
- CH4 lbs/GWh: 16.52
- N2O lbs/GWh: 1.652

Stationary Fuels

The majority of City facilities converted from heating oil to natural gas use prior to 2019, yet some facilities still partially rely on heating oil for their operations. One of the Homer Recreation and Education Complex (HERC) buildings is in low use status requiring relatively little oil for its square footage. Further, the Public Works headquarters building, the sewer treatment plant, and the old police station all used some amount of heating oil in 2019. A negligible amount of propane was used by Public Works. Stationary fuel emission factors are static, so GHG emission totals are a function of the quantity of fuel used by fuel type. A stationary fuel grand total was produced by combing GHG emissions from all fuel sources.

Table 3 *HEA monthly KWh GHG calcualtion sheet for 2019*

FACTOR VALUES BY MONTH	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
System CO2 Production Tons/MWh	0.4242	0.5085	0.5299	0.4525	0.3884	0.4438	0.4207	0.3549	0.2698	0.2699	0.2961	0.3336	**0.3910**
System CH4 Production Tons/MWh	0.000007994	0.000009583	0.000009987	0.000008528	0.000007320	0.000008365	0.000007929	0.000006688	0.000005085	0.000005086	0.000005581	0.000006287	**0.000011875**
System NOx Production Tons/MWh	0.000000799	0.000000958	0.000000999	0.000000853	0.000000732	0.000000836	0.000000793	0.000000669	0.000000509	0.000000509	0.000000558	0.000000629	**0.000001936**
kW Used	61246	56369	55821	53993	57501	56142	53799	54111	52474	50546	54211	105372	711585.00
CO2 Produced (lbs)	57273.32	63192.40	65213.19	53862.12	49235.98	54935.71	49897.76	42336.45	31215.73	30074.30	35391.53	77490.56	610119.05
CH4 Produced (lbs)	1.07940667	1.19096123	1.22904618	1.01511720	0.92793025	1.03535080	0.94040259	0.79789765	0.58830999	0.56679789	0.66700965	1.46043269	11.49866279
NOx Produced (lbs)	0.10794067	0.11909612	0.12290462	0.10151172	0.09279302	0.10353508	0.09404026	0.07978976	0.05883100	0.05667979	0.06670096	0.14604327	1.14986628
GW Used	0.061246	0.056369	0.055821	0.053993	0.057501	0.056142	0.053799	0.054111	0.052474	0.050546	0.054211	0.105372	0.711585
MW Used	61.246	56.369	55.821	53.993	57.501	56.142	53.799	54.111	52.474	50.546	54.211	105.372	711.585

Table 2 *Emission factor Calculation sheet for grid electricity 2019*

Emission Totals in lbs	Airport	Buildings & Facilities	Port Facilities	Streetlights & Traffic	Wastewater Facilities	Water Delivery	Totals
CO2	188,863.19	606,733.55	2,103,902.59	225,288.90	1,050,808.45	610,119.05	4,785,715.73
CH4	3.56	11.43	39.65	4.25	19.80	11.50	90.19
NO2	0.36	1.14	3.97	0.42	1.98	1.15	9.02

Energy Totals	
KW	5,458,909.00
MW	5,458.91
GW	5.458909

Factors in MW		
CO2 FACTOR	CH4 FACTOR	Nox FACTOR
876.6798875	16.52242532	1.65

Emission totals for electricity and stationary fuel consumption are combined to produce a GHG grand total for the Building & Facility category

Category – Streetlights & Traffic Signals.

GHG emissions for this category were calculated in the same way as in 2010.

Category – Vehicle Fleet.

Fleet reports for 2019 were not as comprehensive as 2010. Even so, the methods used for calculating GHG emissions are the same as in 2010.

Category – Water & Wastewater Treatment Facilities.

Methods for calculating GHG emissions relating to electricity and stationary fuel are the same as in 2010. Updates for community population and water treatment flows were required before running the Water and Wastewater Treatment calculators.

Results

The Clear Path software calculates emissions for CO2, NH4, and N2O concurrently, but for the purpose of evaluating totals by City sector, the CO2 equivalent (CO2e) output is most useful. CO2e is a universal measurement that equates the global warming potential (GWP) of greenhouse gases into one unit of carbon-dioxide. For example CO2 itself has a GWP of 1, while CH4 has a GWP of 28-36, meaning that 1 unit of CH4 has 28-36 times the global warming potential of CO2. GWP of N2O is significantly higher at 265-298. As CO2e provides a useful summation of GHG emission totals, all results displayed in the following charts and tables use CO2e as the GHG unit of measure.

CO2e totals for 2019 are 951.22 metric tons less than totals for 2010 – a 21.78% decrease. The most significant decrease belongs to Buildings & Facilities followed by Water and Wastewater.

With the exception of the Vehicle Fleet, all clear path categories experienced decreased emissions.

Table 4 *Total CO2e output comparison by City sector*

Category	2010 CO2e (MT)	2019 CO2e (MT)
Buildings & Facilities	2533.39	1919.32
Water & Wastewater	1320.69	983.98
Street Lights & Signals	85.82	49.88
Vehicle Fleet	429.22	464.72
TOTAL	4369.12	3417.90

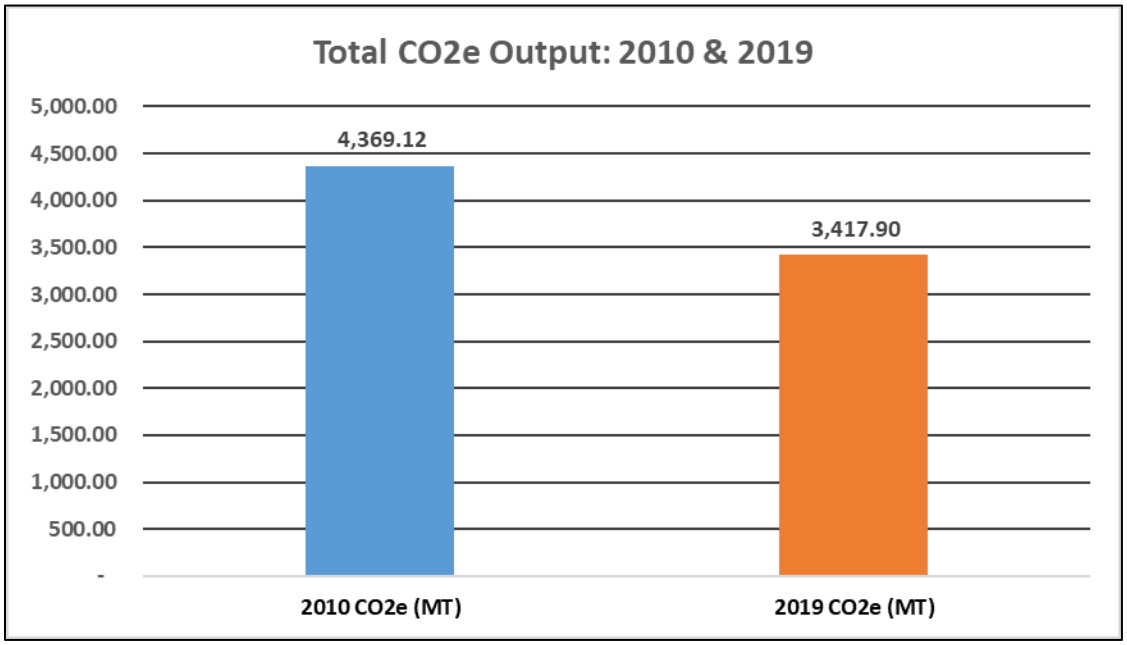


Chart 1 *Total City CO2e output comparison*

The proportion of total City emissions by Clear Path category remained relatively constant between 2010 and 2019. The greatest shift occurred in the Vehicle Fleet category, which assumed a 4% increase of total city emissions.

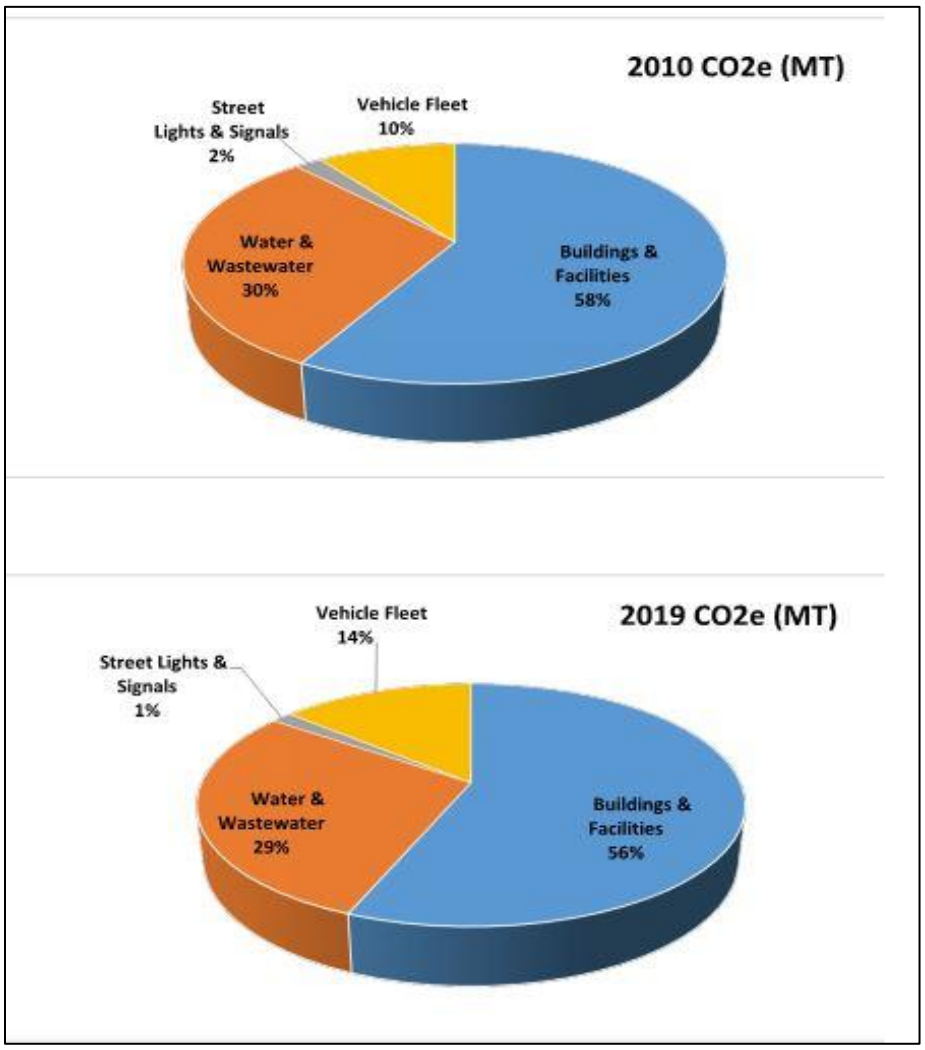


Chart 2 *Comparison of CO2e output % by City sector*

Two important questions in the analysis of GHG reduction progress are:

1. In what City sector did emissions reduce?
2. What was the energy type of any such emissions reductions?

The following tables and charts provide a more detailed look at emission outputs by examining specific inventory records contained within the broader Clear Path categories for both electricity and stationary fuel use. These records include:

- City Facilities
- Port & Harbor
- Airport
- Water Treatment
- Wastewater Treatment
- Streetlights & Traffic Signals

The Vehicle Fleet inventory was omitted from this list as little to no emission mitigation efforts were initiated.

A comparison of electricity use reveals a CO2e reduction of 987 CO2e (MT) between years 2010 and 2019. The largest reductions were achieved in the Water and Wastewater Treatment Facilities.

Table 5 *CO2e output comparisons for electricity use*

Inventory Record	2010	2019
City Facilities	588.46	489.29
Port & Harbor	1,268.91	1,014.69
Airport	149.16	272.61
Water Teatment	393.69	56.51
Waste Water Treatment	651.84	267.19
Streetlights & Signals	85.82	49.88
TOTAL	3,137.87	2,150.17

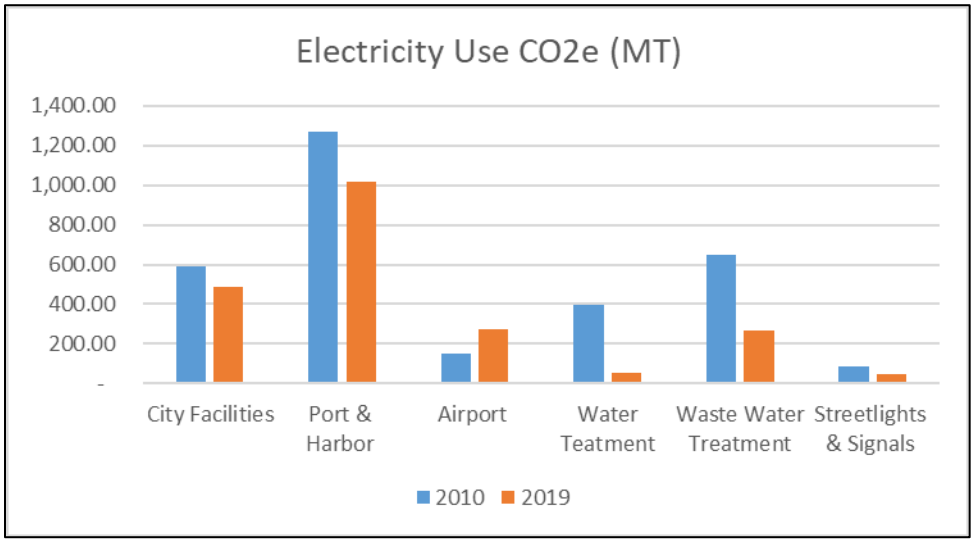


Chart 3 *CO2e output comparisons for electricity use*

Stationary fuel use in 2010 was exclusively heating oil. By 2019, all facilities had converted to natural gas. The 2019 CO2e totals for the Public Works Headquarters Building, the Wastewater Treatment Plant, and Port & Harbor was a combination of both natural gas and heating oil use. Even so, natural gas use far outweighed heating oil consumption for these facilities

CO2e reductions associated with stationary fuel use were less than experienced by electricity. Indeed, total emissions for all City facilities combined increased by 19.2 metric tons. Four out of five sectors experienced small decreases, with the greatest reduction realized by the water treatment facility at 21 metric tons. Yet, these improvements were offset by an increase of 72.58 metric tons from all the City Facilities sector.

Table 6 *Stationary fuel CO2e output comparison. Asterisk denote facilities that use both heating oil and natural gas*

Inventory Record	2010	2019
City Facilities	372.36	444.94*
Port & Harbor	68.56	63.07*
Airport	84.50	66.43
Water Treatment	80.23	59.68
Wastewater Treatment	128.23	118.94*
TOTAL	733.88	753.06

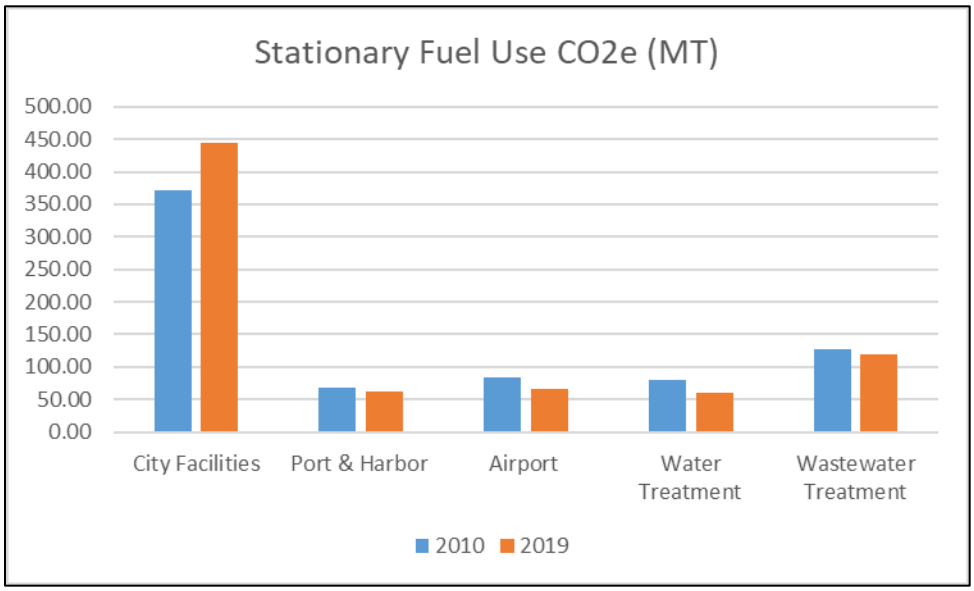


Chart 4 *Stationary fuel CO2e output by City Category*

To help explain how these reductions were achieved, **Table 7** History of CAP implementationpresents a general timeline of the City's efforts in implementing emission mitigation strategies outlined in the CAP. The timeline begins in 2009 with the Deerstone Consulting report recommendations and carries through to 2019. In the leftmost column, all completed projects are marked with an "X", incomplete or unmitigated issues are left blank.

Table 7 *History of CAP implementation*

CAP Implementation Recommendations Based on Deerstone Consulting Report of 2009			
CATEGORY	FACILITY	PROJECT DETAILS	COMPLETED
Airport	Terminal	Separate switches on baggage area lighting fixtures to separately control high use lights & low use lights	
	Terminal	Variable frequency drives for main air handling unit to conserve electricity and fuel	**X**
Port & Harbor	Fish Dock	Remove 8 high energy consuming transformers	**X**
	Ice Plant	Install digital controls for ice machine boost system	
	Main Shop	Transition to manual operation of air compressor to save energy when not in use	**X**
Buildings and Facilities	Harbor Restrooms	Insulate hot water pipes and improve cold air return furnace system	**X**
	Harbor Restrooms	Add grid tied wind generator at good wind area with estimated 12 mph average	
Water & Wastewater Treatment	Pressure Reducing Stations	Turn off 3 KW heaters when temperatures are above 50 Deg. F.	**X**
	Pressure Reducing Stations	Use hydro turbines at some pressure reducing stations to heat the maintenance and water plant buildings	
Energy Consumption Evaluation by Bill Smith & EDC, LLC 2009-2010			
CATEGORY	FACILITY	PROJECT DETAILS	COMPLETED
Buildings and Facilities	Homer Public Library	Adjustments made to ventilation system & staff operating procedures	**X**
Siemens Industry, Inc. Energy Audit Recommendations: 2011 - 2018			
CATEGORY	FACILITY	PROJECT DETAILS	COMPLETED
Water & Wastewater Treatment	Sewer Treatment Plant	Replace existing pump motors with high efficiency motors	**X**
	Raw Water Pump Station	Replace existing motors with higher efficiency motors & install VFDs	**X**
	Sewer Treatment Plant	Solar Aeration System	**X**

Water & Wastewater Treatment	Sewer Treatment Plant	Interior & exterior lighting upgrade	**X**
	Sewer Treatment Plant	Natural Gas Conversion	**X**
	Water Treatment Plant	Natural Gas Conversion	**X**
Airport	Terminal	HVAC Improvements	**X**
	Terminal	Interior & Exterior lighting upgrade	**X**
	Terminal	Natural gas conversion	**X**
Buildings & Facilities	Public Works Dept.	Insulate various pipes	**X**
	Public Works Dept.	Natural gas conversion	**X**
	Police Station	installed LED to replace indoor T-12's and all outdoor lights	**X**
	Fire Station	Natural gas conversion	**X**
	Homer Public Library	Natural gas conversion	**X**
	Animal Shelter	Natural gas conversion	**X**
Port & Harbor	Harbor Maintenance Building	Conversion to 100% LED lighting	**X**
	Harbor Master Office	Natural gas conversion	**X**
	Ice Plant	Conversion to 100% LED lighting	**X**
	High Mast Lights	LED upgrade with digital controller	**X**
CITY FUNDED LIGHTING AUDIT AND LED CONVERSION WORKPLAN: 2018-2020			
CATEGORY	FACILITY	PROJECT DETAILS	COMPLETED
Buildings & Facilities	City Hall	LED lighting conversion	**X**
	Animal Shelter	LED lighting conversion	**X**
	Homer Public Library	LED lighting conversion	**X**
	Public Works Dept.	LED lighting conversion	**X**
Airport	Terminal	LED lighting conversion	**X**

Discussion

The results demonstrate the City reduced its GHG emissions in all inventories for electricity consumption and in four out of six inventories for stationary fuel use. Conversion to natural gas and implementing electricity conservation strategies have had a measurable positive effect in meeting CAP goals. In fact, if the CAP goal of decreasing community wide emissions by 20% by 2020 were applied to this municipal accounting, the City has exceeded that mark. Using the CO2e total of 5,369 tons emitted in 2006, the City achieved a 29.44% decrease in emissions by 2019.

This is a positive outcome, yet the discussion needs to consider two external variables, which undoubtedly impacted total emissions – building square footage and recent winter temperatures. The following discussion addresses these variables against the backdrop of the City's reduced emissions.

As Table 8 indicates, through expansions, additions and replacements, total building area increased by 10,986 sq. ft. from 2010 to 2019. With the exception of the HERC buildings and old police station, City facilities converted to natural gas for heating purposes over the last decade. As natural gas produces 30% less CO2 than heating oil, more substantial CO2e reductions are assumed for 2019, yet the Clear Path calculators don't show this. In fact, stationary fuel emissions increased in 2019, which is likely due to the increased square footage heating requirement. Apparently, the increase in City building area after 2010 diminished potential GHG emission reductions. Some facilities use a combination of natural gas and heating oil in their operations (albeit, the amount of heating oil is significantly less than natural gas). Even so, stationary fuel emissions could be brought closer to 2010 levels if all City facilities stopped using heating oil.

The other variable that may belie stationary fuel GHG reductions is that in this time period, average annual temperatures increased. Obviously, the fewer freezing days in the year, the less heat is required to warm a building. Therefore, warmer temperatures may partially explain some of the GHG reductions in relation to increased building area for stationary fuel use. The CAP report the City produced in 2020 contains information which may help illustrate the interplay among these variables. Even though results from this inventory do not accurately represent fluctuating emission factors for electricity over this time period the stationary fuel emission quantities were based on the amount of energy consumed and are, therefore, useful in displaying trends. Chart 5 displays this relationship by overlaying CO2e output over changes in facility square footage and annual average temperatures.

Chart 5 and Table 8 indicate temperature increases roughly coincide with facility expansion while emissions remain relatively stable throughout this intersection. Therefore, temperature increases over this time period may play a large role in emission reductions. If this is the case, natural gas conversion during the period of facility expansion did help to keep emissions stable, but cannot entirely account for positive gains in reducing stationary fuel GHG emissions.

Table 8 *Temperature fluctuations and City square footage increases from 2006 to 2019*

Year	Avg Annual Temperature	Sq Footage	Facility Added
2006	36.58	150,948	New Library
2007	37.08	150,948	No Additions
2008	37.00	150,948	No Additions
2009	37.25	150,948	No Additions
2010	37.35	150,948	No Additions
2011	37.25	153,738	City Hall Remodel
2012	37.00	153,738	No Additions
2013	37.47	154,890	WKFL Restroom; Bartlett Restroom
2014	44.05	154,890	No Additions
2015	43.42	175,444	Skyline Fire Station; Harbormaster Office; Public Works Equipment Shed; Ramp 5 Restroom
2016	43.48	175,524	Mariner Park Camp Fee Building
2017	42.75	178,204	Fire Station Pole Shed; 4 Conexes
2018	42.55	179,296	No Additions
2019	34.58	179,296	No Additions

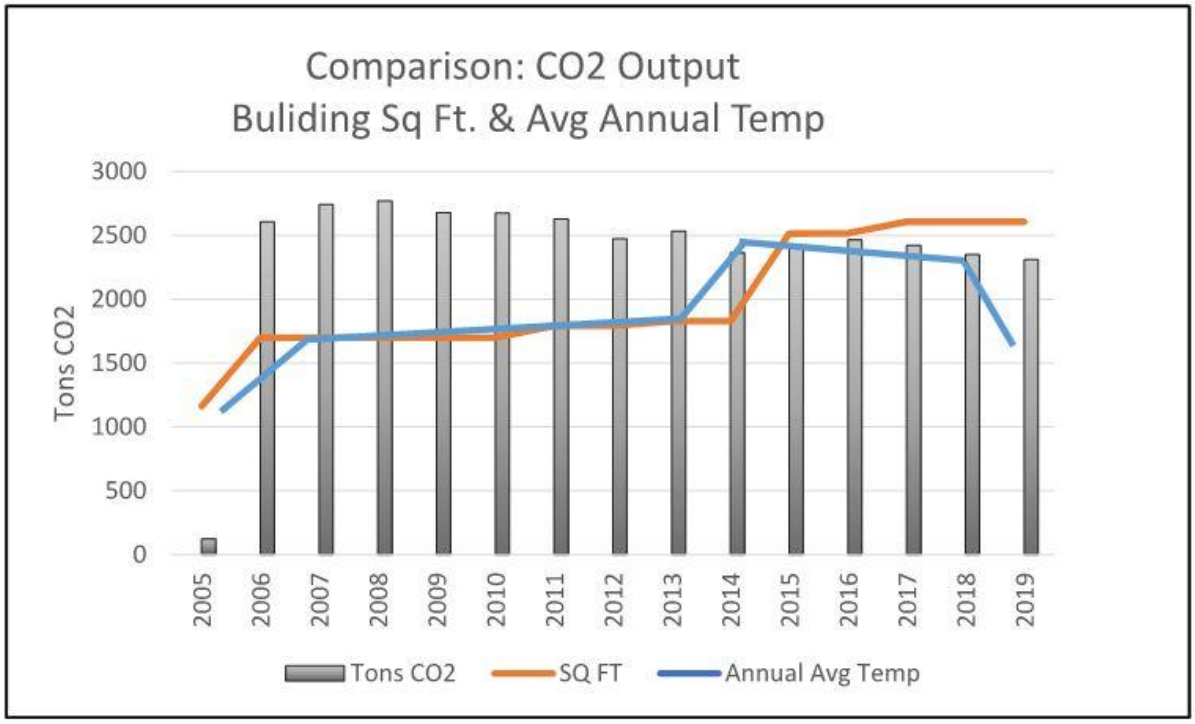


Chart 5 *Temperature, sq. footage and CO2e output comparison from 2005 to 2019*

Less equivocal are the positive results from electricity conservation measures. Even with greater electricity demands from increases in building area, every inventory experienced a reduction in emission output. Lighting conversions in City facilities have been effective in reducing electricity related GHG emissions; however, these reductions require another consideration – specifically that HEA provided a less GHG intensive energy source in 2019 than CEA did in 2010. For example, Table 8 shows that a comparison of MMBTU and CO2e outputs for electricity consumption reveals that Port & Harbor actually used more electricity in 2019 than in 2010, yet the CO2e for 2019 was less than 2010. Revisiting emission factors for electricity bolster this result, as the 2010 emission factor of 1190 lbs. CO2/MWh, is considerably larger than the 2019 factor of 876 lbs. CO2/MWh.

Table 9 *MMBtu comparison by City sector*

Inventory Record	**2010** (MMBtu)	**2019** (MMBtu)	Inventory Record	**2010** CO2e	**2019** CO2e
Port & Harbor	8,015.91	8,699.84	Port & Harbor	1,268.91	1,014.69
Buildings and Facilities	3,717.37	2,337.35	Buildings and Facilities	588.46	272.61
Airport	942.25	484.51	Airport	149.16	56.51
Water Teatment	2,487.01	2,290.83	Water Teatment	393.69	267.19
Waste Water Treatment	4,117.75	4,195.13	Waste Water Treatme	651.84	489.29
Lights and Signals	542.12	427.68	Lights and Signals	85.82	49.88
	19,822.43	18,435.34		3,137.87	2,100.28

Regardless of the disparity in emission factors, the electricity MMBtu in Table 9 illustrate that, with the exception of Port and Harbor, proactive measures taken by the City helped reduce energy consumption across the remaining electricity-dependent inventories.

The City failed to make any gains in the vehicle fleet category. Of the four Clear Path categories, this was the only one where total emissions increased. A contributing factor is that the City – particularly Parks personnel - operate many older vehicles. In fact, some vehicles were in use before the CAP was initiated. Considering that the standard for vehicle replacement at the time of the first CAP report was approximately 10 years of use or 65,000 miles, these older vehicles have exceeded their useful life in terms of GHG emissions potential. Another issue is the lack of consistent record keeping for vehicle mileage and equipment meters. More accurate (and potentially more positive results) may be achieved with concise and up-to-date vehicle reports.

From a societal perspective, results illustrate that the often overlooked category of buildings and facilities is a greater emitter of GHG than the more attention-grabbing vehicle category. Therefore its is important to note that as humans we always focus on vehicle emissions as the problem to reduce, while at the city level it is the buildings we need to focus more attention on.

Another shortcoming of this inventory is the dearth of data regarding City solid waste disposal and the associated methane emissions. The Deerstone Consulting CAP Implementation Report of 2009 accounted for that activity, but at some point since then solid waste disposal tracking ceased. ICLEI provides emission calculators to quantify methane produced from waste disposed in landfills. Adding this activity as an emission category will make future inventories more comprehensive.

Recommendations

Public Engagement

Moving forward, the City must reengage the community about climate change mitigation and the status of the City's CAP. Outreach and messaging could be conducted via several formats to solicit maximum participation. For instance, the venues can include open meetings, city web pages devoted to the topic, in-person workshops, interactive media, etc. Unfortunately, due to pandemic restrictions, some of these options may not be available. CAP history and report results will drive discussion in these meetings, and should generate meaningful input about community concerns, hopes, and motivations regarding climate change and its potential impacts to Homer. Ideally, by showcasing the City's successful climate mitigation efforts, enough support for climate action will be generated to carry on with future energy use improvements. Potentially, if enough momentum is gained, these efforts may extend beyond the local Government sphere and into the greater community.

Partnerships and collaborations with local climate change motivated entities should be pursued. An active exchange of information and ideas between stakeholders with various expertise on this issue will produce synergetic relationships with positive outcomes for climate action advancement. Some of these groups should include the Kenai Peninsula Resilience Commission, the Kachemak Bay National Estuarine Research Reserve, and the University of Alaska. Collaboration with these groups may prove invaluable to develop and implement community and region wide climate mitigation strategies.

Energy Use

Any energy related recommendations are contingent on the level of support from the community and City Council for advancing an updated climate action agenda. As energy saving technology, and alternative energy systems continue to advance, there may be opportunities beyond the City's current CAP implementation achievements for reducing energy consumption. The following recommendations reiterate many found in the Deerstone Consulting report of 2010, yet may be more viable today. They include:

- Reexamine unaccomplished recommendations in the Deerstone Consulting Implementation report for alternative energy production
    - Wind/Solar/Hydro energy production
- Investigate whether or not additional facility energy savings are feasible by conducting up-to-date energy audits
- Eliminate remaining heating oil use in City facilities
- Make improvements to vehicle fleet and operations
    - Hybrid/Electric vehicle introduction
    - Reduce vehicle Idling
    - Reduce unnecessary travel

Inventory & Reporting

It is recommended that inventories be maintained for all energy consuming and GHG producing City sectors to ensure that the compilation of energy data always be up to date and viable regardless of the motivation or disinclination to act on data information at any given time. Maintaining these records isn't over-burdensome to the City, as data gathering relationships with energy providers are well established and only one city staff member is required to organize the data on a monthly basis. That being said, there is room for improvement with inventory maintenance and reporting. It is also recommended that this report be supplemented with a cost analysis associated with reduced energy consumption between baseline year 2010 and comparison year 2019.

The following recommendations will help the City better understand its level of energy consumption and associated costs in terms of climate change exacerbation and monetary expense:

- Maintain annual membership with ICLEI
- Continue to use ICLEI protocol for organizing and calculating energy use
- Improve vehicle fleet inventory
    - Maintain more detailed records for vehicle age, mileage/hours, maintenance history
- Develop inventory for disposal of landfill waste
- Produce basic inventory reports on an annual basis for year to year comparison
    - Reports should include summaries of energy consumption, GHG, and energy outputs and energy costs
    - In addition to City sector totals, reporting should account for all facilities individually for detailed evaluation

Attachment A

4th Quarter LOB Taxable Sales
Presented March 8, 2021

	2016	2017	2018	2019	2020	% Δ 2020 - 2019
ADMINISTRATIVE, WASTE MAN	224,073	164,649	155,250	166,876	152,225	-9%
AGRICULTURE, FORESTRY, FI	22,190	49,869	37,022	44,149	41,097	-7%
ARTS AND ENTERTAINMENT	268,703	328,352	277,357	303,677	145,134	-52%
CONSTRUCTION CONTRACTING	406,932	372,787	386,079	364,590	487,741	34%
EDUCATIONAL SERVICES	73,547	66,973	78,859	90,528	58,566	-35%
FINANCE AND INSURANCE	16,324	30,128	27,189	26,563	25,265	-5%
GUIDING LAND	500	5,898	-	-	477	100%
GUIDING WATER	78,346	117,984	134,694	120,809	193,829	60%
HEALTH CARE AND SOCIAL AS	63,034	54,418	50,658	38,063	16,437	-57%
HOTEL/MOTEL/BED & BREAKFA	1,712,384	1,641,953	1,455,582	1,734,109	1,710,573	-1%
INFORMATION	1,043,506	985,693	1,008,965	992,162	710,741	-28%
MANAGEMENT OF COMPANIES	-	-	-	-	-	0%
MANUFACTURING	326,180	318,410	339,803	406,462	428,970	6%
MINING/QUARRYING	-	-	150	19,981	21,611	8%
PROFESSIONAL, SCIENTIFIC	647,970	700,387	680,434	635,037	763,313	20%
PUBLIC ADMINISTRATION	1,188,557	999,094	1,143,132	1,022,188	874,562	-14%
REMEDIATION SERVICES	-	-	-	-	-	0%
RENTAL COMMERCIAL PROPERT	59,815	61,466	64,428	60,191	71,944	20%
RENTAL NON-RESIDENTAL PRO	171,965	146,382	148,707	126,417	96,490	-24%
RENTAL OF SELF-STORAGE &	385,338	284,593	276,934	294,635	322,683	10%
RENTAL PERSONAL PROPERTY	147,841	150,791	157,676	174,262	192,495	10%
RENTAL RESIDENTAL PROPERT	1,052,578	1,140,120	1,089,752	1,116,156	1,140,114	2%
RESTAURANT/BAR	3,149,958	3,337,515	3,482,700	3,501,273	2,851,904	-19%
RETAIL TRADE	14,894,226	15,948,127	17,314,037	18,463,774	20,013,292	8%
SERVICES	1,708,265	2,078,565	2,071,964	2,001,089	2,059,134	3%
TELECOMMUNICATIONS	430,659	440,014	534,464	334,477	462,880	38%
TELECOMMUNICATIONS-CABLE	130	2,771	519	429	1,932	350%
TIMBERING	-	-	500	-	-	0%
TRANSPORTATION AND WAREHO	144,554	178,728	168,374	165,792	252,295	52%
UTILITIES	1,993,120	2,156,588	2,045,862	2,028,860	2,365,856	17%
WHOLESALE TRADE	404,805	421,454	355,568	223,920	208,920	-7%
TOTAL	**30,615,500**	**32,183,709**	**33,486,659**	**34,456,469**	**35,670,480**	**4%**
Applied Sales Tax 4.85%	**1,484,852**	**1,560,910**	**1,624,103**	**1,671,139**	**1,730,018**	**58,880**

Attachment B
Quarterly LOB Taxable Sales
Presented March 8, 2021

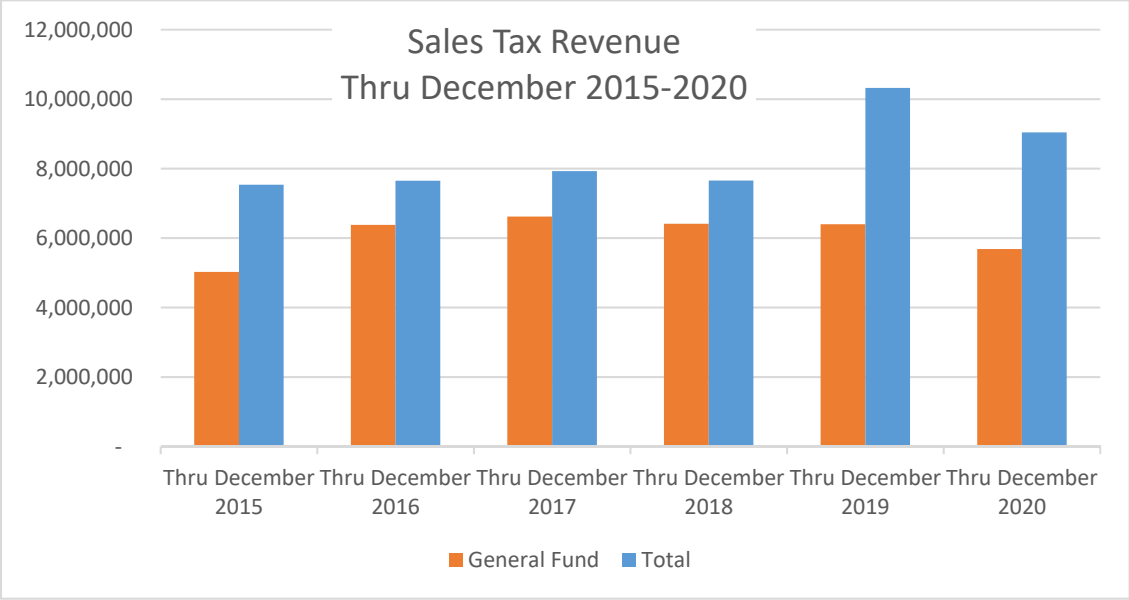
	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
ADMINISTRATIVE, WASTE MAN	214,519	307,936	401,661	224,073	207,412	305,688	336,793	164,649	155,528	203,986	204,971	155,250	136,996	211,749	202,322	166,876	126,571	115,955	162,542	152,225
AGRICULTURE, FORESTRY, FI	4,143	110,003	144,270	22,190	14,600	144,996	205,859	49,869	33,710	203,853	234,217	37,022	640,248	160,020	202,286	44,149	18,712	111,415	187,204	41,097
ARTS AND ENTERTAINMENT	253,949	417,206	677,310	268,703	249,016	472,227	674,135	328,352	249,287	501,469	737,507	277,357	253,475	548,940	731,228	303,677	216,312	165,688	477,017	145,134
CONSTRUCTION CONTRACTING	372,572	477,737	486,586	406,932	484,978	438,379	381,548	372,787	315,934	409,170	385,926	386,079	333,640	373,100	336,222	364,590	367,431	392,005	397,914	487,741
EDUCATIONAL SERVICES	66,901	50,233	47,609	73,547	71,272	52,994	53,633	66,973	61,687	54,866	55,190	78,859	58,316	56,928	75,184	90,528	72,931	42,283	44,879	58,566
FINANCE AND INSURANCE	15,710	17,884	16,893	16,324	19,204	23,980	28,566	30,128	27,385	25,820	25,924	27,189	28,275	36,654	29,481	26,563	26,553	19,785	40,410	25,265
GUIDING LAND	41	65,599	132,975	500	-	94,324	169,829	5,898	-	105,778	228,047	-	-	125,677	258,602	-	-	42,822	79,186	477
GUIDING WATER	104,823	2,687,936	6,225,895	78,346	36,497	2,697,548	6,158,152	117,984	79,447	2,869,368	6,061,804	134,694	187,753	2,985,820	5,988,975	120,809	110,697	1,359,274	4,822,074	193,829
HEALTH CARE AND SOCIAL AS	45,037	76,757	131,576	63,034	77,243	126,554	134,541	54,418	80,890	95,062	80,786	50,658	78,958	62,473	45,090	38,063	21,795	15,422	28,941	16,437
HOTEL/MOTEL/BED & BREAKFA	1,789,574	4,657,728	7,026,750	1,712,384	1,532,096	4,558,923	7,153,924	1,641,953	1,490,223	4,422,516	7,518,922	1,455,582	1,543,084	4,629,194	8,375,973	1,734,109	1,279,481	2,828,851	6,389,397	1,710,573
INFORMATION	1,127,408	1,115,491	1,108,504	1,043,506	1,020,993	1,084,186	1,093,603	985,693	972,981	1,061,677	1,031,736	1,008,965	984,852	978,052	1,037,924	992,162	983,669	883,165	935,171	710,741
MANAGEMENT OF COMPANIES	-	-	-	-	-	-	-	-	-	-	-	-	-	126,214	311,026	-	-	10,508	-	-
MANUFACTURING	237,863	470,938	581,747	326,180	225,385	503,806	633,841	318,410	249,843	530,866	641,802	339,803	281,903	756,819	715,234	406,462	344,961	505,214	687,424	428,970
MINING/QUARRYING	-	-	-	-	500	-	-	-	-	-	150	150	150	1,150	10,926	19,981	3,220	14,961	26,838	21,611
PROFESSIONAL, SCIENTIFIC	654,874	773,463	732,636	647,970	698,422	708,767	771,398	700,387	691,012	756,620	770,672	680,434	648,929	785,571	761,163	635,037	702,504	767,048	823,623	763,313
PUBLIC ADMINISTRATION	644,546	954,300	2,150,884	1,188,557	1,100,933	1,309,629	2,560,676	999,094	816,016	1,427,693	2,458,720	1,143,132	829,928	1,432,737	2,845,900	1,022,188	971,581	1,368,423	3,105,875	874,562
REMEDIATION SERVICES	32,704	-	-	-	32,666	-	-	-	38,717	-	-	-	33,767	-	-	-	-	-	-	-
RENTAL COMMERCIAL PROPERT	42,061	59,602	63,881	59,815	58,558	96,775	101,707	61,466	69,250	85,800	130,158	64,428	196,565	99,765	95,207	60,191	58,935	80,696	81,163	71,944
RENTAL NON-RESIDENTAL PRO	128,148	170,232	256,561	171,965	128,347	180,793	246,013	146,382	144,070	187,303	238,829	148,707	138,064	184,240	234,955	126,417	92,816	90,896	129,139	96,490
RENTAL OF SELF-STORAGE &	249,716	296,770	643,544	385,338	201,259	248,428	561,005	284,593	232,561	265,933	528,323	276,934	217,415	272,863	537,757	294,635	231,287	271,739	570,643	322,683
RENTAL PERSONAL PROPERTY	132,816	166,630	229,364	147,841	138,081	197,202	242,233	150,791	148,701	210,142	259,883	157,676	141,046	221,419	229,691	174,262	165,835	194,678	216,695	192,495
RENTAL RESIDENTAL PROPERT	1,020,110	1,510,996	1,799,042	1,052,578	1,035,396	1,512,623	1,835,339	1,140,120	1,146,434	1,638,398	1,880,675	1,089,752	1,077,295	1,632,238	1,834,018	1,116,156	1,101,887	1,402,570	1,708,348	1,140,114
RESTAURANT/BAR	3,145,686	6,149,338	8,195,446	3,149,958	2,787,404	6,211,565	8,780,547	3,337,515	3,101,373	6,773,895	9,542,688	3,482,700	3,179,549	6,848,886	9,553,633	3,501,273	2,514,895	3,762,292	6,529,920	2,851,904
RETAIL TRADE	12,275,910	24,767,175	29,665,962	14,894,226	12,505,192	24,992,523	30,421,714	15,948,127	12,769,708	27,043,054	34,053,544	17,314,037	14,151,272	29,033,873	34,490,183	18,463,774	15,612,943	27,598,497	34,754,701	20,013,292
SERVICES	1,675,348	2,384,956	2,202,016	1,708,265	1,799,351	2,703,585	2,645,475	2,078,565	1,894,742	2,768,109	2,305,938	2,071,964	1,749,725	2,701,456	2,586,137	2,001,089	1,608,833	2,196,866	2,465,235	2,059,134
TELECOMMUNICATIONS	387,800	396,570	419,879	430,659	408,560	430,719	428,326	440,014	449,669	469,468	511,781	534,464	401,118	337,618	332,138	334,477	335,461	440,569	468,600	462,880
TELECOMMUNICATIONS-CABLE	75	653	235	130	627	642	1,811	2,771	574	1,202	1,305	519	495	6,282	691	429	861	516	809	1,932
TIMBERING	487	-	-	-	500	-	430	-	-	-	-	500	505	-	-	-	-	-	-	-
TRANSPORTATION AND WAREHO	141,573	664,934	1,110,780	144,554	190,285	780,040	1,569,692	178,728	177,563	853,236	1,545,966	168,374	196,800	925,578	1,410,586	165,792	195,409	347,778	1,072,654	252,295
UTILITIES	2,070,114	1,772,903	1,602,262	1,993,120	2,322,217	1,992,650	1,795,759	2,156,588	2,445,497	2,058,123	1,757,390	2,045,862	2,503,521	2,114,934	1,727,760	2,028,860	2,710,459	2,197,539	1,812,700	2,365,856
WHOLESALE TRADE	231,382	340,526	193,516	404,805	262,379	317,823	214,032	421,454	325,567	355,069	298,755	355,568	296,494	398,831	280,016	223,920	273,328	338,319	291,360	208,920
TOTAL	**27,065,890**	**50,864,496**	**66,247,784**	**30,615,500**	**27,609,373**	**52,187,369**	**69,200,581**	**32,183,709**	**28,168,369**	**55,378,476**	**73,491,609**	**33,486,659**	**30,290,138**	**58,049,081**	**75,240,308**	**34,456,469**	**30,149,367**	**47,565,777**	**68,310,460**	**35,670,480**

Attachment C

Thru December Sales Tax Revenue

Presented March 8, 2021

	Thru December 2015	Thru December 2016	Thru December 2017	Thru December 2018	Thru December 2019	Thru December 2020
General Fund	5,022,763	6,376,187	6,617,305	6,408,983	6,394,988	5,685,187
HAWSP	1,255,613	1,275,554	1,307,539	1,244,495	1,583,087	1,397,997
HART-Roads	1,130,052	-	-	-	1,503,204	1,258,197
HART-Trails	125,252	-	-	-	173,803	139,800
Police Station	-	-	-	-	664,701	559,199
Total	**7,533,680**	**7,651,741**	**7,924,845**	**7,653,478**	**10,319,783**	**9,040,379**



Between 2018 and 2019, taxable sales increased by $9.67 million. This equates to roughly $470,000 in additional sales tax revenue received in 2019.

KACHEMAK HERITAGE
LAND TRUST

ACCREDITED
LAND TRUST
ACCREDITATION COMMISSION

February 23, 2021

Mayor Ken Castner
Homer City Council
491 E. Pioneer Ave
Homer, AK 99603

Dear Homer City Council,

Kachemak Heritage Land Trust would like to thank the City of Homer for the grant support we received in 2020 as administered through the Homer Foundation. The matched funds were spent on the community effort to complete Phase II of the universally accessible Poopdeck Trail. KHLT teamed up with the City of Homer and Homer Independent Living Center to build an Americans with Disabilities Act (ADA) accessible trail on KHLT's in-town Poopdeck property, and, with permission, on the adjacent land owned by the City of Homer. We want to thank the City for this important funding opportunity that supports our local non-profits.

We look forward to the coming year and the opportunities that await us to further collaborate with other local businesses, organizations, and community members that help make the City of Homer such a special place. Thank you again for supporting Kachemak Heritage Land Trust's mission – conserving the natural heritage of the Kenai Peninsula for future generations.

Sincerely,

Marie McCarty

Marie McCarty

Executive Director

Thank you so much for being a wonderful partner!

P.O. Box 2703, Homer, Alaska 99603 - (907) 235-2647
www.kevinbellarena.org

February 22, 2021

Homer City Council
491 E. Pioneer Avenue
Homer, Alaska 99603

Dear Members of the City Council,

I would like to thank the Homer City Council on behalf of the Homer Hockey Association for providing funding to the City of Homer Grants Program administered by the Homer Foundation.

The Kevin Bell Arena provides recreational opportunities from September to April. These activities provide an opportunity for those in our community, who represent a diverse population, to interact with acceptance and respect for each other's differences while sharing a common interest.

Some of the programs offered include USA hockey, high school hockey, men's and women's adult hockey, figure skating, broomball, curling, Learn to Skate programs, and recreational programs.

In addition to the varied recreational opportunities listed above, the KBA has brought thousands to our community since opening in 2005. We again want to thank the Homer City Council for their continued support of the Homer Hockey Association and the Kevin Bell Arena.

Sincerely,

John Mink
HHA President

Center for Alaskan Coastal Studies
Celebrating Over 35 Years of Outdoor Education

708 Smokey Bay Way, Homer, Alaska 99603 • www.akcoastalstudies.org • Ph. 907-235-6667 • Email: info@akcoastalstudies.org

February 8, 2021

Homer City Council
491 East Pioneer
Homer, AK 99603

Dear Council Members,

The Center for Alaskan Coastal Studies (CACS) would like to thank the City of Homer for continuing to support local nonprofits in the community through the City of Homer Grants Program administered through the Homer Foundation. We are especially thankful for the $1,000 in operational support we received in 2020 through this program.

Operational funds are very difficult to raise, yet so vital to the functions and sustainability of an organization. In 2020, the COVID pandemic presented extreme challenges to CACS as well as other local non-profits. We saw an 80% loss in earned revenue as well as a 60% loss in fundraising event income, which largely supports our operational needs. We thought outside the box, engaged in collaborations with other non-profits, such as the Pier One Theatre, and were able to run programs and host a few small virtual events. The generosity of the community and local businesses helped us recover some of these important unrestricted funds.

City of Homer grant funds are used primarily so support free and reduced price afterschool and community programs and our CoastWalk program. CoastWalk is conducted every fall and, even during the pandemic, we were able to clean 28 miles of beach, involve 169 volunteers and collect 860 lbs of marine debris. This program, started in 1984, is an important stewardship activity for the Homer community. In partnership with the City we were able to set up 4 recycling stations at key public venues (Karen Hornaday Park, Bishop's Beach, Mariner Park and the Water Trail Pavilion by the Nick Dudiak Fishing Hole). City of Homer grant funds were leveraged to help us get funding to support a summer high school intern who helped to install and monitor these recycling stations.

Thanks for your continuing support and the support of other non-profits in Homer, all contributing to the important work being done to promote a healthy ecosystem, and an engaged and connected community.

Sincerely,

Elizabeth Trowbridge

Executive Director

City of Homer
www.cityofhomer-ak.gov

Public Works
3575 Heath Street
Homer, AK 99603
publicworks@cityofhomer-ak.gov
(p) 907- 235-3170
(f) 907-235-3145

Memorandum

TO: City Council

Through: Robert Dumouchel, City Manager

FROM: Janette Keiser, PE, Director of Public Works

DATE: February 23, 2021

SUBJECT: Update to Skyline Water Tank Aeration Project

Issue: The City issued a Task Order to DOWL engineers to design an aeration system for the Skyline Water Storage Tank, to improve water quality. The purpose of this memorandum is to provide an update on the investigation.

Background: The City disinfects its water supply with chlorine. Chlorine reacts with the tiny organic compounds our existing treatment system cannot remove from our source water to create byproducts, called Disinfection By-Products ("DBP"). One traditional way to reduce the DBP is to aerate the water. The City commissioned DOWL to design an aeration system that could be installed in the Skyline Water Storage Tank.

In the course of their investigation, DOWL engineers studied our water chemistry, conducted laboratory tests and analyzed our water distribution system parameters. Then, they applied their knowledge of DBP reduction chemistry to our conditions and made recommendations. Much to our surprise, they did not recommend aeration; instead, they recommended a different solution. Their recommended solution involves treating the water supply BEFORE it goes into the tank to reduce the organic compounds, thereby reducing the "food supply" that triggers the development of DBPs in the tank. This would not only reduce DBPs, but would facilitate other water quality improvements.

Reducing the organic compounds in the source water can be done by introducing a chemical into the water that would cause the tiny particles of organics to coagulate into particles that could be trapped by our filter membranes. This requires a precise application of precisely the right kinds of chemicals. To determine what kind of chemicals should be used, and at what rates, DOWL will be conducting laboratory tests, called "Jar Tests" at the Homer Water Treatment Plant.

We will be shifting funds that would have gone to complete the design of the aeration system to the completion of the Jar Testing. We are not seeking additional funding for this project at this time. We hope we can complete the studies and the adjustment to our water treatment processes, with the money that was already appropriated for the Water Tank Aeration Project.

Parks Art Recreation & Culture Advisory Commission
2021 Calendar

	MEETING	AGENDA DEADLINE	CITY COUNCIL MEETING FOR REPORT*	ANNUAL TOPICS/EVENTS
JANUARY	No Regular Meeting			
FEBRUARY	Thursday 2/18 5:30 p.m.	Wednesday 2/10 5:00 p.m.	Monday 2/22 6:00 p.m.	• Beach Policy Review • Letter to the Editor Subject & Draft Approval
MARCH	Thursday 3/18 5:30 p.m.	Wednesday 3/10 5:00 p.m.	Monday 3/22 6:00 p.m.	• Strategic Plan Review & Amendments • Beach Policy Review
APRIL	Thursday 4/15 5:30 p.m.	Wednesday 4/7 5:00 p.m.	Monday 4/26 6:00 p.m.	• Budget & Financial Goals Review • Beach Policy Public Hearing • Beach Park Walk Through
MAY	Thursday 5/20 6:00 p.m.	Wednesday 5/12 5:00 p.m.	Monday 5/24 6:00 p.m.	• Diamond Creek Plan Review • Recreation & Parks Fee Schedule Review • Budget FY22/23
JUNE	Thursday 6/17 6:00 p.m.	Wednesday 6/9 5:00 p.m.	Monday 6/28 6:00 p.m.	• Capital Improvement Plan Review: Recommendations for Any New Parks & Rec-Related Projects • Letter to the Editor Topics
JULY	No Regular Meeting			
AUGUST	Thursday 8/19 5:30 p.m.	Wednesday 8/11 5:00 p.m.	Monday 8/23 6:00 p.m.	• Letter to the Editor Draft Submitted for Review & Approval • Commission Fund Expenditure Review • Art Policy Review and Amendments
SEPTEMBER	Thursday 9/16 5:30 p.m.	Wednesday 9/18 5:00 p.m.	Monday 9/27 6:00 p.m.	• Fall Park/Beach Walk-Thru • Schedule Park Clean Up Day • Reappointment Notices & Applications
OCTOBER	Thursday 10/21 5:30 p.m.	Wednesday 10/13 5:00 p.m.	Monday 10/25 6:00 p.m.	• Terms Expire October 31st • Advisory Body Training Worksession • Beach Policy Review
NOVEMBER	Thursday 11/18 5:30 p.m.	Wednesday 11/10 5:00 p.m.	Monday 11/22 6:00 p.m.	• Approve 2022 Meeting Schedule • Election of Chair & Vice Chair
DECEMBER	No Regular Meeting			

*The Commission's opportunity to give their report to City Council is scheduled for the Council's regular meeting following the Commission's regular meeting, under Agenda Item 8 – Announcements/ Presentations/ Borough Report/Commission Reports. Reports are the Commission's opportunity to give Council a brief update on their work.

City of Homer

Road Assessment Report

Summer 2020

City of Homer Public Works Department
7-20-2020

Table of Contents

Tables

Figures

Appendices

Executive Summary

Data collection and record keeping are necessary for producing and maintaining organized and efficient work processes. A data-driven and systematic process for identifying road deficiencies will help the City of Homer identify and achieve short and long term maintenance goals by generating evidenced-based action plans for prioritizing tasks and guiding budgeting decisions. Additionally, having quantifiable data regarding the City's infrastructure will help educate, demonstrate accountability to, and build credibility with the City's executive leadership, elected officials and the public.

This Report describes the road assessment process developed by the City of Homer Public Works Department in the summer of 2020. The process included the following steps:

a. Researching best practices related to road assessment models;
b. Adapting a selected model to Homer conditions;
c. Conducting a field review of actual road conditions;
d. Compiling the data into an assessment report, complete with findings and ratings of Homer's road conditions;
e. Integrating the ratings into the City's existing GIS maps;
f. Preparing this Road Assessment Study; and
g. Using the Study to program road maintenance tasks.

A result of the process is a system of methods and standards, which can be used to regularly assess road conditions. This system can be used as a tool to plan and explain road maintenance work.

.

Introduction

The City of Homer's crew of heavy equipment operators maintain fifty miles of roads within the City of Homer. Of that total, 29 miles are gravel roads and 21 miles are paved roads. Regular road maintenance duties include (a) snow removal and sanding in the winter; and (b) ditch clearing, corridor brushing, crack sealing, patching, grading and dust control in the summer and shoulder seasons. Maintenance procedures and requirements differ, depending on road type – gravel or paved. For example, crack sealing is a paved road repair, while grading is a routine maintenance duty for the City's gravel roads.

As winter road maintenance is devoted to snow removal and sanding, maintenance that directly affects road structural conditions occurs in the summer and shoulder seasons. For example, grading and dust control of gravel roads takes place in early summer, just after the ground has thawed. Crack sealing of paved roads takes place in mid-summer, when it's dry. Brush cutting and ditch cleaning of all roads takes place in late summer, because these activities are less weather dependent. The record of what maintenance activities are conducted on what roads is largely anecdotal, rather than documented.

An annual or biannual road condition inventory, based on a systematic road assessment strategy, with detailed spatial information will provide a documented record of deficiencies, repairs, and progress. This will enable road maintenance activities to be budgeted for and planned with greater efficiency. It will also allow crews to conduct training and preparedness activities more mindfully in the event of employee turnover.

The road condition assessment data was largely collected by and integrated with the City's web-based, GPS-enabled Geographic Information System (GIS) by the City's GIS Technician, Aaron Yeaton. In the future, updates to the road condition assessment survey will be made by the road maintenance crews utilizing the same system. This will allow for mobile and spatially accurate data gathering that can be updated with real time immediacy. When needed, this information could be disseminated in maps and tables to other Public Works and City of Homer employees. Having evidenced- based information in this format will also allow the City to engage in more proactive public outreach – to educate the community about road maintenance activities.

Methodology

Two methods were used in the assessment process. Method 1 utilized GPS and a Geographic Information System (GIS) to thoroughly map road deficiencies, to documented observations about road conditions while walking along the roads. This data was later analyzed to evaluate and rate overall road condition. Initially, the goal was to walk all fifty miles of Homer's roads throughout the summer for a close, highly detailed evaluation of the City's roads. While this method did create detailed data, it was time-consuming. Further, the data indicated that many of Homer's roads had similar problems, so the high level of detail was not the most efficient use of time. To expedite the process, Method 2, where the roads were evaluated from a vehicle, was used.

Method 2 involved a "pencil and clipboard" assessment while driving along the roads with a member of the City's road maintenance crew. It was accomplished much more quickly and with the added assistance of an experienced road maintenance expert, it generated a detailed and accurate summation of road conditions.

Both methods relied on the criteria set forth in the Pavement Surface Evaluation and Rating (PASER) model developed by the Transportation Information Center, University of Wisconsin – Madison.[1] There is a separate PASER manual for paved roads and for gravel roads. The PASER manuals guided the quantification of road conditions and provided important insights into the process of (a) conducting objective road assessment data and (b) documenting ratings of road conditions.

The PASER model doesn't specifically address brush and tree obstructions, which are important issues in the City of Homer. The criteria in the PASER model were augmented to include vegetation as an element of road corridor conditions. Yet, to maintain fidelity with PASER's quantification methods, which mostly focuses on road surface conditions, the assessment of vegetation and corridor conditions did not overly impact the final road condition ratings.

Method 1

Gravel roads were first assessed. This choice was made so that springtime breakup conditions endemic to many of Homer's gravel roads, could be evaluated prior to grader maintenance. Ninety-six roads totaling 21 miles were inventoried using a web-interfaced Trimble R2 GPS device and associated base station. With 3-inch accuracy, affording detailed assessment and mapping of road deficiencies, two-thirds of the gravel roads were walked and inventoried in GIS – Method 1. The remaining third of the gravel roads was mapped using GPS and GIS but while driving – Method 2. Time was of the essence because of the need to record gravel road conditions ahead of advancing grader maintenance. This quicker assessment undoubtedly left out some deficiency details, particularly regarding culverts, but the overall condition of roads was nevertheless mapped adequately.

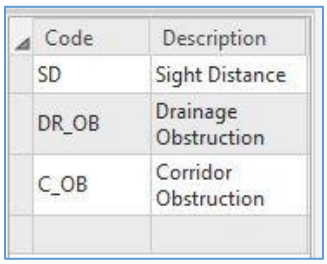
Generally, gravel road conditions can change rapidly due to environmental factors and recent maintenance activities. Because of this, the PASER model recommends that gravel road assessment be based on major factors rather than detailed surface conditions. The five main surface conditions and defects for gravel roads are:

1. crown condition,
2. drainage,
3. gravel layer,
4. surface deformation, and
5. surface defects.

[1] The City of Soldotna uses the PACER Model for its Road Maintenance Plan.

These categories provide the basis for quantifying overall road condition. Spring breakup conditions, as a seasonal inevitability, were included in the "surface deformation" category. According to the PASER model, "surface deformations" are limited to washboarding, potholes and ruts, but not the kind of seasonal frost-heaving some Alaskan roads experience. This is probably because the original Pacer criteria were developed in Wisconsin where it is unlikely the ground shifts as dynamically as it does in Alaska.

Prior to field work, a series of GIS feature classes applicable to PASER's road deficiency categories were created in a Geodatabase to be used for mapping road conditions. For example, polygon features were made to represent breakup conditions, polyline features to represent sub-standard ditches, and point features to represent vegetation obstructions. These features were given added specificity by applying "domains", or coded descriptions, within their attribute tables. For example, for vegetation obstructions, a domain was created to describe the nature of the obstruction in the form of a drop down menu, as shown in the figure below.



Code	Description
SD	Sight Distance
DR_OB	Drainage Obstruction
C_OB	Corridor Obstruction

Figure 1: Domains assigned to vegetation obstruction feature

Having such fields in the Attribute Tables facilitated data gathering in the field. A "Notes" field was also added to the Attribute Table to further augment basic attribute information. For instance, a "features condition" could be rated with considerable detail by added notes such as severe, moderate, etc. This gave us the opportunity to add historic notes about a particular road – for example, whether it was built to City standards or not.

When taking measurements, the GPS device interfaces with the GIS "Collector" App, which is a cloud-based platform that hosts editable maps used for taking field measurements. The Collector App records location, counts, lengths, areas, dates, as well as any notes and posts them to the City's GIS organizational account in real time. Once features are collected the maps were uploaded locally onto a desktop to ArcGIS Pro for further analysis and editing of symbology.

Figure 2: Gravel rood deficiencies mapped in a GIS. Different symbology represent different deficiencies: i.e. breakup, potholes, and shallow ditches.

Analysis of mapped features in ArcGIS Pro allowed close evaluation of the counts, lengths and areas of road deficiencies. This information was compared to individual road length, thereby providing close approximation of overall road condition for rating purposes. Each deficiency category (surface conditions, and defects listed by PASER) was then given an averaged value ranging from poor to excellent. The values were weighted based on comparisons of road condition segments. For example if a small length of a long road was experiencing severe breakup, but the remainder of the road was in fair condition, the overall value for surface deformation was ranked from "fair to moderate".

PASER ratings for gravel roads range from 1 – 5; with "1" being a road in failed condition, "5" being excellent. Ultimately, the ratings are prescriptive in nature; meaning each rating corresponds to the level of maintenance the road needs. If a rating of "5" is given, the road has been recently constructed and needs no maintenance, whereas a road with a rating of "1" requires complete reconstruction. To produce a final rating for a particular road, the scores in the individual deficiency categories were averaged to produce an overall rating. The final ratings were exported from ArcGIS attribute tables into Excel formats to produce finished tables.

Method 2

The City's paved roads were assessed using Method 2, the drive-along method. The roads were evaluated by directly applying the PASER model's paved roads criteria. Before the field survey began, the criteria were inserted into an Excel table. These categories involved assessment of the following conditions:

1. surface defects,
2. surface deformation,
3. cracks,
4. patches, and
5. potholes.

Since drainage isn't as crucial a factor to paved road surfaces as it is for gravel roads, the PASER model does not use it as a standalone category. To maintain as comprehensive a survey as possible, a drainage category was added to the PASER model. As with the gravel road assessments, we added a vegetation category, which, as with

the gravel road assessments, did not overly effect the final road rating so as to maintain the integrity of the PASER model's quantification methods.

Over the course of several days, the team, including the City's GIS Technician and an experienced road maintenance operator, drove along the City's paved roads to observe, evaluate and rate them. They routinely stopped to more closely examine defects and deformities. Adding the expertise of a seasoned road maintenance operator proved invaluable in making comprehensive assessments more quickly.

Because paved roads are not typically subject to the same type of rapid changes that gravel roads are, the ratings for paved roads tend to be more nuanced. Condition categories have more variables to consider. For example, the category of "surface deformation" includes rutting, distortion – rippling and shoving, settling, and frost heave. The condition of "cracking" includes there are longitudinal, transverse, slippage, reflection, block and alligator cracking. Final road conditions ranged from 1 to 10, with "1" meaning "failed" and "10" meaning "excellent". The ratings encompassed varying degrees of poor, fair, good and excellent. Like the gravel road assessments, final paved road ratings were based on averaging the values of the condition categories. And, as with the gravel road assessments, ratings are based on road maintenance needs.

Results

Gravel Roads

The majority of gravel roads fall into the "Fair" category (rating – 3), with the next numerous being "Good" (rating 4). A considerable number of roads fall into the "Poor" category (rating – 2). The "fair" and "poor" rated roads mostly comprise those of the annexation area. These roads were not constructed to City standards and inherently have structural issues and alignment problems. The "excellent" ratings are roads that have been constructed within the last year. A "failed" rating was applied to Crossman Ridge Road, due to severe breakup issues. The major deficiencies contributing to a less than good rating were poor gravel layer and breakup issues.

Table 1

	GRAVEL				
Rating	1	2	3	4	5
Descrp.	**Failed**	**Poor**	**Fair**	**Good**	**Excellent**
# Roads	1	35	60	50	3

RATINGS ARE RELATED TO NEEDED MAINTENANCE OR REPAIR

Rating 5 Newly constructed road. Excellent crown and drainage. No maintenance required.

Rating 4 Good crown and drainage. Routine maintenance.

Rating 3 Roadway shows traffic effects. Needs regrading, minor ditch maintenance, and spot gravel application.

Rating 2 Road needs additional aggregate layer, major drainage improvements.

Rating 1 Travel is difficult. Complete rebuilding required.

Table 2: PASER rating descriptions for gravel roads

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Figure 3: Severe Breakup area on Sprucewood Dr.

Figure 4: Extensive Breakup down the length of Eagle Pl.

As stated previously, local road condition issues, particularly breakup-related subsidence and boiling, are not reflected in PASER's rating criteria. Interpolation of PASER criteria were made to suit local conditions. Therefore springtime breakup was a major factor in evaluating gravel road surface deformities. Even though these inferences were made, the basic evaluation process outlined by PASER was valuable and applicable for rating Homer's gravel roads.

Paved Roads

Overall, Homer's paved roads are in better condition than the gravel roads. The majority of paved roads fell into the lower "Good" category (Rating 6), followed by the upper "Good" category (Rating 7) and then "Fair" (Ratings 4 & 5). Of the Hundred plus paved roads in the community, only 8 rated in the two "Poor" categories.

	PAVED									
Rating	1	2	3	4	5	6	7	8	9	10
Descrp.	Failed	Very Poor	Poor	Fair	Fair	Good	Good	Very Good	Excellent	Excellent
# Roads	0	4	4	3	7	44	33	9	1	4

Table 3

Surface rating	*Visible distress**	*General condition/ treatment measures*
10 Excellent	None.	New construction.
9 Excellent	None.	Recent overlay. Like new.
8 Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). All cracks sealed or tight (open less than ¼").	Recent sealcoat or new cold mix. Little or no maintenance required.
7 Good	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open ¼") due to reflection or paving joints. Transverse cracks (open ¼") spaced 10' or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6 Good	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open ¼"–½"), some spaced less than 10'. First sign of block cracking. Sight to moderate flushing or polishing. Occasional patching in good condition.	Shows signs of aging. Sound structural condition. Could extend life with sealcoat.
5 Fair	Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open ½") show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs sealcoat or thin non-structural overlay (less than 2")
4 Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50% of surface). Patching in fair condition. Slight rutting or distortions (½" deep or less).	Significant aging and first signs of need for strengthening. Would benefit from a structural overlay (2" or more).
3 Poor	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Severe block cracking. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes.	Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.
2 Very Poor	Alligator cracking (over 25% of surface). Severe distortions (over 2" deep) Extensive patching in poor condition. Potholes.	Severe deterioration. Needs reconstruction with extensive base repair. Pulverization of old pavement is effective.
1 Failed	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

Table 4: PASER rating description for paved roads

Figure 5: Extensive Alligator cracking and Rutting on Ohlsen Ln.

Figure 6: Longitudinal cracking at shoulder indicative of failing subgrade. Tulin Terrace

The vast majority of paved roads have minor to moderate longitudinal and lateral cracking that is maintainable with annual crack sealing. Most roads have minor surface defects, most notably ravelling, which is a condition where pavement material deteriorates exposing the aggregate. Among the roads meriting reconstruction are Ohlson Lane, Tulin Terrace Blvd. and Woodside Ave. These roads have extensive alligator cracking, rutting and potholes; deformities that indicate the road structure itself, not just the pavement surface, is failing. Many roads have minor rutting. Although the PASER model considers rutting to be a surface deformity caused by sub-surface settling, in the case of Homer, rutting is mostly due to studded tire use. Nevertheless, as rutting compromises sheeting of water from crown to shoulder, it was a contributing factor in road rating.

Vegetation

A significant aspect of this assesment outside the PASER criteria involved inventorying vegetation obstructions. As the road crew annually brushes out road corridors to an extent reasonable for proper maintenance, the areas of alder, perennial grasses, etc. within the corridor were generally disregarded during this assessment. Exceptions were made when these obstructions impeded sight distance or the establishment of drainage ditches. These situations often occur in cases where the road is not aligned with the right-of-way. In some cases, the road is so far off center, the edge of the road practically grazes the outer boundary of the right-of-way. In such cases, the road crew does its best to maintain a reasonably brush-free corridor to enable snow plowing, ditching and other essential maintenance activities. However, this is not always possible.

Corridor obstructions, such as large spruce, located inside the right-of-way were mapped in Method 1 or made note of in Method 2. These obstructions often impede operator maintenance during snow removal and ditching. Roads that have notable vegetation impediments are Easy Street, Mountain Park Street, and Race Road. Vegetation ratings are available in the master spreadsheets located in the Appendices. Landowner concern for the vegetation fronting their property, often makes problem tree removal a sensitive issue.

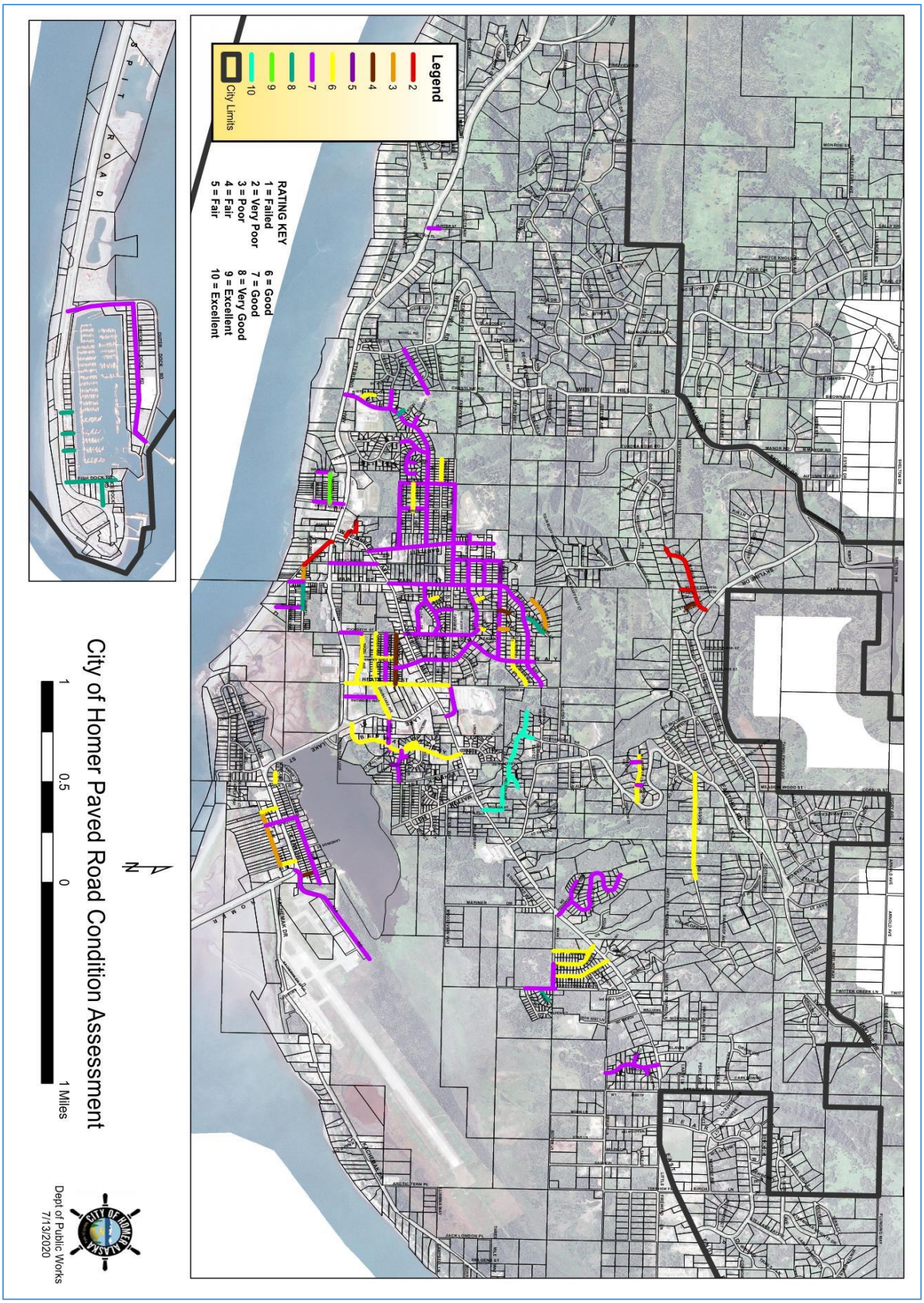
Figure 7: Tree, well inside right of way, scarred from grader during snow removal

Figure 8: Tree limbs within roadway

Figure 9: Alder, routinely hedged, yet impeding ditch establishment due to road misalignment

Figure 10: Spruce trees in corridor preventing proper ditch establishment

Appendix A - Maps


Legend
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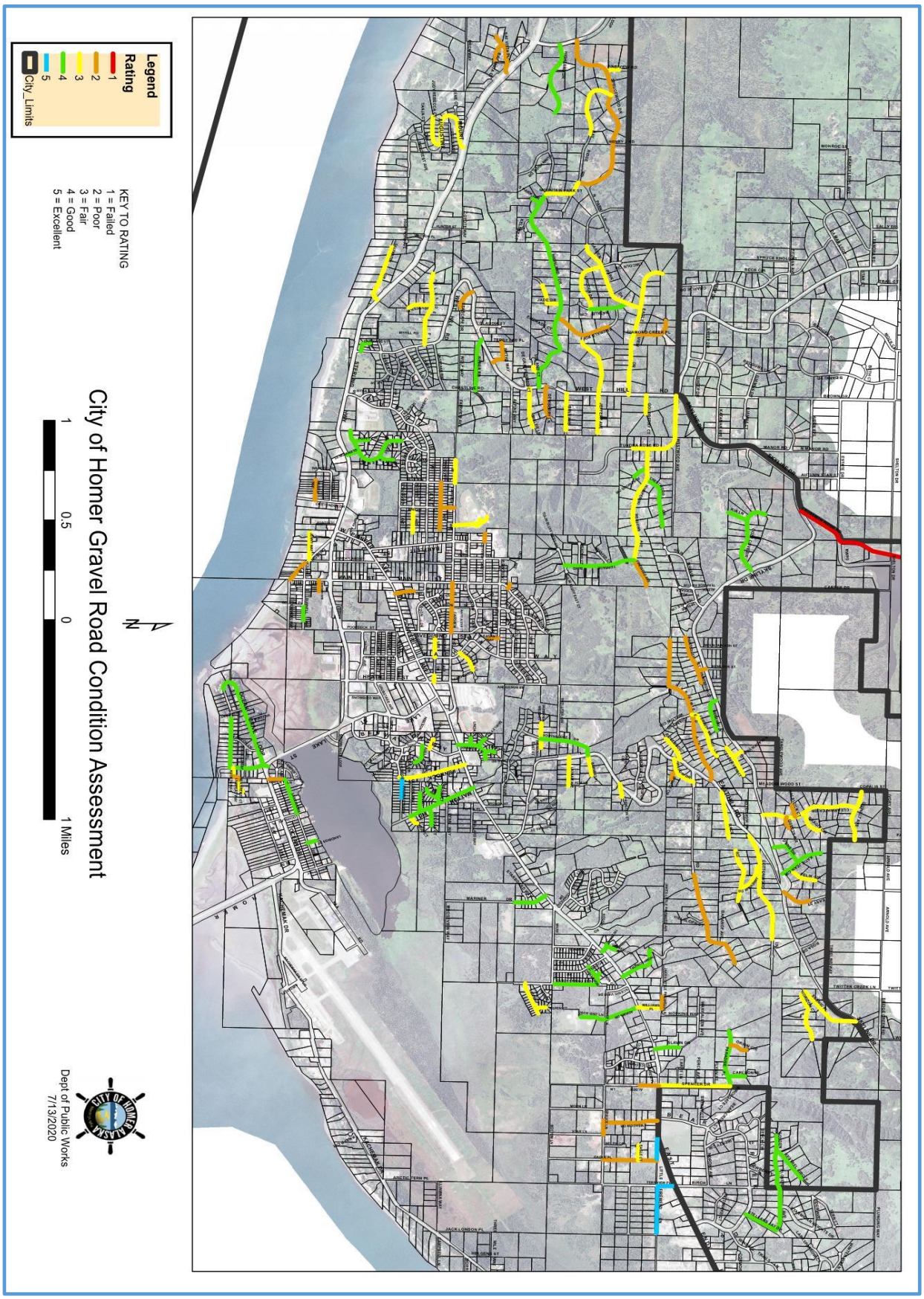
3
4
5
6
7
8
9
10
City Limits
RATING KEY
1 = Failed
2 = Very Poor
3 = Poor
4 = Fair
5 = Fair
6 = Good
7 = Good
8 = Very Good
9 = Excellent
10 = Excellent
SPIT ROAD
City of Homer Paved Road Condition Assessment
1
0.5
0
1 Miles
N
Dept of Public Works
7/13/2020


Legend
Rating
1
2
3
4
5
City_Limits
KEY TO RATING
1 = Failed
2 = Poor
3 = Fair
4 = Good
5 = Excellent
City of Homer Gravel Road Condition Assessment
1
0.5
0
1 Miles
Dept of Public Works
7/13/2020

Appendix B – Paved Road Assessment Tables

PAVED ROAD INFO			ROAD SURFACE CONDITION					VEG	RATING
STREET	TYPE	ANNEXED	SURFACE DEFECTS	SURFACE DEFORMATION	CRACKS	PATCHES & POTHOLES	DRAINAGE	VEGETATION	1:FAILED 2:VERY POOR 3:POOR 4:FAIR 5:FAIR 6:GOOD 7:GOOD 8:VERY GOOD 9:EXCELLENT 10:EXCELLENT
A St.	Paved		Minor	Minor	Severe	Minor	4	Moderate	4
B St.	Paved		Minor	Minor	Moderate	Minor	6	Moderate	6
Bay Ave.	Paved		Moderate	Moderate	Severe	Moderate	3	Minor	3
W. Bayview Ave.	Paved		Minor	Minor	Severe	Moderate	5	None	5
E. Bayview Ave.	Paved		Minor	Minor	Moderate	None	6	Moderate	7
Bayview Ct.	Paved		Minor	Severe	Severe	Minor	3	None	3
Beluga Pl.	Paved		Minor	Minor	Minor	None	7	None	7
Ben Walters Ct.	Paved		Minor	Minor	Minor	Minor	7	None	7
Ben Walters Ln.	Paved		Minor	Minor	Moderate	None	6	None	6
Bonanza Ave.	Paved		Minor	Minor	Minor	Minor	5	None	7
W. Bunnell Ave.	Paved		Moderate	Moderate	Severe	Moderate	3	None	3
Calhoun Ct.	Paved		Minor	Moderate	Moderate	Minor	4	Minor	4
Crittenden Dr.	Paved		Minor	Minor	Minor	Minor	7	None	7
Nielson Cir.	Paved		Moderate	Minor	Moderate	Minor	6	Minor	6
Clover Pl.	Paved		Minor	None	Minor	None	7	None	7
Clover Ln.	Paved		Minor	Minor	Minor	None	7	Minor	7
East Hill Rd.	Paved		Minor	None	Minor	None	7	Minor	7
Ice Dock Rd.	Paved		None	None	None	None	8	None	8
FAA Rd.	Paved		Minor	Minor	Moderate	Minor	6	None	7
E st.	Paved		Minor	Minor	Moderate	Moderate	6	None	6
Grubstake Ave. East	Paved		Minor	Minor	Minor	None	7	None	10
Daybreeze Ct.	Paved		Minor	Minor	Minor	None	7	None	7
Calamari Ct.	Paved		Minor	Minor	Minor	None	7	None	7
Sea Plane Ct.	Paved		Minor	Minor	Minor	Minor	6	None	6
El Sario Ct.	Paved		Minor	Minor	Moderate	None	6	None	6
Elderberry Ct.	Paved		Minor	Minor	Moderate	None	6	None	6
Elderberry Dr.	Paved		Minor	Minor	Moderate	None	6	None	6
W. Fairview Ave.	Paved		Minor	None	Minor	None	7	None	7
Freight Dock Rd.	Paved		Minor	None	None	None	7	None	7
Frisbee Ct.	Paved		None	None	None	None	8	None	8

PAVED ROAD INFO			ROAD SURFACE CONDITION					VEG	RATING
STREET	TYPE	ANNEXED	SURFACE DEFECTS	SURFACE DEFORMATION	CRACKS	PATCHES & POTHOLES	DRAINAGE	VEGETATION	1:FAILED 2:VERY POOR 3:POOR 4:FAIR 5:FAIR 6:GOOD 7:GOOD 8:VERY GOOD 9:EXCELLENT 10:EXCELLENT
Gavin Ct.	Paved		Minor	Minor	Moderate	None	6	None	6
Hazel Ave	Paved		Minor	Minor	Moderate	Minor	6	None	6
Herdon Dr.	Paved		Minor	Minor	Moderate	None	6	Minor	7
Hillview Pl.	Paved		Minor	Minor	Minor	None	7	Moderate	7
E. Danview Ave.	Paved		Minor	Minor	Moderate	None	5	None	7
Larkspur Ct.	Paved		Minor	Minor	Moderate	None	6	Moderate	6
N. Larkspur Cir.	Paved		Minor	Minor	Minor	None	7	Moderate	7
S. Larkspur Cir.	Paved		Minor	Minor	Minor	None	7	Moderate	7
Lakeside Ct.	Paved		Minor	Minor	Minor	None	7	None	7
Lakeside Dr.	Paved		Minor	Minor	Minor	None	7	None	7
Lakeside Cir.	Paved		Moderate	Minor	Minor	None	5	None	5
Pine Terrace Cir.	Paved	YES	Moderate	Moderate	Severe	None	2	Minor	2
Smoky Bay Way	Paved		Minor	Minor	Moderate	None	6	None	7
Rochelle Rd.	Paved		Minor	Minor	Minor	Minor	6	None	6
Sabrina Rd.	Paved		Minor	Minor	Minor	Minor	6	None	6
Sitka Rose Cir	Paved		Minor	Minor	Minor	Minor	6	None	6
Spruce Terrace Cir.	Paved	YES	Moderate	Moderate	Moderate	None	4	None	4
Svedlund Cir	Paved		Minor	Minor	Moderate	Moderate	6	None	6
Svedlund St.	Paved		Minor	Minor	Moderate	Minor	6	None	7
Tamara St.	Paved		Minor	Minor	Moderate	Minor	6	Minor	6
Towne Heights Ln.	Paved		None	None	None	None	8	None	8
Tulin Terrace Blvd.	Paved	YES	Moderate	Moderate	Severe	Moderate	2	Moderate	2
Waddell St.	Paved		None	None	Minor	None	9	None	9
Woodside Ave.	Paved		Moderate	Severe	Severe	Moderate	2	None	2
Freight Dock Rd.	Paved		Minor	None	Minor	None	7	None	7
Harbor Entrance Roads	Paved		Minor	None	None	None	8	None	8
Harbor Entrance Roads	Paved		Moderate	None	None	Moderate	7	None	7
Harbor Entrance Roads	Paved		Moderate	None	None	Minor	7	None	7
Fish Dock Rd.	Paved		None	None	None	None	8	None	8
Lakeshore Dr.	Paved		Minor	Minor	Moderate	Minor	6	None	7
Douglas Pl.	Paved		Minor	None	Minor	None	6	None	7
Douglas Pl.	Paved		Minor	None	Minor	None	6	None	7
Forest Glenn Dr.	Paved		Minor	Minor	Minor	Minor	7	None	7

Gravel_Roads_Table

PAVED ROAD INFO			ROAD SURFACE CONDITION					VEG	RATING
STREET	TYPE	ANNEXED	SURFACE DEFECTS	SURFACE DEFORMATION	CRACKS	PATCHES & POTHOLES	DRAINAGE	VEGETATION	1:FAILED 2:VERY POOR 3:POOR 4:FAIR 5:FAIR 6:GOOD 7:GOOD 8:VERY GOOD 9:EXCELLENT 10:EXCELLENT
W. Danview Ave.	Paved		Minor	None	Moderate	None	6	None	7
W. Danview Ave.	Paved		Minor	None	Moderate	None	6	None	7
Rangeview Ave.	Paved		Minor	Minor	Moderate	None	6	None	6
Calhoun St.	Paved		Minor	Minor	Moderate	None	6	None	7
Lee Dr.	Paved		Minor	Minor	Moderate	None	6	None	7
Mark White Ave.	Paved		Minor	Minor	Minor	None	6	None	7
Mission Rd.	Paved		Minor	Minor	Moderate	None	6	Minor	6
Fairview Ave.	Paved		Minor	Minor	Minor	Minor	6	None	7
E. Bunnell Ave.	Paved		Minor	None	None	None	8	None	8
Main St.	Paved		Minor	Minor	Minor	None	6	None	7
Heath St.	Paved		Minor	Minor	Moderate	Minor	5	None	6
Heath St.	Paved		Minor	Minor	Moderate	Minor	5	None	6
Mountain View Dr.	Paved		Minor	Minor	Moderate	None	6	None	7
Klondike Ave.	Paved		Moderate	Moderate	Moderate	Moderate	4	None	4
Kachemak Way	Paved		Minor	Minor	Minor	None	7	None	7
Soundview Ave.	Paved		Minor	Minor	Moderate	None	6	None	7
Barlett St.	Paved		Minor	Minor	Minor	None	6	None	7
Spruceview Ave.	Paved		Minor	None	Moderate	Minor	6	None	7
Mulliken St.	Paved		Minor	Minor	Minor	None	7	None	7
Shelly Ave.	Paved		Minor	Minor	Minor	None	7	None	7
Tajen Ln.	Paved		Minor	None	None	None	8	None	8
Cabana Ct.	Paved		Minor	Minor	Minor	None	6	None	7
Compass Dr.	Paved		Minor	Minor	Minor	None	7	None	7
Candlelight Ct.	Paved		Minor	Minor	Minor	Minor	7	None	7
Craftsman Rd.	Paved		Minor	Minor	Minor	Minor	7	None	7
Kachemak Way	Paved		Minor	Minor	Minor	None	7	None	7
Hunter St.	Paved		Minor	Minor	Minor	Minor	7	None	7
Early Spring St.	Paved		Minor	Minor	Minor	Minor	7	None	7
Snowbird St.	Paved		Minor	None	Minor	None	7	None	7
Grubstake Ave.	Paved		Minor	Minor	Moderate	None	5	None	6
Main St.	Paved		Minor	Minor	Minor	Minor	6	None	7
Eric Ln.	Paved		Minor	Minor	Minor	None	8	None	7
Craftsman Rd.	Paved		Minor	Minor	Minor	None	7	None	7

PAVED ROAD INFO			ROAD SURFACE CONDITION					VEG	RATING
STREET	TYPE	ANNEXED	SURFACE DEFECTS	SURFACE DEFORMATION	CRACKS	PATCHES & POTHOLES	DRAINAGE	VEGETATION	1:FAILED 2:VERY POOR 3:POOR 4:FAIR 5:FAIR 6:GOOD 7:GOOD 8:VERY GOOD 9:EXCELLENT 10:EXCELLENT
Greatland St.	Paved		Minor	None	Minor	Minor	8	None	7
Lucky Shot St.	Paved		Minor	Minor	Minor	Minor	6	Minor	6
Noview	Paved		Minor	Minor	Minor	Minor	7	None	7
Ronda S.	Paved		None	None	None	None	10	None	10
Nelson Ave.	Paved		None	None	None	None	10	None	10
South Slope Dr.	Paved		None	None	None	None	10	None	10
Father Dean Ct.	Paved		None	None	None	None	10	None	10
Wright St.	Paved		Minor	Minor	Moderate	None	6	None	7
Noview Ave.	Paved		Minor	Minor	Minor	Minor	6	None	6
Island View Ct.	Paved		Minor	Moderate	Severe	None	3	None	3
Hohe St.	Paved		Minor	Minor	Moderate	None	6	None	7
Poopdeck St.	Paved		Minor	Minor	Moderate	None	7	None	7

Appendix C – Gravel Road Assessment Tables

GRAVEL ROAD			ROAD SURFACE CONDTIONS					VEGETATION CONDITIONS		RATING
STREET	TYPE	ANNEX	CROWN	DRAIN AGE	GRAVEL LAYER	SURFACE DEFORMATION	SURFACE DEFECTS	VEG	VEGETATION NOTES	1:FAILED 2:POOR 3:FAIR 4:GOOD 5:EXCELLENT
Adams Dr.	Gravel		Good	Good	Good	None	None	None		4
Alder Ln.	Gravel		Poor	Fair	Poor	Moderate	None	None		2
Aprill Pl.	Gravel		Good	Good	Good	None	None	None		4
Aspen Ct.	Gravel		Fair	Fair	Fair	Minor	None	Minor	Routine Brushing	3
Aspen Ln.	Gravel		Fair	Fair	Fair	Minor	None	Minor	Ditch Obst	3
Aurora Ct.	Gravel		Good	Good	Good	None	None	None		4
Barnett Pl.	Gravel		Good	Fair	Fair	None	None	None		3
Bay Ridge Rd.	Gravel	YES	Fair	Good	Fair	Minor	None	None		3
Bay Vista Ct.	Gravel		Fair	Poor	Poor	Moderate	Moderate	None		2
Bay Vista Pl.	Gravel		Fair	Poor	Poor	Minor	None	None		2
Bell Ave.	Gravel	YES	Fair	Fair	Fair	Minor	None	None		3
Beluga Cir.	Gravel		Good	Good	Good	None	None	None		4
Beluga Ct.	Gravel		Good	Good	Good	None	None	None		4
Campground Rd.	Gravel		Fair	Fair	Fair	None	None	None		3
Carlson Pl.	Gravel	YES	Good	Good	Good	None	None	None		4
Carriage Ct.	Gravel		Good	Good	Good	None	None	None		4
Clearwater Dr.	Gravel	YES	Good	Fair	Good	Minor	None	None		3
Cook Way	Gravel		Good	Good	Good	None	None	None		4
Cottonwood Ln.	Gravel	YES	Fair	Good	Poor	Moderate	Minor	None		3
Cozy Cove Dr.	Gravel		Good	Good	Good	None	None	None		4
Crestwood Cir.	Gravel	YES	Good	Good	Good	Minor	None	None		4
Crossman Ridge Rd.	Gravel	YES	Poor	Poor	Poor	Severe	None	None		1
Dehel Ave.	Gravel		Poor	Poor	Fair	Minor	None	None		2
Dewberry Ln.	Gravel		Poor	Fair	Poor	Minor	None	None		2
Diamond Creek Pl.	Gravel	YES	Fair	Fair	Poor	Moderate	None	None		2
Dons Dr.	Gravel	YES	Good	Fair	Good	None	None	None		4
E. Bunnell Ave.	Gravel		Good	Good	Good	None	None	None		4
E. Fairview Ave.	Gravel		Poor	Poor	Poor	Severe	None	None		2
E. Jeffery Ave.	Gravel	YES	Fair	Fair	Good	Moderate	None	None		3
Eagle Court	Gravel		Fair	Fair	Fair	Minor	Minor	None		3
Eagle Pl.	Gravel		Poor	Poor	Poor	Severe	None	Moderate		2

STREET	TYPE	ANNEX	CROWN	DRAINAGE	GRAVEL LAYER	SURFACE DEFORMATION	SURFACE DEFECTS	VEG	VEGETATION NOTES	1:FAILED 2:POOR 3:FAIR 4:GOOD 5:EXCELLENT
Eagle View Dr.	Gravel	YES	Good	Good	Poor	Moderate	None	Minor	Routine Brushing/1 spruce	3
Easy St.	Gravel	YES	Fair	Poor	Fair	Minor	None	Severe	Spruce within entire maintenance corridor	2
Emerald Rd.	Gravel	YES	Fair	Poor	Poor	Severe	None	None		2
Felix Cir.	Gravel	YES	Good	Fair	Good	None	None	Moderate	Spruce Obst	3
Fireweed Ave.	Gravel	YES	Fair	Fair	Poor	Severe	None	None	Bad Breakup	2
Forest Glenn Dr.	Gravel		Good	Good	Good	None	None	None		4
Forget Me Not Ln.	Gravel	YES	Good	Fair	Good	Minor	None	None		3
Garden Park Dr.	Gravel	YES	Good	Fair	Fair	Moderate	None	None		3
Glacier View Ct.	Gravel	YES	Good	Poor	Good	Minor	None	None		3
Glenview St.	Gravel		Good	Good	Good	None	None	None		4
Goldberry Ct.	Gravel	YES	Fair	Fair	Fair	None	None	None		3
Golden Plover Ave.	Gravel		Good	Good	Good	None	None	None		4
Hanson Ave.	Gravel		Poor	Poor	Poor	Minor	None	Minor		2
Heidi Ct.	Gravel		Good	Good	Good	Minor	Minor	None		4
Hidden Way	Gravel		Poor	Poor	Poor	Moderate	Moderate	Moderate		2
Highland Dr.	Gravel		Good	Good	Good	Minor	None	None		4
Highland Dr.	Gravel		Fair	Fair	Fair	Moderate	None	None		3
Highlook Ct.	Gravel		Good	Fair	Good	None	None	None		3
Hillfair Ct.	Gravel		Good	Good	Good	None	None	None		4
Hillside Pl.	Gravel		Fair	Fair	Fair	Minor	None	None		3
Horizon Ct.	Gravel		Fair	Poor	Fair	Minor	None	Moderate	Row Misaligned crowding road	3
Hornaday Parking Are	Gravel		Fair	Fair	Fair	None	None	None		3
Iris Ct.	Gravel		Good	Poor	Good	None	None	None	No Draingage at CuldeSac	3
Jack Gist Ln.	Gravel		Good	Good	Good	None	None	None		4
Jade Dr.	Gravel		Fair	Fair	Poor	Moderate	None	None		3
Jakes Little Fireweed I	Gravel	YES	Good	Poor	Good	None	None	Severe	alders prevent ditch establishment	2
Janeview Dr.	Gravel	YES	Good	Fair	Good	Minor	None	Minor	SD Obst's	3
Jennifer Pl.	Gravel		Good	Good	Good	Minor	Minor	None		3

STREET	TYPE	ANNEX	CROWN	DRAIN AGE	GRAVEL LAYER	SURFACE DEFORMATION	SURFACE DEFECTS	VEG	VEGETATION NOTES	1:FAILED 2:POOR 3:FAIR 4:GOOD 5:EXCELLENT
Jenny Way	Gravel		Good	Fair	Fair	None	None	None		3
Judy Rebecca Ct.	Gravel		Fair	Fair	Fair	Minor	None	None		3
Kalalock Ct.	Gravel	YES	Poor	Fair	Poor	Moderate	None	Moderate	Spruce/Alder	2
Kestrel Circle	Gravel		Good	Good	Good	None	None	None		4
Kia Ln.	Gravel		Good	Good	Good	None	None	Minor	SD Obst	4
Kramer Ln.	Gravel		Good	Good	Good	Minor	None	None		4
Krueth Way	Gravel		Good	Poor	Good	None	None	None		3
Lake St.	Gravel		Good	Good	Good	None	None	None		4
Lakeshore Dr. (W)	Gravel		Good	Good	Good	None	None	Minor		4
Lampert Ln.	Gravel		Good	Poor	Good	Severe	None	None		2
Lampert Ln.	Gravel		Good	Good	Good	Minor	None	None		4
Landing St.	Gravel		Good	Good	Good	None	None	None		4
Latham Ave.	Gravel		Fair	Good	Poor	Moderate	None	None		3
Lee Dr.	Gravel		Poor	Fair	Poor	None	None	Minor		3
Lincoln Dr.	Gravel	YES	Good	Good	Fair	None	None	None		3
Linda Ct.	Gravel		Good	Good	Good	Minor	None	None		4
Little Fireweed Ln.	Gravel		Excellent	Excellen	Excellent	None	None	None		5
Little Fireweed Ln.	Gravel		Good	Good	Good	None	None	None		4
Lupine Ct.	Gravel		Good	Fair	Good	Minor	None	None		3
Mariner Dr.	Gravel		Fair	Good	Good	Good	None	None		4
Mariner Dr.	Gravel		Fair	Fair	Fair	Minor	None	None		3
Mattox Rd.	Gravel		Good	Good	Good	Minor	None	None		4
Meadow Dr.	Gravel		Poor	Poor	Fair	Moderate	None	None		2
Miller Ln.	Gravel		Fair	Fair	Fair	Moderate	None	None		3
Mission Rd.	Gravel	YES	Fair	Poor	Poor	Moderate	None	Minor	Routine Brushing	2
Mount Augustin Dr.	Gravel		Fair	Fair	Poor	Moderate	None	Minor	Routine Brushing	3
Mountain Park Street	Gravel		Good	Fair	Good	Minor	None	Moderate	Spruce well within corridor	3
N. Glacier View Ct.	Gravel	YES	Good	Fair	Good	None	None	None		3
Natilie Cir.	Gravel	YES	Good	Fair	Good	None	None	None		4
Noview Ave.	Gravel		Fair	Poor	Good	None	None	None		3
Ocean Drive Lp.	Gravel		Good	Fair	Good	None	None	Minor	Spruce	4
Ohlson Ln.	Gravel		Poor	Poor	Poor	Moderate	None	None		2
Orion Cir.	Gravel	YES	Poor	Good	Poor	Minor	Minor	None		2
Paintbrush Ct.	Gravel	YES	Fair	Poor	Fair	Severe	None	Moderate	Spruce&SD Obst	2

STREET	TYPE	ANNEX	CROWN	DRAIN AGE	GRAVEL LAYER	SURFACE DEFORMATION	SURFACE DEFECTS	VEG	VEGETATION NOTES	1:FAILED 2:POOR 3:FAIR 4:GOOD 5:EXCELLENT
Paintbrush St.	Gravel	YES	Poor	Poor	Poor	Moderate	None	Moderate	Spruce obst	2
Paradise Pl.	Gravel	YES	Good	Good	Good	Minor	None	None		4
Pennock St.	Gravel		Good	Fair	Good	Minor	None	Moderate		3
Pine View Rd.	Gravel	YES	Fair	Fair	Fair	None	None	None		3
Pleasant Way	Gravel		Poor	Poor	Poor	None	None	Moderate		2
Poppy Cir.	Gravel		Good	Good	Good	None	None	None		4
Queets Cir.	Gravel	YES	Fair	Good	Poor	Moderate	None	None		2
Quinalt Ave.	Gravel	YES	Good	Fair	Fair	None	None	Minor	Spruce Obst/SD Obst	3
Race Rd.	Gravel	YES	Good	Good	Poor	Moderate	None	None		3
Race Rd.	Gravel	YES	Good	Good	Poor	Moderate	None	None		3
Rainbow Ct.	Gravel		Fair	Poor	Poor	Minor	None	Severe		3
Rainbow Pl.	Gravel		Poor	Poor	Poor	Moderate	None	None		2
Rangeview Ave.	Gravel		Fair	Good	Poor	Severe	None	Severe		2
Rangeview Ave.	Gravel		Fair	Fair	Poor	Severe	None	None		2
Reber Rd.	Gravel		Good	Fair	Good	None	None	None		4
Ridgeway Ct.	Gravel	YES	Good	Fair	Good	None	None	Moderate	Ditch Obst	4
Rosebud Ct.	Gravel	YES	Fair	Poor	Fair	Moderate	None	None		3
Rosewood Cir.	Gravel	YES	Good	Good	Good	Minor	None	Minor	SD Obst	4
S. Park Cir.	Gravel	YES	Good	Good	Good	Minor	None	None		4
Saltwater Dr.	Gravel		Fair	Good	Poor	Moderate	None	Minor		3
Scenic Pl.	Gravel	YES	Fair	Fair	Fair	Minor	None	None		3
Sea Breeze Ct.	Gravel		Good	Poor	Good	None	None	Moderate		3
Seascape Dr.	Gravel		Fair	Poor	Fair	None	None	None	Severe ROW Misalignment	2
Shannon Ct.	Gravel		Good	Good	Good	None	None	None		4
Shannon Ln.	Gravel		Good	Good	Good	None	None	None		4
Shelford St.	Gravel		Poor	Poor	Poor	Poor	None	Moderate		2
Shirley Ct.	Gravel		Good	Good	Good	Minor	None	None		4
Skagit Cir.	Gravel		Fair	Fair	Fair	Fair	None	None		3
Slavin Dr.	Gravel	YES	Good	Fair	Good	None	None	None		4
South Slope Dr.	Gravel		Good	Good	Good	None	None	Minor	Routine Brushing	4
Spencer Dr.	Gravel	YES	Good	Poor	Good	None	None	Severe	Row Misaligned crowding road	3
Spruce Cir.	Gravel	YES	Fair	Poor	Poor	Moderate	None	None		2
Spruce Ln.	Gravel		Poor	Poor	Poor	Moderate	None	None		2

STREET	TYPE	ANNEX	CROWN	DRAINAGE	GRAVEL LAYER	SURFACE DEFORMATION	SURFACE DEFECTS	VEG	VEGETATION NOTES	1:FAILED 2:POOR 3:FAIR 4:GOOD 5:EXCELLENT
Sprucewood Dr.	Gravel	YES	Good	Poor	Poor	Severe	None	None		2
Stellars Jay	Gravel		Good	Good	Good	Minor	None	None		4
Tasmania East	Gravel		Good	Good	Poor	None	None	Minor	Routine Brushing	3
Tasmania West	Gravel		Good	Fair	Poor	None	None	Minor	Routine Brushing	3
Ternview Pl.	Gravel		Excellent	Excellen	Excellent	None	None	None		5
Thompson Dr.	Gravel		Good	Fair	Good	None	None	Minor	Brush in Travelway	4
Triton Ct.	Gravel		Good	Good	Good	None	None	None		4
Tundra Rose Rd.	Gravel	YES	Good	Fair	Good	Moderate	None	Minor	Routine Brushing	3
Uminski Ct.	Gravel		Good	Fair	Good	None	None	Minor		4
Upland Ct.	Gravel		Good	Fair	Poor	None	None	None		3
Virginialyn Way	Gravel		Excellent	Excellen	Excellent	None	None	None		5
W. Cityview Ave.	Gravel		Fair	Poor	Poor	Moderate	None	None		2
W. Fairview Ave.	Gravel		Fair	Fair	Fair	Minor	None	None		3
W. Jeffery Ave.	Gravel	YES	Fair	Poor	Fair	Moderate	None	Minor		3
West Terrace Blvd.	Gravel		Good	Good	Good	None	None	None		4
Westwood Ave.	Gravel	YES	Good	Fair	Good	Minor	None	None		3
Whispering Meadow A	Gravel	YES	Good	Good	Poor	Moderate	None	None		3
Williams Pl.	Gravel		Good	Fair	Good	None	None	None		3
Willow Dr.	Gravel	YES	Good	Fair	Good	Minor	None	None		3
Wright St.	Gravel		Poor	Poor	Poor	Severe	None	Moderate		2
Wythe Way	Gravel		Poor	Poor	Poor	Minor	None	None		2

Appendix D – Manuals for the PASER Road Assessment Model

Pavement Surface Evaluation and Rating

PASER Manual

Gravel Roads

RATING 5

RATING 3

Transportation Information Center
University of Wisconsin–Madison

30

RATING

1

31

Contents

This manual is intended to assist local officials in understanding and rating the surface condition of gravel roads. It describes types and causes of distress and provides a simple system to visually rate the road segment's condition. The rating procedure can be used as condition data for the Wisconsin DOT local road inventory and as part of a computerized pavement management system like PASERWARE.

Produced by the T.I.C. with support from the Federal Highway Administration, the Wisconsin Department of Transportation, and the University of Wisconsin-Extension. The T.I.C., part of the nationwide Local Technical Assistance Program (LTAP), is a Center of the College of Engineering, Department of Engineering Professional Development, University of Wisconsin-Madison.

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32

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33

Pavement Surface Evaluation and Rating

PASER Manual

Gravel Roads

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Transportation Information Center
University of Wisconsin–Madison

Pavement Surface Evaluation and Rating

Gravel PASER Manual

There are many miles of unsurfaced roads in this country. Wisconsin alone has over 22,000 miles of gravel roads under the jurisdiction of local governments. Maintaining and improving these roads is a major responsibility for local governments.

Gravel roads may service very remote areas and very few vehicles. On the other hand it is common to have gravel roads providing service to agricultural, logging, and recreational areas with fairly high traffic volumes. Many urban areas also have some gravel roads. Heavy trucks and residential traffic can combine to make very heavy demands on these unsurfaced roads.

This manual is intended to help you plan the maintenance and overall management of gravel roads. It discusses common problems and typical repairs. A simple system for evaluating conditions and rating roads is included.

The Wisconsin Transportation Information Center also has PASER manuals for other pavement types (see inside back cover). The rating systems are similar and compatible so that local road agencies can work with a comprehensive condition rating method. The rating procedure can be used as condition data for the Wisconsin DOT local road inventory (WISLR) and as part of a computerized pavement management system like PASERWARE.

Taking an organized approach to roadway management has many benefits. By documenting the actual conditions of roads you can set realistic budgets, make timely repairs, and set up cost effective maintenance procedures. Developing an overall plan for the roadway system lets local agencies develop budgets and plan for future needs. When detailed information is available, local officials can respond more effectively to questions from the public. A planned approach is easier to explain and receives greater public support.

Several key steps are necessary to develop a meaningful roadway management plan. First, you must inventory the existing condition. This is normally done by dividing the roadway into segments with similar conditions. During the inventory you collect information on construction history, roadway width, etc. Then you need some method for assessing the condition of the existing roadway. This Gravel PASER Manual uses a visual approach. Other information from material sampling, testing, and traffic counts can be useful for a more detailed system plan.

Another necessary step is setting priorities for roadway improvements. You can use roadway condition and the local importance of these roads to assign priorities. Then budgets can be developed based on cost estimates for the projected improvements. Since not all improvements can be made in one year, you can set up a multi-year budget plan. You can make a capital improvement plan for three to five years. Normally this is updated annually.

Gravel road evaluation

Evaluating and rating gravel roads requires a different perspective than similar evaluations of asphalt or concrete pavements. This is due to the nature of gravel roads and their variability. Surface conditions on gravel roads can change literally overnight. Heavy rains and local heavy traffic can dramatically change the surface characteristics of gravel roads from one day to the next. In addition, routine maintenance activities, such as one pass of a motor grader, could improve the surface conditions of a gravel road significantly.

Since the evaluation or rating of a road could vary depending on recent weather conditions or recent maintenance activities, it should be based on major factors. Detailed surface conditions should be secondary.

The most important factors in evaluating a gravel road are the road cross section, drainage, and adequacy of the gravel layer. The gravel road cross section must contain adequate crown and good lateral drainage systems. The crown should be approximately 6", the adjacent ditches should be deep enough to contain surface water, and the culvert systems should be clean and sized to prevent any serious impoundment of water against the roadway.

The depth of the gravel layer will obviously depend on the existing soils and the amount of heavy traffic. For most conditions, a minimum gravel thickness of 6" is required. Heavier layers are necessary for very poor soils and/or very heavy traffic loads. Using geotextiles in very poor subgrade soil conditions can also significantly improve the performance of a gravel road.

Surface distress, such as ruts and potholes, indicates a lack of strength. This could be caused by improper drainage, by lack of adequate gravel cover, or possibly both. Therefore, surface distress becomes an important indicator of the primary concern for drainage and adequate gravel. The level of service that a gravel road provides to the driver also depends on smooth ride and dust control. Therefore distress such as washboarding, loose rock, and dust are important in the overall service of the road. However, these conditions are secondary since they can change quickly due to weather and maintenance activities. They should not influence the primary evaluation of the roadway.

It may be difficult to distinguish between a poorly maintained gravel road and an unimproved (dirt) road. The local road agency must first decide if they plan to maintain the road with a gravel surface or as an unimproved road. A minimum of 1½"– 2" of gravel surfacing is generally necessary to be considered a gravel road. More gravel is needed to provide a good level of service.

Surface conditions and defects

The *Gravel PASER Manual* presents a method for visually assessing and rating the conditions of existing roadways. It is based on understanding the conditions and defects common on gravel roads. To set a rating you assess both the extent of problems on the road and the appropriate repairs or reconstruction needed.

It is helpful to separate the various conditions common to gravel roads. Five road conditions can be used to evaluate and rate gravel roads.

Crown
The height and condition of crown, and an unrestricted slope of roadway from the center across the shoulders to the ditches.

Drainage
The ability of roadside ditches and under-road culverts to carry water away from the road.

Gravel layer
Adequate thickness and quality of gravel to carry the traffic loads.

Surface deformation
Washboarding, potholes and ruts.

Surface defects
Dust and loose aggregate.

Each of these is described in some detail in this manual. Assessing the condition of an actual roadway usually involves looking for different combinations of conditions.

In reviewing different conditions and defects, it is important to consider their severity and extent. Generally problems begin slowly and progressively become more serious. Slight defects will grow into moderate and then severe conditions. At first, defects may be found in only a few isolated places. As the condition worsens, more defects will show up on the surface. Examples in this manual will help you identify conditions and determine both how bad they are and how extensive they are.

CROWN

An unsurfaced road must be built so water drains quickly off the roadway. If it is not, water stays in ponds or puddles, soaks into the roadbed, and softens it. Building a crown into the road—making the center of the road higher than the shoulder—enhances drainage. Normally, a gravel road will have 4"– 6" of crown, or fall, from its center to the edge.

A roadway that has no crown will pond water. A windrow of soil or a high shoulder may also trap water on the roadway and impede drainage. In severe cases the crown is reversed—lower than the edges—so that the road is in a bowl shape. Naturally, this traps water and rapidly deteriorates the roadway, especially under traffic.

Inadequate crown can be restored by regrading with a motor patrol grader. Light blading will restore minor irregularities. Restoring crown to a flat roadway may require complete reworking. This involves scarifying, or cutting loose, 3"– 4" of gravel and reshaping the crown. It is helpful to apply water and use compaction to establish the crown.

If the surface gravel on the roadway is inadequate you may need to add gravel to construct a road with proper crown. Use good quality aggregate. Hard and sound aggregate will prevent the breakdown of large aggregate into small particles under traffic. A proper mixture of aggregate sizes (gradation) is also important. You need an adequate amount of fines to bind the gravel together on the road. See Wisconsin Transportation Bulletins No. 4, *Road Drainage* and No. 5, *Gravel Roads* for more information.

When you do routine maintenance grading, take care to grade the roads to allow free drainage from the center of the road to the shoulder and into the ditch. Improper grading can create a secondary ditch.

► **Excellent crown. No restriction to water flow from centerline to ditch.**

Flat crown with poor grading has created secondary ditch preventing free drainage into

▼ **roadside ditch.**

Poorly graded crown traps water causing it to run down center of road.

DRAINAGE

Roadside ditches and culverts must be able to handle surface water flow. Without adequate ditches, water will pond on the roadway and soften the road base. The ditch must be wide and deep enough to accommodate all the surface water. It must slope so water drains and doesn't form local ponds. A ditch bottom which is several feet below the top of the road is best. This will provide thorough drainage of the roadbed and prevent flooding. Deeper and wider ditches may be necessary to accommodate very heavy surface water flow. Ditches must be maintained to prevent erosion or the buildup of debris.

Drainage across roadways is handled with culverts or bridges. These drainage structures must be maintained to prevent ponding and water backup. Culvert headwalls and riprap are very helpful in directing water flow and preventing erosion of the roadbed.

Ditch cleaning is a routine maintenance procedure necessary to keep water flowing properly. Spoil material from a ditch may be used along the roadway if there is room. Major ditch cleaning may require loading and hauling excess material. Take care to maintain uniform ditch slopes. Seed the soil or install additional erosion control after major ditching repairs.

Roadway culverts tend to fill with debris and silt. They must be cleaned routinely to maintain their water carrying capacity. Replacing headwalls and riprap is also necessary to prevent erosion. Collapsed or damaged culverts must be replaced.

◄ **Excellent drainage with wide deep ditches.**

Partial drainage. Ditch and new culvert being added on left. Little or no drainage on right. ▼

▲ **Good ditches.**

DRAINAGE

Continued

► Poor drainage due to little or no ditch, no driveway culverts.

Shallow, narrow ditch cannot carry surface water causing ditch erosion and temporary roadway flooding.

▼

◄ Shallow ditch and partially filled culvert. Ditch needs cleaning and culvert should be lowered to allow a minimum of 12” of aggregate cover.

► No ditch. Road is actually trenched into roadside forcing water onto surface.

GRAVEL LAYER

Traffic loads require an adequate layer of gravel to carry and distribute the loads to the subsoils. The thickness needed will vary with the amount of heavy traffic and the stability of the subsoils. A minimum layer of 6" is normally required. Heavier layers, up to 10" or more, are sometimes used for heavy loads or poor soil conditions.

The gravel must be of good quality to provide long term service. The gradation and durability of the gravel (measured by hardness and soundness testing) are important. A proper gradation contains a mixture of larger aggregate (1"), sand-sized aggregate, and fines. More fines (8%–15%) are recommended for surfacing gravel than are normally used in base gravel. See Transportation Information Bulletin No. 5, *Gravel Roads,* for more information.

► **Excellent gravel layer.**

◄ **Adequate gravel layer. No ruts or potholes.**

◄ **Little or no gravel layer.**

SURFACE DEFORMATION

Washboard

Traffic action can dislodge aggregate and create a washboard effect on the surface. This washboarding or corrugation develops across the road, perpendicular to the direction of traffic. It is more prevalent under heavy traffic and under loose aggregate conditions. It may also tend to develop on hills or curves, near intersections, or in areas where traffic is accelerating or decelerating. Soft roadbeds and improper grader operation can also cause washboards.

Light washboarding can be removed with routine grading. Washboarding that is moderate or severe often requires scarification, cutting down 3”-4”, and regrading. If there is insufficient material, new gravel will be required. Select an aggregate with sufficient fines to resist future washboarding.

Since washboarding may be concentrated at specific locations, spot regrading is often required. Take care to blend the regraded sections into the adjoining roadway. Since moisture is needed for compaction, correcting washboarding after a rain is more effective. Maintain the crown, and super-elevation, and match bridges and intersections when repairing spot corrugations.

Operating a motor patrol grader at a high rate of speed can actually create corrugations during routine maintenance. Speeds below 10 mph are recommended. Proper blade angle and pitch, and proper tire inflation, are also essential.

▼ **Moderate washboarding in center of road.**

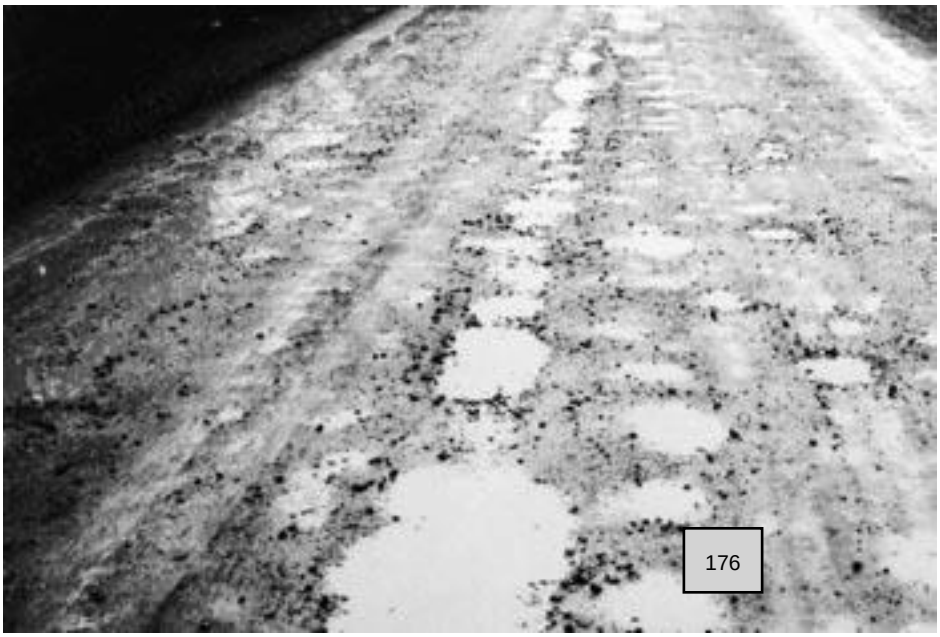
► **Severe washboarding traps water.**

Potholes

Potholes and depressions can develop in the gravel or surface. They're caused when surface material is worn away or soft spots develop in underlying soils. They may fill with water and are accelerated in roads without adequate crown. Isolated potholes may be repaired by hand. This can involve putting granular material into the holes and compacting it.

◄ **Small, isolated potholes. Routine regrading should eliminate them.**

▲ **Series of moderate potholes require scarification and regrading.**



▲ **Potholes at bridge may require scarification and hand patching. Gravel and debris should be cleaned off bridge deck.**

◄ **Severe potholes covering most of road need additional gravel and regrading.**

Extensive potholes require reworking and major regrading. It is usually necessary to add granular material to repair them. Scarify the area prior to repair to insure a good blend. You may need to reshape the road to restore a crown and make drainage improvements to restore surface stability and prevent future potholes.

Ruts

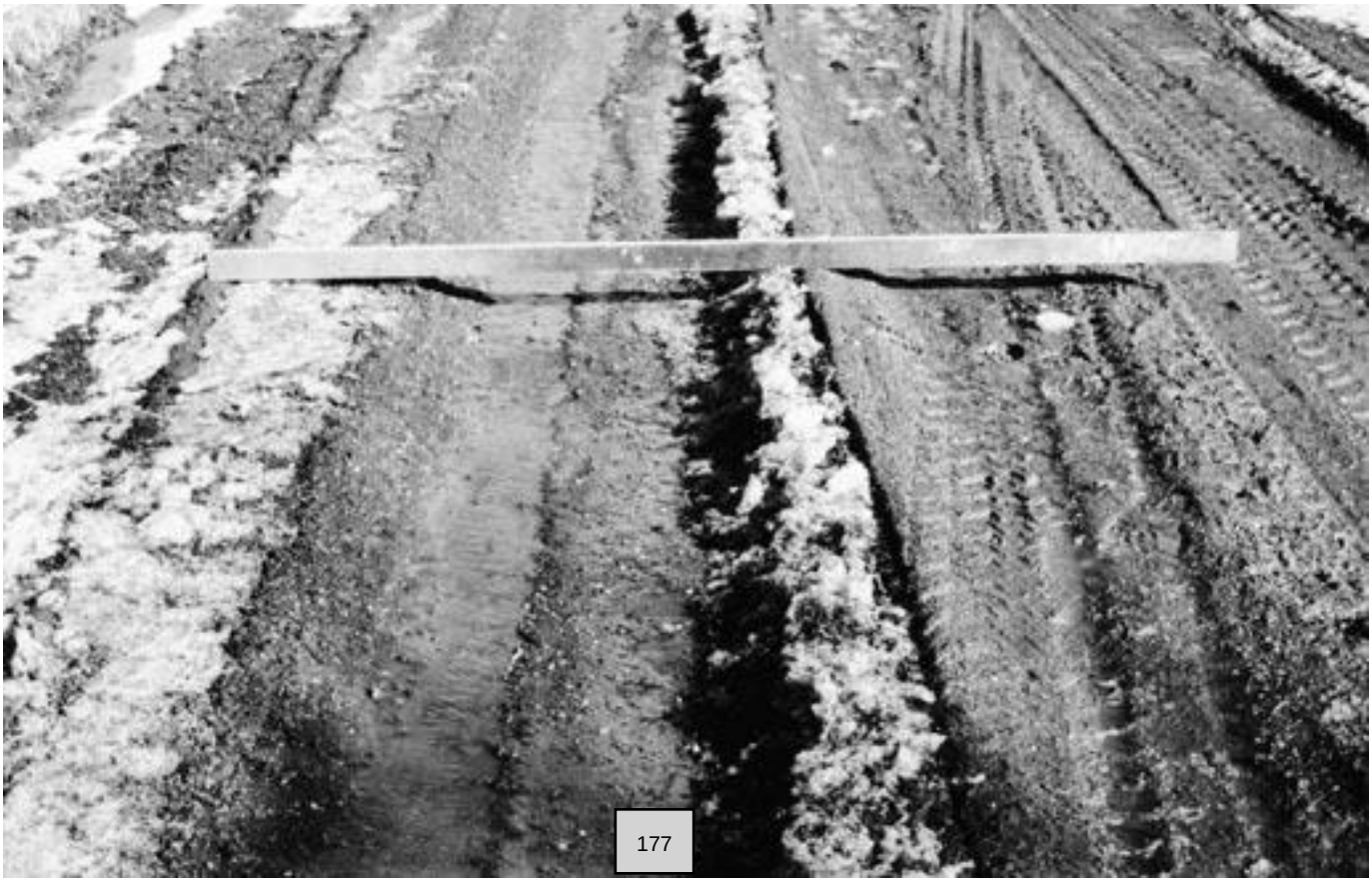
Traffic can create a surface depression or rut over a portion of a gravel road. The ruts may be caused by dislodging some of the surface gravel. Loose unstable gravel may be displaced by traffic causing minor surface ruts. Severe rutting (over 3") may be caused by weak underlying soils. Poor crown and drainage conditions weaken the base and accelerate rutting.

Slight rutting can be removed by blading and restoring the crown. Severe rutting caused by unstable subsurface soils will require improvements in drainage and addition of aggregate.

▲ **Rut in wheel path needs regrading to eliminate ponding and prevent further road deterioration.**

Numerous ruts and very poor drainage create soft roadbed conditions and need major

▼ **regrading and new aggregate.**



SURFACE DEFECTS

Dust

Traffic on dry gravel roads can generate dust. Good quality gravel used in the construction of gravel roads has a combination of large aggregate, sand, and fine material or binder. These fines can be picked up under the action of traffic and become airborne.

Dust on gravel roads creates several problems. Visibility can be severely restricted under heavy dust conditions, creating traffic safety hazards. Dust is a form of air pollution and can be very objectionable to nearby property owners. The loss of the fine material from a well-graded gravel surface can eventually lead to a loss of stability. Without the fine binder material, the larger particles become unstable and are dislodged by traffic.

Rolling and compacting a new gravel surface will help maintain a tight and impervious surface or crust. Under traffic and during extended dry periods this crust may be disturbed and heavy dust conditions result. Controlling dust with liquid calcium chloride or other surface treatment agents can be very helpful.

It is essential to replace the fines in the gravel mix to maintain the road and keep it stable under traffic. Fines can often be reclaimed from the shoulder edge and regraded and mixed with existing gravel. This should be done as routine maintenance while restoring and maintaining the crown.

◄ **Heavy dust obscures vision and causes loss of roadway fine material. A dust control chemical may be advisable in areas of heavy traffic.**

Loose aggregate

Loose aggregate or unstable surface gravel conditions can develop from loss of fines through heavy dust action or from erosion due to an improper gradation mix of the original aggregate. Vehicles can move loose or unstable aggregate forming ridges or windrows in the direction of traffic. Generally gravel will be moved from the wheel path and form ridges at the center of lanes and at roadway edges. Loose aggregate can also accumulate at places where vehicles frequently turn or stop.

Loose aggregate may be temporarily bladed to the shoulder although you have to be careful not to restrict drainage. By remixing loose aggregate with fines from the road edge it may be possible to produce a well graded mix. However, a severe accumulation of loose aggregate usually requires mixing with additional well graded surface gravel.

▲ **Loose aggregate over most of road. Light grading and compaction during wet weather would improve stability and develop a surface crust.**

► **Heavy accumulation of loose aggregate on outside of roadway.**

Regrading and possibly new aggregate are needed.

Rating road surface condition

A simplified rating system has been developed to help manage gravel roads. It uses a scale of 1 to 5—5 is excellent condition and 1 is failed. In a normal progression the road will start out in excellent condition and gradually deteriorate under the effects of traffic and weather. Routine grading and minor patching may be sufficient to restore the road to excellent condition. As conditions worsen, more extensive maintenance may be required; complete rebuilding may eventually be necessary.

To select a rating first assess the crown, drainage, and gravel layer. Then review the individual defects and select the type of maintenance or rehabilitation necessary. The rating should reflect the condition and type of maintenance or repairs required. Look at the photographs in this section to become more familiar with the ratings and conditions.

RATINGS ARE RELATED TO NEEDED MAINTENANCE OR REPAIR

Rating 5 Newly constructed road. Excellent crown and drainage. No maintenance required.

Rating 4 Good crown and drainage. Routine maintenance.

Rating 3 Roadway shows traffic effects. Needs regrading, minor ditch maintenance, and spot gravel application.

Rating 2 Road needs additional aggregate layer, major drainage improvements.

Rating 1 Travel is difficult. Complete rebuilding required.

Surface rating	*Visible distress**	*General condition/ treatment measures*
5 Excellent	No distress. Dust controlled. Excellent surface condition and ride.	New construction—or total reconstruction. Excellent drainage. Little or no maintenance needed.
4 Good	Dust under dry conditions. Moderate loose aggregate. Slight washboarding.	Recently regraded. Good crown and drainage throughout. Adequate gravel for traffic. Routine grading and dust control may be needed.
3 Fair	Good crown (3”-6”). Adequate ditches on more than 50% of roadway. Gravel layer mostly adequate but additional aggregate may be needed in some locations to correct washboarding or isolated potholes and ruts. Some culvert cleaning needed. Moderate washboarding (1”-2” deep) over 10%-25% of the area. Moderate dust, partial obstruction of vision. None or slight rutting (less than 1” deep). An occasional small pothole (less than 2” deep). Some loose aggregate (2” deep).	Shows traffic effects. Regrading (reworking) necessary to maintain. Needs some ditch improvement and culvert maintenance. Some areas may need additional gravel.
2 Poor	Little or no roadway crown (less than 3”). Adequate ditches on less than 50% of roadway. Portions of the ditches may be filled, overgrown and/or show erosion. Some areas (25%) with little or no aggregate. Culverts partially full of debris. Moderate to severe washboarding (over 3” deep) over 25% of area. Moderate rutting (1”-3”), over 10%-25% of area. Moderate potholes (2”-4”) over 10%-25% of area. Severe loose aggregate (over 4”).	Travel at slow speeds (less than 25 mph) is required. Needs additional new aggregate. Major ditch construction and culvert maintenance also required.
1 Failed	No roadway crown or road is bowl shaped with extensive ponding. Little if any ditching. Filled or damaged culverts. Severe rutting (over 3” deep), over 25% of the area. Severe potholes (over 4” deep), over 25% of area. Many areas (over 25%) with little or no aggregate.	Travel is difficult and road may be closed at times. Needs complete rebuilding and/or new culverts.

** Individual road sections will not have all of the types of distress listed for any particular rating. They may have only one or two types.*

RATING 5

EXCELLENT — Little or no maintenance required

New construction with excellent crown, drainage and gravel layer. Little or no distress.

► **Newly constructed road with excellent crown, drainage and gravel layer.**

► **Road has excellent crown. Gravel has been stabilized for dust control. Very good drainage.**

RATING 4

GOOD — Routine maintenance may be required

Good crown, drainage and gravel layer. Distress limited to traffic effects such as dust, loose aggregate, and slight washboarding.

◄ **Good crown, ditches, and gravel layer.**

Slight traffic effects, washboarding, and loose gravel.

◄ **Good crown and gravel, ditch appears good throughout.**

Occasional routine grading for traffic effects.

◄ **Plenty of crown and excellent ditch. Needs routine grading to eliminate slight secondary ditch and loose gravel.**

RATING 3

FAIR — Regrading and drainage improvement, spot gravel application needed

Adequate drainage and crown on more than 50% of roadway. Gravel layer is adequate with only need for spot replacement. Regrading needed to improve crown and repair wash-boarding and slight ruts or potholes.

►
Good gravel and crown but ditch partially blocked. Needs cleaning or additional culvert.

►
Heavy accumulation of loose gravel.

Requires regrading. Ditch cleaning needed on right side.

►
Fair crown and good gravel layer. Shallow ditch needs improvement.

RATING 3

FAIR — *(continued)*
Regrading and drainage improvement, spot gravel application needed

◄
Fair crown and gravel layer.

Needs ditching on right and more crown.

◄
Adequate drainage and fair crown. A few small potholes indicate need for regrading and additional gravel.

RATING 2

POOR — More gravel and major drainage improvements required

Travel at slow speeds (25 mph) may be necessary. Additional gravel layer needed to carry traffic. Little or no crown. Ditching is inadequate on more than 50% of roadway.

► **Some gravel and crown but almost no ditch. Driveway culvert required.**

▲ **Little gravel and almost no ditches or crown.**

No crown, poor drainage, and needs gravel. ▼

▲ **Lack of ditch on right causes ruts. Needs gravel.**

Numerous potholes indicate additional gravel most likely required to restore crown. Needs extensive reworking. ►

RATING 1

Failed — Reconstruction required

Needs complete rebuilding. Travel is difficult; road may be closed at times.

◄ **Ruts. No ditch or aggregate.**

▲ **Deep ruts and potholes. No drainage. Travel is difficult.**

▲ **Complete failure. Restricted travel.**

Practical advice on rating roads

Inventory and field inspection

Most agencies routinely observe roadway conditions as a part of their normal work and travel. However, an actual inspection means looking at the entire roadway system and preparing a written summary of conditions. This inspection has many benefits over casual observations. Useful comparisons between segments can be made and more dependable decisions are likely because the entire roadway system is considered.

An inspection also encourages a review of specific conditions important in roadway maintenance—drainage and adequate strength, for example.

A simple written inventory is useful in making decisions where other people are involved. You do not have to trust your memory, and you can usually answer questions in more detail. Having a written record also improves your credibility with the public.

Finally, a written inventory is very useful in documenting the changing roadway conditions. Without records extending over several years, it is impossible to know if your road conditions are improving, holding their own, or declining.

Annual budgets and long range planning are best done when based on actual needs as documented with a written inventory.

The Wisconsin DOT local road inventory (WISLR) is a valuable resource for managing your local roads. Adding PASER surface condition ratings is an important improvement.

Averaging and comparing sections

For evaluation, divide the local road system into individual segments which are similar in construction and condition. Rural segments may vary from ½ mile to a mile long, while some sections in urban areas will likely be 1-4 blocks long or more. If you are starting with the WISLR inventory, the segments have already been established. You may want to review them for consistent road conditions. Obviously no roadway segment has entirely consistent conditions. Some "averaging" will be necessary. Also, individual road segments will not have all of the types of distress listed for any particular rating; they may have only one or two. The objective is to rate the condition that represents the majority of the roadway. Small or isolated conditions should not influence the rating. It is useful to note these special conditions on the inventory form so this information can be used in project design. For example, some spot repairs may be required.

Occasionally pavement conditions vary significantly. For example, short sections of good condition may be followed by sections of poor pavement conditions. In these cases it is best to rate the pavement according to the worst conditions and note the variation on the form.

The overall purpose of condition rating is to provide a relative comparison of the condition of all your pavement segments. Therefore, comparing any two pavement segments would show the better pavement having a higher rating. Within a given rating, say 3, not all pavements will be exactly the same. However, they should all be considered to be in better condition than those with lower ratings, say 2. Sometimes it is helpful in rating a difficult segment to compare it to other previously rated segments. For example, if it is better than one you rated 2, and worse than a typical 4, then a rating of 3 is appropriate. Having all road segments rated in the proper relative order is most important and useful.

Separating road function from conditions

Gravel roads often are found in very low volume applications. This sometimes is confusing. People rating roads are more willing to accept poor condition on a road if it is little used. In higher traffic situations, they expect a road in better condition.

Therefore, there may be a tendency in evaluating the condition of a road to evaluate the condition more harshly in higher traffic volume situations and to be more lenient in evaluating little-used roads. This tendency should be avoided. The evaluation of the actual roadway condition must be objective.

You will also consider the road's function or importance but this must be done separately. Roads can be categorized by their use or their function. In selecting project improvements, you will likely consider both the road condition and the road's importance to select the most needed projects.

Planning maintenance and repair

We have found that relating a normal maintenance or rehabilitation procedure to the surface rating scheme helps local officials use the rating system. However, an individual surface rating should not automatically dictate the final maintenance or rehabilitation technique. You should consider safety, future traffic projections, original construction, and roadway strength since these may dictate a more comprehensive rehabilitation than the rating suggests.

Summary

Using local road funds most efficiently requires good planning and accurate identification of appropriate rehabilitation projects. Assessing roadway conditions is an essential first step in this process. The PASER evaluation procedure has proven effective in improving decision making and using highway funds more efficiently. It can be used directly by local officials and staff. It may be combined with additional testing and data collection in a more comprehensive pavement management system. For additional training and information, contact the Wisconsin Transportation Information Center.

Transportation Information Center Publications

Pavement Surface Evaluation and Rating (PASER) Manuals

Asphalt PASER Manual, 2002, 28 pp.

Brick and Block PASER Manual, 2001, 8 pp.

Concrete PASER Manual, 2002, 28 pp.

Gravel PASER Manual, 2002, 20 pp.

Sealcoat PASER Manual, 2000, 16 pp.

Unimproved Roads PASER Manual, 2001, 12 pp.

Drainage Manual
Local Road Assessment and Improvement, 2000, 16 pp.

SAFER Manual
Safety Evaluation for Roadways, 1996, 40 pp.

Flagger's Handbook (pocket-sized guide), 1998, 22 pp.

Work Zone Safety, Guidelines for Construction, Maintenance, and Utility Operations, (pocket-sized guide), 2002, 58 pp.

Wisconsin Transportation Bulletins

#1 Understanding and Using Asphalt

#2 How Vehicle Loads Affect Pavement Performance #3 LCC—Life Cycle Cost Analysis

#4 Road Drainage

#5 Gravel Roads

#6 Using Salt and Sand for Winter Road Maintenance #7 Signing for Local Roads

#8 Using Weight Limits to Protect Local Roads #9 Pavement Markings

#10 Seal Coating and Other Asphalt Surface Treatments #11 Compaction Improves Pavement Performance

#12 Roadway Safety and Guardrail
#13 Dust Control on Unpaved Roads
#14 Mailbox Safety

#15 Culverts-Proper Use and Installation

#16 Geotextiles in Road Construction/Maintenance and Erosion Control #17 Managing Utility Cuts

#18 Roadway Management and Tort Liability in Wisconsin #19 The Basics of a Good Road

#20 Using Recovered Materials in Highway Construction #21 Setting Speed Limits on Local Roads

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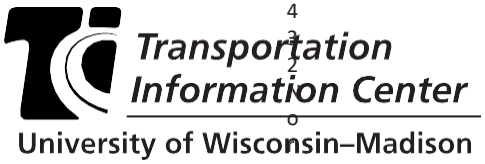

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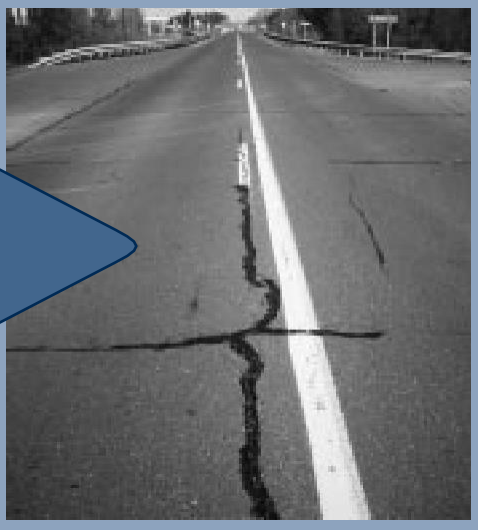
Gravel Roads

Pavement Surface Evaluation and Rating

PASER Manual

Asphalt Roads



Transportation Information Center
University of Wisconsin–Madison

Contents

Department of Engineering Professional Development,
University of Wisconsin–Madison.

This manual is intended to assist local officials in understanding and rating the surface condition of asphalt pavement. It describes types of defects and provides a simple system to visually rate pavement condition. The rating procedure can be used as condition data for the Wisconsin DOT local road inventory and as part of a computerized pavement management system like PASERWARE.

The PASER system described here and in other T.I.C. publications is based in part on a roadway management system originally developed by Phil Scherer, transportation planner, Northwest Wisconsin Regional Planning Commission.

Produced by the T.I.C. with support from the Federal Highway Administration, the Wisconsin Department of Transportation, and the University of Wisconsin-Extension. The T.I.C., part of the nationwide Local Technical Assistance Program (LTAP), is a Center of the College of Engineering,

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Pavement Surface Evaluation and Rating

PASER Manual

Asphalt Roads

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Susan Kummer, Artifax, ***designer***

Transportation Information Center
University of Wisconsin–Madison

Pavement Surface Evaluation and Rating

Asphalt PASER Manual

A local highway agency's major goal is to use public funds to provide a comfortable, safe and economical road surface—no simple task. It requires balancing priorities and making difficult decisions in order to manage pavements. Local rural and small city pavements are often managed informally, based on the staff's judgment and experience. While this process is both important and functional, using a slightly more formalized technique can make it easier to manage pavements effectively.

Experience has shown that there are three especially useful steps in managing local roads:

1. Inventory all local roads and streets.
2. Periodically evaluate the condition of all pavements.
3. Use the condition evaluations to set priorities for projects and select alternative treatments.

A comprehensive pavement management system involves collecting data and assessing several road characteristics: roughness (ride), surface distress (condition), surface skid characteristics, and structure (pavement strength and deflection). Planners can combine this condition data with economic analysis to develop short-range and long-range plans for a variety of budget levels. However, many local agencies lack the resources for such a full-scale system.

Since surface condition is the most vital element in any pavement management system, local agencies can use the simplified rating system presented in this *Asphalt PASER Manual* to evaluate their roads. The PASER ratings combined with other inventory data (width, length, shoulder, pavement type, etc.) from the WisDOT local roads inventory (WISLR) can be very helpful in planning future budgets and priorities.

WISLR inventory information and PASER ratings can be used in a computerized pavement management system, PASERWARE, developed by the T.I.C and WisDOT. Local officials can use PASERWARE to evaluate whether their annual road budgets are adequate to maintain or improve current road conditions and to select the most cost-effective strategies and priorities for annual projects.

PASER Manuals for gravel, concrete, and other road surfaces, with compatible rating systems are also available (page 29). Together they make a comprehensive condition rating method for all road types. PASER ratings are accepted for WISLR condition data.

Asphalt pavement distress

PASER uses visual inspection to evaluate pavement surface conditions. The key to a useful evaluation is identifying different types of pavement distress and linking them to a cause. Understanding the cause for current conditions is extremely important in selecting an appropriate maintenance or rehabilitation technique.

There are four major categories of common asphalt pavement surface distress:

Surface defects
Raveling, flushing, polishing.

Surface deformation
Rutting, distortion—rippling and shoving, settling, frost heave.

Cracks
Transverse, reflection, slippage, longitudinal, block, and alligator cracks.

Patches and potholes

Deterioration has two general causes: environmental due to weathering and aging, and structural caused by repeated traffic loadings.

Obviously, most pavement deterioration results from both environmental and structural causes. However, it is important to try to distinguish between the two in order to select the most effective rehabilitation techniques.

The rate at which pavement deteriorates depends on its environment, traffic loading conditions, original construction quality, and interim maintenance procedures. Poor quality materials or poor construction procedures can significantly reduce the life of a pavement. As a result, two pavements constructed at the same time may have significantly different lives, or certain portions of a pavement may deteriorate more rapidly than others. On the other hand, timely and effective maintenance can extend a pavement's life. Crack sealing and seal coating can reduce the effect of moisture in aging of asphalt pavement.

With all of these variables, it is easy to see why pavements deteriorate at various rates and why we find them in various stages of disrepair. Recognizing defects and understanding their causes helps us rate pavement condition and select cost-effective repairs. The pavement defects shown on the following pages provide a background for this process.

Periodic inspection is necessary to provide current and useful evaluation data. It is recommended that PASER ratings be updated every two years, and an annual update is even better.

SURFACE DEFECTS

Raveling

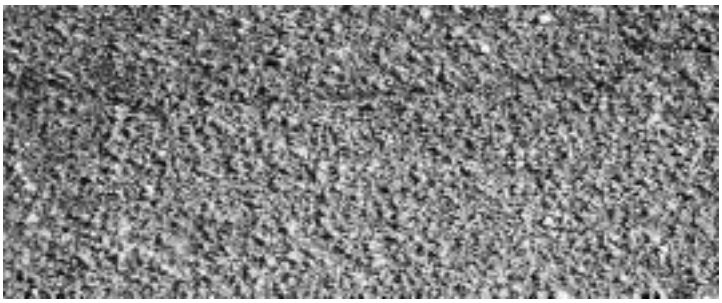
Raveling is progressive loss of pavement material from the surface downward, caused by: stripping of the bituminous film from the aggregate, asphalt hardening due to aging, poor compaction especially in cold weather construction, or insufficient asphalt content. Slight to moderate raveling has loss of fines. Severe raveling has loss of coarse aggregate. Raveling in the wheelpaths can be accelerated by traffic. Protect pavement surfaces from the environment with a sealcoat or a thin overlay if additional strength is required.

Flushing

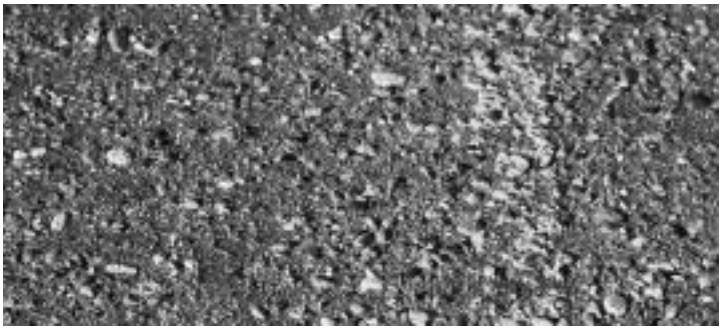
Flushing is excess asphalt on the surface caused by a poor initial asphalt mix design or by paving or sealcoating over a flushed surface. Repair by blotting with sand or by overlaying with properly designed asphalt mix.

Polishing

Polishing is a smooth slippery surface caused by traffic wearing off sharp edges of aggregates. Repair with sealcoat or thin bituminous overlay using skid-resistant aggregate.



◄ **Slight raveling. Small aggregate particles have worn away exposing tops of large aggregate.**

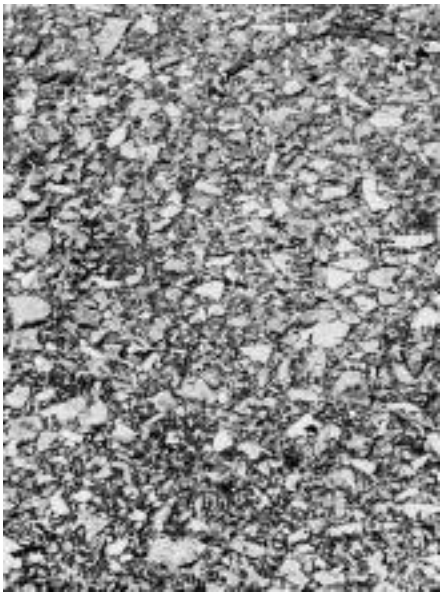


◄ **Moderate to severe raveling. Erosion further exposes large aggregate.**

◄ **Severe raveling and loss of surface material.**

Polished, worn aggregate needs repair. ▼

► **Flushing. Dark patches show where asphalt has worked to surface.**



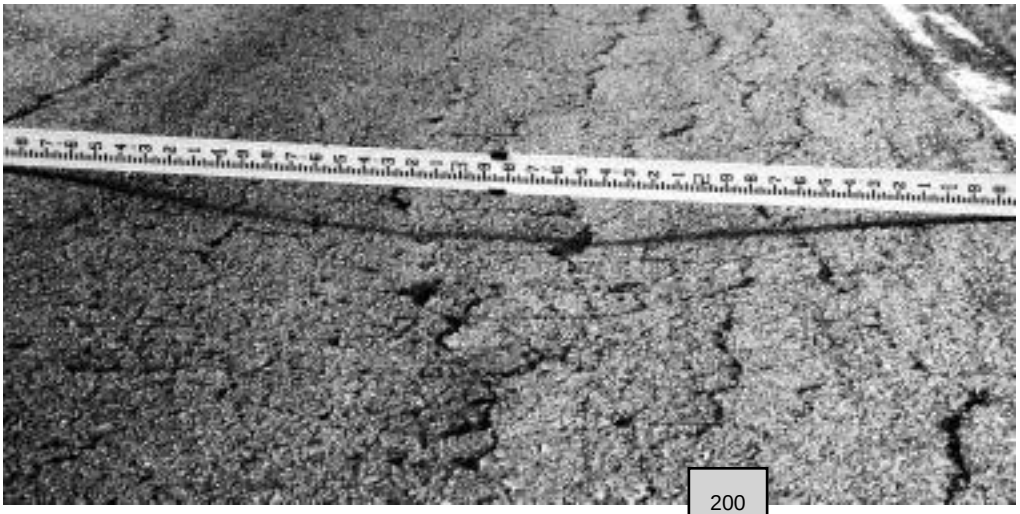
SURFACE DEFORMATION

Rutting

Rutting is displacement of material, creating channels in wheelpaths. It is caused by traffic compaction or displacement of unstable material. Severe rutting (over 2") may be caused by base or subgrade consolidation. Repair minor rutting with overlays. Severe rutting requires milling the old surface or reconstructing the roadbed before resurfacing.

◄ **Even slight rutting is evident after a rain.**

◄ **Severe rutting over 2" caused by poor mix design.**



◄ **Severe rutting caused by poor base or subgrade.**

EVALUATION — Surface Deformation 6

Distortion

Shoving or rippling is surfacing material displaced crossways to the direction of traffic. It can develop into washboarding when the asphalt mixture is unstable because of poor quality aggregate or improper mix design. Repair by milling smooth and overlaying with stable asphalt mix.

Other pavement distortions may be caused by settling, frost heave, etc. Patching may provide temporary repair. Permanent correction usually involves removal of unsuitable subgrade material and reconstruction.

▼ Heavy traffic has shoved pavement into washboard ripples and bumps.

► Severe settling from utility trench.

► Frost heave damage from spring break-up.

▼ Widely spaced, well-sealed cracks.

CRACKS

Transverse cracks

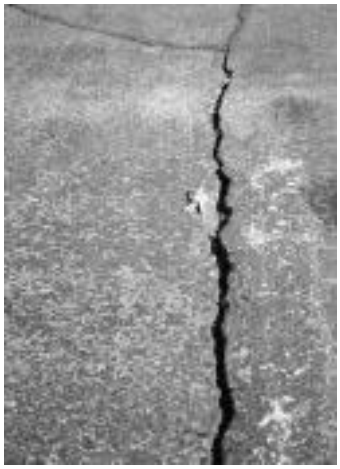
A crack at approximately right angles to the center line is a transverse crack. They are often regularly spaced. The cause is movement due to temperature changes and hardening of the asphalt with aging.

Transverse cracks will initially be widely spaced (over 50'). Additional cracking will occur with aging until they are closely spaced (within several feet). These usually begin as hairline or very narrow cracks; with aging they widen. If not properly sealed and maintained, secondary or multiple cracks develop parallel to the initial crack. The crack edges can further deteriorate by raveling and eroding the adjacent pavement.

Prevent water intrusion and damage by sealing cracks which are more than ¼" wide.

◄ **Sealed cracks, a few feet apart.**

▲ **Tight cracks less than ¼" in width.**



▲ **Open crack – ½" or more in width.**

▲ **Water enters unsealed cracks softening pavement and ng secondary cracks.**

▲ **Pavement ravels and erodes along open cracks causing deterioration.**

Reflection cracks

Cracks in overlays reflect the crack pattern in the pavement underneath. They are difficult to prevent and correct. Thick overlays or reconstruction is usually required.

► **Concrete joints reflected through bituminous overlay.**

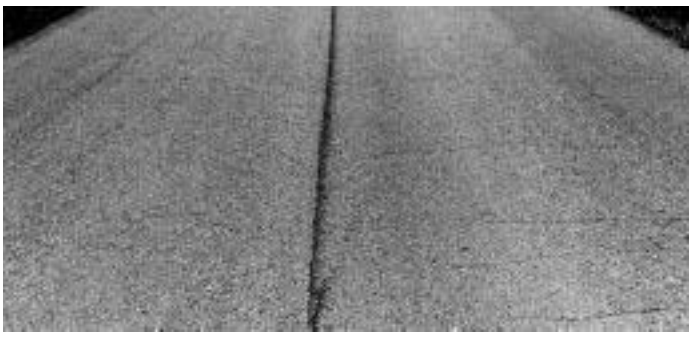
Slippage cracks

Crescent or rounded cracks in the direction of traffic, caused by slippage between an overlay and an underlying pavement. Slippage is most likely to occur at intersections where traffic is stopping and starting. Repair by removing the top surface and resurfacing using a tack coat.

► **Crescent-shaped cracks characteristic of slippage.**

► **Loss of bond between pavement layers allows traffic to break loose pieces of surface.**

Centerline crack (still tight). ►



Edge cracking from weakened subbase and traffic loads. ▼

►
First stage of wheelpath cracking caused by heavy traffic loads.

Longitudinal cracks

Cracks running in the direction of traffic are longitudinal cracks. Center line or lane cracks are caused by inadequate bonding during construction or reflect cracks in underlying pavement. Longitudinal cracks in the wheel path indicate fatigue failure from heavy vehicle loads. Cracks within one foot of the edge are caused by insufficient shoulder support, poor drainage, or frost action. Cracks usually start as hairline or vary narrow and widen and erode with age. Without crack filling, they can ravel, develop multiple cracks, and become wide enough to require patching.

Filling and sealing cracks will reduce moisture penetration and prevent further subgrade weakening. Multiple longitudinal cracks in the wheel path or pavement edge indicate a need for strengthening with an overlay or reconstruction.

.

▼

Multiple open cracks at center line, wheelpaths and lane center. ▼

Block cracks

Block cracking is interconnected cracks forming large blocks. Cracks usually intersect at nearly right angles. Blocks may range from one foot to approximately 10' or more across. The closer spacing indicates more advanced aging caused by shrinking and hardening of the asphalt over time. Repair with sealcoating during early stages to reduce weathering of the asphalt. Overlay or reconstruction required in the advanced stages.

► **Large blocks, approximately 10' across.**

► **Intermediate-size block cracking, 1'-5' across with open cracks.**

▲ **Extensive block cracking in an irregular pattern.**

► **Severe block cracking –1' or smaller blocks. Tight cracks with no raveling.**

Alligator cracks

Interconnected cracks forming small pieces ranging in size from about 1” to 6”. This is caused by failure of the surfacing due to traffic loading (fatigue) and very often also due to inadequate base or subgrade support. Repair by excavating localized areas and replacing base and surface. Large areas require reconstruction. Improvements in drainage may often be required.

◄
Alligator crack pattern. Tight cracks and one patch.

◄
Characteristic “chicken wire” crack pattern shows smaller pavement pieces and patching.

◄
Open raveled alligator cracking with settlement along lane edge most likely due to very soft subgrade.

PATCHES AND POTHOLES

Patches

Original surface repaired with new asphalt patch material. This indicates a pavement defect or utility excavation which has been repaired. Patches with cracking, settlement or distortions indicate underlying causes still remain. Recycling or reconstruction are required when extensive patching shows distress.

► **Typical repair of utility excavation. Patch in fair to good condition.**

► **Edge wedging. Pavement edges strengthened with wedges of asphalt. Patch is in very good condition.**

► **Extensive patching in very poor condition.**

Potholes

Holes and loss of pavement material caused by traffic loading, fatigue and inadequate strength. Often combined with poor drainage. Repair by excavating or rebuilding localized potholes. Reconstruction required for extensive defects.

◄
Small pothole where top course has broken away.

◄
Multiple potholes show pavement failure, probably due to poor subgrade soils, frost heave, and bad drainage.

◄
Large, isolated pothole, extends through base.

Note adjacent alligator cracks which commonly deteriorate into potholes.

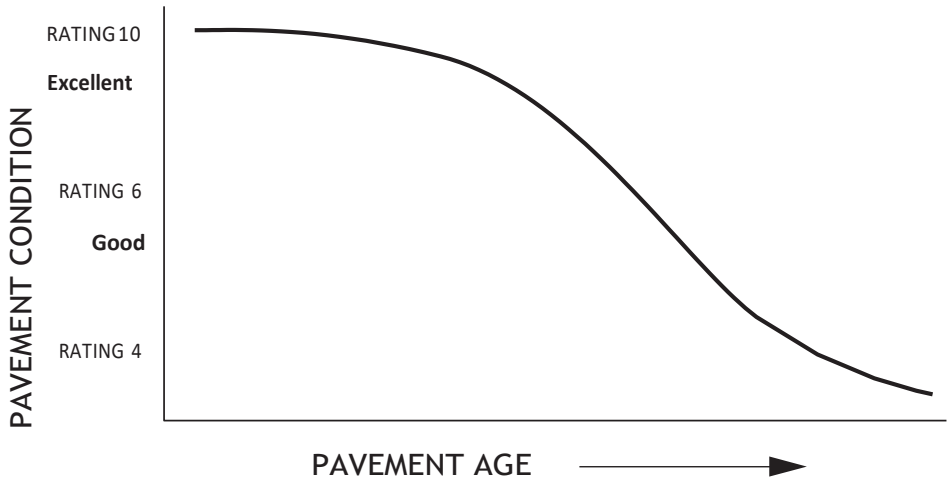
Rating pavement surface condition

With an understanding of surface distress, you can evaluate and rate asphalt pavement surfaces. The rating scale ranges from 10 - excellent condition to 1- failed. Most pavements will deteriorate through the phases listed in the rating scale. The time it takes to go from excellent condition (10) to complete failure (1) depends largely on the quality of the original construction and the amount of heavy traffic loading.

Once significant deterioration begins, it is common to see pavement decline rapidly. This is usually due to a combination of loading and the effects of additional moisture. As a pavement ages and additional cracking develops, more moisture can enter the pavement and accelerate the rate of deterioration.

Look at the photographs in this section to become familiar with the descriptions of the individual rating categories. To evaluate an individual pavement segment, first determine its general condition. Is it relatively new, toward the top end of the scale? In very poor condition and at the bottom of the scale? Or somewhere in between? Next, think generally about the appropriate maintenance method. Use the rating categories outlined below.

Finally, review the individual pavement distress and select the appropriate surface rating. Individual pavements will ***not*** have all of the types of distress listed for any particular rating. They may have only one or two types.



In addition to indicating the surface condition of a road, a given rating also includes a recommendation for needed maintenance or repair. This feature of the rating system facilitates its use and enhances its value as a tool in ongoing road maintenance.

RATINGS ARE RELATED TO NEEDED MAINTENANCE OR REPAIR

Rating 9 & 10	No maintenance required
Rating 8	Little or no maintenance
Rating 7	Routine maintenance, crack sealing and minor patching
Rating 5 & 6	Preservative treatments (sealcoating)
Rating 3 & 4	Structural improvement and leveling (overlay or recycling)
Rating 1 & 2	Reconstruction

Rating system

Surface rating	*Visible distress**	*General condition/ treatment measures*
10 Excellent	None.	New construction.
9 Excellent	None.	Recent overlay. Like new.
8 Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). All cracks sealed or tight (open less than ¼").	Recent sealcoat or new cold mix. Little or no maintenance required.
7 Good	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open ¼") due to reflection or paving joints. Transverse cracks (open ¼") spaced 10' or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6 Good	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open ¼"– ½"), some spaced less than 10'. First sign of block cracking. Sight to moderate flushing or polishing. Occasional patching in good condition.	Shows signs of aging. Sound structural condition. Could extend life with sealcoat.
5 Fair	Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open ½") show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs sealcoat or thin non-structural overlay (less than 2")
4 Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50% of surface). Patching in fair condition. Slight rutting or distortions (½" deep or less).	Significant aging and first signs of need for strengthening. Would benefit from a structural overlay (2" or more).
3 Poor	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Severe block cracking. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes.	Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.
2 Very Poor	Alligator cracking (over 25% of surface). Severe distortions (over 2" deep) Extensive patching in poor condition. Potholes.	Severe deterioration. Needs reconstruction with extensive base repair. Pulverization of old pavement is effective.
1 Failed	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

** Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.*

RATING 10 & 9

EXCELLENT —

No maintenance required

Newly constructed or recently overlaid roads are in excellent condition and require no maintenance.

►

RATING 10

New construction.

►

RATING 9

Recent overlay, rural.

►

RATING 9
Recent overlay, urban.

RATING 8

VERY GOOD —

Little or no maintenance required

This category includes roads which have been recently sealcoated or overlaid with new cold mix. It also includes recently constructed or overlaid roads which may show longitudinal or transverse cracks. All cracks are tight or sealed.

◄ **Recent chip seal.**

◄ **Recent slurry seal.**

▼ **Widely spaced, sealed cracks.**

▲ **New cold mix surface.**

RATING 7

GOOD —

Routine sealing recommended

Roads show first signs of aging, and they may have very slight raveling. Any longitudinal cracks are along paving joint. Transverse cracks may be approximately 10‘ or more apart. All cracks are ¼” or less, with little or no crack erosion. Few if any patches, all in very good condition. Maintain a crack sealing program.

► **Tight and sealed transverse and longitudinal cracks. Maintain crack sealing program.**

► **Tight and sealed transverse and longitudinal cracks.**

► **Transverse cracks about 10’ or more apart. Maintain crack sealing program.**

RATING 6

GOOD —

Consider preservative treatment

Roads are in sound structural condition but show definite signs of aging. Seal-coating could extend their useful life. There may be slight surface raveling. Transverse cracks can be frequent, less than 10‘ apart. Cracks may be ¼–½”and sealed or open. Pavement is generally sound adjacent to cracks. First signs of block cracking may be evident. May have slight or moderate bleeding or polishing. Patches are in good condition.

◄
Slight surface raveling with tight cracks, less than 10’ apart.

◄
Transverse cracking less than 10’ apart; cracks well-sealed.

▼ Large blocks, early signs of raveling and block cracking.

▼ Open crack, 1/2" wide; adjoining pavement sound.

▼ Moderate flushing.

RATING 5

FAIR –

Preservative maintenance treatment required

Roads are still in good structural condition but clearly need sealcoating or overlay. They may have moderate to severe surface raveling with significant loss of aggregate. First signs of longitudinal cracks near the edge. First signs of raveling along cracks. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Any patches or edge wedges are in good condition.

▼ **Block cracking with open cracks.**

► **Moderate to severe raveling in wheel paths.**

▼ **Severe flushing.**

Wedges and patches extensive but in good condition. ▲

RATING 4

FAIR –

Structural improvement required

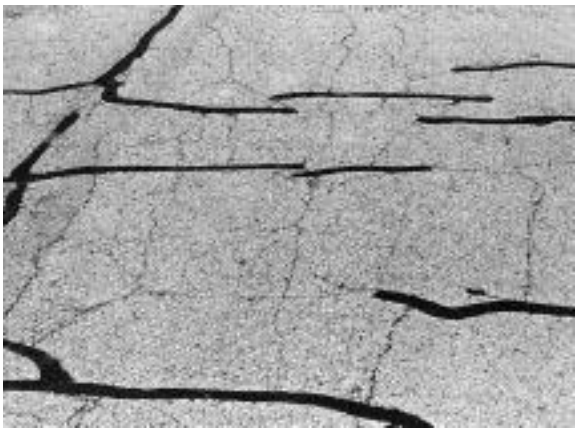
Roads show first signs of needing strengthening by overlay. They have very severe surface raveling which should no longer be sealed. First longitudinal cracking in wheel path. Many transverse cracks and some may be raveling slightly. Over 50% of the surface may have block cracking. Patches are in fair condition. They may have rutting less than ½" deep or slight distortion.

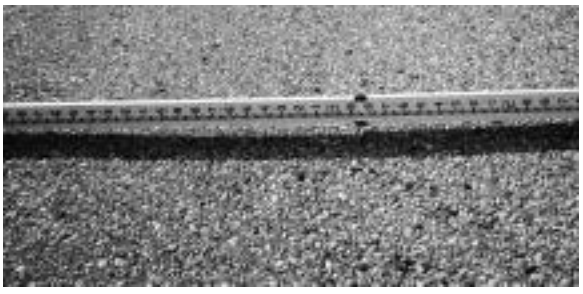
Severe raveling with ▼ extreme loss of aggregate.

Load cracking and slight ▼ rutting in wheel path.

◄ Longitudinal cracking; early load-related distress in wheel path. Strengthening needed.

▼ Slight rutting; patch in good condition.





◄ Extensive block cracking. Blocks tight and sound. Slig g in wheel pat

RATING 3

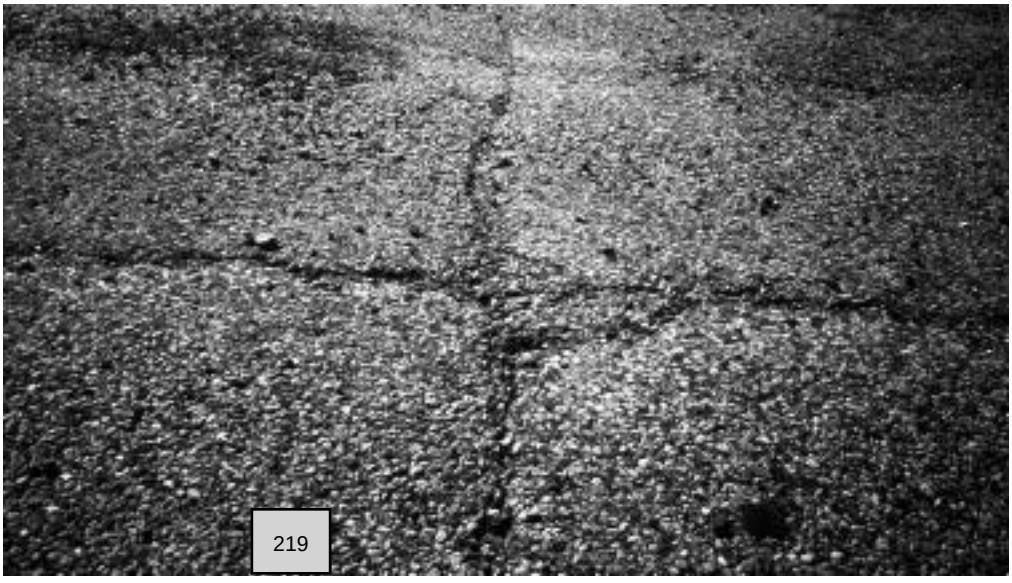
POOR–

Structural improvement required

Roads must be strengthened with a structural overlay (2“ or more). Will benefit from milling and very likely will require pavement patching and repair beforehand. Cracking will likely be extensive. Raveling and erosion in cracks may be common. Surface may have severe block cracking and show first signs of alligator cracking. Patches are in fair to poor condition. There is moderate distortion or rutting (1-2”) and occasional potholes.

► **Many wide and raveled cracks indicate need for milling and overlay.**

► **2” ruts need mill and overlay.**



► **Open and raveled block cracks.**

RATING 3

POOR — (continued)

Structural improvement required

◄ **Alligator cracking. Edge needs repair and drainage needs improvement prior to rehabilitation.**

▼ **Distortion with patches in poor condition. Repair and overlay.**

RATING 2

VERY POOR—
Reconstruction required

Roads are severely deteriorated and need reconstruction. Surface pulverization and additional base may be cost-effective. These roads have more than 25% alligator cracking, severe distortion or rutting, as well as potholes or extensive patches in poor condition.

► **Extensive alligator cracking. Pulverize and rebuild.**

▲ **Severe rutting. Strengthen base and reconstruct.**

▲ **Patches in poor condition, wheelpath rutting. Pulverize, strengthen and reconstruct.**

► **Severe frost damage. Reconstruct.**

RATING 1

FAILED —

Reconstruction required

Roads have failed, showing severe distress and extensive loss of surface integrity.

◄ **Potholes from frost damage. Reconstruct.**

◄ **Potholes and severe alligator cracking. Failed pavement. Reconstruct.**

Ext

◄ **Extensive loss of surface material: Rebuild**

Practical advice on rating roads

Inventory and field inspection

Most agencies routinely observe roadway conditions as a part of their normal work and travel. However, an actual inspection means looking at the entire roadway system as a whole and preparing a written summary of conditions. This inspection has many benefits over casual observations. It can be helpful to compare segments, and ratings decisions are likely to be more consistent because the roadway system is considered as a whole within a relatively short time.

An inspection also encourages a review of specific conditions important in roadway maintenance, such as drainage, adequate strength, and safety.

A simple written inventory is useful in making decisions where other people are involved. You do not have to trust your memory, and you can usually answer questions in more detail. Having a written record and objective information also improves your credibility with the public.

Finally, a written inventory is very useful in documenting changing roadway conditions. Without records over several years it is impossible to know if road conditions are improving, holding their own, or declining.

Annual budgets and long range planning are best done when based on actual needs as documented with a written inventory.

The Wisconsin DOT local road inventory (WISLR) is a valuable resource for managing your local roads. Adding PASER surface condition ratings is an important improvement.

Averaging and comparing sections

For evaluation, divide the local road system into individual segments which are similar in construction and condition. Rural segments may vary from ½ mile to a mile long, while sections in urban areas will likely be 1-4 blocks long or more. If you are starting with the WISLR Inventory, the segments have already been established. You may want to review them for consistent road conditions.

Obviously, no roadway segment is entirely consistent. Also, surfaces in one section will not have all of the types of distress listed for any particular rating. They may have only one or two types. Therefore, some averaging is necessary.

The objective is to rate the condition that represents the majority of the roadway. Small or isolated conditions should not influence the rating. It is useful to note these special conditions on the inventory form so this information can be used in planning specific improvement projects. For example, some spot repairs may be required.

Occasionally surface conditions vary significantly within a segment. For example, short sections of good condition may be followed by sections of poor surface conditions. In these cases, it is best to rate the segment according to the worst conditions and note the variation on the form.

The overall purpose of condition rating is to be able to compare each segment relative to all the other segments in your roadway system. On completion you should be able to look at any two pavement segments and find that the better surface has a higher rating.

Within a given rating, say 6, not all pavements will be exactly the same. However, they should all be considered to be in better condition than those with lower ratings, say 5. Sometimes it is helpful in rating a difficult segment to compare it to other previously rated segments. For example, if it is better than one you rated 5 and worse than a typical 7, then a rating of 6 is appropriate. Having all pavement segments rated in the proper relative order is most important and useful.

Assessing drainage conditions

Moisture and poor pavement drainage are significant factors in pavement deterioration. Some assessment of drainage conditions during pavement rating is highly recommended. While you should review drainage in detail at the project level, at this stage simply include an overview drainage evaluation at the same time as you evaluate surface condition.

Urban drainage.

RATING:

Excellent

Good rural ditch and driveway culvert. Culvert end needs cleaning.
RATING: Good

High shoulder and no ditch lead to pavement damage. Needs major ditch improvement for a short distance.
RATING: Fair

No drainage leads to failed pavement.

RATING: Poor

Consider both pavement surface drainage and lateral drainage (ditches or storm sewers). Pavement should be able to quickly shed water off the surface into the lateral ditches. Ditches should be large and deep enough to drain the pavement and remove the surface water efficiently into adjacent waterways.

Look at the roadway crown and check for low surface areas that permit ponding. Paved surfaces should have approximately a 2% cross slope or crown across the roadway. This will provide approximately 3“ of fall on a 12‘ traffic lane. Shoulders should have a greater slope to improve surface drainage.

A pavement’s ability to carry heavy traffic loads depends on both the pavement materials (asphalt surfacing and granular base) and the strength of the underlying soils. Most soils lose strength when they are very wet. Therefore, it is important to provide drainage to the top layer of the subgrade supporting the pavement structure.

In rural areas, drainage is provided most economically by open ditches that allow soil moisture to drain laterally. As a rule of thumb, the bottom of the ditch ought to be at least one foot below the base course of the pavement in order to drain the soils. This means that minimum ditch depth should be about 2‘ below the center of the pavement. Deeper ditches, of course, are required to accommodate roadway culverts and maintain the flow line to adjacent drainage channels or streams.

You should also check culverts and storm drain systems. Storm drainage systems that are silted in, have a large accumulation of debris, or are in poor structural condition will also degrade pavement performance.

The T.I.C. publication, *Drainage Manual: Local Road Assessment and Improvement*, describes the elements of drainage systems, depicts them in detailed photographs, and explains how to rate their condition. Copies are available from the Transportation Information Center.

Planning annual maintenance and repair budgets

We have found that relating a normal maintenance or rehabilitation procedure to the surface rating scheme helps local officials use the rating system. However, an individual surface rating should not automatically dictate the final maintenance or rehabilitation technique.

You should consider future traffic projections, original construction, and pavement strength since these may dictate a more comprehensive rehabilitation than the rating suggests. On the other hand, it may be appropriate under special conditions to do nothing and let the pavement fully deteriorate, then rebuild when funds are available.

Summary

Using local road funds most efficiently requires good planning and accurate identification of appropriate rehabilitation projects. Assessing roadway conditions is an essential first step in this process. This asphalt pavement surface condition rating procedure has proved effective in improving decision making and using highway funds more efficiently. It can be used directly by local officials and staff. It may be combined with additional testing and data collection in a more comprehensive pavement management system.

Transportation Info

Pavement Surface Evaluation and Rating (PASER) Manuals

Asphalt PASER Manual, 2002, 28 pp.

Brick and Block PASER Manual, 2001, 8 pp.

Concrete PASER Manual, 2002, 28 pp.

Gravel PASER Manual, 2002, 20 pp.

Sealcoat PASER Manual, 2000, 16 pp.

Unimproved Roads PASER Manual, 2001, 12 pp.

Drainage Manual

Local Road Assessment and Improvement, 2000, 16 pp.

SAFER Manual

Safety Evaluation for Roadways, 1996, 40 pp.

Flagger's Handbook (pocket-sized guide), 1998, 22 pp.

Work Zone Safety, Guidelines for Construction, Maintenance, and Utility Operations, (pocket-sized guide), 1999, 55 pp.

Wisconsin Transportation Bulletins

#1 Understanding and Using Asphalt

#2 How Vehicle Loads Affect Pavement Performance #3 LCC—Life Cycle Cost Analysis

#4 Road Drainage

#5 Gravel Roads

#6 Using Salt and Sand for Winter Road Maintenance #7 Signing for Local Roads

#8 Using Weight Limits to Protect Local Roads #9 Pavement Markings

#10 Seal Coating and Other Asphalt Surface Treatments #11 Compaction Improves Pavement Performance

#12 Roadway Safety and Guardrail

#13 Dust Control on Unpaved Roads

#14 Mailbox Safety

#15 Culverts-Proper Use and Installation

#16 Geotextiles in Road Construction/Maintenance and Erosion Control #17 Managing Utility Cuts

#18 Roadway Management and Tort Liability in Wisconsin #19 The Basics of a Good Road

#20 Using Recovered Materials in Highway Construction #21 Setting Speed Limits on Local Roads

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