



FEMA

Finding of No Significant Impact

Flood Reduction and Resiliency Project City of Reedsport, Oregon

FEMA Pre-Disaster Mitigation Program, PDMC-PJ-10-OR-2017-007

The City of Reedsport (City) applied to the Federal Emergency Management Agency (FEMA) through the Oregon Office of Emergency Management for a fiscal year 2018 grant under FEMA's Pre-Disaster Mitigation Program (PDM) for a flood reduction and resiliency project on its existing levee system. The PDM is authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's PDM program provides grants to eligible states, territories, and local governments and federally recognized tribes to reduce overall risk to the population and structures from future hazard events as well as reduce reliance on federal funding from future disasters.

Reedsport is in western Douglas County, Oregon, 11.6 river miles from the Pacific Ocean on the Umpqua River adjacent to its confluence with the Smith River and Scholfield Creek. Reedsport's existing levee, designed to protect the City up to a 200-year flood event (i.e., a 0.5 percent annual chance of occurring) plus three feet of freeboard, is an approximately 2.9-mile-long flood reduction system consisting of earthen levees and concrete and sheet pile floodwalls. Six gravity drains, with tide and flap gates, positioned at low points around the City drain water from behind the levee. Additionally, four pump stations transport water over the levee during high tides or major flood events when gravity drains cannot adequately transport the stormwater runoff accumulating inside the levee. Since the original construction of the Reedsport levee in 1971, settlement has caused some portions of the levee to decrease in height by approximately 5 feet and pump systems have aged.

The purpose of the Proposed Action is to address deficiencies to the existing levee system by rebuilding and updating about 4,500 feet of the levee and associated facilities to protect the eastern portion of the City from up to a 500-year flood event (i.e. 0.2 percent annual chance of occurring) at least over the next 40 years. The proposed retrofits consist of new or replacement concrete or sheet pile floodwalls, earthen levee embankment reconstruction, seepage mitigation, and roadway reconstruction. About 40,000 cubic yards of suitable soil material would be sourced from a recently logged City-owned property. Improvements to the pump stations, conveyance piping, and gravity drains are also planned for future, non-FEMA funding. Work would be completed over a 2-year construction period across 16 levee sections.

Findings

FEMA prepared an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321-4347, as amended, as implemented by the regulations promulgated by the Council on Environmental Quality (CEQ) (40 C.F.R. §§ 1500-1508), and in accordance with Department of Homeland Security (DHS) Instruction Manual 023-01-001-01, Implementation of the National Environmental Policy Act, FEMA Instruction 108-1-1, Instruction on Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program Requirements, and FEMA Directive 108-1, Environmental Planning and Historic Preservation Responsibilities and Program Requirements. Changes to the NEPA regulations became effective on September 14, 2020 and as stated in 40 C.F.R. § 1506.13, the new regulations apply to any NEPA process begun after that date. FEMA and the City of Reedsport began working on the analyses presented in this EA in 2019, therefore the EA conforms to the CEQ regulations that were in place prior to September 14, 2020.

The EA, which is incorporated by reference in this Finding of No Significant Impact (FONSI), identified and evaluated potential individual and cumulative environmental impacts from the proposed action and a no action alternative. It also described alternatives that were considered and dismissed.

FEMA consulted with the National Marine Fisheries Service (NMFS) under Section 7(a)(2) of the Endangered Species Act (ESA). NMFS issued a Biological Opinion (BiOp) and Incidental Take Statement (ITS) on November 8, 2022 (WCRO-2021-01247), finding that the proposed action is not likely to jeopardize the continued existence of Oregon Coast coho salmon, southern DPS North American green sturgeon, or southern DPS Pacific eulachon.

FEMA consulted with the Oregon State Historic Preservation Office and Tribes under Section 106 of the National Historic Preservation Act (NHPA). FEMA determined that the proposed action would have no adverse effect to historic properties or cultural resources. The Oregon SHPO concurred with FEMA's findings for below ground resources on November 4, 2021 and for built environment resources on October 27, 2022 (Case No. 21-1356). Consultation with the Tribes was completed on June 6, 2022.

The EA describes various measures to avoid, minimize and mitigate identified or potential adverse effects during project implementation. These measures are included as project conditions in the attachment to this FONSI. The analysis determined the proposed action will not affect wild and scenic rivers, land use and zoning, sole source aquifers, or hazardous materials either because the resource or consideration does not exist in the project area or proposed activities will have no effect on them.

The EA (Table 14) summarizes the proposed action's anticipated impacts. The proposed action will result in negligible or minor impacts to soils, geology, air quality, climate change, wetlands, coastal zone, vegetation, birds and their habitat, fish and their habitat, wildlife, and visual aesthetics. There will not be any disproportionate high adverse effects on low income or minority populations.

The proposed action will result in moderate long term beneficial impacts to water quality, traffic, public health and safety, and economics with a decrease in localized flooding after the levee is stabilized and raised. FEMA expects that there will be on-going moderate adverse impacts on floodplain functions, as well as short term moderate adverse impacts from noise and vibrations and on recreational resources as described in the EA. With the avoidance, minimization, and mitigation measures, none of the identified or potential adverse effects that would be caused by the proposed action, as defined in the CEQ regulations at 40 C.F.R. 1508.8(a) and (b), would be significant. In the long-term, the Proposed Action's reduced flood risks will benefit Reedsport's residences, businesses, and the water quality and habitat surrounding the city.

FEMA made the draft EA available to the public and interested parties for review and comment from November 4, 2022 to December 6, 2022. FEMA used various public outreach methods to make the draft EA available. 42 people, including 4 elected officials, 6 City employees, and 8 virtual attendees, attended the public meeting at the Reedsport Community Center on November 15, 2022. Ten members of the public spoke at the public meeting and FEMA received five written comments after the meeting. As appropriate, FEMA has addressed these oral and written comments in the final EA.

In accordance with 44 CFR Section 9.12 (Floodplain Management), this FONSI also serves as a final public notice for FEMA's final decision to award a grant that will affect a floodplain and wetlands. FEMA has determined the only practicable alternative is to fund the rebuilding and updating of the levee and associated facilities to protect the eastern portion of the City from up to a 500-year flood event.

Funding for the proposed project will be conditional upon compliance with all applicable federal, tribal, state and local laws, regulations, floodplain standards, permit requirements and conditions.

Conclusion

The Proposed Action is the selected alternative because the No Action alternative would not address the purpose and need stated in the EA and no other practical alternatives were identified. Based upon the information contained in the grant application, the EA, and conditions in Attachment A of this FONSI; and in accordance with the DHS Instruction Manual, FEMA's Instruction and Directive, and Executive Orders (EOs) addressing floodplains (EO 11988), wetlands (EO 11990), and environmental justice (EO 12898), FEMA has determined that the Proposed Action will not cause significant impacts on the quality of the natural and human environment. As a result of this FONSI, an environmental impact statement (EIS) will not be prepared and the project, as described in the grant application, the EA, and the conditions in Attachment A, may proceed.

APPROVAL

**SCIENCE
A KILNER** Digitally signed by
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1/18/2023

Science Kilner
Regional Environmental Officer
FEMA Region 10

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ENDORSEMENT

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Jackie Pritchard
Community Resilience Infrastructure Branch Chief
FEMA Region 10

Date

Attachment A – Project Conditions

The City of Reedsport (including its contractors) shall implement the Proposed Action and comply with the following project conditions, best management practices, and mitigation measures, as detailed in the EA. Compliance must be documented as part of the grant's closeout. Many of these are incorporated into the proposed action's scope of work:

- Soils and Waste
 - Removed asphalt will be disposed at a licensed asphalt recycling pit selected by the contractor.
 - Hydroseed the redistributed topsoil in the soil acquisition areas with a native seed mix to stabilize the soil and prevent erosion.
- Air Quality
 - All construction activities would have to comply with OAR 340-208, which contains requirements related to visible emissions (e.g., diesel-related opaque emissions), and fugitive emissions (e.g., dust from road grading, excavation, and transport of soil to and from the project site).
 - Construction contractors and subcontractors will be required to use reasonable precautions to minimize fugitive dust emissions and comply with OAR 340-208-0210 such as water application, spraying water in work areas, washing truck wheels and using gravel driveways at construction and staging access points, covering piles, minimizing traffic and traffic speeds on bare soils, covering of open bodied trucks, daily clean-up, and minimizing the idling of diesel-powered equipment.
- Water Quality
 - Contaminated or sediment-laden water, or water contained within an isolation barrier or excavated trench, would not be discharged directly into any Waters of the State or wetland until it has been satisfactorily treated (e.g., by bioswale, filter, settlement pond, pumping to a vegetated upland location, bio-bag, or dirtbag).
 - Spill prevention measures and fuel containment systems designed to completely contain a potential spill, as well as other pollution control devices and measures (such as diapering, parking on absorbent material, etc.) adequate to provide containment of hazardous materials, would be implemented.
 - Sediment barriers would be installed to prevent spoils or sediment-laden water from entering any waterbody.
 - Any activity that causes turbidity to exceed 10% above natural stream turbidity is prohibited except as specifically provided below:
 - Turbidity monitoring must be conducted and recorded as described below. Monitoring must occur at two hour intervals each day during daylight hours when in-water work is being conducted. The Applicant must compare turbidity monitoring results from the compliance points to the representative background levels taken

during each two – hour monitoring interval. Pursuant to OAR 340-041-0036, short term exceedances of the turbidity water quality standard are allowed.

- In-water work would only be conducted during the approved work window for the Umpqua River Estuary, which is November 1 to January 31, per Oregon Guidelines for Timing of In-water Work to Protect Fish and Wildlife Resources (ODFW 2022), to minimize impacts to fish.
- Equipment for work required in the OHWE would be staged on top of the levee and extensions would reach the work areas.
- Sediment disturbance within the OWHE and near the banks of Scholfield Creek and the Umpqua River would require installation of silt curtains in portions of these waterways.
- Wetlands
 - Purchase 0.17 acres of mitigation credits from the Wilbur Island Mitigation Bank to offset impacts to wetland habitat.
- Vegetation
 - Return levee, pumping station, and gravity drainage improvement areas to pre-construction conditions in accordance with the approved Planting Plan.
 - Replace loss of riparian shading by planting live willow cuttings along the bank of Scholfield Creek in accordance with the approved Planting Plan.
 - Implement BMPs, including rinsing equipment before arrival to the site, to ensure that invasive species are not transported into the work areas on construction equipment.
- Fish
 - Fish depletion will be supervised by a qualified fish biologist, who will determine at what point the fish removal process has effectively reached depletion.
 - Use a sediment curtain and fish seining with dewatering, if required, to occur over the course of approximately 12 hours to allow fish to voluntarily leave the work area.
 - Remaining fish in the isolated area will be removed first by seining or using dip nets, then by electrofishing if needed. Electrofishing will be completed according to NMFS and ODFW electrofishing guidelines.
 - All handled fish will be recorded, placed in aerated buckets, examined, identified, then released outside the project area in similar habitat.
 - Electrofishing will be conducted early in the day to minimize stress to salmonids. Fish capture will be conducted when stream temperatures are at or below 15° Celsius, to the extent practical. The work is anticipated to occur during one in-water work window.
 - Use a bubble curtain to mitigate underwater pile driving noise impacts at the 16th Avenue Pumping Station.
 - Monitor distance of visible suspended sediment plumes throughout the in-water work of the project. If the project exceeds a visible continuous sediment plume of 600 feet, all work resulting in elevated suspended sediment must stop until the plume dissipates to match baseline conditions (RPM 1, elevated suspended sediment).

- Conduct pile driving with an impact hammer within 200 feet of Scholfield Creek or McIntosh Slough only during daylight hours with the sun above the horizon. This is to ensure that pile driving does not occur at dawn or dusk, which can be peak movement time for OC coho salmon (RPM 2, elevated sound pressure).
- Use daily soft start procedures when implementing impact pile driving near waterbodies when ESA-listed fish or marine mammals are present.
- Allow a minimum rest period of 12 hours between daily pile driving activities within 200 feet of Scholfield Creek or McIntosh Slough during which no impact pile driving occurs (RPM 2).
- While minimizing water quality effects on EFH, also minimize effects on space from work area isolation by reducing the area of isolation to the smallest area necessary and reducing the duration of isolation to the least amount of time necessary.
- Monitor underwater sound according to the Federal Hydroacoustics Working Group underwater noise monitoring plan template; submit a Project Completion Report to FEMA and NMFS within 60 days of completing construction; and submit a Fish Salvage Report within 60 days of completing fish capture and release events. The BiOp specifies what contents each report requires. (RPM 3 monitoring and reporting).
- Birds
 - Prior to start of construction, construction managers shall document all active eagle nests within 660 feet of construction locations.
 - If there is the potential for a nesting pair to be disturbed by project actions or habitat modifications within 330 feet of the active nest, an incidental eagle take permit will be needed from USFWS (PermitsR1MB@fws.gov)
<https://www.fws.gov/library/collections/migratory-bird-permit-memorandum-series>.
 - If the trees need to be removed during construction, the contractor will only remove them outside of nesting season for migratory birds.
 - Existing swallow nests would either be removed outside of nesting season or protected with a net barrier to prevent impacts to nesting from pile driving.
 - Contractors shall check all areas of project work for active nests (tree, shrub, ground) and flag any areas that must be avoided.
 - The City will also coordinate with the USFWS to acquire necessary permits if impacts to nesting birds cannot be avoided. (PermitsR1MB@fws.gov)
<https://www.fws.gov/library/collections/migratory-bird-permit-memorandum-series>.
- Archaeological and Historic Resources
 - Include an Inadvertent Discovery Plan (IDP) in the construction documents to describe procedures for actions to be taken in the event of the discovery of cultural, archeological or historic resources during construction.
 - If additional cultural, archaeological or historic resource resources are discovered, implement IDP, cease ground disturbance in that area until a professional archaeologist or can evaluate the discovery in coordination with FEMA.

- **Traffic and Transportation**
 - To inform City residents and businesses, road closure and work notifications would be published in the newspaper and on the City's websites and via their social media accounts at least 14 days before the work commences.
 - Close and lock the soil acquisition area access gate from Crestview Drive. Trucks will use the access gate near Scolfield Road on State Route 38 and not Crestview Drive.
 - Access to this construction staging area will be from Hwy 101 and the unimproved right of way for 17th Street to minimize impact to the residences on Hawthorne Avenue. The area consists of 2.2 acres of flat, open field, but only the area near the levee will be used for staging.
- **Noise**
 - No soil removal at the upland area will occur until two hours past sunrise.
 - Upland soil removal activities will cease two hours before sunset.
 - No construction will take place on Saturdays, Sundays, state and federal holidays.
 - No construction-related activities, including worker arrivals and engine run-ups, would take place during the hours of 6 p.m. to 7 a.m.
 - Staging areas near residential areas (see sections below) will remain closed between these hours so that construction workers do not arrive early or start-up and warm-up equipment during these hours. No on-site construction engine start-up or warm-ups will be permitted during these hours, including at the levee or pile driving work locations.
 - Where possible, disable backup alarms of vehicles and equipment based at the staging sites, provide adequate turning radiuses at these sites to minimize backup alarms for transient trucks and other delivery vehicles. Limit idling of engines, require these restrictions in the construction documents, and provide visible on-site signage and enforcement.
 - At the staging areas, explore the feasibility of partial shielding with soil piles, construction trailers, and construction offices placed between equipment and residences; equipment mufflers and shields; and wood or straw bail enclosures for stationary equipment.
 - No pile driving at segment 8 off Juniper Avenue until two hours past sunrise and cease pile driving two hours before sunset.
 - Pile driving using a sonic pile driver, auger piles, micro piles, helix piles, an echo barrier, or a noise dampening shield in all areas that the thresholds would be exceeded.
 - Near Champion Park, coordinate with the owner or resident to conduct an opt-in baseline assessment of the structure before work commences and then conduct a post-construction assessment. The City would fix or replace any damage caused by the pile driving.
- **Economic**
 - Notify businesses prior to temporary closures and construction periods.
 - Ensure pedestrian and vehicle access at all times.



Final Environmental Assessment

City of Reedsport, Oregon Flood Reduction and Resiliency Project

Pre-Disaster Mitigation Grant Program

PDMC-PJ-10-OR-2017-007

January 2023



FEMA

**U.S. Department of Homeland Security
Federal Emergency Management Agency, Region X
130 – 228th Street SW
Bothell, WA 98021**

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ACRONYMS AND ABBREVIATIONS

AADT	Annual Average Daily Traffic	HUD	US Department of Housing and Urban Development
ACOE	U.S. Army Corps of Engineers	IDP	Inadvertent Discovery Plan
ACS	American Community Survey	IPAC	Information for Planning and Consultation
AMSL	Above Mean Sea Level	ITS	Incidental Take Statement
AP	Anderson Perry & Associates, Inc.	LiDAR	Light Detection and Ranging
APE	Area of Potential Effects	LOMR-F	Letter Of Map Revision for Fill
BA	Biological Assessment	MBTA	Migratory Bird Treaty Act
BFE	Base Flood Elevation	MSA	Magnuson-Stevens Fisheries Conservation and Management Act
BGS	Below Ground Surface	NAAQS	National Ambient Air Quality Standards
BiOp	Biological Opinion	NEPA	National Environmental Policy Act
BMPs	Best Management Practices	NHC	Northwest Hydraulics Consultants, Inc.
CEQ	Council for Environmental Quality	NHPA	National Historic Preservation Act
CFR	Code of Federal Regulations	NHRP	National Register of Historic Places
Cfs	Cubic Feet per Second	NMFS	National Marine Fisheries Service
CLOMR	Conditional Letter of Map Revision	NOAA	National Oceanic and Atmospheric Administration
CWA	Clean Water Act	NWI	National Wetlands Inventory
CY	Cubic Yards	OAR	Oregon Administrative Rules
CZMA	Coastal Zone Management Act	OCMP	Oregon Coastal Management Program
dba	A-weighted Decibel Noise Measure	ODA	Oregon Department of Agriculture
DCH	Designated Critical Habitat	ODEQ	Oregon Department of Environmental Quality
DHS	Department of Homeland Security	ODFW	Oregon Department of Fish and Wildlife
DLCD	Oregon Department of Land Conservation and Development	ODOT	Oregon Department of Transportation
DOGAMI	Oregon Department of Geology and Mines	ODSL	Oregon Department of State Lands
DPS	Distinct Population Segment	OEM	Oregon Office of Emergency Management
EA	Environmental Assessment	OHWE	Ordinary High Water Elevation
EFH	Essential Fish Habitat	ORBIC	Oregon Biodiversity Information Center
EJ	Environmental Justice	PDM	Pre-Disaster Mitigation Grant Program
EO	Executive Order	PPV	Peak Particle Velocity (for vibrations)
EPA	U.S. Environmental Protection Agency	ROW	Right Of Way
ESA	Endangered Species Act	SHFA	Special Flood Hazard Area
ESU	Evolutionary Significant Unit	SHPO	State Historic Preservation Office
FEMA	Federal Emergency Management Agency	SY	Square Yards
FHWA	Federal Highway Administration	TMDL	Total Maximum Daily Load
FWWG	Fisheries Hydroacoustic Working Group	USFWS	U.S. Fish and Wildlife Service
FIRM	Flood Insurance Rate Map	VdB	Vibration Decibels
FONSI	Finding of No Significant Impact		
FTA	Federal Transit Administration		
HRA	Historical Research Associates		

Cover photos (clockwise):

Mayer Henderson's Grocery Store during the 1964 Christmas Flood (Akre 2011)

Floodwall near Juniper Street & N. 13th Street, view to the west (Schwendiman 2021)

Levee southwest corner, south of the Rt. 101 bridge, view to the southwest (Schwendiman 2021)

1.0 Introduction

The City of Reedsport (City) proposes modifications to its levee system as part of a broader flood and seismic hazard resiliency strategy and has applied to the Federal Emergency Management Agency (FEMA), through the Oregon Office of Emergency Management (OEM), for a Fiscal Year (FY) 2018 grant under FEMA's Pre-Disaster Mitigation Grant Program (PDM). OEM would be the direct recipient for the grant, and the City would be the subrecipient. The PDM is authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Under the PDM, federal funds pay 75 percent of the project cost, and the remaining 25 percent comes from non-federal funding sources.

Reedsport lies in western Douglas County, Oregon, 11.6 river miles from the Pacific Ocean on the Umpqua River adjacent to its confluence with the Smith River and Scholfield Creek (Figure 1, Location and Vicinity Map). The mouth of the Umpqua has a drainage area of 4,560 square miles, and the flood levels apex with the accumulation of warm rains, snowmelt, and high tides. Since its incorporation in 1917, the City has been prone to flooding due to its location and low elevation, approximately 10 feet above mean sea level (AMSL) (Reedsport 2018). In the early 1900s, Reedsport was a "City on Stilts" with boardwalks around Rainbow Slough and the Umpqua riversides. Pilings supporting wooden streets raised 3-7 feet were throughout the lowland district in the eastern portion of the City.

Reedsport's most intense flooding episodes occurred in 1923, 1927, 1934, 1943, and 1964 (Schwendiman 2021) and the levee was originally constructed between 1925 and 1945. The 1964 flood, remembered as the Christmas Flood, was a 100-year flood event (i.e., a 1 percent annual chance of occurring) with water depths up to 4 feet in the City. The Reedsport Flood Damage Reduction Project was federally authorized by Section 205 of the 1948 Flood Control Act. The United States Army Corps of Engineers (ACOE) constructed earthen levees, floodwalls, closure structures, an interior drainage system, and pump stations in 1969 (AP 2022, ACOE 2022).

The existing levee, designed to protect the City up to a 200-year flood event (i.e., a 0.5 percent annual chance of occurring) plus three feet of freeboard, is an approximately 2.9-mile-long flood reduction system consisting of earthen levees and concrete and sheet pile floodwalls (Figure 2). Six gravity drains positioned at low point around the City drain water from behind the levee when river levels are low. Each gravity drain has a tide gate and flap gate to prevent high tide or floodwaters from Scholfield Creek or the Umpqua River from entering the land side of the levee.

Pumps transport water over the levee during high tides or major flood events when existing gravity drains cannot adequately transport the stormwater runoff accumulating on the interior side of the levee. Since the Reedsport Levee was built levee embankment settlement has occurred, and the aging pump stations required increased levels of maintenance and no longer adequately conveyed stormwater (Reedsport 2018).

In 2014, FEMA initiated a Douglas County Coastal Flood Study based on recent Light Detection and Ranging (LiDAR) data acquired by the Oregon Department of Geology and Mineral Industries (DOGAMI). The LiDAR data provided new elevation information for the Reedsport area. FEMA and the City determined that updated bathymetry, hydrology, and hydraulics were needed for the Reedsport Levee certification per 44 Code of Federal Regulations (CFR) 65.10, and for the updated Douglas County floodplain mapping.

Figure 1: Location and Vicinity Map

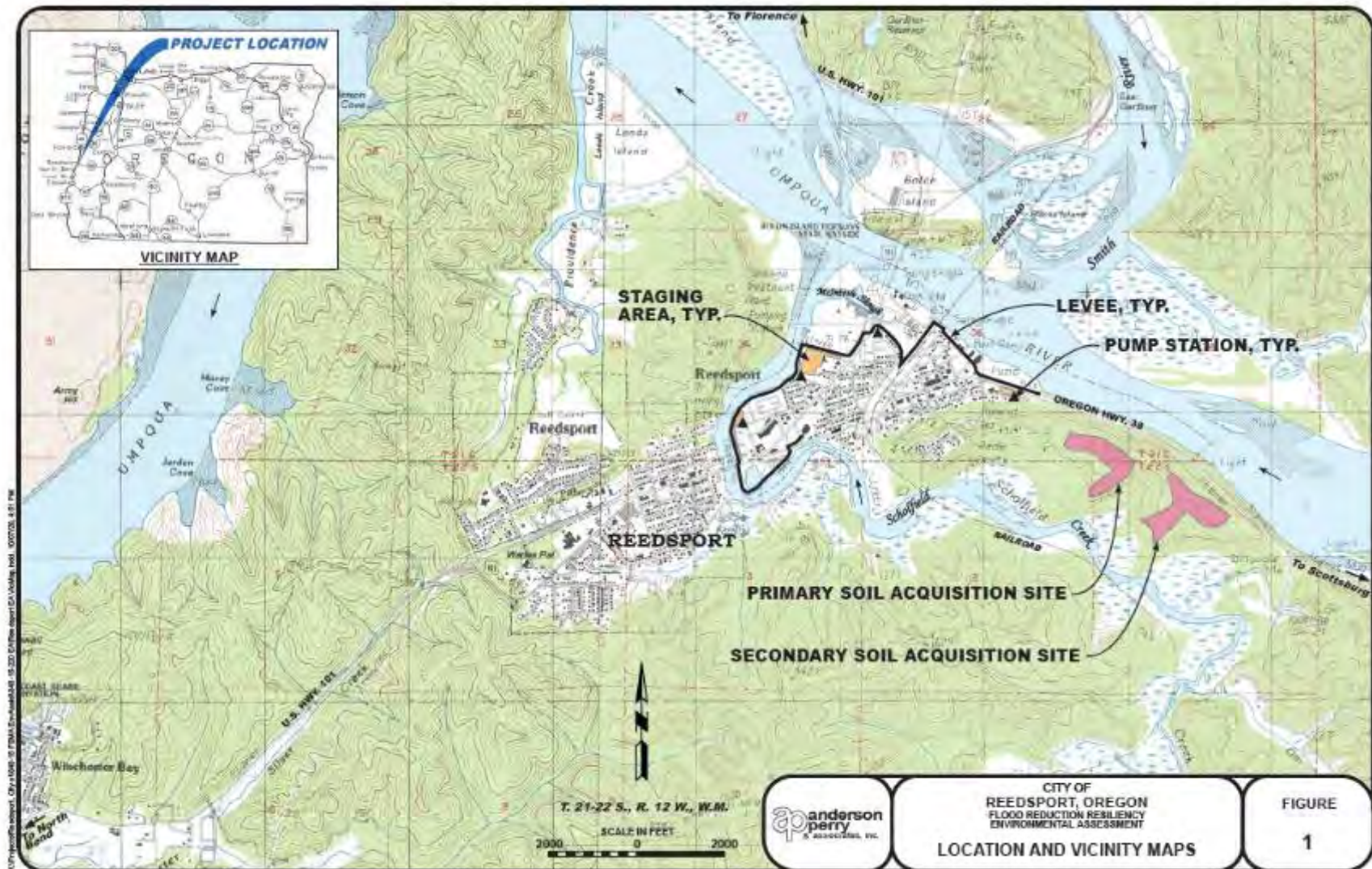


Figure 2: Existing Conditions



Since the construction of the levee, settlement has caused some portions of the existing levee to decrease in height up to five feet. The City applied for and was awarded a FEMA Flood Mitigation Assistance Program Advance Assistance grant (FY 2017) to develop a feasibility, engineering, and design study of alternatives to address the identified deficiencies.

This Environmental Assessment (EA) analyzes the impacts of the City's proposed plan to increase levee height and improve storm drainage systems to reduce risk to the City from future flooding events. These flooding events may be associated with riverine flooding, coastal storm surge, land subsidence, and sea level rise from a changing climate. With FEMA support, the proposed project would restore approximately 4,500 feet of the existing earthen levee, replace and add sheet piles and sections of concrete floodwall, install a sand berm and drainage trench, and reconstruct portions of three roads. FEMA would also support the improvements to the 16th avenue pump station.

Other elements of the City's plan, described in this EA, include continued and proposed upgrades to the stability, capacity and redundancy of the other pump stations, conveyance piping, and modernizing the gravity drains. These elements are not included in FEMA's proposed support. However, as detailed in Section 3.2 they are considered in associated environmental permit processes (e.g., Endangered Species Act, Clean Water Act, Cultural Resources Analysis), and are included in this EA as connected actions under NEPA (40 CFR 1501.9(e)(1)(iii)).

FEMA has prepared this EA in accordance with the National Environmental Policy Act (NEPA) of 1969; the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 CFR § 1500 to 1508); and the U.S. Department of Homeland Security's (DHS) Instruction 023-01-001, Revision 01 and FEMA Instruction 108-01-1, NEPA implementing procedures. Changes to the NEPA regulations became effective on September 14, 2020 and as stated in 40 CFR § 1506.13, the new regulations apply to any NEPA process begun after that date. Work on this EA commenced in 2019. Therefore, this EA conforms to the CEQ regulations that were in place prior to September 14, 2020.

FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of this EA is to analyze the potential environmental impacts of the proposed project. FEMA will use the findings in the EA to determine whether to prepare an environmental impact statement or to issue a finding of no significant impact (FONSI).

2.0 Purpose and Need

FEMA's PDM program provided grants to eligible states, territories, and local governments and federally recognized tribes to reduce overall risk to the population and structures from future hazard events as well as reduce reliance on federal funding from future disasters.

The purpose of this proposed project is to increase the City's resiliency to flood events from the Umpqua River, Smith River and Scholfield Creek. The City's goal is to reduce the risk of riverine flooding from a 500-year flood event (i.e., a 0.2 percent chance of occurring every year). The proposed project would reduce flood risks from riverine flooding, coastal storm surge, expected climate change triggered sea level, and continued levee subsidence.

Reedsport is geographically isolated from other communities in this coastal region of Oregon and is about 70 miles from Roseburg, the next major community in Douglas County. It serves as an outpost for the unincorporated surrounding communities and the municipal government for about 6,500 people. Peak summer tourist season travelers bring Reedsport's population up to about 10,000. Reedsport has about three miles of river frontage and much of the city is only several feet above sea level.

The City's levee system protects the community's midtown and historic downtown area which is home to a large population of low to moderate income residents (including high density U.S. Department of Housing and Urban Development [HUD] housing complexes), governmental offices (local, state, federal), critical facilities (such as the region's jail, fire department, sewer, and drinking water facilities), commercial core, and industrial facilities. Some utilities also provide services to nearby Gardiner and Winchester Bay. The levee also protects two major State highways, 101 and 38, and State bridges over Schofield Creek and the Umpqua River (Reedsport 2018).

The City's low elevation and location along the Umpqua River adjacent to its confluence with the Smith River and Scholfield Creek makes it vulnerable to recurring flood events. Additionally, over the past 50 years, the City's levee has been compromised by significant land settlement, which could leave the City vulnerable to a 100-year flood event. The bathymetry, hydrology, and hydraulics survey (AP 2016) showed that the original levee embankments have undergone settlement up to five feet in some places. A detailed vulnerability assessment completed in 2018 identified several locations along the levee where there are either overtopping, seepage, stability, or structural deficiencies. For future accreditation, it is important for the levee to be improved to meet the requirements of 40 CFR 65.10.

A significant flood event (Figure 3) could overtop or compromise the levee, resulting in up to ten feet of flood depths behind the levee in a matter of hours (Wells 2018). Such an event could result in major impacts to public safety and irreparable damage to the economic, social and cultural infrastructure. These impacts would be further exacerbated by a significant seismic event. Significant flood damages to Highways 101 and 38 and the bridges could require prolonged and lengthy detours, which would cause major transportation disruptions and economic losses for coastal communities that depend on this vital transportation infrastructure (Reedsport 2018). The economically distressed City, which lacks debt service and bonding capacity, would not be able to achieve its resiliency objectives without federal funding assistance (Reedsport 2018). Rising sea levels, increasing storm frequency and magnitude, increased winter snow-driven flows, and an advanced timing of the spring melt expected in the Pacific Northwest will only exacerbate flood events and these outcomes.

Figure 3: 100-Year (1 percent annual chance of occurring) Inundation Map



Source: Levee Vulnerability Assessment, from Anderson Perry & Associates to the City of Reedsport, December 18, 2018 (AP 2018b).

3.0 Alternatives

The CEQ regulations require federal agencies to consider a reasonable range of alternatives that meet the purpose and need for action in their NEPA review. This section describes the no action alternative, the proposed action, and alternatives that were considered but dismissed.

3.1 No Action Alternative

Under the no action alternative, FEMA would not fund the proposed flood risk reduction actions. The levee and associated structures would continue to deteriorate. Coupled with changing climate conditions and sea level rise, flood risk to local residences, commercial businesses, transportation systems, utilities, industrial facilities, and government buildings would increase.

The existing levee system includes approximately 12,000 feet of earthen levee, 1,000 feet of reinforced concrete T-floodwall, 630 feet of steel sheet pile floodwall, seven stop-log closure structures (ranging from 24-33 feet wide), six interior drainage structures, and four stormwater pump stations (Figure 2).

- The earthen levee embankments generally have a crown width of 12 feet, with some segments up to 16- or 18-feet wide. The levee height is generally 7 to 10 feet above adjacent landward elevation. Levee side slopes vary from 2 horizontal to 1 vertical and 3 horizontal to 1 vertical.
- The concrete floodwall has steel sheet pile in the middle acting as a hydraulic cutoff barrier. Wooden piles are driven approximately every 4 feet. There are approximately 1,200 feet of concrete floodwall with four stop log structures incorporated into the existing concrete floodwall. The floodwall is approximately 6.5 feet high.
- The steel sheet pile floodwall, otherwise known as an I-floodwall, is approximately 650 feet in length, embedded approximately 6.5 feet and rising 4.5 feet above the top of the levee.

This levee system can provide flood reduction for floods with 1-percent chance of occurring in a given year (100-year flood¹) without any freeboard, as demonstrated by its historical performance. However, with no freeboard, anticipated climate change impacts, and continued settlement, the impacts of flooding may become more severe (Figure 3).

Flood risk for the downtown area of the City and Highway 101 would remain at an unacceptable level. Impacts to local government operations would continue and be dealt with according to the existing Emergency Operation Plans at an increasing rate. Depending on the source, scale, and severity of future flood events; access to and or operation of buildings, facilities, and infrastructure in the affected area could be interrupted. These includes critical infrastructure such as emergency response facilities and utilities. Flood damage claims would increase over time, ranging from claims to address minor damages

¹ The flood has a 1-percent chance of occurring in any given year. During the span of a 30-year mortgage, a home in the 1-percent Annual Exceedance Probability or 100-year floodplain has a 26-percent chance of being flooded at least once during those 30 years. The value of 26-percent is based on probability theory that accounts for each of the 30 years having a 1-percent chance of flooding.

to extensive and costly claims for replacing destroyed buildings and infrastructure. Moreover, a sudden failure to the levee could result in mass casualties (Reedsport 2018).

Under the no action alternative, the City will continue to rely on the four existing pump stations and six existing gravity drains, upgrading when local funds and grants are available. Gravity drains are effective during low tide but when tidal waters are high or during flood events, Reedsport relies on these pump stations to evacuate the water from the inside of the levee. The stations are located at Elm Street/Highway 38, 7th Street, 12th Street, and 16th Street (see Figure 2). Due to the age of the pump stations, maintenance requirements continue to increase and the pumps do not provide adequate pumping capacity for high-flood events. The City has made some improvements (see Section 3.2.3) to the pumps and support structures, but additional work is needed.

The no action alternative is included in the analysis as a benchmark to allow decision makers and the public to compare the effects of the alternatives.

3.2 Proposed Action – Levee System Improvements

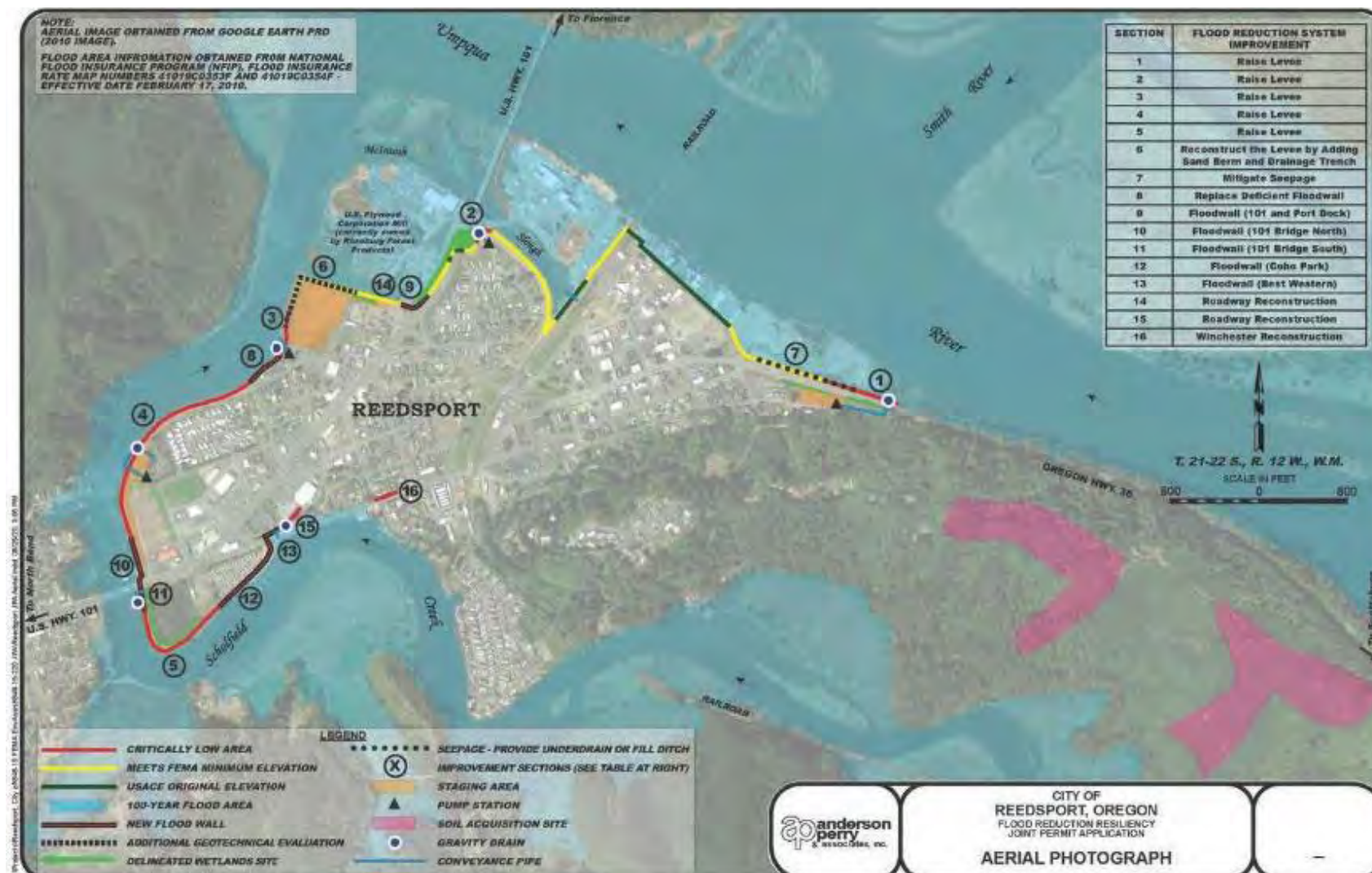
The proposed action would address deficiencies to the levee system by rebuilding and updating the levee and associated facilities to protect the eastern portion of the City from up to a 500-year flood event (i.e. 0.2 percent annual chance of occurring) at least over the next 40 years. This EA uses the term “increase in levee resiliency” interchangeably with the term “levee raising” when describing the correction of levee settlement that has occurred over the past 50 years.

The proposed project includes infrastructure retrofits that consist of floodwall construction, levee embankment reconstruction, seepage mitigation, and roadway reconstruction. The City would use earthen fill in locations that are practical and use concrete or sheet pile floodwalls where there are existing sheet pile floodwalls or where there is the potential for impacts to adjacent structures or facilities if using fill. The City would replace one floodwall and construct up to five new floodwalls to meet the flood elevation height requirements. Additional work will be required to reduce the risk associated with potential seepage. Improvements to the pump stations, conveyance piping, and gravity drains are also planned for future, non-FEMA funding.

Work would be completed over a 2-year construction period. Protection would be achieved by restoring approximately 4,500 feet of the levee back to its original height (protection to a 200-year flood event plus, 3 feet of freeboard), thereby achieving the 500-year flood event level of protection plus two additional feet of freeboard elevation. Work on the levee will undergo ACOE review to alter the federally-built levee per Section 408 of the River and Harbors Act. Work would also meet Oregon Department of Transportation (ODOT) construction standards and FEMA levee certification standards per 44 CFR Part 65.10.

The following sections detail the proposed project components as presented in Figure 4.

Figure 4: Proposed Project Components



3.2.1 Levee Improvements

The levee is divided into 16 sections (see Figure 4) that require various levels of excavation, construction, and reconstruction based on the preexisting infrastructure and potential impacts to adjacent areas. Appendix A presents the preliminary design drawing for each section. Raising the levee involves excavation of the existing surface to create a platform, placement of additional material, and compaction. Compaction would occur several times as more material is added to the levee.

Sections 1-5 comprise approximately 4,155 discontinuous feet of earthen levee that have settled to critically low elevations. These sections would be raised using soil, 3/4-inch crushed rock, and geosynthetic fiber. Approximately 7,400 cubic yards (CY) of existing levee material would be temporarily removed and reused on site. An additional 37,000 CY of soil, 2,240 tons of 3/4-inch crushed rock, and 6,250 square yards (SY) of geosynthetic fabric would raise and stabilize these sections of the levee.

Section 6 consists of approximately 700 feet of existing earthen levee. Due to issues of underseepage, this portion of the levee would be stabilized using a sand berm and sand trench. The area will be filled with imported sand to a depth of 3 feet and a 4-foot-wide, 14-foot-deep, and 675-foot-long trench would be excavated on the northernmost side. Sand would be placed in the trench to reduce risk of underseepage. Once all sand is placed, the drainage trench would be covered with a mounded crushed rock trench cap, the stockpiled topsoil and vegetation would be replaced on the sand berm, and the site would be restored.

Section 7 of the levee is approximately 600 feet long and would be raised as part of Section 1. However, the section does not meet geotechnical factors of safety for underseepage. This issue would be addressed by installing 600 feet of 48-inch culvert or horizontal relief pressure drains along a preexisting ditch. Drainage pipe installation would require excavation of the ditch, placement of the culvert, and fill for stabilization and proper drainage.

Sections 8 through 13 require floodwall reconstruction. Floodwalls constructed in these sections would be placed on top of the existing earthen levee, on the river side of center of the levee. The floodwalls would be driven to approximately 40 feet below the surface of the levee. General design elements/features include the following for each section:

- Section 8: Reconstruct 650 feet of floodwall with an 8-foot concrete floodwall and piles
- Section 9: Reconstruct 300 feet of floodwall with 6-foot, 6-inch concrete floodwall and piles
- Sections 10-12: Reconstruct 2,410 feet of floodwall with 4-foot, 6-inch concrete floodwall and piles
- Section 13: Reconstruct 220 feet of floodwall with 5-foot, 6-inch concrete floodwall and piles

Sections 14 through 16 are areas that pool water and flood during high water and storm events. To improve drainage in these areas, the roadways would be raised to the original ACOE levee height and meet the 500-year flood plus 2 feet of freeboard elevation. Approximately 850 feet of roadway would be raised with the placement of additional fill material split among Sections 14, 15, and 16 (150 feet, 176 feet, and 525 feet, respectively).

In each segment, the existing roadway would be excavated and asphalt would be removed to a licensed asphalt recycling pit selected by the contractor. The roadway would be raised using 3/4-inch crushed rock and roadway fill, stabilized with geosynthetic fabric, compacted and leveled, and finished with hot-mix asphalt.

3.2.2 Soil Acquisition Area

Additional soil will be needed for the levee work. The soil acquisition area is approximately 30 acres and is located on City property approximately 300 to 400 feet above mean sea level (AMSL) (see Figure 1). The soil acquisition area is partially located within the boundaries of two City Timber Sale Units; one was logged between June and September 2018 and the other was logged in 2002. No other activity has occurred on this site after the harvesting of timber. The soil has been tested and meets suitability requirements for placement on the levee (Reedsport 2018).

Figure 5: Soil Acquisition West Area Photographs



Source: AP 2021

The soil acquisition area is fenced and is not accessible to the public. Soil will be excavated using track-mounted excavators and transported via rubber-tired dump trucks. Vegetation, including some trees, may need to be removed. However, this area has already been disturbed by recent logging and does not support any attributes of mature forested stands. A secondary soil acquisition area, approximately 800 feet southeast of the primary acquisition area, is available but not anticipated to be used.

Approximately 40,000 CY of soil would be needed to return the levee to its original height. All soil material would be acquired from the soil acquisition area. Excavation of the area is anticipated to extend to up to 20 feet below ground surface. One foot of topsoil will be segregated for reuse during restoration. Segregated topsoil will be spread over the top of the site following construction to restore the disturbed areas. All disturbed areas will be hydroseeded with a native seed mix to stabilize the soil and prevent erosion.

An additional approximately 40,000 CY of sand will be needed for the trench in Section 6 of the levee alignment. This domestic, commercial sand will have to be trucked to the project site.

3.2.3 Pump Station and Drainage Improvements

Improvements to the pump station and drainage are not included in FEMA's support. However, they are included in the associated environmental permits and are therefore described and analyzed in this EA as connected actions.

The City plans on continuing upgrades to the four pumping stations at 7th Street, 12th Street, 16th Street, and Highway 38/Elm Avenue pump stations as needed. These pump stations are wood and steel structures mounted 8 to 10 feet above the adjacent ground (see Figure 6). The pump stations use existing conveyance pipes to transport stormwater through the levee to either the Umpqua River or Scholfield Creek.

- The City completed some seismic retrofits for the Elm Avenue/Highway 38 and 12th Street pump stations, some with past FEMA funding. Additional pilings would be added to the 7th street and 16th street pump stations driven to depths of approximately 20 feet below ground surface (BGS) into the associated pump station ponds. All pile driving will take place within these ponds, outside the ordinary high water of the Umpqua River and Scholfield Creek.
- A second pump will be installed at 16th Street to increase the capacity and redundancy. The Elm Avenue/Highway 38 pumping station has an existing small backup pump while 12th Street and 7th Street pump stations have redundant pumps.
- Backup power will be added at each station.
- Control systems and variable frequency drives will be added at Elm Street and Highway 38. These systems have already been added to the 12th Street and 7th Street pump stations.
- To improve drainage, the City may replace existing pipes at all four pump stations with 36-inch polyvinyl chloride piping and/or add a second adjacent pipe. The new conveyance pipes would likely be placed on top of the existing pipe supports. If extra support is required, 8-foot by 8-inch poles would be driven to approximately 6 feet BGS. The levee would be excavated and refilled to run the piping through to the opposite side of the levee.

The City anticipates that the 16th street pump station conveyance pipes will discharge below the ordinary high water elevation (OHWE). This discharge pipe will be equipped with an air gap device or will be constructed at an elevation high enough to prevent backflow.

Figure 6 shows the 12th Street & Juniper Avenue Pumping Station as an example of one of the pumping stations and discharge pipes.

Figure 6: 12th Street Pumping Station

Source: (left) Google Earth, 3/18/2022; (Right) 12/4/2018 Photo by Stephanie O'Brien in the Joint Permit Application to the ACOE, application dated 6/4/2021

Improvements to the levee, conveyance piping, and gravity drains will not require construction equipment to enter the areas below the OHWE. To minimize impacts, equipment for work required below the OHWE will be staged on the levee and extensions will reach down to the work areas. Silt curtains will be used to isolate in-water work areas. The silt curtains will be centered around the work area and extended into either Scholfield Creek or the Umpqua River approximately 50 feet from the bank. Seining will be used to remove any fish from the isolated area.

3.2.4 Gravity Drain Excavation Activities and Channel Restoration

Gravity drain activities are not included in FEMA's support. However, they are included in the associated environmental permits and are therefore described and analyzed in this EA as connected actions.

The existing gravity drains at 7th Street, 12th Street, 16th Street, and Winchester Street would require excavation and relining or slip lining to increase drainage resiliency. Depending on the current condition and location of the gravity drains, approximately 3 to 6 feet BGS would be excavated to allow installation of a new liner. At the pipe entrance, the channel inlet and exit would be lined with quarry spall to provide adequate erosion protection. The amount of quarry spall would vary for each drainage depending on length and depth of the channel. This component will also require work below the OHWE and project conditions will apply as discussed above.

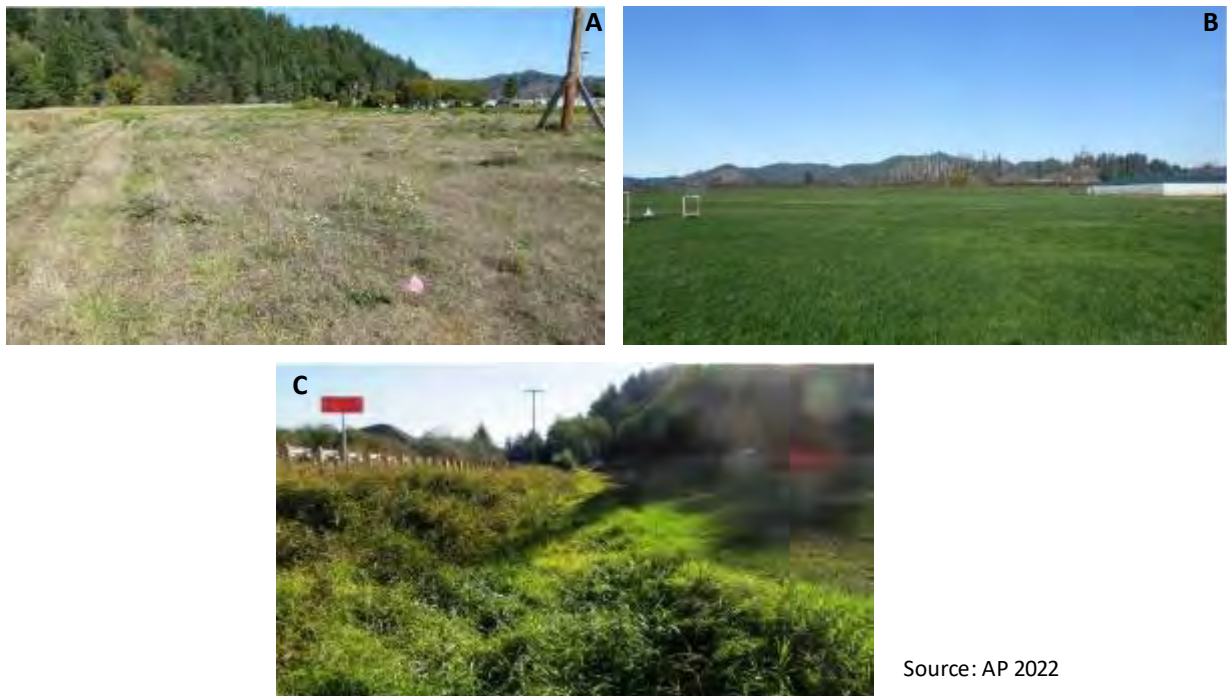
3.2.5 Construction

The project is anticipated to take approximately two construction seasons to complete, with in-water construction elements anticipated to take approximately two months. In water work will occur during the in-water work window of November to January. Each segment will take approximately 1 month to complete, depending on the length of the segment.

The proposed action will drive 263 H-piles and 53 micro piles (augered or helix) for the sheet wall as described in Section 3.2.1 (segments 8, 9, 10, 11, 12, and 13 shown in Figure 4). The project will also require up to ten 16-inch diameter steel piles to stabilize the 7th and 16th Street pump stations. The City anticipates pile driving will last 2.5 hours per pump station for a total of 1-2 days and 8 to 58 hours for each flood wall segment for a total of 20 days (durations of 1 to 7 days at each location as detailed in Section 4.7.2 Noise).

The project will require three construction staging areas (Figure 4) and shown clockwise in Figure 7.

Figure 7: Staging Areas



Source: AP 2022

- Area A is in the southwest section of the City north off 101 west of 16th street. Access to this construction staging area will be from Hwy 101 and the unimproved right of way for 17th Street to minimize impact to the residences on Hawthorne Avenue. The area consists of 2.2 acres of flat, open field, but only the area near the levee will be used for staging.
- Staging Area B is within the Champion Dog Park between Juniper Avenue and Port Dock Road and consists of 5 acres of flat, open field.
- Staging Area C is adjacent to the Public Works Department on Elm Avenue and across the Umpqua Highway from the Reedsport Levee and consists of 1.4 acres of flat, open field.

All three staging areas are adjacent to pumping stations. Therefore, the staging areas will also serve as construction sites for the pumping station improvements.

The City will use the existing levee Right of Way (ROW) and easements for all work and access to work sites. Ancillary structures and vegetation that has encroached into the established ROW may have to be removed.

3.3 Alternatives Considered and Dismissed

Other alternatives were considered but not retained for further consideration.

- Avoiding the use of floodwalls. Levees would be raised using earthen fill where the levee height has settled below the 100-year FEMA base flood elevation plus 3 feet of freeboard. While this alternative would cost less than the proposed action, it would increase the load on foundation soils that could lead to further settlement. There may be substantial impact to adjacent structures, facilities, and resources in several locations to accommodate the higher earthen levees. This alternative may be impractical in several locations because of the site conditions. Since this alternative does not address all deficiencies to the flood reduction system, it does not meet the purpose and need and is therefore not retained for analysis in this EA.
- Community relocation. The city's growth and alternative location are constrained by the topographical conditions of the mountainous coastal range. Community relocation is not a reasonable (financially or logistically feasible) option (Reedsport 2018). Abandoning the existing city location would result in substantial decommissioning, demolition, clean up, and restoration costs.
- Levee relocation. Relocating the levee further towards the water would require substantial in-water work and new fill. This could result in significant environmental impacts. Relocating the levees away from the water would require the purchase and abandonment of several of properties that lie adjacent to the current levee and would require substantial acquisition of private property for the new location. This approach is not reasonable or feasible.

No other viable alternatives have been proposed. This EA retains the proposed alternative and no action alternative for analysis.

4.0 Affected Environment, Potential Impacts, and Mitigation

This section describes the environment potentially affected by the alternatives and evaluates potential environmental impacts. The section begins with a discussion of methodology, impact criteria, and environmental trends.

4.1 Methodology

The NEPA compliance process requires agencies to consider direct and indirect effects or impacts on the environment. The NEPA Regulations² define effects as “ecological... aesthetic, historic, cultural, economic, social, or health”. For each of these resource categories, the impact analysis follows the same general approach in terms of impact findings. For most resources, the methodology included gathering data on the current condition of the resource from existing data sources, including trends, and limited field investigations, evaluating how each alternative would or would not change the existing condition, and determining whether that change would comply with the regulations and guidance.

The study area for all resources analyzed in this EA is shown in Figure 4. It encompasses the City of Reedsport as bounded by the Umpqua River and Scholfield Creek, the existing levee system around the City of Reedsport, and the upload soil acquisition areas. The study area for each resource evaluated in this EA may extend slightly beyond the project’s study area because there may be associated effects to adjacent areas.

The planning horizon for the proposed project, and the analysis timeframe for the impact analysis is 40 years, which coincides with the upper range of the expected useful life of the improved levee system.

4.1.1 Impact Criteria

When possible, quantitative information is provided to establish impacts. Qualitatively, these impacts will be measured as outlined below in Table 1.

Table 1. Evaluation Criteria for Potential Impacts

<i>Impact Scale</i>	<i>Criteria</i>
Negligible	The resource area would not be affected, or changes or benefits would be either nondetectable or, if detected, would have impacts that would be slight and local. Adverse impacts would be well below applicable regulatory standards.
Minor	Changes to the resource would be measurable, although the changes would be small and localized. Adverse impacts would be within or below applicable regulatory standards. Mitigation measures, if applied, would reduce any potential adverse impacts.

² 40 CFR 1508.8 through September 14, 2020 and 1508.1(g)(4) after September 14, 2020.

<i>Impact Scale</i>	<i>Criteria</i>
Moderate	Changes to the resource would be measurable and have short- or long-term adverse or beneficial localized or regional-scale impacts. Adverse impacts would be within or below applicable regulatory standards. Mitigation measures may reduce any potential adverse impacts.
Major	Changes would be readily measurable and would have substantial consequences on a local or regional level. Adverse impacts that exceed regulatory standards may be significant. Major adverse impacts would be less than significant if mitigation measures offset these adverse impacts.

As discussed in Section 4.7.8, either a *moderate* or *major* impact scale corresponds to a “high” impact for the Environmental Justice analysis, required pursuant to Executive Order 12898.

4.1.2 Scoping

The NEPA Regulations require agencies to use “the scoping process, not only to identify significant environmental issues deserving of study, but also to deemphasize insignificant issues, narrowing the scope of the environmental impact statement process accordingly.” (40 CFR 1500.4(i)). FEMA has determined that the following resource areas are not affected by the proposed action and are not evaluated further in this EA:

Wild and Scenic Rivers: None are located in the proposed project area; therefore, this project would have no effect on Wild and Scenic rivers (National Wild and Scenic Rivers System 2018).

Land Use and Zoning: This proposed action would not change existing land uses and is consistent with the current zoning. The proposed improvements would be located within the city limits and Urban Growth Boundaries associated with the existing levee right of way and easements. The soil acquisition area is zoned as Rural Suburban Residential (R-A), with a portion of the soil acquisition area extending into forested land (FF). The land is currently undeveloped and, as noted in Section 3.2.2, was recently logged.

Sole Source Aquifers: According to the U.S. Environmental Protection Agency's (EPA) sole source aquifer map (EPA 2021), there are no sole source aquifers designated in Douglas County.

Hazardous Materials: The soil acquisition area is previously undeveloped and the applicant has tested the soil for constructability and found it suitable for levee construction (Reedsport 2018). No subsurface work will be conducted in the staging areas. The levee work consists of excavating and rebuilding the existing levees, which were built between 1925 and 1965 using material from different sources. All excavated soil will be reused on site. The pump station and drainage system improvements would require excavation, and there is the potential to encounter petroleum-contaminated soil and groundwater based on the existence of several leaking underground storage tank and Environmental Cleanup Site Information sites within the proposed project area. If petroleum or other contamination is encountered during excavation, work would stop and the City will contact the Oregon Department of Environmental Quality (ODEQ). The project will not impact any of the City's previous or current contaminated sites (AP 2021).

4.2 Environmental Trends

The impact analysis is informed by the baseline analysis of the affected environment as influenced by predictable environmental trends in the project area. This section describes climate change, seismicity, and geotechnical conditions as they affect the design and efficacy of the levees, associated infrastructure, and environmental resource categories.

4.2.1 Climate Change

Climate change is both a predictable environmental trend and a resource that proposed actions may affect. This section considers the effects of climate change on the proposed action and its environmental impacts, while Section 4.3.2 addresses the potential impacts to climate change as indicated by greenhouse gas emissions.

The climate in the project vicinity is characterized by warm, wet winters and hot, moist summers. The growing season is long, and the spring is cool and wet. Rainfall in July and August is less than 0.5-inch per month (AP 2021). In the Pacific Northwest, precipitation is strongly influenced by the topography, particularly the coastal mountain ranges. Because flood levels at Reedsport are influenced by high tides under all flows of the Umpqua River, the estimation of future flood risk for planning at Reedsport requires evaluation of the likely changes to sea level over the long term. (NHC 2016). The study relied on 2012 data from the National Academy of Sciences that forecasted an increase of 0.56 ± 0.34 feet in 2020³ for Newport on the Oregon Coast. This factor (0.17 ± 0.10 meters) is within the most recent range published by NOAA (2022) which concludes that the regionalized global mean sea level scenario-based estimates, in meters, of relative sea level in 2050 relative to a baseline of 2000 for the Pacific Northwest range from 0.10m to 0.31m.

Climate change is therefore a reasonably foreseeable environmental trend that influences the Affected Environment and that the City has incorporated into its design of the levee system. The Future Hydrology and Sea Level study (NHC 2016) found that the existing conditions 100-year flood flow at Reedsport was 330,000 cubic feet per second (cfs) while the future 2069 estimates were 545,000 cfs. The estimated peak 100-year flood was 11.55 feet in 2016 and was projected to be 12.11 feet in 2050 and 13.63 feet in 2100 (Table 3.3 in NHC 2016).

Within these forecasts, the Reedsport levee has been designed to protect the City against the 500-year flood event plus 2 feet of freeboard and reduce the threat of damage to the City by climate change-induced flooding. Plan Sheet C-301 in Appendix A shows selected current and proposed cross sections of the levee system.

4.2.1 Seismicity

The Earthquake Hazards Reduction Act informs the City's analysis of the seismic vulnerability of the 1970 levee structures. The main tectonic feature in the Northwest is the Cascadia Subduction Zone, which is primarily responsible for the regional seismicity and volcanic activity (Crouse 1994). The Statewide Geohazard Viewer maintained by the Oregon Department of Geology and Mineral Industries shows that the project area would experience *Violent*⁴ shaking during a magnitude 9.0 Cascadia

³ Under the A1B scenario with uncertainty of one standard deviation. This scenario corresponded to 'middle of the road' assumptions concerning the course of future global emissions of greenhouse gases.

⁴ The Geohazard Viewer ranks earthquake shaking as Violent, Severe, Very Strong, Strong, Moderate, or Light.

Subduction Zone earthquake or an earthquake in a 500-year period. The upland soil acquisition area would experience *Strong* shaking under the same conditions (DOGAMI 2022).

Currently, two pump stations (7th Street and Highway 38/Elm Avenue) are vulnerable to seismic activity because these stations have not been seismically retrofitted. Flood damage to the economic, social and cultural infrastructure would be exacerbated if the pump stations aren't functioning after an earthquake. The structural integrity of the levees, which could be further weakened by a seismic event, is discussed in the next section.

Under the proposed action, the City would structurally strengthen these two pumping stations, driving 10 new pilings to depths of approximately 20 feet below ground surface into the associated pump station ponds (see Section 3.2.3). The deck supporting the pump station and restraints on the piping would also be strengthened. The proposed work would increase the City's stormwater capacity during an earthquake event and benefit the City's residents, businesses, and infrastructure.

4.2.2 Geotechnical Factors

Geological forces and the application of geotechnical practices play an important role in the strength and stability of earthen levees, pump stations, and concrete and pile floodwalls. A 2017 Geotechnical Engineering Report identified settlement, slope stability and under-seepage, and sheet pile/ floodwall criteria deficiencies that could lead to a levee breach. Specific weak points along the levee were identified as U.S. Highway 101's Scholfield Creek Bridge and Umpqua River Bridge approach, the levee sheet pile wall, and various other levee segments.

Currently, the levees continue to settle, weakening the efficacy of the levee system. Parts of the existing levee will continue to be geotechnically unstable, leaving levee segments vulnerable to failure. Associated infrastructure, such as roads and trails, would also be vulnerable as presented the Levee Vulnerability Assessment (AP 2018b):

- Between Stations 3+50 to 9+50 along Highway 38, a landslide ditch across the road and settlement have increased the levee's safety vulnerability and reduced its utility (Figure C-101 in Appendix A).
- The north and west end of Champion Park, between Stations 68+00 to 85+25, underlying segments of organic silt and woody debris and the L-shaped bend have increase seepage forces and increased risk of reposition and breach under high seepage forces (Figures C-105 and C-106 in Appendix A).
- North of Juniper Avenue, the height of the exposed floodwall is higher than the design maximum, the floodwall has settled over time to an elevation that increases the risk of overtopping, and the structure has stability weaknesses (Figure C-106 in Appendix A).

Under the proposed action, the levee system would be strengthened for an additional 40 years as settlement, stability, under-seepage, and other geotechnical deficiencies would be addressed. The proposed action would also improve the integrity of the levees during a seismic event.

4.3 Physical Resources

This section describes the impacts on physical resources in the project area. For this assessment, physical resources include seismicity, geology and soils, air quality, and climate change.

4.3.1 Geology and Soils

Reedsport is situated on a narrow terrace mostly between Scholfield Creek and the Umpqua River. The primary geological features are the Umpqua River estuary, the coastal sand dunes, and the rolling forested uplands between the dunes and the City (USGS 1980). The project area is generally comprised of historic fill materials that the Port of Umpqua Commission and the U.S. Army Corps of Engineers dredged in the 1920s and 1960s and used to fill the City's lowlands. The layer of reclaimed land is estimated to have been at least 7 feet thick after the sediments settled (HRA 2022). These dredged materials (silts, sands, and gravel) lie over tidal marsh sediments that are characterized as highly organic clays, silty clays, and peats that extend deeper than 14 feet below ground surface and perhaps deeper than 50 feet. This clay is reportedly underlain by coarse, unconsolidated, quaternary terrace sediments and interbedded sandstone, siltstone, and solidified volcanic rock and ash (Ash Creek 2009).

Soils needed for the improved earthen levees will be sourced from the upland soil acquisition area described in Section 3.2.2. The Farmland Protection Policy Act requires federal agencies to minimize the unnecessary conversion of farmland into nonagricultural uses. The soil acquisition area consists primarily (68%) of Svenson-Millicoma-Reedsport complex soils on 35-75 percent slopes. Other soils include Templeton-Millocoma (16%) and Svenson Loam (11%). None are classified as prime farmland (NRCS 2022).

A large portion (80%) of the area within the levees has soils that are classified as farmland of statewide importance (Coquille silt loam, 78% and Lint silt loam, 11.5%). The origin and type of soil in the existing levees was installed by the Army Corps of Engineers in 1970.

No Action Alternative

Seismicity, geologic forces, and geotechnical practices (as described in Section 4.2.2) play an important role in the stability and integrity of the levees. Under both alternatives, the levee system would be subject to earthquake, settlement, and other geologic and geotechnical forces.

Under the no action alternative, absent improvements, no change to soil conditions would occur. Geological forces would continue to adversely impact the levees. The existing levee will continue to settle, further exacerbating the risk of overtopping during a flood event and weakening the geotechnical integrity of the structures.

Proposed Action

Under the proposed action, the levee system would be strengthened and made more resilient to geological forces. No specific study has been completed for the project area. However, based on the existing geologic setting and proposed activities, minor effects might occur during soil acquisition, levee excavation, and pile driving actions. These may include localized small slides during soil and levee excavation, erosion, soil settlement after project work is completed, and slight changes in topography. Given the depth of the historic fill, the ongoing settlement of the existing levees, and the underlying deep clay soils, **no adverse effects beyond negligible are anticipated.**

Construction activities will temporarily disturb soils around the levees and staging areas. All soil excavated from the existing levees will be reused on site (AP 2022b). The City will return disturbed areas to their original condition as described in Section 4.5.1 (Vegetation). Domestic commercial sand for the

berm and drainage trench will be trucked to the project site. This sand will be clean and suitable for placement under the dog park at Champion Park.

While the soils where the levee construction will occur are suitable for farmland, the area was previously converted to an urban land-use, is within city limits, and is no longer farmland. Farmland does not include land already in or committed to urban development (7 CFR 658.2 (a)).

Approximately 40,000 CY of soil will be sourced from the upload acquisition area as described in Section 3.2.2. One foot of topsoil will be set aside and reused for restoration at the end of the project. The area will be stabilized by hydroseeding a native seed mix to prevent erosion. The acquisition area is not classified as prime farmland.

Therefore, this alternative will have a negligible adverse impact on local geology, no impact on farmland soils, and a minor adverse impact on soils in the soil acquisition area.

4.3.2 Air Quality and Climate Change

The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for six pollutants harmful to human and environmental health (EPA 2016). Clean Air Act and Amendments of 1990 define a “non-attainment area” as a locality where air pollution levels persistently exceed NAAQs or that contribute to ambient air quality in a nearby area that fails to meet standards. Maintenance areas are those areas that had a history of non-attainment, but are now consistently meeting the NAAQS.

According to the EPA's Green Book (2022), Douglas County is not in an air quality non-attainment area nor in a maintenance area. Therefore, the proposed project area would not require EPA or local air quality permits. The City does not have any specific ordinances related to dust or air quality, and Douglas County has no ordinances specific to the proposed project but generally requires dust be monitored during construction and mitigated on a complaint basis. The EPA has established emission standards for some on-road and off-road vehicle emissions.

Climate change and climate conditions in the Reedsport area are described in Section 4.2.1

No Action Alternative

The no action alternative involves no construction activities and therefore **no new air quality impacts nor new project-related impacts to climate change.**

Proposed Action

The proposed action would generate short-term construction-related dust and other emissions during excavation of the existing levees, soil sourcing, construction of the new levees, and road work. The proposed project is anticipated to use wheel loaders (four-wheel-drive earthmoving machines); track-mounted excavators; rubber-tired dump trucks; rubber-tired mixer trucks; cranes; pump trucks; and pile drivers (Reedsport 2020).

Pollutant emission sources would include exhaust emissions from off-road construction and pile-driving equipment, on-road haul trucks, construction worker employee commuting vehicles, and fugitive dust emissions from paved roads and earthmoving activities. Earthmoving activities that could generate dust include grading, bulldozing, and material handling activities. Additional stationary equipment (e.g.,

pumps and generators) and the pouring of concrete and preparation of the hot mix asphalt would also generate emissions.

The project will incorporate the following air quality mitigation or minimization measures:

- All construction activities will comply with Oregon Administrative Rules (OAR) 340-208, which contains requirements related to visible emissions (e.g., diesel-related opaque emissions), and fugitive emissions (e.g., dust from road grading, excavation, and transport of soil to and from the project site).
- Construction contractors and subcontractors will be required to use reasonable precautions to minimize fugitive dust emissions and comply with OAR 340-208-0210 such as water application, spraying water in work areas, washing truck wheels and using gravel driveways at construction and staging access points, covering piles, minimizing traffic and traffic speeds on bare soils, covering of open bodied trucks, daily clean-up, and minimizing the idling of diesel-powered equipment.

Adverse effects from emissions and fugitive dust emissions on nearby residents would be moderate and localized for the duration of construction work in the immediate vicinity of residents and businesses. The construction schedule (Section 3.2.5) identifies the expected duration of work and the City will notify residents and businesses of expected work schedules by neighborhood.

Construction related emissions are expected to be *deminimus* over a 2-year period. The project will not generate any new permanent greenhouse gas emissions. Therefore, across the extent of the project work in the levees and soil acquisition area, construction of the **proposed action will have a minor adverse short-term impact on local air quality and a negligible adverse impact on climate change.**

4.4 Water Resources

This section describes the water resources affected environment and potential effects on surface water, water quality, wetlands, and floodplains for each alternative. Snyder et. al. (2006) documented the historic and current conditions of the Lower Umpqua River for the Umpqua Basin Watershed Council. Federal statutes for addressing water resources include, but are not limited to, Clean Water Act (CWA), EO 11990, Protection of Wetlands, and EO 11988 Floodplain Management. Other federal, state, or local permits may be required, as identified in Section 6.1.

4.4.1 Surface Water and Water Quality

The Clean Water Act establishes requirements for states and tribes to identify and prioritize Waters of the United States that do not meet water quality standards. Under Section 303(d) of the CWA, ODEQ is required to develop a list of the surface waters in the state that do not meet water quality standards developed for protection of beneficial uses. Water bodies are listed as impaired must have Total Maximum Daily Loads (TMDLs) developed for each pollutant for which that waterbody is “listed” (ODEQ 2006).

As illustrated in Figure 1, the City of Reedsport is bordered by the Umpqua River and bisected by Scholfield Creek and Silver Creek. According to the ODEQ, these are listed as water quality limited for BioCriteria and Fecal Coliform (Category 5), and Sedimentation (Category 4A) (ODEQ 2022). The EPA classifies Scholfield Creek as impaired for fish and aquatic life with exceedances for Benthic

Macroinvertebrates and Sediment (EPA 2022b). To address water quality concerns, ODEQ developed an Umpqua Basin TMDL and Water Quality Management Plan for temperature, bacteria, Biological Criteria, algae/aquatic weeds, dissolved oxygen and pH (ODEQ 2006).

The City developed an Umpqua TMDL Implementation Tracking Matrix for the Umpqua Basin TMDL for nonpoint sources of pollution that are not covered by the City's permit (Reedsport 2021). TMDLs define the maximum amount of controllable impacts a waterbody can accept and still assure that designated beneficial uses are being adequately protected.

No Action Alternative

Under the no action alternative, since there would be no construction activities there would be no change to existing water quality conditions in the Umpqua River and Scholfield Creek.

The existing gravity drains (Figure 2) provide a minor benefit on water quality as the six gravity drains transform surface water flow into a ground water flow and to remove pollutants as the water percolates through the underlying soil and drains out. However, these gravity drains are sub-optimal as described in Section 3.2.4.

The four pumping stations transport untreated water over the levee discharging to the Umpqua River and Scholfield Creek during high tides or major flood events when existing gravity drains become overwhelmed. These aged pumps, as noted in Section 1.0, no longer adequately conveyed stormwater (Reedsport 2018). The inefficiencies in the gravity drain system and water pumps increases the duration that standing water in a flood event mixes with urban pollutants. Urban storm water runoff can contain significant concentrations of solids, nutrients, organics and metals. The concentrations of select water quality parameters in urban runoff is comparable to that found in untreated domestic wastewater (EPA 1999).

Continued and potentially increased flood events over the next 40 years would therefore continue to have a **short-term negligible to moderate adverse impact on the Umpqua River's and or Scholfield Creek's water quality** depending on the frequency and magnitude of the flooding events and the integrity of the levee system.

Proposed Action

The proposed project may impact surface water temporarily during work near Scholfield Creek and the Umpqua River. Earth-disturbing activities can increase delivery of sediment to waterways and increase turbidity in the water column. Sediment introduced into waterways can degrade habitat and reduce primary biological productivity. Additionally, use of construction equipment in and near waterbodies increases the risk that harmful substances, such as fuel, lubricants, hydraulic fluids, or coolants, may enter the water.

The proposed project includes locations where the drainage system would extend into waterways. The proposed drainage improvements would pipe the Elm Avenue Slough to curtail previous issues of poor drainage. Small portions (600 sf) of Scholfield Creek and the Umpqua River would require excavation of native sediments and replacement with quarry spall to allow the placement of the new drains. Impacts would occur from the increased diameter of conveyance pipes that would have a greater volume capacity, as well as the excavation and rebuilding of existing gravity drains to dispose of stormwater

more effectively. No in-channel operation of machinery is expected; however, the operation of equipment adjacent to the waterways has the potential to adversely impact water quality.

As required by the Water Quality Certificate issued by the ODEQ, the project will incorporate the BMPs and mitigation measures to minimize potential adverse impacts on the water quality of the Umpqua River and Scholfield Creek. Some of these conditions are summarized below; the City will adhere to all conditions identified in the Water Quality Certificate, the project Biological Assessment (Reedsport 2020c), the Biological Opinion and Incidental Take Statement (NMFS 2022), and this EA:

- Contaminated or sediment-laden water, or water contained within an isolation barrier or excavated trench, would not be discharged directly into any Waters of the U.S. or wetland until it has been satisfactorily treated (e.g., by bioswale, filter, settlement pond, pumping to a vegetated upland location, bio-bag, or dirtbag).
- Spill prevention measures and fuel containment systems designed to completely contain a potential spill, as well as other pollution control devices and measures (such as diapering, parking on absorbent material, etc.) adequate to provide containment of hazardous materials, would be implemented.
- Sediment barriers, including straw wattles, silt fences, and berms, would be installed to prevent spoils or sediment-laden water from entering any waterbody.
- Any activity that causes turbidity to exceed 10% above natural stream turbidity is prohibited. Turbidity monitoring must be conducted and recorded as described in the Water Quality Certificate. Pursuant to OAR 340-041-0036, short term exceedances of the turbidity water quality standard are allowed.
- In-water work would only be conducted during the approved window of November 1 to January 31 to minimize impacts to fish (Section 4.5.3).
- Equipment for work required in the OHWE would be staged on top of the levee and extensions would reach the work areas.
- Sediment disturbance within the OWHE and near the banks of Scholfield Creek and the Umpqua River would require installation of silt curtains in portions of these waterways.

Given the project design, consisting primarily of work on pre-existing levees, and the construction-related best management practices and mitigation measures described above, project construction will result in a **short-term minor adverse impact on the water quality** of the Umpqua River and Scholfield Creek.

The proposed improvements to the levee and drainage system will reduce or eliminate levee overtopping or failure events over the next 40 years, therefore substantially reducing opportunities for floodwaters to mix with urban pollutants. Improvements to the gravity drains will improve discharge water quality from any remaining water within the levee system. The impact on water quality of untreated flood waters being released by the pumping stations will not change; however, the frequency of these events will be substantially decreased. Together, these elements will result in a **moderate long term beneficial impact on water quality**.

The short-term minor adverse impact on water quality is offset by the long-term moderate benefits.

4.4.2 Wetlands

EO 11990, Protection of Wetlands requires federal agencies to consider alternatives to work in wetlands and limits potential impacts on wetlands if there are no practicable alternatives. FEMA regulation 44 CFR Part 9, Floodplain Management and Protection of Wetlands, sets forth the policy, eight-step procedures, and responsibilities to implement and enforce EO 11990 and prohibits FEMA from funding activities in a wetland unless no practicable alternatives are available.

According to the USFWS National Wetlands Inventory (NWI) map, several wetlands that act as erosion control and provide habitat for flora and fauna intersect the proposed project area. The NWI map (Figure 8) identifies freshwater forested/shrub wetlands west of the levee along Scholfield Creek, extending approximately 200 feet south and 1,000 feet north of Highway 101; along the levee approximately 650 feet west-northwest of the intersection of Highways 83 and 101; on both sides of Highway 101 near the intersection of Port Dock Road; and on both sides of Highway 83 approximately 250 feet north of Elm Avenue. Freshwater emergent wetlands are located between the levee and 16th Street roughly 250 feet north of Highway 101 and along Railroad Avenue between 4th Street and Riverfront Way. The NWI also identifies riverine wetlands near the soil acquisition areas.

To validate current wetland conditions, the City completed a wetland delineation in October 2018 (see Appendix A). A copy of the delineation was included in the Joint Permit Application (JPA) package submitted to the ACOE, ODEQ, and Oregon Department of State Lands in 2020. The ODEQ issued its 401 Water Quality Certificate on October 13, 2021. The 2018 delineation showed that not all of the areas identified in the NWI were actual wetlands, as regulated under Section 404 of the CWA. Within the study area, five low quality/urban influenced wetlands totaling 1.45 acres were identified as described in the JPA and shown in Figure 9. In addition to the Umpqua River, Scholfield Creek, and these five wetlands, three manmade ponds and one manmade drainage ditch exist, each associated with one of the four pump stations (AP 2020). Macintosh Slough north of the project site and west of US 101, and a pond in the southwestern corner of the study area are adjacent to but not within the affected area.

No perennial or intermittent drainages were identified in the soil acquisition areas, as there were no channels with developed bed and bank features. Precipitation appears to drain through these areas as percolation and sheet flow across vegetated area (Reedsport 2020).

No Action Alternative

The no action alternative would not change the existing system. However, as noted in the previous section, the water quality of wetlands adjacent to the levee would continue to be adversely impacted during flood events. **This adverse impact on estuarine wetlands and waterways would be short-term and negligible to moderate depending on the flood severity and may be exacerbated by projected increased flood events.**

Proposed Action

The proposed action focuses on the interior portion of the levee to reduce impacts on Umpqua River and Scholfield Creek. Project work *landward* of the existing levee would permanently disturb 0.17 acres (7,443 sf) of wetlands and temporarily disturb 0.08 acres (3,600 sf) of wetlands.

The City will improve the gravity drains in four locations below the OHWE of Scholfield Creek. 100 sf (12 CY) will be permanently impacted at each of the four locations (Reedsport 2020). The installation of

the drainage trench, placement of new conveyance piping, and the gravity drains improvements that would require excavation 3 to 6 feet BGS would impact the wetlands and waterways.

Gravity drains would be filled with quarry spill after excavation, which may cause impacts from erosion and construction-related activities. A drainage trench would be installed to facilitate drainage, resulting in permanent impacts. A piping system would be installed in the Elm Avenue Slough to increase drainage, resulting in permanent impacts in this wetland area. Replacement of the Elm Avenue conveyance pipe would cause excavation of wetland; after excavation, removed soil would be replaced and the site would be returned to near original conditions, causing temporary impacts.

ODEQ has issued a 401 Water Quality Certification Approval⁵ for the project. The conditions that affect water quality (see Section 4.4.1) also apply to wetlands. In addition, the project will comply with the conditions and mitigation identified in the ACOE Section 404 CWA permit.

The City considered and eliminated two mitigation opportunities:

- On-site opportunities: Finding land for on-site mitigation would be extremely difficult in an urban setting and a small on-site area would provide less ecological benefit than other options.
- Off-site opportunities within the immediate area: The City contacted the Umpqua Watershed Council and The Partnership for the Umpqua Rivers; neither had current mitigation projects in the area (Reedsport 2020).

As part of its Section 404 CWA JPA, the City proposed to purchase mitigation credits from the Wilbur Island Mitigation Bank to offset impacts to wetland habitat. The Wilbur Island Mitigation Bank is a 140-acre wetland that had been tidally flooded prior to being diked in the 1950s to create pastureland. Over the last several years it has been restored to its natural state by protecting the neighboring properties, removing the dikes, and restoring native vegetation. It provides a wide array of habitat conditions crucial to many species indigenous to the area. Restoring and protecting the habitat on this 300-acre island is crucial for fish such as salmon and steelhead for acclimating between freshwater and the ocean.

The Reedsport levee project area is approximately 3.5 miles south of the edge of the Wilbur Island Mitigation Bank service area. The City will purchase wetland credit at a 1:1 ratio for the anticipated 0.17 acres of permanent disturbance.

Given the project design, consisting primarily of work outside of wetlands, best management practices, and mitigation measures described above to compensate for unavoidable wetland impacts, **the proposed action will have a minor adverse impact on wetlands.** Consistent with 44 CFR Part 9, this analysis constitutes the eight-step decision-making process, which determined there is no practicable alternative to the proposed action and adverse wetlands effects would be minimized during and following construction as described above.

⁵ Nationwide 401 Water Quality Certification Approval for 2020-450, Reedsport Flood Reduction Resiliency, October 13, 2021, authorized under Nationwide Permit #3.

Figure 8: National Wetlands Inventory (NWI)

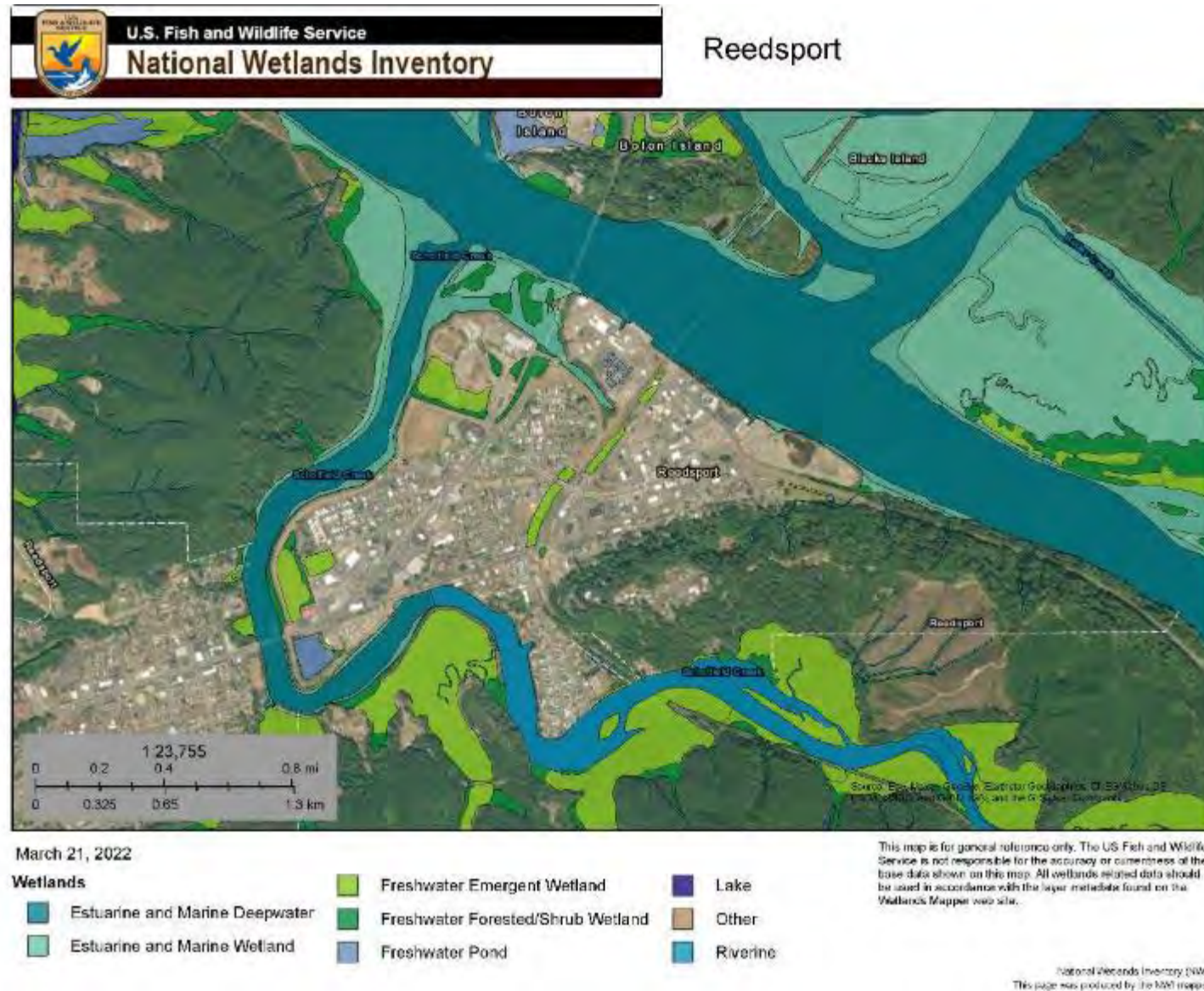
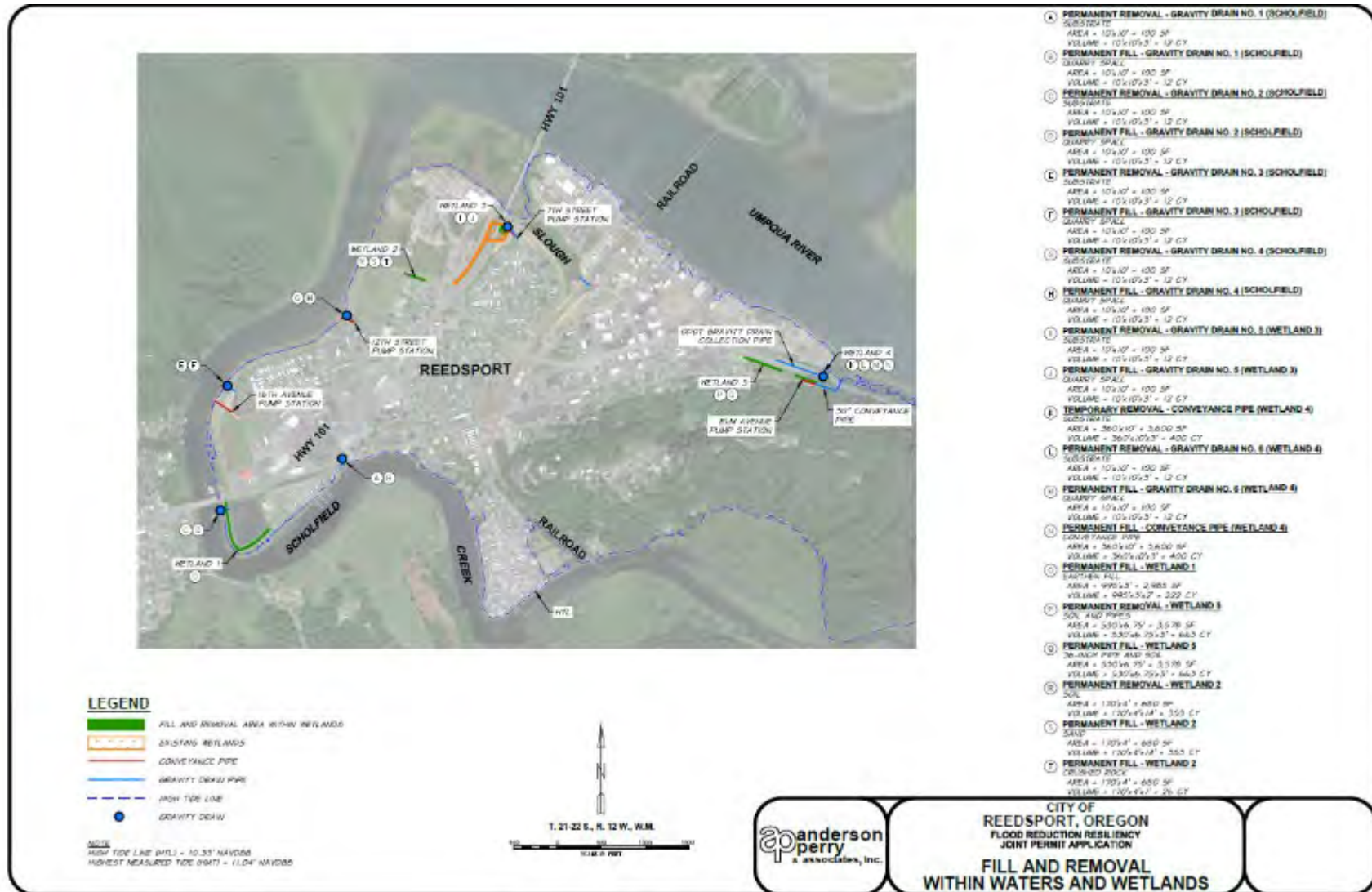


Figure 9: Fill and Removal Within Waters and Wetlands



Appendix A presents details of this graphic.

4.4.3 Floodplains

EO 11988, Floodplain Management, requires federal agencies to avoid, to the extent possible, short- and long-term, adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practical alternative. FEMA regulations (44 CFR Part 9.7) use the 100-year flood (1-percent-annual-chance) as the minimal area for floodplain impact evaluation and for critical actions (facilities) the 500-year flood (0.2-percent-annual-chance).

To satisfy the requirements of EO 11988, the Water Resources Council developed an eight-step process that agencies should carry out as part of their decision making on projects that have potential impacts to or are within a floodplain. The eight steps reflect the decision-making process required in Section 2(a) of the EO and are reflected in FEMA regulations at 44 CFR 9.6. The first step is to determine if the proposed action is in the base floodplain. The proposed action would be located within a floodplain. The levee and certain infrastructure it protects would be considered critical facilities, thus the minimal floodplain impact evaluation is to a 500-year flood event (0.2-percent-annual-chance). The combined floodplain eight-step process is documented in Appendix C and is summarized in this section.

Reedsport is located at the confluence of the Umpqua River and Scholfield Creek, in southwest Oregon, approximately 11.6 river miles upstream of the Umpqua River's confluence with the Pacific Ocean. The City is tidally influenced under all modeled river flows (NHC 2016). The City was established in 1852, and many of the early building structures were built on pile foundations in this low-lying area. This area tended to flood, and sand was imported to fill and raise the old downtown area, resulting in the City being elevated 3 to 8 feet above the typical high water level of the Umpqua River (AP 2018).

The floodplain is shown on FEMA Flood Insurance Rate Map (FIRM) Panels Number 41019C0353G and 41019C0354G, effective, March 23, 2021 (Appendix A). The Umpqua River and Scholfield Creek sides of the levee are in Special Flood Hazard Areas (SFHAs). The inner portions of the levee, including all four pump stations, are in areas identified on the FIRM as FEMA Zone X (500-year floodplain). These areas are protected from the 1-percent-annual-chance or greater flood hazard by a levee system that has been recognized by FEMA per 44 CFR Part 65.10. The FIRM notes that all levees may overtop or fail. The soil acquisition areas are upland, not located in the 100-year floodplain or any SFHA.

No Action Alternative

The existence of the Reedsport Levee has negative impacts on Umpqua River and Scholfield Creek channel conditions and dynamics, including floodplain functions, reduced floodplain connectivity, side channel habitat, channel complexity, pools, and creating artificial conditions to protect the City from flooding. Under this alternative, these adverse conditions would persist, but the levee would continue to exist and provide some flood protection for the city. The risks of overtopping or failure are likely to increase over time. **The long-term impact of the no action alternative on floodplain function is moderate adverse.**

Proposed Action

The proposed action will strengthen the levee system, extend its life, and improve the pumping and drainage capacity. Proposed improvements to the levee structures and floodwalls will not substantially alter the overall floodplain; it is expected to remain largely as shown in the FEMA FIRM.

Most of the work on the Reedsport Levee and pump stations would occur on the land side of the levee to decrease impacts on floodplains near the proposed project. The levee itself is the boundary between a 100-year flood zone (FEMA Zone A) and an area with reduced flood risk (FEMA Zone X). Potential temporary impacts to less than 1 acre of Zone A floodplain would occur in association with sediment distribution and soil erosion in conjunction with excavation and construction disturbance to increase levee height.

Small portions of the proposed project waterward of the levee are located in the 100-year floodplain. Permanent impacts would be associated with adding more earthen fill and constructing floodwalls to return the levee to the original height plus freeboard, installing the drainage trench, improving gravity drains by excavating and rebuilding with quarry spall, and replacing or repairing the conveyance piping that runs through the levee. The following potential permanent impacts to the floodplain will total less than one acre (0.355 acre) of FEMA-designated Zone A (100-year flood) on Maps Number 41019C0353G and 410149C0354G as follows:

- 0.0092 acres – 100 square feet at each of the four gravity drains
- 0.31 acres – Along Highway 38 floodplain area
- 0.036 acres –Scholfield Creek floodplain area

Changes to floodplain footprints or levee walls have the potential to impact local hydrology, including shifting flood-prone areas. Due to the size of the overall floodplain at the confluence of the Umpqua River and Scholfield Creek, with Smith River to the north and the Umpqua River estuary to the Pacific Ocean (see Appendix A), **the new impact of less than 1 acre of floodplain would be negligible** (AP 2016) and **FEMA anticipates that the increase in Base Flood Elevation (BFE)⁶ will be negligible.**

The project will lessen adverse water quality impacts as discussed in Section 4.4.1. However, the ongoing adverse impacts on the floodplain, its channel conditions, floodplain functions, and dynamics will remain the same.

Although riparian shrub vegetation will be removed on the waterward face of the levee, no large shade producing trees or pieces of large woody debris are anticipated to be removed. Aquatic organism access to the stream channel will be temporarily and partially restricted during construction, but this will be temporary and of short duration. The prey base may be disrupted in the action area due to bank, in water work, and channel disturbance, but this impact will be temporary and the benthic macrofauna and other prey species will quickly recolonize the action area following construction.

The final levee footprint is expected to vary from the current footprint by approximately 20 percent, primarily on the landward side of the levee. The City will follow its own development permit standards for levee construction to document compliance with the Reedsport floodplain ordinance and submit a Floodplain Development Permit application for work to the levee. Prior to construction, the City will submit for a Conditional Letter of Map Revision (CLOMR) and subsequently a Letter of Map Revision for Fill (LOMR-F) from FEMA which may update the existing FIRM post-construction.

Section 404 of the CWA is triggered by expected discharges into waters of the U.S. while Section 408 approval (33 USC 408) provides that ACOE may grant permission for another party to alter a Civil Works

⁶ The elevation of surface water resulting from a flood that has a 1 percent chance of equaling or exceeding that level in any given year.

project upon a determination that the alteration proposed will not be injurious to the public interest and will not impair the usefulness of the Civil Works project.

Given the project design, the scale of the existing floodplain, and the minor work that impacts less than one acre of floodplain, the proposed alternative will have a **negligible new impact on the floodplain**. However, the continued existence of moderate adverse impact associated with the negative impacts described under the no action alternative would prevail, resulting in a continued long-term **moderate adverse impact on the floodplain and its functions**. **Over the useful life of the levee, the reduced flood hazards from the proposed improvements would benefit residents, businesses, and public and private infrastructure protected by the levee.**

4.4.4 Coastal Zone Consistency

The Coastal Zone Management Act (CZMA) requires federal agencies to determine whether proposed activities that affect any land or water use or natural resource within the coastal zone shall be carried out in a manner consistent, to the maximum extent practicable, with the enforceable policies of approved state management programs. In Oregon, the Oregon Coastal Management Program (OCMP) in the Department of Land Conservation and Development (DLCD) implements the coastal zone management program.

Coastal resources are associated with a range of topics, including water resources (Section 4.4) and biological resources (Section 4.5). Impacts on specific resources from the action alternatives are evaluated in those sections. This section addresses compliance with the Statewide Planning Goal 16 (OAR-660-015-0010(1)) for the planning and management of Oregon's estuaries. The proposed project lies in the Umpqua River Estuarine Management Unit (DLCD 1987).

No Action Alternative

Under this alternative, there would be no change to the levee system and therefore **no change in the estuary**. An overtopping of the levee and associated release of floodwaters could adversely impact water quality (see Section 4.4.1), but this impact is expected to be short-term.

Proposed Action

Construction of the proposed action will result in minor, localized construction related effects (turbidity, sediment, and vegetation) to the near-shore environment along the levee structure and outfalls. As described in Sections 4.4.1. and 6.2), the City will incorporate best management practices and mitigation measures to reduce these temporary impacts.

As described above (Section 4.4.3), the proposed action will adversely impact less than one acre (0.355 acre) of floodplain. This fill is required to strengthen and improve the existing levees, which are a water-dependent use. The City has designed the levee improvements to minimize impact to the floodplain and estuary. However, the improvements to the four gravity drains and the two areas in which the impacts are unavoidable are necessary for the integrity and functionality of the levee system.

The project will not impact any other physical aspects of the estuary, nor change or adversely impact recreation or aesthetic use, navigation, or other existing or potential uses of the estuary, nor interfere with public trust rights. It will, however, provide a substantial public benefit as described in the Introduction (Section 1.0, Purpose and Need (Section 2.0), and Public Health and Safety (Section 4.7.4).

Therefore, **the proposed project appears to be consistent with the state's coastal plan** and the Umpqua River Estuarine Management Unit. FEMA coordinated with the DLCD as part of the NEPA process and the City will need to secure a Coastal Zone Management Act Consistency Review from DLCD as part of the process of applying for a CWA permit. Consistency with the CZMA enforceable policies of a State's federally approved coastal management program will be required before the project construction can commence.

4.5 Biological Resources

This subsection describes the potential impacts on vegetation, fish, birds, and other wildlife including threatened and endangered species and their critical habitat. The Endangered Species Act (ESA) gives U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) authority for the protection of threatened and endangered species. This protection includes a prohibition on direct take (e.g., killing, harassing) and indirect take (e.g., destruction of habitat). The ESA defines the action area as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR 402.02). Therefore, the action area where effects on listed species must be evaluated may be larger than the project area where project activities would occur. Section 7 of the ESA requires federal agencies, in this case FEMA, to consult with the Services, as appropriate, regarding species protected under the ESA.

AP completed a Biological Assessment (BA) for the proposed action (Reedsport 2020c). With the BA, FEMA initiated formal consultation (WCRO-2021-01247) with NMFS on May 24, 2021 to ensure the proposed project is not likely to jeopardize the continued existence of species listed as threatened, endangered, or proposed (to be listed), nor result in the destruction or adverse modification of designated or proposed critical habitat under its jurisdiction.

4.5.1 Vegetation

Vegetation is important for wildlife forage and habitat, wetland and floodplain functions, and for protecting water and air quality. Changes in vegetation composition and density can affect these other resources. Reedsport is located between the Umpqua River and Schofield Creek, just upstream of the mouth of the Umpqua River on the Pacific Ocean, and is typical of modified vegetation community on the mid Oregon coast. While the terminal ends of the proposed levee work may touch upon Coastal Uplands, the project is largely located in the Coastal Lowlands ecoregion (as defined by the US EPA system of ecoregion classification) (Snyder et al 2006).

The US EPA Ecoregions system describes the Coastal Lowlands Ecoregion of Oregon as *"The Coastal Lowlands ecoregion contains beaches, dunes, and marine terraces below 400 feet elevation. Wet forests, lakes, estuarine marshes, and tea-colored (tannic) streams are characteristic features of the landscape. Wetlands have been widely drained and converted to dairy pastures. Residential, commercial, and recreational developments are expanding in the coastal corridor."* (EPA 2022).

The Lower Umpqua River Watershed Assessment (Snyder et al 2006) further describes the lowlands as "... characterized by very low-gradient, meandering streams, at times under tidal influence, and bordered by mostly flat floodplains. Erosion rates are low and sediment deposition is high due to the low gradient."

The vegetation community of the project site includes tidal marsh, freshwater wetlands and riparian corridors that have been historically modified with the expansion of Reedsport over the centuries since

establishment. This reach of the Umpqua River can include low marsh, bulrush, and sedge marsh, immature and mature high marsh, and tidal swamp. Due to the flow volume of the Umpqua River bulrush marsh tends to be the most extensive wetland vegetation community. In areas where the riparian corridor has not been modified by local residents, canopy coverage is typically douglas fir, western hemlock, Sitka spruce, western red cedar, red alder, and cottonwood, while undercanopy shrubs tends to be salmonberry and ground cover such as Oregon Oxalis, pasture grasses and wetland plants (Snyder et al 2006).

Grass and small shrubs grow in the area immediately around the levees and floodwalls as shown in Figure 10 and Figure 11. Levee management guidelines require a vegetation-free zone surrounding flood damage reduction levees to maintain the safety of the structure and to provide unencumbered access (ACOE 2019). As noted in Section 3.2.2, and shown in the photographs in Figure 5, the soil acquisition sites were logged in 2002 and 2018 and do not have attributes of mature forested stands.

Figure 10: Levee berm along Scholfield Creek



Figure 11: Floodwall near Juniper & N. 13th Street



The Noxious Weed Act and EO 13112, Invasive Species, requires federal agencies to prevent the introduction of invasive species, provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause. According to the Oregon Department of Agriculture

(ODA) WeedMapper, the noxious weeds Japanese knotweed and tansy ragwort are potentially present within the vicinity of the proposed project (ODA 2018).

No Action Alternative

Under this alternative, no work would occur in the soil acquisition area or on the levees. The City would continue to maintain vegetation near the levees and floodwalls per its maintenance plan, **thus there would be no change to existing conditions**. The soil acquisition areas would continue to regrow naturally. The City has not identified any definitive plans for the area in the future.

Proposed Action

At the soil acquisition sites, one foot of segregated topsoil will be separated and returned after the project is complete. The topsoil will be hydroseeded with a certified weed free native seed mix to stabilize the soil and prevent erosion. While the project will result in a short-term adverse impact on vegetation (loss of grasses and small shrubs), no long-term impacts are anticipated as the forest stand at the site has been previously cleared from logging operations.

At the levee construction site in the city, ground-disturbing construction-related activities would include vegetation clearing and grading, increased human presence, and increased vehicle traffic, all of which would adversely impact vegetation at the project site. For temporary disturbances, topsoil will be segregated for reuse during restoration. Upon project completion, all disturbed areas will be covered with a minimum of 6 inches of topsoil and seeded with a mix of native grasses to prevent erosion and aid in the stabilization of disturbed areas. The proposed riparian grass mix includes fowl bluegrass, spike bentgrass, basin wildrye, baltic rush, and tufted hairgrass. The proposed wetland seed mix includes meadow barley, northwestern mannagrass, tufted hairgrass, American sloughgrass, and spike bentgrass (Reedsport 2020b).

After construction, the City will maintain the area and monitor any regrowth. If needed, the areas could be irrigated, and weeds could be mechanically controlled; however, the site will generally be left to develop/return to pre-construction conditions naturally (Reedsport 2020b).

Levee excavation and rebuilding work may impact some riparian vegetation. To replace loss of riparian shading, live willow cuttings will be planted along the bank of Scholfield Creek during the fall planting season. Plant stakes will be harvested from the pond south of highway 101 and the McIntosh Slough in the fall after the plants have gone dormant (Reedsport 2020b).

During construction, the City will implement BMPs to minimize spread of invasive plants, including rinsing construction equipment before arrival to the levee work sites. The segregation and reuse of topsoil at the acquisition site as described above will help limit the amount of weed seeds imported to the levee work sites.

The proposed action will result in a **minor short-term adverse impact on vegetation in the project areas during construction and minor longer-term beneficial effects once seeded and replanted areas are re-established with cover vegetation**.

4.5.2 Birds (including Threatened and Endangered and their Habitat)

This section discusses impacts on birds that may be protected by acts or executive orders. In addition to the ESA described above, the Migratory Bird Treaty Act of 1918 provides protection for migratory birds while the Bald and Golden Eagle Protection Act prohibits the take, possession, sale, or other harmful action of any gold or bald eagle, alive or dead, including any part, nest, or egg.

The USFWS Information for Planning and Consultation (IPAC) was used to identify proposed, threatened, and endangered species in the action area. Table 2 presents the ESA-listed threatened or endangered birds and their designated critical habitat.

Table 2: ESA-listed Birds and Designated Critical Habitat (DCH) within Action Area

Species	ESA Status	Presence	DCH
Marbled murrelet (Washington / Oregon / California DPS) (<i>Brachyramphus marmoratus</i>)	Threatened	Unlikely	No
Northern spotted owl (Contiguous U.S. DPS) (<i>Strix occidentalis caurina</i>)	Threatened	Unlikely	No
Western snowy plover (Pacific Coast DPS) (<i>Charadrius nivosus nivosus</i>)	Threatened	Unlikely	No

ESU = evolutionarily significant unit, DPS = distinct population segment

Marbled murrelets are predominately found in near-shore marine waters feeding on small fish and invertebrates, normally at dawn and dusk. Nesting occurs inland in large-diameter trees found in low elevation forests with several canopy layers. However, there have been instances of marbled murrelets being found on rivers and inland lakes (Reedsport 2020c). According to a USFWS biologist (Reedsport 2020c), that they do not believe that there is much likelihood of marbled murrelet nesting in the forest stand north of the soil acquisition area, the remainder of the forests within the action area were also unlikely to be suitable for marbled murrelet nesting. However, it is possible that marbled murrelet could pass through the action area enroute to undetected nesting sites outside of the action area. The proposed project sites are not included in marbled murrelet designated critical habitat.

According to the Oregon Biodiversity Information Center (ORBIC) 2022 dataset, no **northern spotted owls** have been documented in the proposed project areas (ORBIC 2022). The action area does not include older mature forest, which is used by northern spotted owl for nesting and foraging (Reedsport 2020c). This is further confirmed by a site visit by the USFWS biologist who stated (after internal discussions at the local USFWS office) that they do not believe that there is much likelihood of northern spotted owl nesting in the forest stand north of the soil acquisition area. The proposed project sites are not located in northern spotted owl designated critical habitat (Reedsport 2020c).

Although the action area abuts the Umpqua River and Scholfield Creek, the proposed action area does not have areas of shoreline sufficient to meet nesting and feeding habitat requirements of the **western snowy plover** nest sites typically occur in flat, open areas with sandy or saline substrates and little to no vegetation or driftwood. Snowy plovers forage for invertebrates in the wet sand and sea wrack within the intertidal zone; in dry, sandy areas above the high tide; on salt pans; spoil sites; and along the edges of salt marshes and salt ponds. (Reedsport 2020c).

According to the ORBIC 2022 dataset (ORBIC 2022), **bald eagle** nests were documented (surveys between 1988 to 2006) within the region, the nearest being approximately 1.6mi to the east and northeast of the proposed project area. While they are known to still utilize the Reedsport area generally, no onsite or nearby (line of site) eagle nests (either species) have been currently detected by the City and the expectation is that no new eagle nests will be established close to the project area. Bald and golden eagle critical nesting season is considered to be January 1 through August 31st.

Migratory bird species protected under the Migratory Bird Treaty Act (MBTA) was determined according to USFWS' IPAC (2022), migratory birds (non eagles) that may occur in and near the proposed project areas include: Evening Grosbeak, Lesser Yellowlegs, Olive-sided Flycatcher, and Rufous Hummingbird/ The migratory bird nesting season for these species is from April 15 to August 31. The Lesser Yellowlegs is not known to breed in the vicinity of the project.

No Action Alternative

With no project work occurring under the no action alternative there would be **no change to existing conditions** for birds and their habitat.

Proposed Action

The BA analyzed impacts to ESA-listed species that may be present in the project areas. Those effects are summarized below.

The loudest contributor to project-related noise that can affect birds will be the pile driving (see Section 3.2.5), which is anticipated to last approximately 22 days. Potential physical and biological disturbance effects of the proposed project on birds would be limited to areas within 0.25 miles of project activities. This distance is derived from existing impact analysis documents that indicate no impacts on Northern Spotted Owl and Marbled Murrelet are expected when habitat occurs more than 0.25 miles away from heavy equipment operation (including chainsaws) (USFWS 2021).

There are no large blocks of older mature forest in the immediate vicinity of the project area in and around the levees. The primary soil acquisition area is in a mixed-conifer forest; however, this area has experienced recent logging and does not have attributes of mature forested stands. It is unlikely that **marbled murrelets** or **northern spotted owl** will use this area for nesting. Following a site visit on November 18, 2020, a USFWS biologist concluded that the likelihood of northern spotted owl or marbled murrelets nesting in the forest stand north of the soil acquisition area is low (Reedsport 2020c).

There is only low or marginal nesting habitat for marbled murrelets within 0.25 miles of the pile driving work or the soil acquisition areas. To minimize potential impact on any transiting marbled murrelets, the City will implement the following mitigation at the spoil acquisition site (Reedsport 2020c):

- No soil removal at the upland area will occur until two hours past sunrise
- Upland soil removal activities will cease two hours before sunset

In addition, to minimize potential impact on birds transiting the area to the west of the City, within a 0.25 mile radius of the pile driving activities at Station 8 off Juniper Avenue (AP 2022c):

- No pile driving until two hours past sunrise
- Cease pile driving two hours before sunset

Prior to start of construction, the City will require construction managers to document all active bald eagle nests within 660 ft of construction locations. An active eagle nest is one that has been used in the past 5 years; annual utilization data may be available from state or tribal stakeholders, otherwise the assumption is that the nest is active and not abandoned. If there is the potential for a nesting pair to be disturbed by project actions or habitat modifications within 330 feet of the active nest, an incidental eagle take permit⁷ will be needed from USFWS (2022). Non nesting bald eagles are highly mobile, and it is likely that any individuals that may be nearby and not already acclimated to human generated noise would simply avoid the area during construction.

The City is aware of their obligations under the MBTA to minimize impacts to migratory birds. There is no current plan to cut and remove trees from the project area. However, if the trees need to be removed during construction, the contractor will only remove them outside of nesting season for migratory birds. Existing swallow nests would either be removed outside of nesting season or protected with a net barrier to prevent impacts to nesting from pile driving. The City will require that contractors check all areas of project work for active nests (tree, shrub, ground) and flag any areas that must be avoided. The City will also coordinate with the USFWS to acquire necessary permits if impacts to nesting birds cannot be avoided.

Due to the work timing restrictions to offset the low potential for noise disturbance for marbled murrelets traveling through the project area between foraging waters and updrainage nesting sites, the proposed action will have **negligible adverse impacts on marbled murrelet, and no impact on marbled murrelet habitat**. Due to the lack of suitable nesting and foraging habitat near the project area, the project will have **no adverse impact on northern spotted owl or western snowy plover and their habitat**. Avoidance measures will ensure no adverse impact to bald eagles. The project is expected to result in a **minor adverse impact to migratory birds and a minor adverse impact to other common birds and their habitat**.

4.5.3 Fish (including Threatened and Endangered and their Habitat)

NMFS has authority for the protection of anadromous and marine fish and designates critical habitat for ESA-listed fish. Important fish habitat in the vicinity of the proposed project area includes the waters of and the riparian area surrounding Scholfield Creek and the Umpqua River. The Umpqua River is designated as critical habitat under the ESA for Coho salmon, eulachon, and green sturgeon. Table 3 presents the ESA-listed threatened or endangered fish and their designated critical habitat in the project vicinity.

Table 3: ESA-listed Fish and Designated Critical Habitat (DCH) within Action Area.

Species	ESA Status	DCH
<i>Coho salmon (Oregon Coast ESU) (Oncorhynchus kisutch)</i>	Threatened	Yes. Umpqua River Scholfield Creek
<i>Pacific Eulachon (Southern DPS) (Thaleichthys pacificus)</i>	Threatened	Yes. Umpqua River
<i>Green sturgeon (Southern DPS North American) (Acipenser medirostris)</i>	Threatened	Yes. Umpqua River Scholfield Creek

ESU = evolutionarily significant unit, DPS = distinct population segment

⁷ USFWS 3-200-71.

The Magnuson-Stevens Fisheries Conservation and Management Act (MSA) designates Essential Fish Habitat (EFH) for certain commercially managed marine and anadromous fish species to protect their habitat from being lost because of disturbance and degradation. The project area is designated as EFH for Pacific salmon, Pacific Coast groundfish, and coastal pelagic species and is in an estuary, which is identified as a habitat area of particular concern for salmon and groundfish (NMFS 2022).

While other fish are likely to occur in and near the proposed project area, the impacts and mitigation for threatened and endangered fish would also apply to other fish.

No Action Alternative

The no action alternative would **not change existing conditions** as no project work will take place, however this alternative would not change the historic and ongoing adverse effects of the existing levee. NMFS's recovery plan for Oregon Coast Coho salmon (NMFS 2016) identifies primary habitat-related limiting factors that include lost floodplain habitat, reduced floodplain complexity, and degraded water quality. These limiting factors would continue to adversely impact fish and hamper recovery efforts. Indirect adverse impacts on water quality will affect habitat in the event of flooding that overtops or breaches the levee (discussed in Section 4.4.1).

Proposed Action

Since the project includes pile driving near ESA-listed fish occupied waters, FEMA determined that the project would likely adversely affect ESA-listed fish and initiated a formal consultation pursuant to Section 7(a)(2) of the ESA. NMFS issued a Biological Opinion (BiOp) and Incidental Take Statement (ITS) on November 8, 2022 (WCRO-2021-01247), finding that the proposed action is not likely to jeopardize the continued existence of Oregon Coast coho salmon, southern DPS North American green sturgeon, or southern DPS Pacific eulachon.

Table 4 shows the timing of the affected life stages of ESA-listed species and the presence of species with EFH occurring in the action area.

Table 4: Timing of Affected Fish Life Stages

Species Timing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Adult OC Coho salmon	1								1	2	2	1
Smolt OC Coho salmon		1	1	1	1							
Eulachon Adult	1	1	2	2	1							
Eulachon Larvae			1	1	1	1	1					
Green sturgeon adult/sub-adult					1	2	2	2	2	1		
EFH Species	1	1	1	1	2	2	2	2	2	1	1	1

Note: Darker shading or "2" indicates presence of a higher number of individuals in the action area

Source: NMFS letter, November 29, 2018. OC = Oregon Coast

To minimize potential impacts, improvements to the levee are designed to occur predominantly on the land side of the levee. No in-water work is anticipated from levee reconstruction or construction. Ground-disturbing activity would occur with sediment disposition and minimal amounts of erosion from the addition of crushed rock and soil fill on top of the existing levee to increase levee height.

Indirect impacts from sediment may affect aquatic habitat. During construction, proper erosion and sediment controls would be implemented. Where there is potential for sediment transport, silt fences, continuous rows of hay bales, biobags, and other common BMPs would be used to reduce or eliminate silt and sediment runoff from disturbed areas. The City will secure a 1200-C Construction Stormwater General Permit from ODEQ to ensure erosion and sediment control measures are implemented. The project will also comply with the conditions of the Water Quality Certification (see Section 4.4.1).

Improvements to the pump stations would have minimal impacts to riparian and aquatic areas. Some in-water work associated with the proposed improvements to the gravity drains and conveyance pipes will be required. Existing gravity drains would be partially excavated and refilled with quarry spall to provide drainage for high water events. Excavation and associated construction disturbance would occur on the river side of the levee where portions of conveyance piping would be replaced. Direct impacts (injury of aquatic species during construction) and indirect impacts (sedimentation and a temporary decrease in water quality) could occur to fish.

The proposed soil acquisition areas are located approximately 650 feet from the Umpqua River and approximately 1,800 feet from Scholfield Creek and are not anticipated to result in an effect on either waterbody.

Equipment for work required in the OHWE would be staged on top of the levee and extensions would reach the work areas. In-water work would only be conducted during the approved window of November 1 to January 31 (ODFW 2022, NMFS 2022). To protect fish, the project will use a sediment curtain and fish seining as summarized below.

- Fish depletion will be supervised by a qualified fish biologist, who will determine at what point the fish removal process has effectively reached depletion.
- Dewatering, if required, will occur over the course of approximately 12 hours to allow fish to voluntarily leave the work area.
- A crew will select the optimal tidal period, set the silt curtain, and conduct at least one fish seining pass from the action area along the bank spreading out into the waterway. Additional seining passes will be made as needed to ensure fish are removed from the isolated area.
- Remaining fish in the isolated area will be removed first using dip nets, then by electrofishing as needed. Electrofishing will be completed according to NMFS and Oregon Department of Fish and Wildlife (ODFW) electrofishing guidelines.
- All handled fish will be recorded, placed in aerated buckets, examined, identified, then released outside the project area in similar habitat.
- Electrofishing will be conducted early in the day to minimize stress to salmonids. Fish capture will be conducted when stream temperatures are at or below 15° Celsius, to the extent practical. While the project is anticipated to span two years, the in-water work is anticipated to take approximately two months.

The project will require pile driving of up to ten 16-inch steel piles at the pump stations as well as steel H-piles and micro piles for the flood walls as described in Section 3.2.5. Noise from pile driving can cause both physical and behavioral impacts on fish as described in the NMFS BiOp (NMFS 2022) and in the 2016 Ocean Noise Strategy Roadmap (NOAA 2016). These impacts are for Oregon Coast (OC) coho and

southern DPS eulachon, since green sturgeon are not expected to be in the action area during the proposed work window.

NMFS states that the dual threshold interim criteria for adverse effects (injury or harm) from pile driving in water is cumulative sounds exposure level (SEL), which is 187dB for fish greater than 2 grams and 183dB for fish less than 2 grams; and peak pressure of 206dB. Based on the analysis of the proposed action, this results in impacts zones: 0ft for peak pressure, 59ft for fish greater than 2 grams and 69ft feet for fish under 2 grams where cumulative SEL will physically affect them; and 328 feet for behavioral changes. NMFS concluded that pile driving would also result in pressure waves (greater than 150dB RMS) that would temporarily adversely impact OC coho and southern DPS eulachon behavior within 328 ft of the driven piles. The impact would be in the form of disorientation that would lessen antipredator avoidance response, and temporarily affect/delay migration behaviors. Pre-smolt OC coho may also experience reduction in foraging behavior or success.

However, as noted in the proposed action, no pile driving will be occurring within Scholfield Creek, rather it will be occurring a variety of distances from the shoreline depending on the levee sections. Section 8 being the closest that the piles are to the shoreline, the pressure wave SEL will extend approximately 40 feet into the estuary. This will yield approximately 3.4 acres of potential impact zone. The spatial area of impact is used since it would be difficult to get an accurate estimate of fish presence in this zone. Impacts will be further mitigated when conducting pile strikes at low tide, and that migrating fish will not always be present during the in water work window. The issued NMFS BiOp stated that even with the acknowledged impacts, the existing current condition limiting factors along with mitigation actions included, the proposed action will not have a discernable effect on population viability and will not impede recovery of the OC coho salmon ESU, southern DPS green sturgeon and southern DPS of eulachon.

The NMFS BiOp includes reasonable and prudent measures (RPM), which are: 1) Minimize incidental take from exposure to elevated suspended sediment; 2) Minimize incidental take from exposure to elevated sound pressure from impact pile driving within 200 feet of Scholfield Creek or McIntosh Slough; and 3) Complete monitoring and reporting to confirm that the take exemption for the proposed action is not exceeded, and that the terms and conditions in this incidental take statement are effective in minimizing incidental take.

To achieve these measures, NMFS directs FEMA to include the following terms and conditions as grant project conditions:

- Monitor distance of visible suspended sediment plumes throughout the in-water work of the project. If the project exceeds a visible continuous sediment plume of 600 feet, all work resulting in elevated suspended sediment must stop until the plume dissipates to match baseline conditions (RPM 1, elevated suspended sediment).
- Conduct pile driving with an impact hammer within 200 feet of Scholfield Creek or McIntosh Slough only during daylight hours with the sun above the horizon. This is to ensure that pile driving does not occur at dawn or dusk, which can be peak movement time for OC coho salmon (RPM 2, elevated sound pressure).
- Allow a minimum rest period of 12 hours between daily pile driving activities within 200 feet of Scholfield Creek or McIntosh Slough during which no impact pile driving occurs (RPM 2, elevated sound pressure).

- Monitor underwater sound according to the Federal Hydroacoustics Working Group underwater noise monitoring plan template; Submit a Project Completion Report to FEMA and NMFS within 60 days of completing construction; and submit; Submit a Fish Salvage Report within 60 days of completing fish capture and release events. The BiOp specifies what content each report requires (RPM 3, monitoring and reporting)

Additionally, the applicant and sub-applicant have agreed to implement the following conservation recommendation that NMFS recommended to further help mitigate impacts to ESA-listed fish species:

- The applicant shall use daily soft start procedures when implementing impact pile driving near waterbodies when ESA-listed fish or marine mammals are present. The use of a soft-start procedure for impact pile driving can provide additional protection by providing warning and providing fish/mammals an opportunity to leave the area prior to the impact hammer operating at full capacity.

NMFS (2022) reviewed the likely effects of the proposed action on EFH pursuant to section 305(b) of the MSA and concluded that the following EFH conservation recommendations would protect, by avoiding or minimizing the project's adverse effect on the EFH of Pacific Coast salmon, Pacific Coast groundfish, and coastal pelagic species.

- Monitor distance of visible suspended sediment plumes throughout the in-water work of the project to minimize adverse effects on water quality, include the estuary HAPC. The City will require their contractors to adjust work practices such that visible suspended sediment plumes do not exceed 600 feet and to halt work should the visible suspended sediment plume begin to approach that distance. Work may continue when the plume dissipates to match baseline conditions.
- While minimizing water quality effects on EFH, also minimize effects on space from work area isolation by reducing the area of isolation to the smallest area necessary and reducing the duration of isolation to the least amount of time necessary.
- Conduct pile driving with an impact hammer within 200 feet of Scholfield Creek or McIntosh Slough during low tides to increase the distance between pile driving and water, only during daylight hours with the sun above the horizon, and allow a minimum rest period of 12 hours between daily pile driving during which no impact pile driving occurs.
- Monitor underwater sound according to the Federal Hydroacoustics Working Group underwater noise monitoring plan template.

The proposed action will fortify and extend the life of the existing levee, which has on-going negative effects to aquatic resources and organisms. However, given the minimal in-water work, the narrow in-water work window optimized to avoid impacts to ESA-listed fish, BMPs, seining and sediment curtains, pile driving noise mitigation, and post project reduction of flood event induced urban stormwater runoff (see water quality section), the proposed action will result in a **minor adverse impact on ESA-listed fish, designated critical habitat, and essential fish habitat**. The proposed action will have a **minor adverse impact on other general fish and aquatic species**.

4.5.4 Wildlife (including Threatened and Endangered and their Habitat)

The USFWS Information for Planning and Consultation (IPAC) was used to identify proposed, threatened, and endangered terrestrial species that could occur in the action area. Table 5 presents the ESA-listed threatened or endangered terrestrial species and their designated critical habitat.

Table 5: ESA-listed Mammals and Designated Critical Habitat (DCH) within Action Area

Species	ESA Status	Presence	DCH
Pacific Marten (Coastal DPS) (<i>Martes caurina</i>)	Threatened	Unlikely	No

While the historical range of Pacific Marten includes Reedsport, the habitat preference is for older (mature) conifer dominated forest habitat, with a dense shrub layer with downed logs and snags. This habitat is not found within the project site, and it is unlikely that Pacific Marten will be present in the proposed work areas (city, exposed levee, wetlands) around Reedsport. Since the forest around the soil acquisition area is not suitable for northern spotted owl nesting, it is also unlikely that Pacific Marten would be present there since they share a preference for mature forests. The nearest Pacific Marten designated critical habitat is several miles to the southwest, on the south bank of the Umpqua River mouth.

No Action Alternative

The no action alternative would **not change existing conditions** as no project work will take place.

Proposed Action

Other non-ESA listed terrestrial species (mammals, insects) may be affected during Project actions that change and modify the existing levee, and collection of material from the soil acquisition site. While individual animals may move away while work is occurring, the majority of the Project footprint will remain as open space where grass, wetland plants, and shrubs will regrow and be reoccupied by mobile terrestrial species.

Due to the lack of suitable rearing and foraging habitat within the project area, the project will have **no impact on Pacific Marten and their habitat**. Due to short term site disturbances but retention as open space this project action will result in **minor short-term adverse impacts to general non-ESA listed terrestrial wildlife and insects**.

4.6 Cultural Resources and Historic Properties

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that activities using federal funds undergo a review process to consider potential effects on historic properties within the Area of Potential Effects (APE) that are listed in or may be eligible for listing in the National Register of Historic Places (NRHP). This process is completed in consultation with the State Historic Preservation Office (SHPO) and Tribes.

Historic properties include prehistoric or historic archeological sites, structures, and districts. They may include objects, artifacts, and cultural properties of historic or traditional significance, referred to as Traditional Cultural Properties. These properties may have religious or cultural significance to federally

recognized Indian Tribes. Cultural resources also include other physical evidence of human activity considered to be important to culture, subculture, or community for scientific, traditional, religious, or other reasons. Important living cultural resources, such as salmon and culturally relevant plants, important for traditional, religious, and other reasons, may also be included.

Cultural resources and historic properties were inventoried in two phases, beginning with an archeological survey in 2021 followed by an above ground cultural resource inventory in 2022. An overview of the prehistoric and historic setting around Reedsport can be found in Schwendiman (2021) and AP (2022), respectively. The Lower Umpqua People were known to occupy the land where the proposed project is located. Through treaties, executive orders, judicial decisions, and legislation, most of their territory was ceded to the United States. Treaties reserved certain rights, such as hunting, fishing, and gathering in their usual and accustomed grounds and stations, including ancestral lands that lie outside their reservations. Tribal members rely on culturally relevant plant gathering areas in the project vicinity. Scholfield Creek and the Umpqua River are essential fish habitat for salmonids, which are an important Tribal cultural resource. The following tribes have ancestral lands in the Reedsport area: the Coquille Indian Tribe; the Cow Creek Band of the Umpqua Tribe of Indians; Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians; Confederated Tribes of the Grand Ronde; and the Confederated Tribes of the Siletz Indians. In November 2018, the City sent a project scoping document to the Coquille Indian Tribe, Cow Creek Band of the Umpqua Tribe of Indians, Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians, Confederated Tribes of the Grand Ronde, and the Confederated Tribes of the Siletz Indians to solicit feedback that would help inform the cultural and archeological resources evaluation.

The project's cultural and archeological resources inventory Schwediman (2021) included shovel test probes in areas of proposed project subsurface disturbance outside of the footprint of the existing levee or areas of previous ground disturbance caused by modern levee work or deforested and steep landscape (soil acquisition sites). The lowland areas adjacent to the levee are built of material historically dredged from the Umpqua River in the 1920s. Therefore, significant or intact archeological material below the levee system is unlikely due to the presence of high-water prior to the dredging. No archaeological sites eligible for the NRHP were discovered or recorded during the inventory.

The NHRP identifies the Umpqua River Bridge No. 01822 (ref. 05000815) as the only NRHP-listed resource within or adjacent to the current levee alignment within the City (National Park Service, 2018b). The bridge (Highway 101) is adjacent to the APE and leads into the City from the north.

Historical Research Associates, Inc. (HRA 2022) inventoried above ground resources, initially finding four homes along Juniper Street adjacent to the proposed project area that were identified as historic-period built resources constructed between 1930 and 1949. Upon further review, two of these homes were outside of the APE. The remaining two homes were evaluated but did not meet any criteria for individual listing in the NRHP because of the additions and alterations that have been made.

Of the 18 historic-period resources identified within the project APE, four are recommended for listing in the NRHP:

- 191 Riverfront Way (Knife River) - recommended under Criterion A (36 CFR 60.4)
- 130 Railroad Ave – recommended under Criterion A
- Railroad bridge and Southern Pacific Railroad alignment – recommended under Criterion A

- Reedsport Levee eligible for listing in the NRHP under Criterion A, within the area of Community Development, within the context of a potential Multiple Property Submission of Reedsport's commercial properties.

The original sections of the levees themselves are an historic-period built resource constructed between 1925 and 1945 without federal involvement. Historical photographs and USGS topographical maps confirm the presence of an earthen levee on the west side of town along Scholfield Creek in the 1940s and 1950s. After the Christmas Flood of 1964, federally authorized improvements were completed in 1969 (ACOE 2018). These levees have contributed to the transition of the City from floating houses and stilted homes to a more grounded land-based community, making it significant at a local level to the community development of Reedsport. Therefore, HRA for the City of Reedsport, recommended the levee eligible for listing in the NRHP under Criterion A (HRA 2022).⁸

No Action Alternative

Under the no action alternative, since no construction work will be conducted on the levees, related infrastructure, and soil acquisition areas **no cultural resources or historic properties will be affected**.

Proposed Action

There were no NRHP-listed architectural resources sites within the APE. The closest NRHP-listed resource is the Umpqua River Bridge No. 01822 (Highway 101). The proposed action would have no effect on the bridge; the levee currently runs underneath the elevated bridge and no work is expected on this portion of the levee. (See Appendix A, sheet C-104).

The proposed project will have no adverse affect on the railroad approach or bridge, which will remain functional and within their current alignment. Indirect/viewshed effects have no potential to result in a loss of significance for association with transportation and commerce on Oregon's West Coast, nor loss of integrity of location, setting, materials, design, workmanship, feeling, or association.

The proposed project will have no adverse affect on the buildings at 191 Riverfront Way and 130 E. Railroad Avenue. While these were found to be eligible for listing in the NRHP under Criterion A, the proposed project will not directly or indirectly affect the buildings' integrity of design, materials, or workmanship; nor integrity of location and setting along the river adjacent to the Reedsport downtown commercial district; nor integrity of feeling and association as a commercial/industrial facility.

The levee's eligibility is tied to its role as an evolving water management and flood control system constructed from ca. 1925–1969, which enabled the growth of Reedsport's downtown commercial district. The proposed project will not alter the levee's essential function of water management within its historic period (ca. 1925–1969) alignment. Actions to improve flood resiliency, including but not limited to raising the height of the levee by adding earthen fill, sheet pile, and concrete floodwalls, should not result in a loss of significance or integrity of location, setting, materials, design, workmanship, feeling, or association. As all aspects of integrity will remain, the project will result in no adverse effects to the levee.

⁸ Under Criterion A, properties can be determined eligible for listing in the NRHP if they are associated with events that have made a significant contribution to the broad patterns of our history.

This alternative would have **no adverse effect to historic properties**. The Oregon SHPO concurred with FEMA's findings for below ground resources on November 4, 2021 and built environment resources on October 27, 2022 (see Appendix B). FEMA sent a consultation request to the Tribes with an identified interest in the project area on October 4, 2021 with a copy of the Cultural Resources Report and an opportunity to comment. A copy of the letters (Case No. 21-1356) are provided in Appendix B. Consultation with the Tribes was completed on June 6, 2022.

This alternative would have no impact on the culturally relevant plant gathering areas in the project vicinity, as these areas are outside of the work area. The City has confirmed that fill will be placed on top of the existing levees near these locations but the plants or access to them will not be impacted and will be protected by BMP and project conditions that apply to wetlands and surface water bodies as described in Section 4.3.2 and Section 6.2.

An Inadvertent Discovery Plan (IDP) will be included in the construction documents to describe procedures for actions to be taken in the event of the discovery of cultural resources during construction. If previously unknown cultural resource resources are discovered, ground disturbance would cease in that area until a professional archaeologist can evaluate the discovery. The City would work with FEMA, the SHPO and the consulting Tribes to design an avoidance or mitigation strategy.

This alternative would result in a negligible long-term indirect benefit on tribal cultural resources by protecting, and by reducing the risk of catastrophic overtopping and failure that would lead to degraded water quality and thus salmon habitat as discussed in Section 4.3.1.

4.7 Quality of Life Resources

This section discusses other resources that impact people's quality of life. Specifically, traffic, noise, vibrations, and visual impacts. The section also discusses environmental justice impacts.

4.7.1 Traffic

Construction projects have the potential to disrupt traffic patterns or increase traffic volumes to unacceptable levels of service. Reedsport has only three access points. US Highway 101 is the primary north-south arterial through Reedsport, with the Umpqua River Bridge and the Scholfield River Bridge both on US 101 providing provide north and south connections from the City. State Route 38 (Umpqua Avenue) begins on US 101 and heads east along the Umpqua River (Figure 1).

Annual average daily traffic (AADT) volumes on both US 101 and Route 38 were obtained from ODOT traffic volume data (ODOT 2022) and shown in Table 6. The data demonstrate that the roadways have adequate capacity in both directions. ODOT does not maintain an Automatic Traffic Recorder in Reedsport.

Table 6: 2019 Traffic Data

<i>Route</i>	<i>Mileposts</i>	<i>Peak AADT 2019</i>	<i>AADT 20 Year Volume</i>	<i>Peak Location</i>	<i>Peak Trucks</i>	<i>Max K-Factor</i>	<i>Max D-Factor</i>
US 101	211.58 to 212.69	12,100	12,300	At Winchester Ave	20	13	55
State R 38	0.00 to 2.20	4,920	5,100	At US 101	32	16	64

Source: ODOT 2022

AADT-Annual average daily traffic, the total traffic for the year divided by 365

Trucks include both single and double units

K factor- The proportion of AADT occurring in the peak hour

D factor- Proportion of traffic traveling in the peak direction during a selected hour

More recent data is available; however, 2020 Peak AADT was lower because of the COVID Pandemic. For example, US 101 was 11,611 and SR 38 was 5,000 in 2020.

No Action Alternative

The low K-factor and the uniform D-factor demonstrate adequate roadway capacity. ODOT reports both routes are designed to accommodate more vehicles than the 2019 traffic conditions and this volume is not expected to change in the foreseeable future (ODOT 2022). The no action alternative would not generate any project-related construction traffic.

This alternative would result in a **moderate adverse impact** on traffic and transportation, including emergency transportation, if the levee overtops or collapses. The impacts would be exacerbated when combined with the inability of the pumps and drains to adequately support the City's needs.

Proposed Action

The proposed action will generate construction worker trips, project-related deliveries, and soil acquisition truck trips. An estimated 11 new truck trips per day are required to deliver soil from the acquisition site and a similar number to deliver commercial sand. A total increase of 44 total daily truck trips to and from the site along Route 38, even when coupled with construction worker traffic and other deliveries, will represent a negligible increase to the 20-year AADT of 5,100 trips (Table 6).

The project will also require temporary blockages, complete closures, or partial lane closures, especially where the roadway is on the levee and has to be raised, where the levee crosses a roadway, when the roadway is needed for construction or pile driving, or where stop gates are being installed or upgraded.

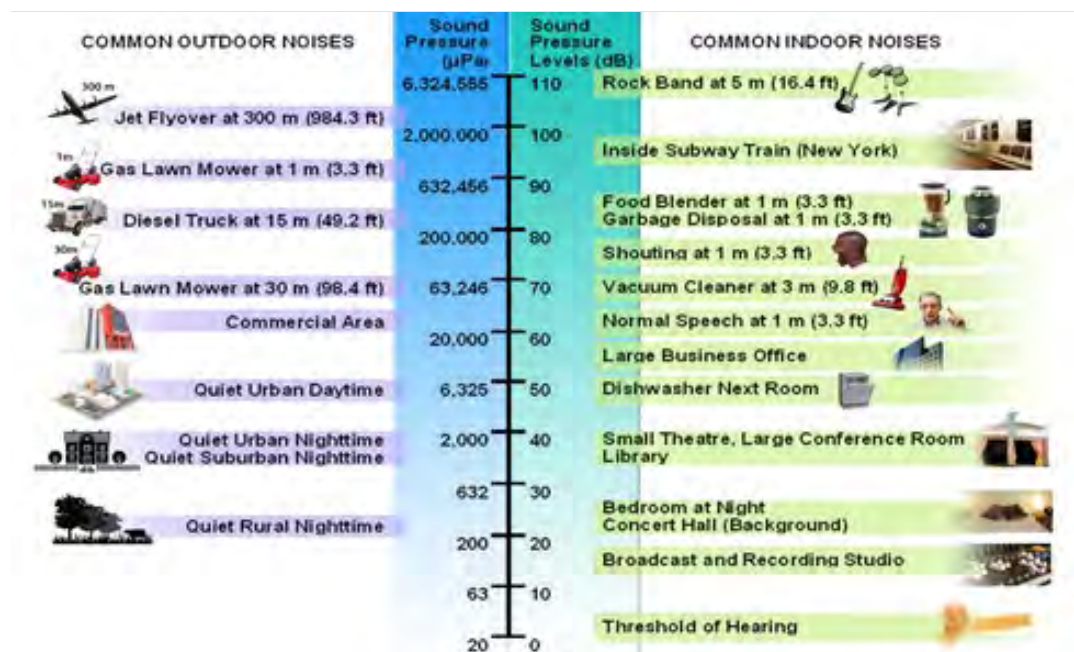
During times of construction, work would be completed on a block-by-block basis. Detours would be made available around work site. The project will maintain at least one lane of traffic through the project area at all times. Temporary traffic signals, flaggers, signboards, or a combination thereof will be used to maintain traffic flow. To inform City residents and businesses, road closure and work notifications would be published in the newspaper and on the City's websites and via their social media accounts at least 14 days before the work commences. The project will not result in any long-term or permanent adverse impacts to transportation. If required, ODOT permits would be obtained for work in state road right of ways. To avoid adverse impacts to residents on Crestview Drive, trucks travelling to and from the soil acquisition area will use the access gate near Scolfield Road on State Route 38 and not Crestview Drive. The City will close and lock the west access gate from Crestview Drive.

The proposed action will create a **minor short-term adverse impact** on traffic and transportation and a **moderate long-term benefit** resulting from levee stabilization.

4.7.2 Noise

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are considered noise. Noise events that occur during the night (10 p.m. to 7 a.m.) are more annoying than those that occur during normal waking hours (7 a.m. to 10 p.m.). Assessment of noise impacts includes the proximity of the proposed action to sensitive receptors (e.g., residences, libraries, schools, healthcare facilities, retirement homes), defined as areas of frequent human use that would benefit from a lowered noise level. Figure 12 shows common noise levels, which will be discussed in this section.

Figure 12: Common Sound Levels



Source: FTA 2018b

There are no statutory or regulatory thresholds for noise impacts on humans. Oregon's administrative rules,⁹ Douglas County Code (8.04.130), and the City's code do not have thresholds or constraints on construction noise levels, only restrictions on construction hours. FEMA relies on noise thresholds established by other agencies to inform its significance determination under NEPA. These thresholds are discussed under the *Pile Driving* section below.

No Action Alternative

In the absence of any construction, the no action alternative would not generate any new noise so **there would be no change in existing conditions.**

Proposed Action

⁹ Chapter 340, Division 35, ODEQ

The project will not generate any new long-term noise. Pumps already exist at the pumping stations; therefore, the new pumps are not anticipated to create a discernable amount of additional noise. This section only addresses construction-related impacts. Noise levels vary with the level of construction activity, types of equipment operating at a particular time, and the proximity of the construction equipment to noise sensitive receptors.

Residents and businesses will experience construction-related noise emanating from four primary sources over a two-year period:

- Increased **truck traffic** hauling soil from the acquisition site, moving materials to and from the staging areas, and removing used soil, asphalt, and other construction waste. This intermittent noise will last for the 2-year duration of the project.
- **Staging area noise** for the duration of the project. Noise will emanate from daily construction worker parking, deliveries, construction offices, job recruitment, and storing of vehicles or equipment and will also last for about 2 years.
- **Levee, Pump Station Improvements, and Drainage Improvements** will require on-site construction equipment, including off-road equipment, generators, pumps, etc. Noise will emanate from daily construction on these project elements. Construction on each segment would be completed on a block-by-block basis, with each segment taking approximately 1 month to complete as described below.
- **Pile driving** for the sheet pile flood walls (263 H-piles and 53 augered micro piles) and pump station stabilization (10 round steel piles). There are six segments of flood walls and two pumping stations that require pile driving. The work at each location will last 1 to 7 days as shown in Table 7.

Table 7: Pile Driving by Location

Floodwall Segment	Estimated Number of Piles	Approximate Duration of Work
101 and Port Dock	30 augered helical micro piles	15 hours
101 Bridge North	56 piles	28 hours
101 Bridge South	16 piles	8 hours
Coho RV Park and Marina	76 piles	38 hours
Best Western Hotel	23 augered helical micro piles	12 hours
Segment 8 near Juniper Ave and Champion Dog Park	115 piles	58 hours

Source: AP 2022c

Traffic

- Noise from truck traffic and increased worker trips would contribute temporarily to existing traffic noise on local roads (see Section 4.4.2), including Highway 101; however, there would be no discernable change in average traffic noise levels because there would be only a minor increase in traffic as discussed in Section 4.7.1. The City has committed to ensuring no trucks to and from the soil acquisition area will use Crestview Drive west of the soil acquisition area (Section 4.7.1). Overall traffic noise impacts will be **negligible** on main roads and minor on side streets and near levee access points away from the main roads.

Construction Days and Hours

The City commits to the following measures to minimize unwanted noise:

- No construction will take place on Saturdays, Sundays, state and federal holidays.
- No construction-related activities, including worker arrivals and engine run-ups, would take place during the hours of 6 p.m. to 7 a.m. (AP 2022c).
- Staging areas near residential areas (see sections below) will remain closed between these hours so that construction workers do not arrive early, leave late, or start-up and warm-up equipment during these hours. No on-site construction engine start-up or warm-ups will be permitted, including at the levee or pile driving work locations (AP 2022c).
- Where possible, disable backup alarms of vehicles and equipment based at the staging sites, provide adequate turning radiuses at these sites to minimize backup alarms for transient trucks and other delivery vehicles. Limit idling of engines, require these restrictions in the construction documents, and provide visible on-site signage and enforcement (AP 2022c).

The following restrictions are related to Marbled Murrelet as discussed in Section 4.5.2 but also serve to minimize overall unwanted noise:

- No soil removal at the upland area will occur until two hours past sunrise. Upland Soil removal activities will cease two hours before sunset.¹⁰ Therefore, no soil deliveries to work sites in Reedsport will occur during these soil removal restricted hours.
- No pile driving at segment 8 off Juniper Avenue near Champion Park until two hours past sunrise and cease pile driving two hours before sunset.

Staging Areas

The three staging areas are described and depicted in Section 3.2.5. Adjacent residences will be exposed to both noise and air emissions during the project. Air quality mitigation is described in Section 4.3.2. Anticipated noise impacts are shown below in Table 8, while proposed noise mitigation is discussed in the *Construction Days and Hours* subsection above.

The north end of Stage Area A abuts a HUD complex and a new apartment building that will be constructed on private property adjacent to the levee at 16th Street. To mitigate noise and air quality impacts to these residences, the project equipment will not use 16th Street and Hawthorne Avenue.

¹⁰ The earliest sunrise in Reedsport is 5:32 a.m., therefore the earliest soil removal work may occur is 7:32 a.m. in June. The earliest sunset in Reedsport is 4:40 p.m. in December, therefore soil removal may not occur after 2:40 p.m. in early December.

Instead, access will only be available from the unimproved right of way for 17th street at the south end of the staging area off Highway 101 behind the Les Schwab building. Only the area near the levee will be used for staging, shown in Figure 4.

Table 8: Staging Area Equipment Engine Noise Analysis

Site	Distance	L _{max} (dBA)	Exceeds 90 dBA	With Echo Barrier /1
Elm Ave Staging Area	60 feet	85.02	No	N/A
Champion Park Staging Area	100 feet	89.47	No	N/A
16 th St. Staging Area	75 feet	92.60	Yes	62.60

/1 An echo barrier shield offers a 30-decibel noise reduction

With the proposed mitigation, there will be **a moderate adverse noise impact on residents adjacent to the staging areas**, commensurate in intensity with other urban construction projects and roadwork but of a longer duration.

The City will also recommend the following measures to the contractor, to be implemented as feasible at the staging areas (AP 2022c):

- Partial shielding with soil piles, construction trailers, and construction offices placed between equipment and residences (Mitigation of Construction Noise in the Federal Highway Construction Noise Handbook, FHWA 2006, Figures 7.2, 7.32).
- Equipment mufflers and shields (FHWA 2006).
- Wood or straw bail enclosures for stationary equipment (FHWA 2006)

These measures are not required to fully mitigate the noise impacts at the staging areas.

Earthen and Concrete Levee Segments, Pump Station Improvements, and Drainage Improvements

Work on the earthen and concrete levee segments, pump stations, and drainage will be intermittent and temporary in nature and confined to the specific project area for the specific duration of construction of that component. Construction on the levees would be completed on a block-by-block basis. Each segment will take approximately 1 month to complete, depending on the length of the segment. Work season will be by month. The project is anticipated to take approximately two construction seasons (May to December) to complete (AP 2022c). The impacts will be **minor**, commensurate in intensity with other urban construction projects and roadwork.

Pile Driving

The project will need 263 H-piles and 53 micro piles (augered) for the sheet wall as described in Section 3.2.1 and ten 16-inch diameter steel piles for the pump stations. Proofing of piles will be of short duration and will be intermittent with long breaks between installation of each pile.

Table 9 lists the areas adjacent to pile driving locations. The noise analysis relies on the following metrics:

- Noise is defined as unwanted sound, which is measured in terms of sound pressure level and is usually expressed in decibels (dB).
- The human ear is less sensitive to higher and lower frequencies than to mid-range frequencies. Therefore, a weighting system that filters out higher and lower frequencies in a manner similar to the human ear was developed. Measurements made with this weighting system are termed “A-weighted” and are specified as “dBA” readings.
- The equivalent sound level (L_{eq}) is the level of a constant sound for a specified period of time that has the same sound energy as an actual fluctuating noise over the same period of time.
- The L_{max} is the loudest instantaneous noise level during a pre-set measurement period.
- The day-night sound level (L_{dn}) is an L_{eq} over a 24-hour period, with a 10 dBA penalty factor added to nighttime sound levels occurring between 10 p.m. and 7 a.m.

The following table lists the distance from the pile driving activities, the anticipated pile driving noise level that might be experienced at each location (L_{max}) depending on the method and mitigation, and whether L_{max} is likely to exceed the daytime limit of 90 dBA for impact pile driving for residences and hotels (FHWA 2006, Table 7.2). Specific mitigation may not be technically feasible at every location.

Table 9: Pile Driving Noise Analysis

Site	Method	Distance	L_{max} (dBA)	Exceeds 90 dBA	With Echo Barrier /1
Coho RV and Marina	Impact	70 feet	101.35	Yes	71.35
Coho RV and Marina	Sonic	70 feet	91.35	Yes	61.35
Best Western Hotel	Impact	25 feet	112.53	Yes	82.53
Best Western Hotel	Sonic	25 feet	102.53	Yes	72.53
Best Western Hotel	Auger	25 feet	77.53	No	N/A
Near Champion Park	Impact	21 feet	114.42	Yes	84.42
Near Champion Park	Sonic	21 feet	104.42	Yes	74.42
12 th St. Pump Station	Impact	90 feet	98.62	Yes	68.62
12 th St. Pump Station	Sonic	90 feet	88.62	No	N/A
16 th St. Pump Station	Impact	45 feet	106.14	Yes	76.14
16 th St. Pump Station	Sonic	45 feet	96.14	Yes	66.14
101 Bridge	Impact	374 feet	83.15	No	N/A
101 and Port Dock	Impact	185 feet	90.79	Yes	60.79
101 and Port Dock	Sonic	185 feet	80.79	No	N/A
101 and Port Dock	Auger	185 feet	55.79	No	N/A
Elm Ave Pump Station	Impact	240 feet	87.97	No	N/A

/1 An echo barrier shield offers a 30-decibel noise reduction

Pile Driving Noise Mitigation

For the locations shown in Table 9 where L_{max} exceeds 90 dBA, the City will require its contractors to mitigate the noise impacts using a sonic pile driver or augered micro piles depending on what is feasible for the soil type and conditions. If necessary, an echo barrier shield, or other equivalent means of noise reduction will also be used. The contractor will monitor noise levels to ensure they are below the limit. Further mitigation will be provided if noise levels are above the limit.

With mitigation, the project **will result in a moderate adverse short-term pile-driving noise impact**. This impact will be less than significant with the proposed mitigation per the evaluation criteria in Table 1.

4.7.3 Vibrations

Vibration is an oscillatory motion described in terms of the displacement, velocity, or acceleration. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings founded on the soil near the construction site respond to these vibrations with varying results, ranging from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibrations at moderate levels, and slight damage at the highest levels.

Ground vibration caused by heavy construction activities including pile driving is expressed in terms of peak particle velocity (PPV) measured in inches per second. It measures the movement within the ground of molecular particles and *not* how much the ground surface moves. Because the motion is oscillatory, there is no net movement of the vibration element and the average of any of the motion metrics is zero.

Calculations of vibration rely on the following metrics:

- Vibration Decibels (VdB) is the vibration velocity level in decibel scale. It is used to predict annoyance to humans.
- Peak Particle Velocity (PPV) is the maximum instantaneous positive or negative peak of the vibration signal. PPV is often used to monitor construction vibration (such as pile driving) since it is related to the stresses buildings experience and not to evaluate human response

Figure 13 illustrates common vibration sources and the human and structural response to ground-borne vibration ranging from 50 VdB (below perceptibility) to 100 VdB (the threshold for potential damage). The background vibration velocity level in residential areas is usually 50 VdB or lower, the threshold of perception for humans is approximately 65 VdB and a vibration level of 85 VdB in a residence can result in strong annoyance.

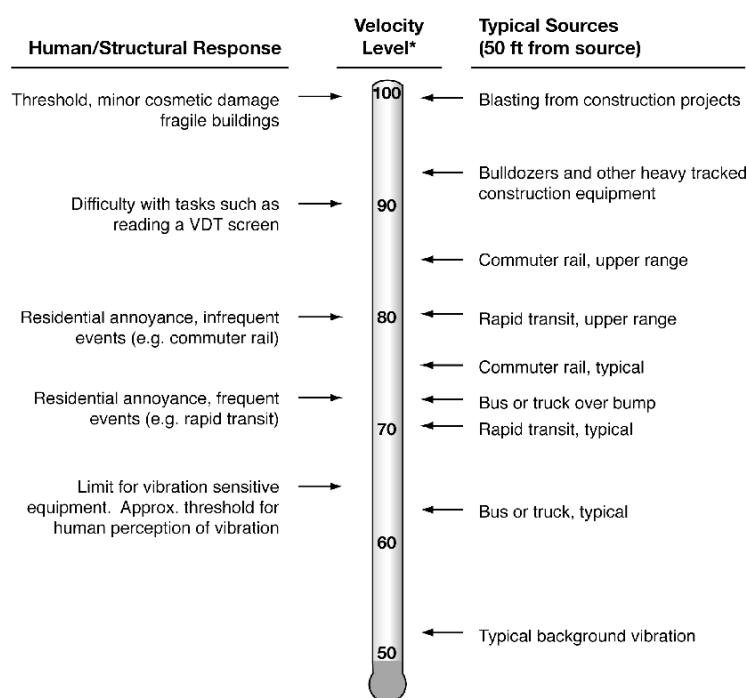
Table 10 shows the thresholds for damage (PPV) and annoyance (Lv) or vibration level in VdB based on the type of building.

Table 10: Construction Vibration Damage Criteria

Building / Structural Category	PPV _{equip} (in/sec)	Approximate Velocity Level L _v (VdB)
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA 2018

Figure 13: Typical levels of ground-borne vibration



* RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second

Source: FTA 2018

No Action Alternative

The no action alternative would **not generate any short-term construction-related vibrations**.

Proposed Action

Table 11 lists areas closest to proposed pile driving. The table lists the calculated peak particle velocity that might be experienced at each location depending on the method and mitigation, and identifies sites that are likely to experience an exceedance of the damage threshold based on Table 10.

Table 11: Pile Driving Vibration Damage Analysis

Site	Type	PPV _{equip} (in/sec)	Damage Threshold (in/sec)	Damage Exceedance
Coho RV and Marina	Impact	0.14	0.2	No
Coho RV and Marina	Sonic	0.04	0.2	No
Best Western Hotel	Impact	0.64	0.2	Yes
Best Western Hotel	Sonic	0.17	0.2	No
Best Western Hotel	Auger	Little to none	0.2	No
Near Champion Park	Impact	0.84	0.12	Yes
Near Champion Park	Sonic	0.22	0.12	Yes
12 th St. Pump Station	Impact	0.09	0.12	No

Site	Type	PPV _{equip} (in/sec)	Damage Threshold (in/sec)	Damage Exceedance
12 th St. Pump Station	Sonic	0.02	0.12	No
16 th St. Pump Station	Impact	0.27	0.12	Yes
16 th St. Pump Station	Sonic	0.07	0.12	No
101 Bridge	Sonic	0.07	0.12	No
101 and Port Dock	Impact	0.03	0.12	No
101 and Port Dock	Sonic	0.01	0.12	No
101 and Port Dock	Auger	Little to none	0.12	No
Elm Ave Pump Station	Impact	0.02	0.12	No

Sources: FTA 2018 and AP 2022c

Table 12 shows the calculated maximum velocity level (L_v) and whether the annoyance threshold is expected to be exceeded at each site. The annoyance thresholds also depend on the building construction. A vibration level that causes annoyance may be below the damage risk threshold for typical buildings (FTA 2018).

Table 12: Pile Driving Vibration Annoyance Analysis

Site	Type	Velocity Level (L_v)	Annoyance Threshold (L_v)	Annoyance Exceedance
Coho RV and Marina	Impact	74.45	94	No
Coho RV and Marina	Sonic	63.45	94	No
Best Western Hotel	Impact	74.00	94	No
Best Western Hotel	Sonic	63.00	94	No
Best Western Hotel	Auger	None	94	No
Near Champion Park	Impact	73.92	90	No
Near Champion Park	Sonic	62.92	90	No
12 th St. Pump Station	Impact	74.56	90	No
12 th St. Pump Station	Sonic	63.56	90	No
16 th St. Pump Station	Impact	74.26	90	No
16 th St. Pump Station	Sonic	63.26	90	No
101 Bridge	Impact	75.17	90	No
101 and Port Dock	Impact	74.87	90	No
101 and Port Dock	Sonic	63.87	90	No
101 and Port Dock	Auger	None	90	No
Elm Ave Pump Station	Impact	74.98	90	No

Pile Driving Vibration Mitigation

As discussed in the previous section and shown in Table 9, six of the eight locations will require the use of a sonic pile driver to mitigate *noise impacts* below the FHWA threshold of 90 dBA and may further mitigate the noise using an echo barrier. At two of these locations (Best Western Hotel and 101/Port Dock), the City will further mitigate the anticipated noise impacts with augered micro piles.

The sonic pile driver and proposed augered micro piles will also reduce *vibration impacts* to below the threshold for damage at all except one location where additional mitigation would be needed. At this

location (Near Champion Park), the contractor would coordinate with the owner or resident to conduct an opt-in baseline assessment of the structure before work commences and then conduct a post-construction assessment. The City would fix or replace any damage caused by the pile driving.

With the proposed mitigation (sonic or auger micro piles) based on the noise and vibration analyses, no locations are anticipated to exceed the annoyance threshold for *vibration annoyance*.

In addition, construction activities would take place only during daylight hours (no noise produced during the hours of 6 p.m. to 7 a.m.); pile driving would commence only two hours after sunrise and cease two hours before sunset; and work notifications would be published in the newspaper and on the City's websites and via their social media accounts at least 14 days before the work commences.

Overall, the project, **with mitigation will result in a moderate adverse short-term pile-driving vibration impact**. This impact will not be significant with the proposed mitigation that would reduce all indicators below the applicable thresholds.

4.7.4 Public Health and Safety

Floods and earthquakes can adversely impact public health and safety. Local emergency services may be overwhelmed, evacuation routes may be restricted, and standing water may harbor biological vectors. Construction projects may also adversely impact residents and businesses.

Impacts to public health and safety are measured in this section by considering whether implementation of the alternatives would increase hazards from flooding or whether there would be moderate to major reductions in levels of emergency services and response times.

No Action Alternative

Depending on the severity of a flood event, the degree of overtopping or compromise of the levee, and the pump stations' ability to deal with the water, the public's health and safety could experience minor to major short- and long-term adverse effects from flooding, damage, biological vectors, and road closures. These adverse effects would be exacerbated in a major seismic event. Under this alternative, **there would be no change to this range of potential impacts**.

Proposed Action

The proposed action will enhance the efficacy of the levees to protect health and safety in the long-term. However, the public would also experience short-term construction related inconveniences. However, these are expected to be minor as the City will secure all construction-related permits, ensure safety of construction workers and residents, route pedestrian and vehicular traffic appropriately, and adhere to other construction-related best management practices.

Therefore, the proposed action will result in long-term moderate benefit to health and safety, coupled with short-term minor adverse construction related impacts.

4.7.5 Economics

Economic effects are evaluated qualitatively to determine short- or long-term impacts on businesses or household income. There are no federal regulations or authorities related to economics. The floodwall,

earthwall, and sheetwall are on private property or property owned by the City of Reedsport. For levee components on private property, easements were acquired when the levee was constructed by the ACOE in the 1970s. The City of Reedsport holds permanent Maintenance Access Easements on all sections of the levee, including the sections that are currently privately owned. The permanent easements are a minimum of 15 feet from the toe of the levee on both slopes.

No Action Alternative

A significant flood event (Figure 3) described in the Introduction (Section 1.0) could overtop or compromise the levee, resulting in up to ten feet of flood depths behind the levee in a matter of hours (Wells 2018). **Residents and businesses would suffer moderate short- and long-term economic impacts** that could be exacerbated by a significant seismic event.

Proposed Action

The City will use the existing legal levee right of way and easements for the project. Although unanticipated, if work needs to proceed outside of the existing easement areas, the City would secure additional easements. No business or residential permanent relocations or new acquisitions are expected as part of the proposed project. There will be no long-term loss of property as the levee will be reconstructed on the existing levee footprint or on city property. The project does not alter the long-term economy, jobs, flood insurance rates, or other economic indicators. This proposed project is anticipated to be financed through federal and state grants.

All businesses adjacent to the levee will experience adverse construction related impacts including noise, dust, exhaust emissions, traffic and pedestrian detours, and vibrations. Specifically:

- Occupancy of the Coho RV Park and Marina may be disrupted by the proximity of pile driving to each RV bay along the southernmost portion of the property. The City will maintain access to the RV Park and Marina at all times during construction and coordinate with the owner on the construction schedule to schedule work during the RV Park's shoulder or off seasons if feasible. The RV Park's shoulder season (October 1 to November 30) and off-season (December 1 to February 28) overlap with the state and federal approved in-water work window (November 1 to January 31). Visitors (RV and marina users) will be exposed to pile driving noise and vibrations, expected to last 1 week.
- Visitors to the Best Western Hotel and businesses in the vicinity will be impacted by project construction anticipated to last 1 week. The floodwall and proposed work in this area is on private property and within an area with an easement provided for the levee segment. The City will ensure that these businesses will be able to continue fully during construction and it is anticipated that there will not be any economic impacts to the hotel and adjacent businesses.

In addition, residents and businesses adjacent to the planned pile driving areas may experience vibration damage as described in Section 4.7.3, that would result in adverse economic impacts. Overall, the City's business owners and customers will experience **minor short-term adverse economic impacts** during the project construction and **long term moderate beneficial economic impacts** associated with a stronger, more reliable levee system.

4.7.6 Visual

Changes to earthen levees and flood walls have the potential to affect visual quality. The analysis of visual quality is a qualitative analysis that considers the visual context of the project area, potential for changes in character and contrast, assessment of whether the project areas include any places or features designated for protection, the number of people who can view the site and their activities, and the extent to which those activities are related to the aesthetic qualities of the area.

No Action Alternative

Under this alternative, absent construction, the levees will continue to slowly settle over time. This settlement will not be perceivable to the casual observer. An overtopping event or breach of the levees could result in a **major adverse visual impact** on the levees and the City from flood damaged infrastructure.

The cover page shows an example of the visual impacts of the 1964 Christmas Day flood. Figure 10 above shows the existing levee berm along Scholdfield Creek while Figure 11 shows the floodwall near Juniper and North 13th street. Figure 14 below shows the existing conditions along seven viewsheds where the levee height is proposed to be increased approximately 4-5 feet.

Proposed Action

The project is restorative. It intends to restore parts of the earthen levee that has settled, replace existing sheet pile flood walls, and make other improvements to the levee system as described in Section 3.2. Along the entire levee system, the largest proposed height increase is 4.92 feet at 107+00 (See Appendix A).

The future conditions of the earthen levee will generally not be visually perceivable to the casual observer. Appendix A presents the preliminary drawings, showing that the difference between the existing and proposed levee height ranges from 1-5 feet.

In a few locations, the restoration effort may be noticeably different from the existing conditions, but closer to the original condition of the levee. For example, the sheet pile wall near Juniper Street (Figure 11) will remain the same height as the current conditions but the height of the fill will be raised to in relation to the top of the sheet pile wall, resulting in a negligible noticeable difference from the existing conditions.

The project will have no visible changes to the underground gravity drains or the pump stations.

The upland soil acquisition site is not accessible to the public nor visible from the City (Figure 1). When the project is completed, it will be hydroseeded and allowed to return to a natural vegetative state. The proposed project will improve the existing conditions of the primary acquisition area given that it is relatively barren having been recently logged (see area photographs in Figure 5).

The proposed project therefore will have a negligible adverse impact on visual resources for the community as a whole.

Figure 14: Viewsheds

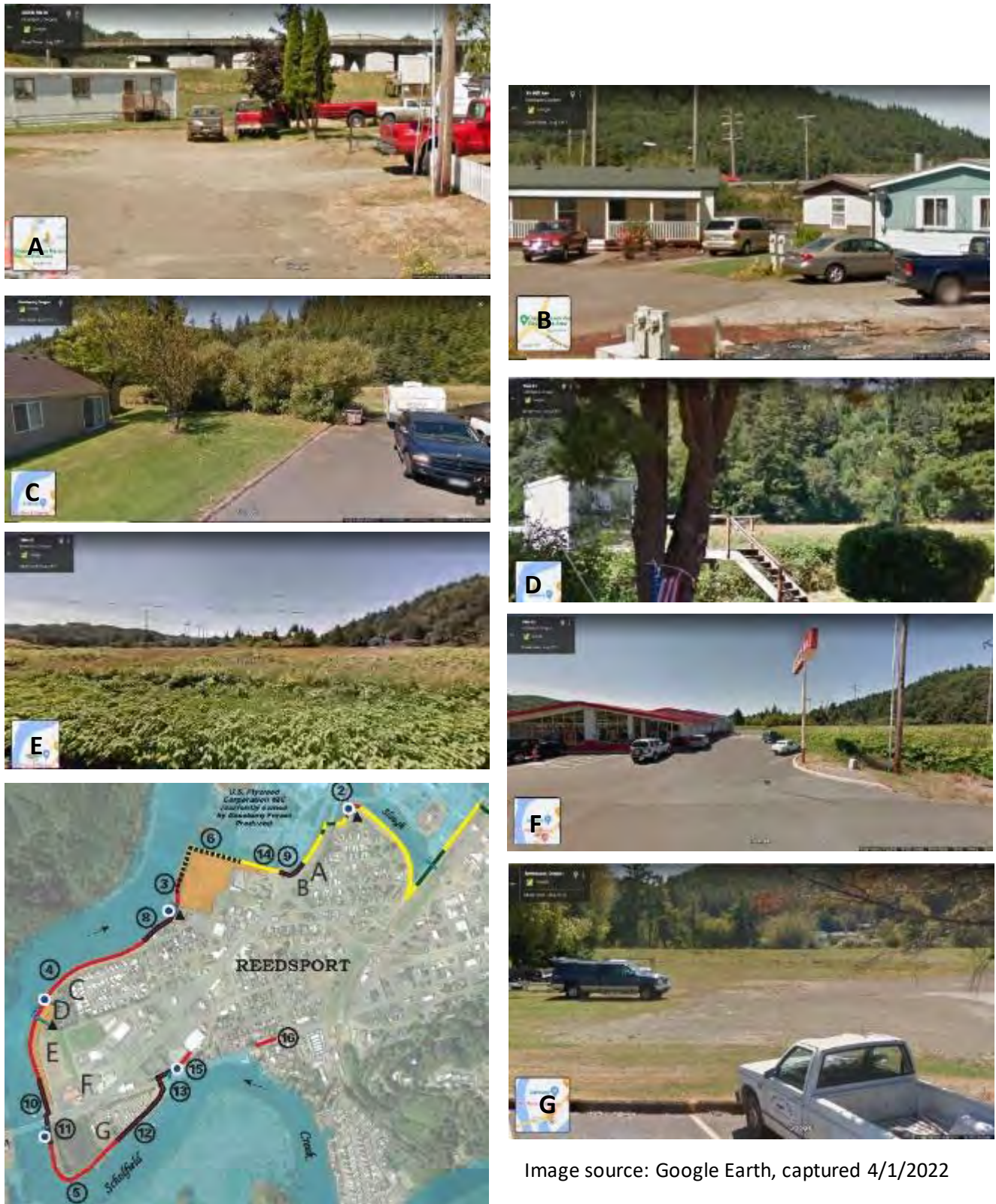


Image source: Google Earth, captured 4/1/2022

4.7.7 Recreation

In 2009, the City Council designated Champion Park as an off-leash dog park. The City of Reedsport is a dog friendly community and dogs are allowed at all three other City parks, under the control of the owner. The City is located within 4 miles of the beach both north and south for dog exercise. Champion Park is at the northwest end of the project, adjacent to the 12th Street pumping station. It is designated as a construction staging area for the proposed project as described in Section 3.2.5.

No Action Alternative

Under this alternative, the dog park will remain as-is and will not be re-designed. **There will be no from existing conditions of the City's recreation resources.**

Proposed Action

Under this alternative, the park will be closed and fenced off for the duration of the levee project. Residents that use the park for recreation or as a source of revenue (dog-sitters and professional dog-walkers) will be adversely impacted by the closure. The public restrooms available at the site will remain open to the general public during construction (AP 2022c).

Upon completion of the proposed project, the city will work with the *Friends of the Dog Park* to redesign the dog park. Initial plans call for multiple small pens where small dogs can be safely separated.

The proposed project will result in a **moderate short-term adverse impact on recreation for the duration of the project construction and a negligible long-term beneficial impact.**

4.7.8 Environmental Justice

FEMA's Instruction on Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program Requirements (108-1-1, October 10, 2018) requires FEMA to consider environmental justice pursuant to Executive Order 12898 and to "Identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs, policies, and activities in minority populations and low-income populations."

Such a determination requires an affirmative response to the following questions:

1. Are there minority and low-income populations, or Tribes, in the affected area?
2. Based on the analysis presented in the preceding sections, does the proposed project result in human health or environmental impacts on any populations? If yes, would these impacts be high and adverse?
3. If yes, is the high and adverse impact on these populations disproportionate?

This section addresses these sequential questions. If the answer is negative, then the analysis stops as there can be no disproportionate high and adverse impacts on minority or low-income populations.¹¹

¹¹ For example, if the project does not result in any high adverse impacts, then there can be no disproportionate high and adverse impacts on a particular segment of the population.

- Question 1: Are there minority and low-income populations, or Tribes, in the affected area?

The proposed project area (Figure 1) encompasses the area behind the levee and the upland soil acquisition area. Those residents and businesses that benefit from the enhanced flood control are the same as those that may be impacted by the project's construction. Federal guidance (CEQ 1997) recommends using census information. The proposed project area lies in one Census Block Group, the smallest area for which minority and low-income data is available.

According to the EPA's EJSCREEN Report (EPA 2022) based on the 2019 American Community Survey (ACS) data, the census block group has 1,260 residents as described in Table 14. Tribal members are present in the affected area (ACS 2019), and as noted in Section 4.6, have historically inhabited the area.

Minority or low-income census tracts are defined as meeting either or both of the following criteria:

- Census block group contains 50 percent or more minority persons or 25 percent or more low-income persons.
- Percentage of minority or low-income persons in any census tract is more than 10 percent greater than the average of the surrounding county.

Table 13: Reedsport Census Block Group Data

<i>Indicator</i>	<i>Census Block</i>	<i>County Average</i>	<i>State Average</i>
People of Color	20%	7%	24%
Low Income	46%	54%	42%
Unemployment Rate	12%	0%	5%
Linguistically Isolated	6%	0%	2%
Less than High School Education	25%	12%	9%
Over Age 64	37%	16%	17%

Source: EPA 2022 for census blockgroup 410190100002 and County 410190100001

The census block minority population is lower than 50 percent but more than 10 percent higher than the average of Douglas County. The low-income population is greater than 25 percent. Therefore, the project area qualifies as an environmental justice population based on both minority and low-income populations.

The other indicators in Table 14 are related to the *Justice40* initiative required by EO 14008 (Tackling the Climate Crisis at Home and Abroad, January 27, 2021), which establishes a goal that 40 percent of overall benefits of federal investments flow to disadvantaged communities (OMB 2021).

CEQ's beta Climate and Economic Justice Screening Tool (CEQ 2022)¹² shows that the Census Tract with Reedsport exceeds the socioeconomic thresholds established for low income and higher education non-enrollment. It also exceeds the climate indicators of *expected building loss rate*¹³ and *expected*

¹² FEMA has not adopted this tool for decision-making. It was released in February 2022 and is in *beta*.

¹³ Percent of building value at risk from losses due to fourteen types of natural hazards that have some link to climate change, including coastal and riverine flooding.

population loss rate.¹⁴ Reedsport is therefore identified as a target climate and economic justice community under the *Justice40* initiative.

- Question 2: Based on the analysis presented in the preceding sections, does the proposed project result in human health or environmental impact on any populations? If yes, would these impacts be high and adverse?

As defined in Section 4.0 (Table 1), either a *moderate* or *major* impact scale corresponds to a “high” impact for this Environmental Justice analysis.

The no action alternative considers a flood event that overtops the levees or causes them to fail. As demonstrated in the preceding sections and summarized in Table 14, the no action alternative results in moderate adverse flooding, traffic, economic, and visual impacts on Reedsport’s residents. FEMA recognizes that certain populations – specifically low-income neighborhoods, communities of color, people with disabilities and older adults, those with language barriers and those living in rural and isolated areas – are disproportionately impacted by disasters (FEMA 2021).

The proposed project will result in short-term moderate adverse impacts on floodplain function, noise, vibration, and recreation. All other impacts on human populations discussed in Section 4 are expected to be negligible or minor (air quality, cultural, archaeological, historic, and visual resources) after applicable mitigation.

- Question 3: Is the high and adverse impact on these populations disproportionate? Are these populations shouldering a disproportionately high burden compared to another group with different demographics in the same area?

There are three distinct population areas within the project area:

The project will have no effect on the residents on the upland portion of Crestview Lane as trucks will be routed from the primary acquisition site west to the access road onto Route 38 (see 4.7.1). These residences are outside of the floodplain and will derive no direct benefit from the project.

The southern portion of the City, including the River Bend community will not be affected by the proposed project. This area lies outside of the city-owned project levees and will not derive any direct benefit from the project.

Residents within the levee footprint and to be protected by the levee system in the event of a flood event. These residents will benefit from the project once complete but will experience short term adverse impacts attributed to staging areas, earthen levee improvements, pump station and drainage, and pile driving noise and vibrations.

All residents of Reedsport, including these three communities and those passing through the project area from other parts of Reedsport, may experience slight traffic delays and re-routing. All residents that use the dog park will experience a short-term adverse impact. Residents and businesses may also experience periods of daytime pile driving noise from pile driving. This impact will be negligible to those

¹⁴ Rate relative to the population of fatalities and injuries due to fourteen types of natural hazards each year that have some link to climate change, including coastal and riverine flooding.

outside of the levee footprint or those passing through given the distance from the nearest proposed pile driving and the noise mitigation measures discussed in Section 4.7.2.

A disproportionate adverse EJ effect would exist if a low-income or minority community (EJ communities) would experience high adverse impacts while non-EJ communities would not experience high adverse impacts. The smallest available census data that identifies low income or minority residents is the census block group; the entire project area falls into one census block group. Therefore, a comparison of noise impacts on different communities using census data is not possible. For example, FEMA cannot determine whether there is a disproportionate adverse effect on the residents within the levee footprint compared to those in River Bend or Crestview Lane because all three communities are in the same block group.

The only other publicly available EJ-related information is the presence of a HUD housing complex approximately 40 feet from the 16th Street pumping station, adjacent to the construction staging area A, and approximately 680 feet from the nearest sheet pile wall. This EJ community will experience moderate adverse noise and vibration impacts, which will be mitigated by preventing access from 16th Street and Hawthorne Avenue, using the south end of the staging area, and using an echo dampening shield as discussed in Section 4.7.2.

FEMA is unable to identify whether the residents adjacent to the other staging areas, sheet pile wall, or pumping stations are low-income or minority. FEMA is also unable to determine whether the clientele of affected businesses (see Section 4.7.5) are low-income or minority. In the absence of this data, FEMA concludes that although the project will result in a moderate adverse short-term noise and vibration impact, this impact is not disproportionate because:

- While the HUD complex is adjacent to one staging area, there are other residents adjacent to both other staging areas. The City has committed to using the south end of this staging area A, furthest from the HUD Complex. The project will mitigate noise from all three staging areas as discussed in Section 4.7.2.
- The HUD complex is adjacent to the pumping station and residents may be impacted by one day of pile driving (30 minutes average per pile for up to 5 piles). The residents near the 12th street pumping station will be equally impacted.
- The HUD complex is a substantially greater distance from the sheet wall pile driving than the residents on Juniper Avenue (approximately 680 feet vs 20 feet).
- All residents near the levee system, those that will be most impacted by a levee failure or overtopping, will experience short-term project construction noise. This noise is not limited to, or focused on one particular area.

Completion of the proposed improvements would benefit all citizens with residences and/or businesses that lie within the area currently surrounded by the Reedsport Levee. All residents will be exposed to noise, vibration, and other impacts as described in this EA. **Therefore, adverse project impacts would be high but would not disproportionately impact low income or minority populations.**

In addition, FEMA notes that under the *Justice40* initiative (EO 14008), FEMA would be directing funds to a project that will benefit a disadvantaged community that will be adversely impacted by climate change.

4.8 Cumulative Impacts

Cumulative effects are the impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative effects can result from individually minor but collectively significant actions taking place over time.

The cumulative effect analysis is bounded by the study area shown in Figure 1, encompassing the proposed project's study area (defined in Section 4.1) and the adjacent area including the confluence of the Umpqua and Smith Rivers. This study period for this analysis looks 10 years into the future and 10 years into the past as greater periods would be more speculative.

There are numerous, past and ongoing public and private projects within the study area, including transportation improvements, new construction, and renovations. These are commensurate with any urban area and primarily result in short-term construction related impacts (e.g., noise and water quality). Notable past projects include the upgrade of the Highway 38 and 12th Street pump stations (see Section 3.2.3) and the Hawthorne Ave sewer line addition. The 16th Street Apartment Complex (9 buildings, 72 units) is ongoing and is expected to be completed in 2023. These projects incorporate construction best management practices, minimize sediment run-off, incorporate traffic management, and comply with applicable requirements.

The County has embarked on a number of planning projects (bridges, transportation planning¹⁵, rural development regulatory environment¹⁶, and wildfire protection) but the impacts of these plans, if implemented, are not reasonably foreseeable. The details of the City's proposed Reedsport Levee Loop Trail, to be built after the levee work is complete, are not reasonably foreseeable. Only ongoing 16th Street Apartment Complex which is adjacent to the proposed staging area on 16th street, is reasonably foreseeable.

Together, these past and reasonably foreseeable future projects, when coupled with ongoing development, resource management projects (e.g. forestry), will continue to result in minor cumulative impact on affected resources (physical, biological, cultural, and quality of life). The minor adverse cumulative impact on quality of life resources (public health and safety, economics, visual, and environmental justice) may be further exacerbated by future major flooding events resulting from the weakening levee system.

Table 14 summarizes the proposed project's impacts by resource. The proposed project, when combined with past, present, and reasonably foreseeable projects, will continue to result in a cumulative minor impact on these affected resources.

Overall, the trajectory of long-term cumulative adverse impacts on physical and biological resources is not expected to change, either with or without the proposed action. The project will, however, result in a long-term cumulative benefit for the quality of life of the residents in that it reduces the risk of flooding and associated impacts.

¹⁵ Douglas County Transportation System Plan (TSP)

¹⁶ Southern Oregon Regional Pilot Project (SORPP)

4.9 Summary of Potential Impacts

Table 14 summarizes the impacts discussed in Sections 4.3 to 4.7. None of the impacts would be significant.

Table 14: Summary of Potential Impacts

Section	Resource	No Action	Proposed Action
4.3.1	Soils	No change to soils	No impact on farmland soils Minor adverse impact on upland soils
4.3.1	Geology	Geological forces continue to adversely impact levees	Negligible adverse impact on local geology
4.3.2	Air Quality	No new air quality impacts	Minor adverse short-term impact
4.3.2	Climate Change	No new project-related climate change impacts	Negligible adverse impact
4.4.1	Water Quality	Short-term negligible to moderate adverse impact	Minor short-term adverse impact Moderate long-term beneficial impact
4.4.2	Wetlands	Short-term negligible to moderate adverse impact	Minor adverse impact with mitigation
4.4.3	Floodplain	Moderate adverse long-term floodplain function	Negligible new impact On-going moderate adverse impact on floodplain function
4.4.4	Coastal Zone Consistency	No change in the estuary	Consistent with the Coastal Plan
4.5.1	Vegetation	No change to existing conditions	Minor short-term adverse impact Minor long-term beneficial impact
4.5.2	Birds and Habitat	No change to existing conditions	Negligible to minor adverse impact with mitigation
4.5.3	Fish and Habitat	No change to existing conditions	Minor adverse impact with mitigation
4.5.4	Wildlife	No change to existing conditions	Minor short-term adverse impact
4.6	Historic Properties	No historical properties affected	No adverse effect to historic properties
4.6	Tribal Cultural Resources	No change to existing conditions	Negligible long-term beneficial impact
4.7.1	Traffic	Moderate adverse	Minor short-term adverse impact Moderate long-term beneficial impact
4.7.2	Noise	No change to existing conditions	Moderate short-term adverse impact with mitigation
4.7.3	Vibrations	No change to existing conditions	Moderate short-term adverse impact with mitigation
4.7.5	Public Health and Safety	No change to existing conditions	Moderate long-term beneficial impact Minor short-term adverse impact
4.7.5	Economics	Moderate Adverse	Minor short-term adverse impact Moderate long-term beneficial impact
4.7.6	Visual	Major adverse	Negligible adverse impact
4.7.7	Recreation	No change to existing conditions	Moderate short-term adverse impact Negligible long-term beneficial impact
4.7.8	Environmental Justice	Could a be high disproportionate adverse impact depending on the flooding.	Not disproportionate

5.0 Agency and Tribal Coordination, and Public Involvement

As part of the preparation of this EA, correspondence regarding the proposed project was sent to federal, state, tribal, and local agencies beginning in November 2018. The list of agencies contacted is presented below, while Appendix B contains copies of substantive correspondence.

5.1 Tribal and Agency Coordination

FEMA consulted or coordinated with the following Tribes and Agencies.

- Coquille Indian Tribe
- Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians
- Confederated Tribes of the Grand Ronde
- Confederated Tribes of the Siletz Indians
- Confederated Tribes of the Warm Springs Reservation
- Klamath Tribes
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- National Marine Fisheries Service
- Oregon State Historic Preservation Office
- Oregon Department of Land Conservation and Development

5.2 Public Participation

This EA reflects the evaluation and assessment of the federal government, the decision-maker for the federal action. FEMA released the draft EA to the public, Tribes, and federal, state, and local agencies for a 30-day public review and comment period from November 4, 2022 to December 6, 2022. FEMA, the State of Oregon, and the City of Reedsport used various public outreach methods to make the draft EA available and invite the public to a meeting on November 15, 2022. These methods included direct emails to Tribes, federal, state, and local agencies; posting the public notice and draft EA on FEMA's website (Appendix D) and the City of Reedsports' website; publishing a notice in OEM's weekly newsletter and the local print and online newspaper ([The World](#), Coos Bay Oregon, November 1, 2022, Appendix D); using social media (City of Reedsport Facebook and FEMA Twitter); posting laminated flyers posted at Champion Park and Lions Park; posting flyers in public spaces and businesses around the City; direct mailings to residents and businesses; and targeted outreach to the high school students who have a vested interest in the future of the city. The City Manager also discussed the project on KDUN (103.5 FM) on November 10, 2022 and invited the public to attend the public meeting.

42 people, including 4 elected officials, 6 City employees, and 8 virtual attendees, attended the public meeting at the Reedsport Community Center on November 15, 2022 between 4:30pm and 6:30 pm. Ten

members of the public spoke at the public meeting and FEMA received five written comments after the meeting (via the City of Reedsport or directly to FEMA). FEMA tabulated approximately 30 individual comments from these speakers or submissions as each speaker or submitter may have raised more than one comment. No organizations or entities submitted comments on the draft EA. This section summarizes the public comment relevant to the scope of the NEPA EA and presents FEMA's responses. FEMA has incorporated all applicable oral and written comments in this final EA.

The public was extremely supportive of the proposed project, noting for example, "Highly supportive of the purpose and need for the project" and "Greatly needed. Reedsport will not flourish if it's constantly vulnerable to flooding."

There were concerns raised about the alignment and design of the proposed levee improvements as well as businesses and future housing projects between the river and levee. FEMA is evaluating the levee alignment as proposed by the City of Reedsport in its grant application. The City proposed using the existing levee alignment to minimize adverse environmental and property impacts. Parcels outside of the levee and businesses along Riverfront Way have always been outside of the levee and their flood risk will not be impacted by the proposed project. Comments were raised about the foundation and sheet pile segments of the levees. Section 3.2.1 discusses specifics of each segment including underseepage and replacement of the sheet pile walls.

The public asked about the proposed schedule. Once FEMA completes this final EA and issues a FONSI, FEMA will award the grant and the City will need to finalize designs, obtain approval from the ACOE (see Section 6.1), and initiate the procurement process for construction contracts. The exact construction schedule is unknown but the tentative schedule the City presented at the public meeting showed construction likely in 2024-2025. The construction schedule (Section 3.2.5) identifies the expected duration of work and the City will notify residents and businesses of expected work schedules by neighborhood.

Comments were raised about acquisition and easements. The City plans to use the existing legal levee right of way and easements as discussed in Section 4.7.5. Several residents raised concerns about the short and long-term impacts to the dog park at Champion Park. The EA discusses these in Section 4.7.7 and the City is exploring options for a temporary location during construction.

Questions were raised about water quality. Section 4.4.1 discusses the existing conditions according to ODEQ and EPA. These will remain relatively unchanged after construction. Longer-term, City-wide efforts to improve the storm water system and mitigate urban runoff outside of this project are ongoing or planned. All project-related short term adverse impacts will be mitigated as required by NMFS and ODEQ as presented in this EA (Sections 4.4.1 and 6.2). ODEQ has already issued the water quality certification for this project and the City will apply for a CWA Permit before construction.

A number of concerns were raised about noise and vibration impacts on residents. Section 4.7.2 of the EA discusses these impacts and associated mitigation. As a result of the NEPA process, the City has committed to using additional technologies (e.g. sonic vibration pile driving, augers, bubble curtains and echo dampeners) where needed to mitigate noise and vibration levels below the FWHA thresholds, limit the number of hours of pile driving, and notify the public before work commences. These commitments are presented in Sections 4.7.2 and 6.1.

Questions raised about project funding; flood insurance; new storm drains outside of the levee right of way; impacts to private property within the levee right of way; and future design, connectivity, and accessibility of a levee walking trail are outside of FEMA's purview for an EA under NEPA. FEMA has forwarded these comments to the City of Reedsport. The City has set up a project specific web page at <https://www.cityofreedsport.org/publicworks/page/levee-system-project> with the proposed schedule, project documents, and other updates.

No significant impacts have been identified and FEMA is issuing a FONSI and awarding the grant.

A federal action located in a floodplain or wetland requires initial public notice as per Executive Orders 11988 and 11990, respectively, and 44 CFR Part 9 (as described in Section 4.4.2 and 4.4.3). The City published a public notice on November 17, 2018, and December 6, 2018, to notify the public of potential project impacts. No comments were received. The public involvement associated with the draft EA further satisfies this requirement.

6.0 Permitting, Project Conditions, and Mitigation Measures

This section provides a summary of the permits mitigation efforts that are required to authorize the project and to offset the proposed projects' adverse impacts as described in Section 4.0 of this EA.

6.1 Permits

The City will be responsible for obtaining any necessary local, state permits needed to conduct the proposed work. As described in Section 4.0, the City will require or has secured the following federal permits or authorizations:

Table 15: Permits, Authorizations, and Consultations

Agency	Permit
ODEQ	CWA 401 Permit (Water Quality Certification)
ODEQ	CWA 402 Permit (NPDES) and 1200 C Construction Stormwater Permit
ACOE	CWA 404 Permit (Dredge and Fill)
ACOE	RHA 408 Process
ODSL	Removal / Fill Permit per ORS 196.795-990
NMFS	ESA Biological Opinion and Incidental Take Statement
City	NFIP Floodplain Development Permit
FEMA	NFIP Conditional Letter of Map Revision (CLOMR) – pre construction NFIP Letter of Map Revision (LOMR) – post construction
DCLD	CZMA Coastal Zone Management Consistency Determination

6.2 Project Conditions and Mitigation Measures

Mitigation measures and project conditions of the opinion, take statements, permits, or authorizations shown above in Table 15 are incorporated by reference. The following conditions apply to the project and the City's failure to comply with these conditions before, during, and after project implementation may jeopardize the receipt of FEMA funding:

- Soils and Waste
 - Removed asphalt will be disposed at a licensed asphalt recycling pit selected by the contractor.
 - Hydroseed the redistributed topsoil in the soil acquisition areas with a native seed mix to stabilize the soil and prevent erosion.

- Air Quality
 - All construction activities would have to comply with OAR 340-208, which contains requirements related to visible emissions (e.g., diesel-related opaque emissions), and fugitive emissions (e.g., dust from road grading, excavation, and transport of soil to and from the project site).
 - Construction contractors and subcontractors will be required to use reasonable precautions to minimize fugitive dust emissions and comply with OAR 340-208-0210 such as water application, spraying water in work areas, washing truck wheels and using gravel driveways at construction and staging access points, covering piles, minimizing traffic and traffic speeds on bare soils, covering of open bodied trucks, daily clean-up, and minimizing the idling of diesel-powered equipment.
- Water Quality
 - Contaminated or sediment-laden water, or water contained within an isolation barrier or excavated trench, would not be discharged directly into any Waters of the State or wetland until it has been satisfactorily treated (e.g., by bioswale, filter, settlement pond, pumping to a vegetated upland location, bio-bag, or dirtbag).
 - Spill prevention measures and fuel containment systems designed to completely contain a potential spill, as well as other pollution control devices and measures (such as diapering, parking on absorbent material, etc.) adequate to provide containment of hazardous materials, would be implemented.
 - Sediment barriers would be installed to prevent spoils or sediment-laden water from entering any waterbody.
 - Any activity that causes turbidity to exceed 10% above natural stream turbidity is prohibited except as specifically provided below:
 - Turbidity monitoring must be conducted and recorded as described below. Monitoring must occur at two hour intervals each day during daylight hours when in-water work is being conducted. The Applicant must compare turbidity monitoring results from the compliance points to the representative background levels taken during each two – hour monitoring interval. Pursuant to OAR 340-041-0036, short term exceedances of the turbidity water quality standard are allowed.
 - In-water work would only be conducted during the approved work window for the Umpqua River Estuary, which is November 1 to January 31, per Oregon Guidelines for Timing of In-water Work to Protect Fish and Wildlife Resources (ODFW 2022), to minimize impacts to fish.
 - Equipment for work required in the OHWE would be staged on top of the levee and extensions would reach the work areas.
 - Sediment disturbance within the OWHE and near the banks of Scholfield Creek and the Umpqua River would require installation of silt curtains in portions of these waterways.
- Wetlands
 - Purchase 0.17 acres of mitigation credits from the Wilbur Island Mitigation Bank to offset impacts to wetland habitat.
- Vegetation
 - Return levee, pumping station, and gravity drainage improvement areas to pre-construction conditions in accordance with the approved Planting Plan.

- Replace loss of riparian shading by planting live willow cuttings along the bank of Scholfield Creek in accordance with the approved Planting Plan.
- Implement BMPs, including rinsing equipment before arrival to the site, to ensure that invasive species are not transported into the work areas on construction equipment.
- Fish
 - Fish depletion will be supervised by a qualified fish biologist, who will determine at what point the fish removal process has effectively reached depletion.
 - Use a sediment curtain and fish seining with dewatering, if required, to occur over the course of approximately 12 hours to allow fish to voluntarily leave the work area.
 - Remaining fish in the isolated area will be removed first by seining or using dip nets, then by electrofishing if needed. Electrofishing will be completed according to NMFS and ODFW electrofishing guidelines.
 - All handled fish will be recorded, placed in aerated buckets, examined, identified, then released outside the project area in similar habitat.
 - Electrofishing will be conducted early in the day to minimize stress to salmonids. Fish capture will be conducted when stream temperatures are at or below 15° Celsius, to the extent practical. The work is anticipated to occur during one in-water work window.
 - Use a bubble curtain to mitigate underwater pile driving noise impacts at the 16th Avenue Pumping Station.
 - Monitor distance of visible suspended sediment plumes throughout the in-water work of the project. If the project exceeds a visible continuous sediment plume of 600 feet, all work resulting in elevated suspended sediment must stop until the plume dissipates to match baseline conditions (RPM 1, elevated suspended sediment).
 - Conduct pile driving with an impact hammer within 200 feet of Scholfield Creek or McIntosh Slough only during daylight hours with the sun above the horizon. This is to ensure that pile driving does not occur at dawn or dusk, which can be peak movement time for OC coho salmon (RPM 2, elevated sound pressure).
 - Use daily soft start procedures when implementing impact pile driving near waterbodies when ESA-listed fish or marine mammals are present.
 - Allow a minimum rest period of 12 hours between daily pile driving activities within 200 feet of Scholfield Creek or McIntosh Slough during which no impact pile driving occurs (RPM 2).
 - While minimizing water quality effects on EFH, also minimize effects on space from work area isolation by reducing the area of isolation to the smallest area necessary and reducing the duration of isolation to the least amount of time necessary.
 - Monitor underwater sound according to the Federal Hydroacoustics Working Group underwater noise monitoring plan template; submit a Project Completion Report to FEMA and NMFS within 60 days of completing construction; and submit a Fish Salvage Report within 60 days of completing fish capture and release events. The BiOp specifies what contents each report requires. (RPM 3 monitoring and reporting).
- Birds
 - Prior to start of construction, construction managers shall document all active eagle nests within 660 feet of construction locations.
 - If there is the potential for a nesting pair to be disturbed by project actions or habitat modifications within 330 feet of the active nest, an incidental eagle take permit will be needed from USFWS (PermitsR1MB@fws.gov)
<https://www.fws.gov/library/collections/migratory-bird-permit-memorandum-series>.

- If the trees need to be removed during construction, the contractor will only remove them outside of nesting season for migratory birds.
- Existing swallow nests would either be removed outside of nesting season or protected with a net barrier to prevent impacts to nesting from pile driving.
- Contractors shall check all areas of project work for active nests (tree, shrub, ground) and flag any areas that must be avoided.
- The City will also coordinate with the USFWS to acquire necessary permits if impacts to nesting birds cannot be avoided. (PermitsR1MB@fws.gov)
<https://www.fws.gov/library/collections/migratory-bird-permit-memorandum-series>.
- Archaeological and Historic Resources
 - Include an Inadvertent Discovery Plan (IDP) in the construction documents to describe procedures for actions to be taken in the event of the discovery of cultural, archeological or historic resources during construction.
 - If additional cultural, archaeological or historic resource resources are discovered, implement IDP, cease ground disturbance in that area until a professional archaeologist or can evaluate the discovery in coordination with FEMA.
- Traffic and Transportation
 - To inform City residents and businesses, road closure and work notifications would be published in the newspaper and on the City's websites and via their social media accounts at least 14 days before the work commences.
 - Close and lock the soil acquisition area access gate from Crestview Drive. Trucks will use the access gate near Scolfield Road on State Route 38 and not Crestview Drive.
 - Access to this construction staging area will be from Hwy 101 and the unimproved right of way for 17th Street to minimize impact to the residences on Hawthorne Avenue. The area consists of 2.2 acres of flat, open field, but only the area near the levee will be used for staging.
- Noise
 - No soil removal at the upland area will occur until two hours past sunrise.
 - Upland soil removal activities will cease two hours before sunset.
 - No construction will take place on Saturdays, Sundays, state and federal holidays.
 - No construction-related activities, including worker arrivals and engine run-ups, would take place during the hours of 6 p.m. to 7 a.m.
 - Staging areas near residential areas (see sections below) will remain closed between these hours so that construction workers do not arrive early or start-up and warm-up equipment during these hours. No on-site construction engine start-up or warm-ups will be permitted during these hours, including at the levee or pile driving work locations.
 - Where possible, disable backup alarms of vehicles and equipment based at the staging sites, provide adequate turning radiuses at these sites to minimize backup alarms for transient trucks and other delivery vehicles. Limit idling of engines, require these restrictions in the construction documents, and provide visible on-site signage and enforcement.
 - At the staging areas, explore the feasibility of partial shielding with soil piles, construction trailers, and construction offices placed between equipment and residences; equipment mufflers and shields; and wood or straw bail enclosures for stationary equipment.
 - No pile driving at segment 8 off Juniper Avenue until two hours past sunrise and cease pile driving two hours before sunset.

- Pile driving using a sonic pile driver, auger piles, micro piles, helix piles, an echo barrier, or a noise dampening shield in all areas that the thresholds would be exceeded.
- Near Champion Park, coordinate with the owner or resident to conduct an opt-in baseline assessment of the structure before work commences and then conduct a post-construction assessment. The City would fix or replace any damage caused by the pile driving.
- Economic
 - Notify businesses prior to temporary closures and construction periods.
 - Ensure pedestrian and vehicle access at all times.

7.0 List of Preparers

The following is a list of preparers who contributed to the development of this EA.

Federal Emergency Management Agency, Region 10.

Science Kilner, Regional Environmental Officer
William Kerschke, Deputy Regional Environmental Officer
Galeeb Kachra, Senior Environmental Specialist
Jessica Stewart, Senior Environmental Specialist
Dr. Phillip Fisher, Archeologist
Jeffery Parr, Biologist

City of Reedsport (Sub-Applicant)

Deanna Schafer, City Manager

Anderson Perry & Associates, Inc

John Wells, P.E., Senior Engineer
Shiloh Simrell, Natural Resources Specialist
Dana Kurtz, Environmental Scientist
Shiloh Simrell, Natural Resources Specialist
Stephanie O'Brien, Registered Professional Archaeologist
Sue Brady, Biologist

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9.0 Appendices

Available in a separate PDF

- APPENDIX A: Figures
 - Preliminary Drawings
 - Wetland Delineation
 - Gravity Drain Impacts
 - Floodplain FIRMS
- APPENDIX B: Agency and Tribal Coordination
 - Tribal Consultation
 - Oregon State Historic Preservation Office
 - National Marine Fisheries Service
- APPENDIX C: Floodplains and Wetlands Eight-Step Decision-Making Process
 - 8-Step Analysis
- APPENDIX D: Public Notices



Final Environmental Assessment -Appendices

City of Reedsport, Oregon Flood Reduction and Resiliency Project

Pre-Disaster Mitigation Grant Program

PDMC-PJ-10-OR-2017-007

January 2023



FEMA

**U.S. Department of Homeland Security
Federal Emergency Management Agency, Region X**
130 – 228th Street SW
Bothell, WA 98021

Appendices

Appendices

APPENDIX A: Figures

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- Gravity Drain Impacts
- Floodplain FIRMS

APPENDIX B: Agency and Tribal Coordination

- Tribal Consultation
- Oregon State Historic Preservation Office
- National Marine Fisheries Service

APPENDIX C: Floodplains and Wetlands Eight-Step Decision-Making Process

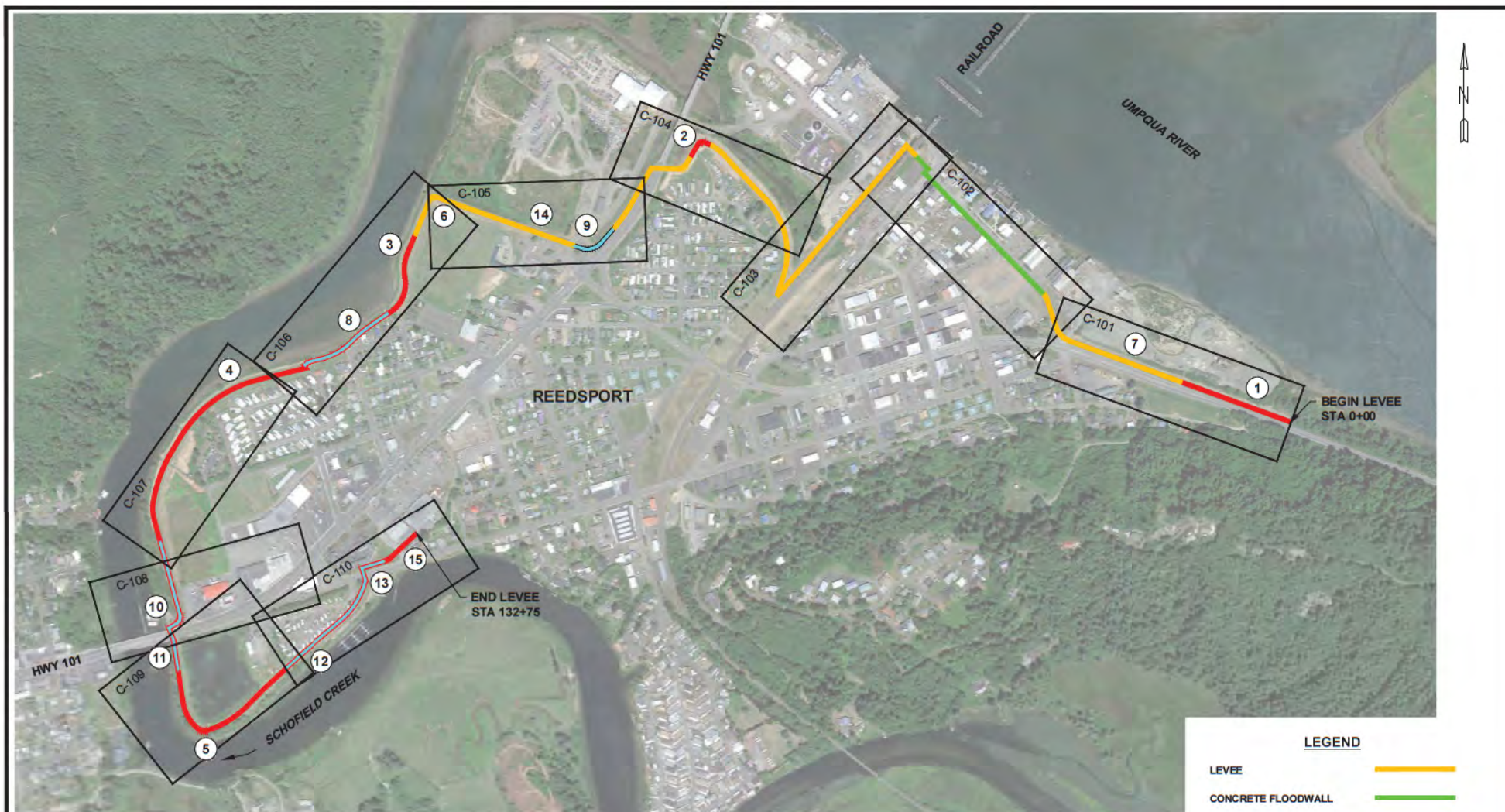
- 8-Step Analysis

APPENDIX D: Public Notices

- Public Notices

APPENDIX A: Figures

Preliminary Drawings



LEGEND

LEVEE —

CONCRETE FLOODWALL —

STEEL PILE WALL —

CRITICAL LOW AREA —

DETAIL NUMBER, SHEET C-301 (X)

DESIGNED BY A. ROBINSON/E. ZITTERKOPF	BY	D-T	DATE 8-28-08	DATE 8-28-08
DRAWN BY J. CHAPMAN			DATE 7-29-2019	DATE 7-29-2019
CHECKED BY J. WELLS			DATE 8-28-08	DATE 8-28-08
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PRELIMINARY

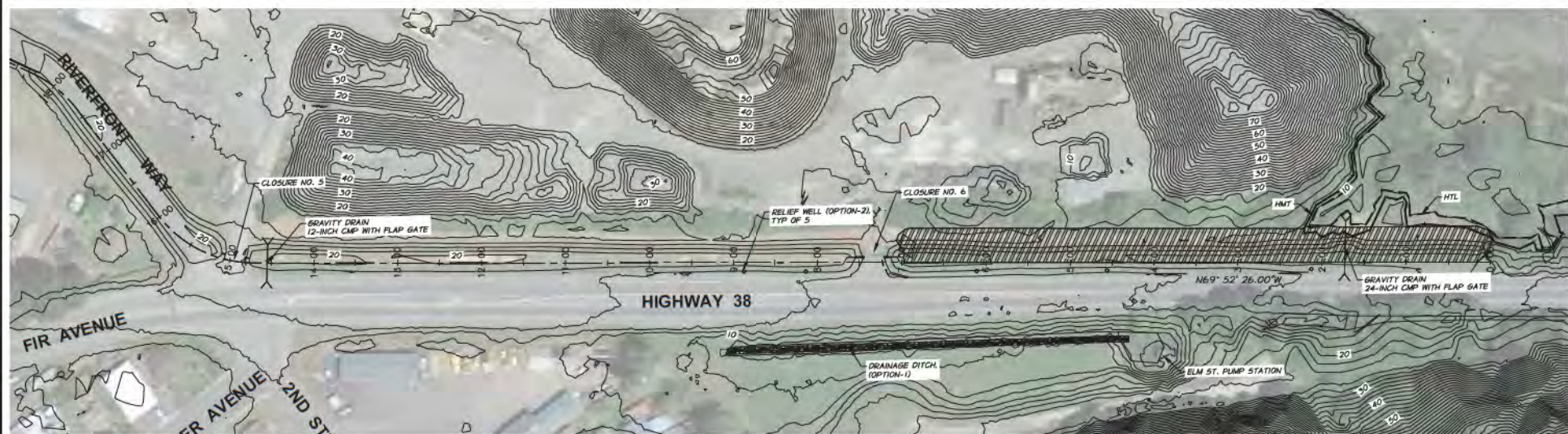
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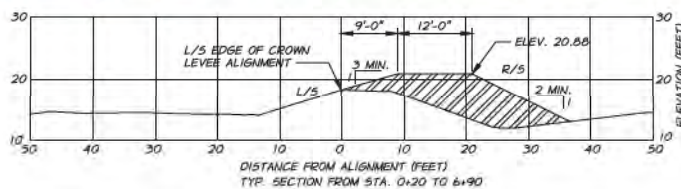
CITY OF REEDSPORT FLOOD REDUCTION RESILIENCY LEVEE IMPROVEMENTS 2019		SHEET
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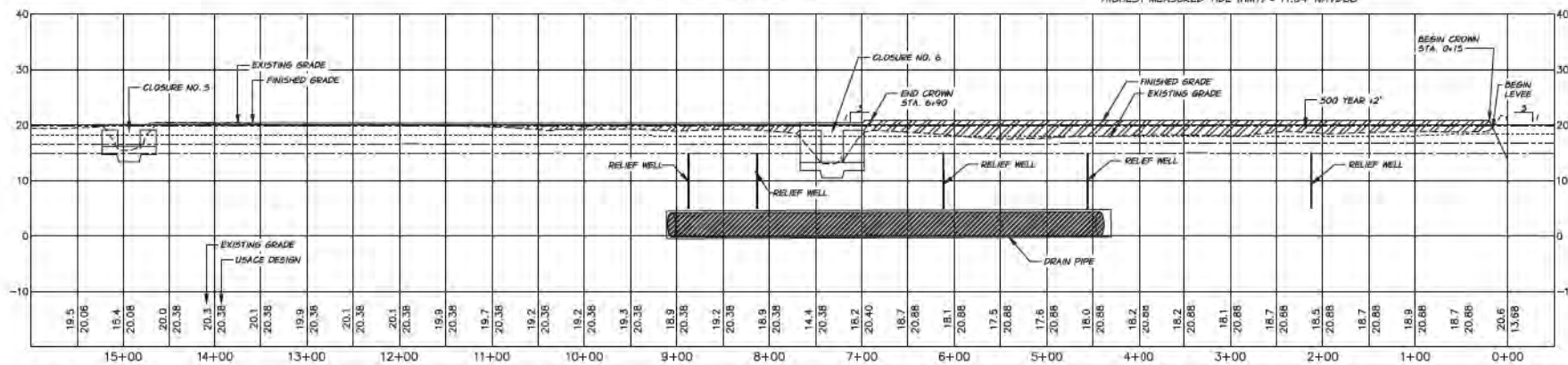
LEGEND

- LEVEE RAISING AREA
- NEW LEVEE CROWN
- LEVEE FILL LIMIT
- 65.10 MIN ELEVATION
- 2016 200 YR FLOOD
- 2016 100 YR FLOOD
- NEW FLOOD WALL
- HIGH TIDE LINE (HTL)
- HIGHEST MEASURED TIDE (HMT)



NOTES

- DESIGN FLOOD ELEVATIONS EQUIVALENT TO 500 YEAR PLUS 2 FEET FREEBOARD BASED ON AP 2016 HYDROLOGY & HYDRAULICS REPORT.
- VERTICAL DATUM NAVD 88. EXISTING USAGE AS-CONSTRUCTED PLANS CONVERTED FROM MSL 1947 ADJ WITH CONVERSION FACTOR OF +3.68 FEET.
- HORIZONTAL DATUM OREGON STATE PLANE, SOUTH, INTERNATIONAL FEET.
- CONTR. STA. 0+00 N 76°19'38.8132 BEARING STA. 0+15 TO 6+90 E 3972663.2274 N69°52'26.00"W
- VOLUME OF FILL = 3,800 CY (STA. 0+16 TO 6+98)
- HIGH TIDE LINE (HTL) = 10.33' NAVD88. HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88



DESIGNED BY	DATE	SCALE	DATE
DESIGNED BY A. ROBINSON/E. ZITTERKOPF	DATE July 29, 2019	SCALE 1"=40'	DATE July 29, 2019
DRAWN BY J. CHAPMAN			
CHECKED BY J. WELLS			

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**CITY OF REEDSPORT
FLOOD REDUCTION RESILIENCY
LEVEE IMPROVEMENTS
2019**

PLAN AND PROFILE STA 0+00 TO STA 16+00

SHEET

C-101

OF

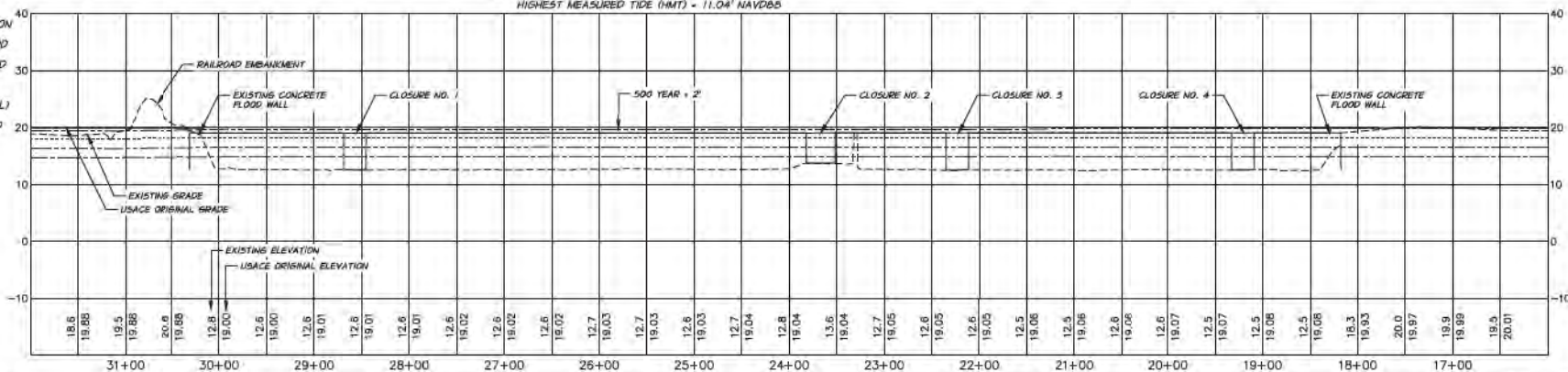


LEGEND

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3. HORIZONTAL DATUM OREGON STATE PLANE, SOUTH, INTERNATIONAL FEET.
4. HIGH TIDE LINE (HTL) = 10.33' NAVD88
HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88



REVISION	BY	DATE	SCALE	DATE
DESIGNED BY A. ROBINSON/E. ZITTERKOPF			AS SHOWN 848-08	DATE JULY 29, 2019
DRAWN BY J. CHAPMAN			AS SHOWN 848-08-2.1.5_C-102W_IMPRO.DWG	
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CITY OF REEDSPORT
FLOOD REDUCTION RESILIENCY
LEVEE IMPROVEMENTS
2019

PLAN AND PROFILE STA 16+00 TO STA 32+00

SHEET

C-102

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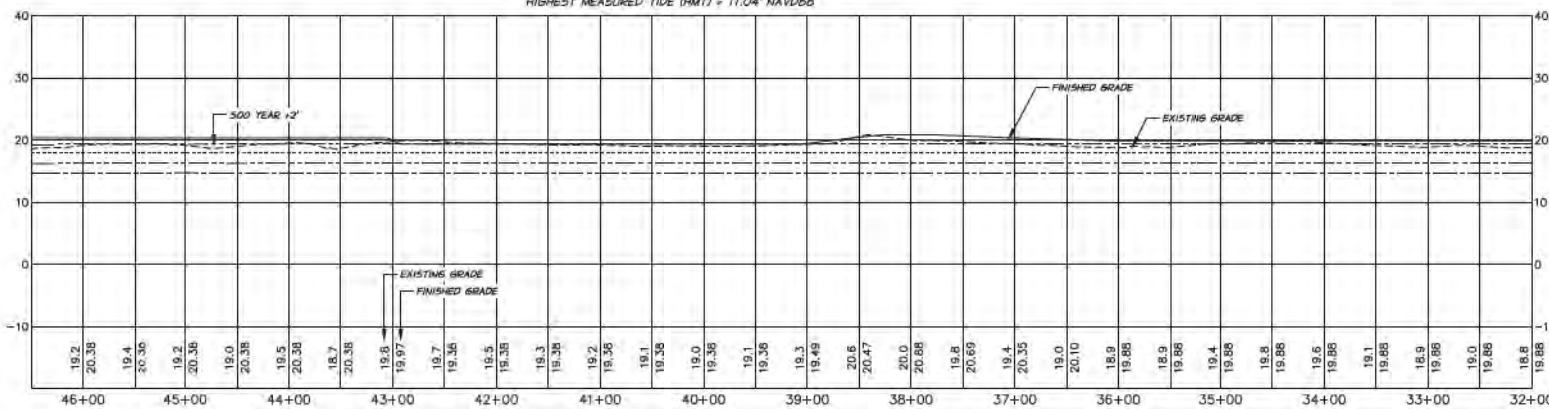


NOTES

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LEGEND

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- NEW FLOOD WALL
- HIGH TIDE LINE (HTL)
- HIGHEST MEASURED TIDE (HMT)



DESIGNED BY: A. ROBINSON/E. ZITTEKOPF	BY:	DATE:
DRAWN BY: J. CHAPMAN		
CHECKED BY: J. WELLS		
PROJECT: 848-08	DATE: July 29, 2019	
FILE: 848-08-2.1.5_C-103_W_JMP.DWG		
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**CITY OF REEDSPORT
FLOOD REDUCTION RESILIENCY
LEVEE IMPROVEMENTS
2019**

PLAN AND PROFILE STA 32+00 TO STA 46+50

SHEET

C-103

OF

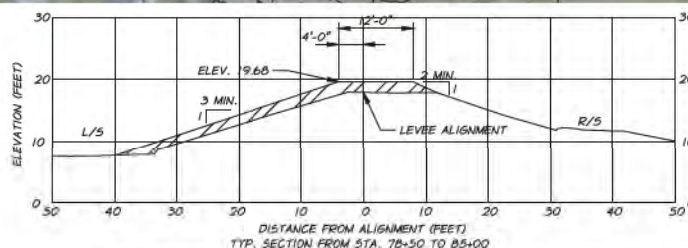
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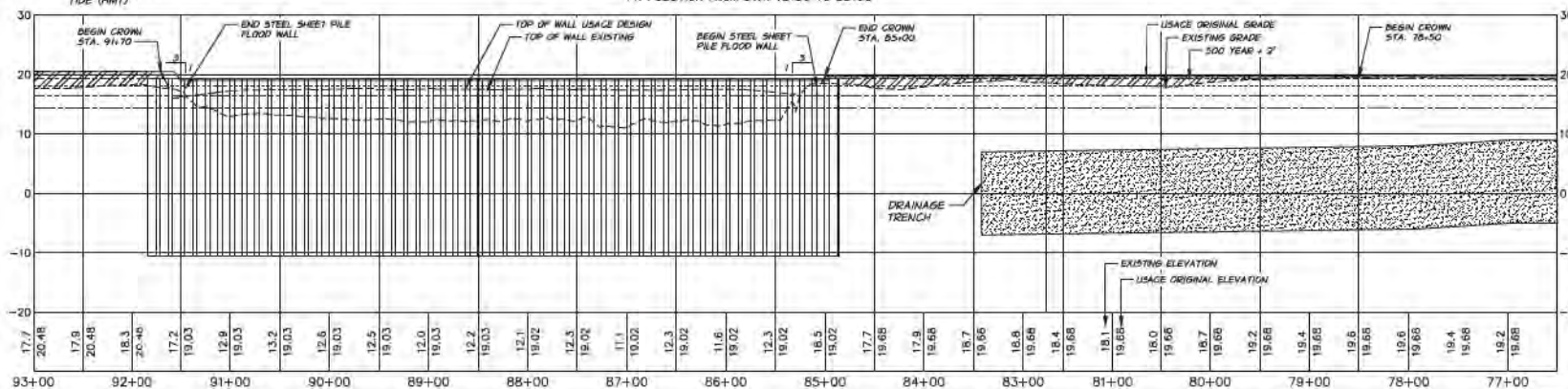
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4. VOLUME OF FILL = 1,100 CY (STA. 78+50 TO 85+04)
5. HIGH TIDE LINE (HTL) = 10.33' NAVD88
HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88



DESIGNED BY: A. ROBINSON/E. ZITTERKOPF	CHECKED BY: J. CHAPMAN	DATE: JULY 29, 2019
DRAWN BY: J. CHAPMAN	DATE: JULY 29, 2019	PROJECT: 848-08
REVIEWED BY: J. WELLS	DATE: JULY 29, 2019	PROJECT: 848-08-2.1.5_C-106W_IMP.DWG
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CITY OF REEDSPORT
FLOOD REDUCTION RESILIENCY
LEVEE IMPROVEMENTS
2019

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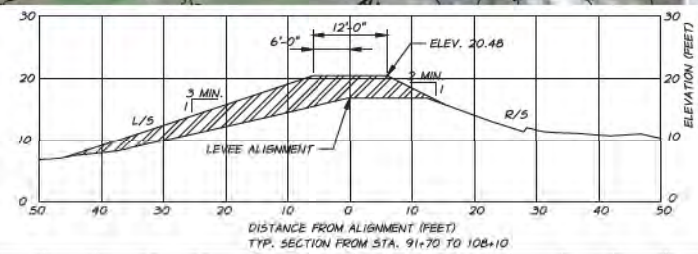
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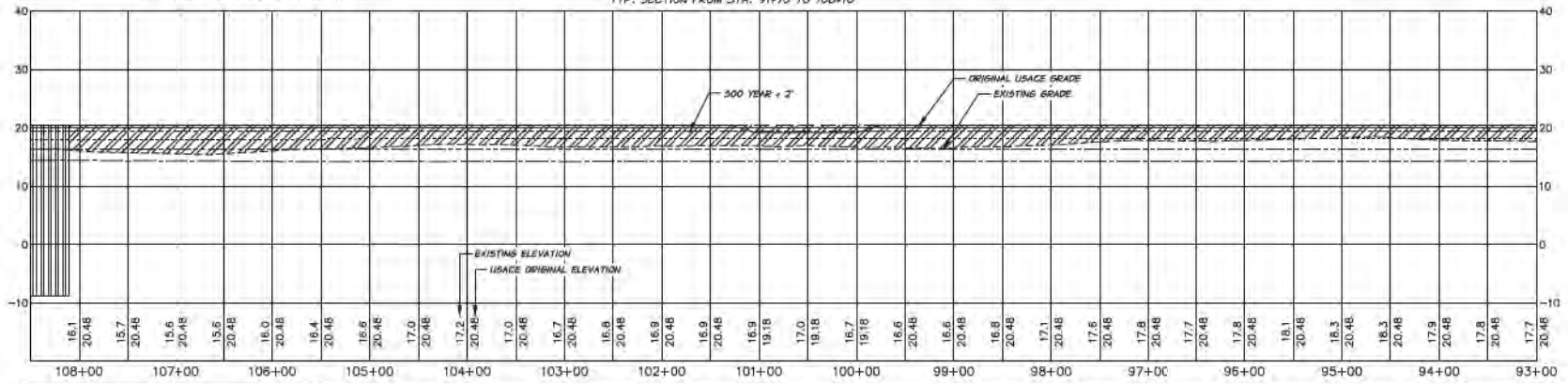
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2. VERTICAL DATUM NAVD 88. EXISTING USACE A5-CONSTRUCTED PLANS CONVERTED FROM MSL 1947 ADJ WITH CONVERSION FACTOR OF +3.68 FEET.
3. HORIZONTAL DATUM OREGON STATE PLANE, SOUTH, INTERNATIONAL FEET.
4. VOLUME OF FILL - 14,250 CY (STA. 91+50 STA. 113+50)
5. HIGH TIDE LINE (HTL) = 10.33' NAVD88
HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88



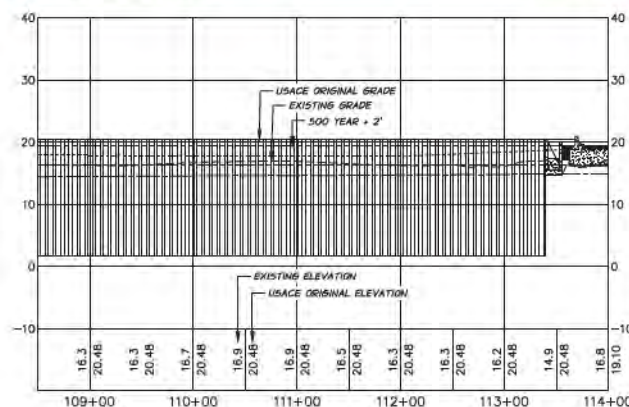
REVISION	BY	DATE
DESIGNED BY A. ROBINSON/E. ZITTERKOPF		
DRAWN BY J. CHAPMAN		
CHECKED BY J. WELLS		

HORIZONTAL SCALE IN FEET	VERTICAL SCALE IN FEET
1" = 100'	1" = 10'
1" = 200'	1" = 20'
1" = 400'	1" = 40'
1" = 800'	1" = 80'
1" = 1600'	1" = 160'
1" = 3200'	1" = 320'
1" = 6400'	1" = 640'
1" = 12800'	1" = 1280'
1" = 25600'	1" = 2560'
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LEGEND

- LEVEE RAISING AREA
- NEW LEVEE CROWN
- LEVEE FILL LIMIT
- 65.10 MIN ELEVATION
- 2016 200 YR FLOOD
- 2016 100 YR FLOOD
- NEW FLOOD WALL
- HIGH TIDE LINE (HTL)
- HIGHEST MEASURED TIDE (HMT)



NOTES

- DESIGN FLOOD ELEVATIONS EQUIVALENT TO 500 YEAR PLUS 2 FOOT FREEBOARD BASED ON 2016 AP HYDROLOGY & HYDRAULICS REPORT.
- VERTICAL DATUM NAVD 88. EXISTING USACE AS-CONSTRUCTED PLANS CONVERTED FROM MSL 1947 ADJ WITH CONVERSION FACTOR OF +3.68 FEET.
- HORIZONTAL DATUM OREGON STATE PLANE, SOUTH, INTERNATIONAL FEET.
- HIGH TIDE LINE (HTL) = 10.33' NAVD88
HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88

DESIGNED BY	BY	DATE	SCALE	DATE
DESIGNED BY A. ROBINSON/E. ZITTERKOPF			SCALE	DATE
DRAWN BY J. CHAPMAN			SCALE	DATE
CHECKED BY J. WELLS			SCALE	DATE

THIS DRAWING HAS BEEN REDUCED 50%
ADJUST SCALE ACCORDINGLY.
BAR SCALE SHOWN IS ACCURATE.

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CITY OF REEDSPORT
FLOOD REDUCTION RESILIENCY
LEVEE IMPROVEMENTS
2019

PLAN AND PROFILE STA 180+50 TO STA 114+00

SHEET

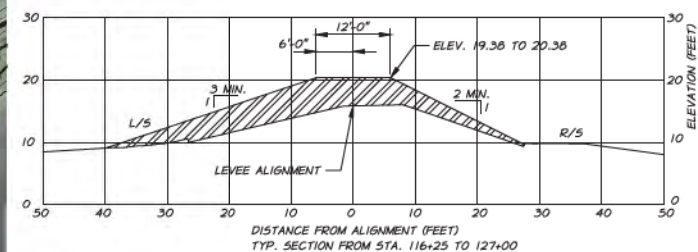
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OF



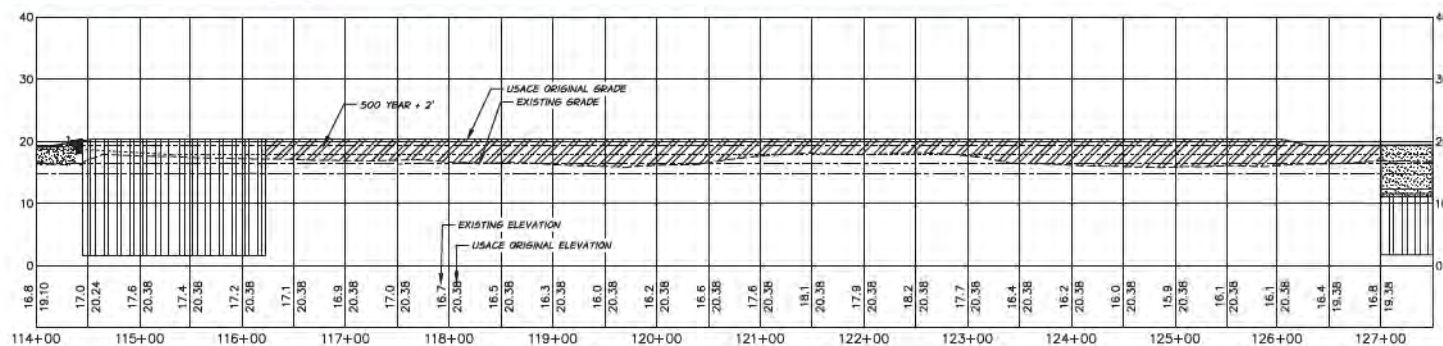
LEGEND

- LEVEE RAISING AREA
- NEW LEVEE CROWN
- LEVEE FILL LIMIT
- 65.10 MIN ELEVATION
- 2016 200 YR FLOOD
- 2016 100 YR FLOOD
- NEW FLOOD WALL
- HIGH TIDE LINE (HTL)
- HIGHEST MEASURED TIDE (HMT)



NOTES

1. DESIGN FLOOD ELEVATIONS EQUIVALENT TO 500 YEAR PLUS 2 FOOT FREEBOARD BASED ON AP 2016 HYDROLOGY & HYDRAULICS REPORT.
2. VERTICAL DATUM NAVD 88, EXISTING USACE AS-CONSTRUCTED PLANS CONVERTED FROM MSL 1947 ADJ WITH CONVERSION FACTOR OF +3.68 FEET.
3. HORIZONTAL DATUM OREGON STATE PLANE, SOUTH, INTERNATIONAL FEET.
4. VOLUME OF FILL = 12,000 CY
5. HIGH TIDE LINE (HTL) = 10.33 NAVD88
HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88



DESIGNED BY	BY	DATE	SCALE	DATE
DESIGNED BY A. ROBINSON/E. ZITTERKOPF			SCALE	DATE
DRAWN BY J. CHAPMAN			SCALE	DATE
CHECKED BY J. WELLS			SCALE	DATE

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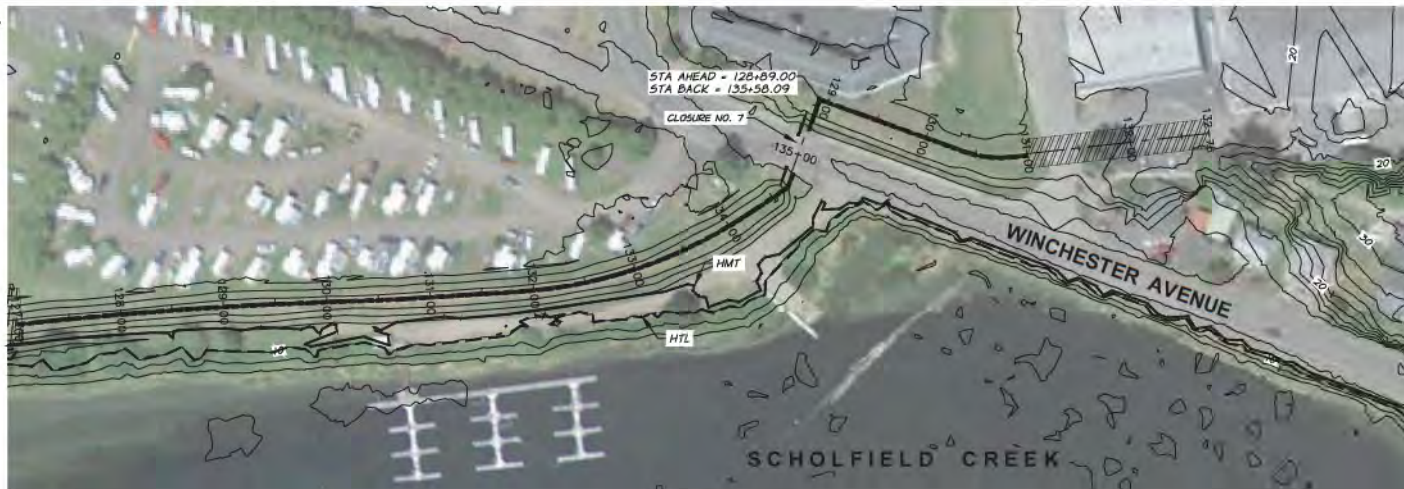
CITY OF REEDSPORT
FLOOD REDUCTION RESILIENCY
LEVEE IMPROVEMENTS
2019

PLAN AND PROFILE STA 114+00 TO 127+00

SHEET

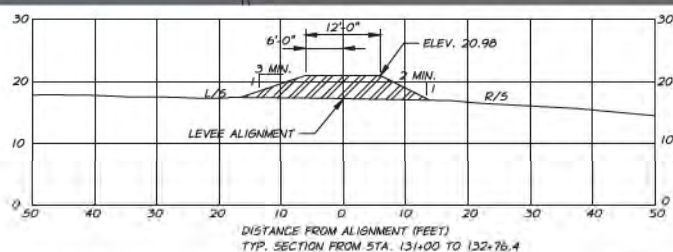
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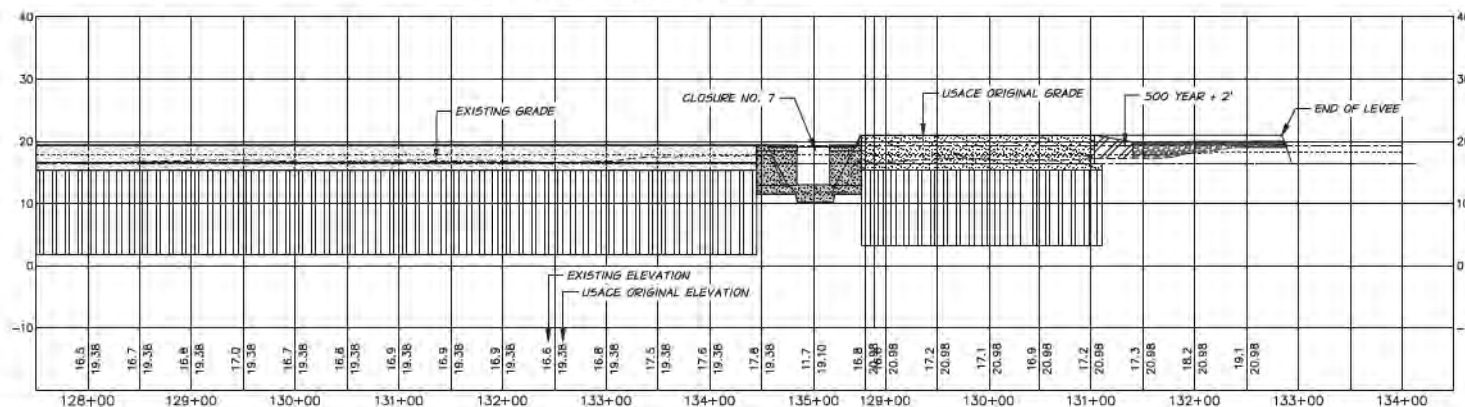
LEGEND

- LEVEE RAISING AREA
- NEW LEVEE CROWN
- LEVEE FILL LIMIT
- 65.10 MIN ELEVATION
- 2016 200 YR FLOOD
- 2016 100 YR FLOOD
- NEW FLOOD WALL
- HIGH TIDE LINE (HTL)
- HIGHEST MEASURED TIDE (HMT)



NOTES

1. DESIGN FLOOD ELEVATIONS EQUIVALENT TO 500 YEAR PLUS 2 FOOT FREEBOARD BASED ON AP 2016 HYDROLOGY & HYDRAULICS REPORT.
2. VERTICAL DATUM NAVD 88, EXISTING USAGE AS-CONSTRUCTED PLANS CONVERTED FROM MSL 1947 ADJ WITH CONVERSION FACTOR OF +3.68 FEET.
3. HORIZONTAL DATUM OREGON STATE PLANE, SOUTH, INTERNATIONAL FEET.
4. VOLUME OF FILL = 1,250 CY
5. HIGH TIDE LINE (HTL) = 10.33' NAVD88
HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88



REVISION	BY	DATE	SCALE	SCALE
DESIGNED BY A. ROBINSON/E. ZITTERKOPF			AS SHOWN	DATE JULY 29, 2019
DRAWN BY J. CHAPMAN			AS SHOWN	DATE JULY 29, 2019
CHECKED BY J. WELLS			AS SHOWN	DATE JULY 29, 2019
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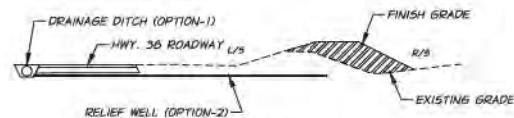
**CITY OF REEDSPORT
FLOOD REDUCTION RESILIENCY
LEVEE IMPROVEMENTS
2019**

PLAN AND PROFILE STA 127+50 TO 132+75

SHEET

C-110

OF



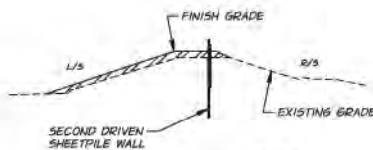
SECTION 1 2

TYP. SECTION FROM STA. 0+15 TO 6+90
TYP. SECTION FROM STA. 7+66 TO 10+86
TYP. SECTION FROM STA. 4+30 TO 9+12



SECTION 5

TYP. SECTION FROM STA. 116+25 TO 127+00



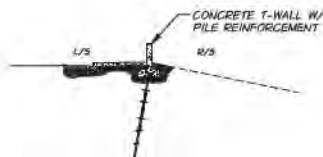
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TYP. SECTION FROM STA. 84+84 TO 91+62



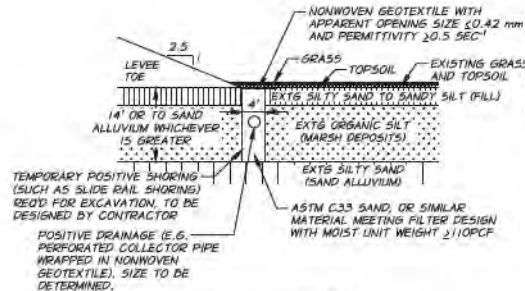
SECTION 2 3 4

TYP. SECTION FROM STA. 54+57.5 TO 56+95
TYP. SECTION FROM STA. 76+50 TO 85+00
TYP. SECTION FROM STA. 91+70 TO 108+10



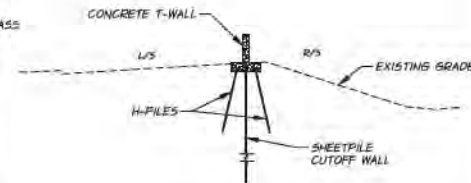
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TYP. SECTION FROM STA. 62+14 TO 66+64



SECTION 6

TYP. DRAINAGE TRENCH SECTION FROM STA. 68+00 TO 83+42



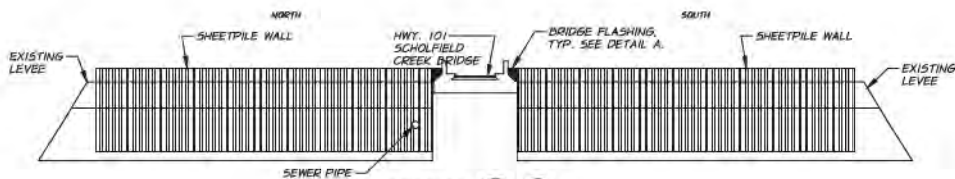
SECTION 12 13

TYP. SECTION FROM STA. 127+00 TO 134+45
TYP. SECTION FROM STA. BACK 135+46 TO 135+58
TYP. SECTION FROM STA. AHEAD 128+59 TO 131+00



SECTION 14 15 16

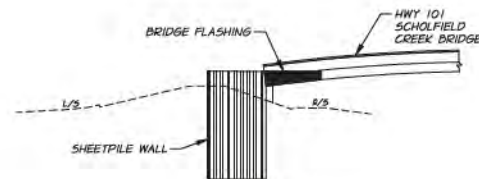
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TYP. SECTION FROM STA. 4+75 TO 10+00



SECTION 10 11

PERPENDICULAR TO BRIDGE
PARALLEL TO LEVEE

TYP. SECTION FROM STA. 106+10 TO 113+20



DETAIL A

PARALLEL WITH BRIDGE
PERPENDICULAR TO LEVEE

TYP. SECTION FROM STA. 114+44 TO 116+25

REVISION	BY	DATE	SCALE	SCALE
DESIGNED BY A. ROBINSON/E. ZITTERKOPF			AS SHOWN	DATE: July 29, 2019
DRAWN BY J. CHAPMAN			AS SHOWN	DATE: July 29, 2019
CHECKED BY J. WELLS			AS SHOWN	DATE: July 29, 2019

THIS DRAWING HAS BEEN REDUCED 50%
ADJUST SCALE ACCORDINGLY.
BAR SCALE SHOWN IS ACCURATE.

PRELIMINARY
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

anderson perry
& associates, inc.
engineering • surveying • natural resources

CITY OF REEDSPORT
FLOOD REDUCTION RESILIENCY
LEVEE IMPROVEMENTS
2019

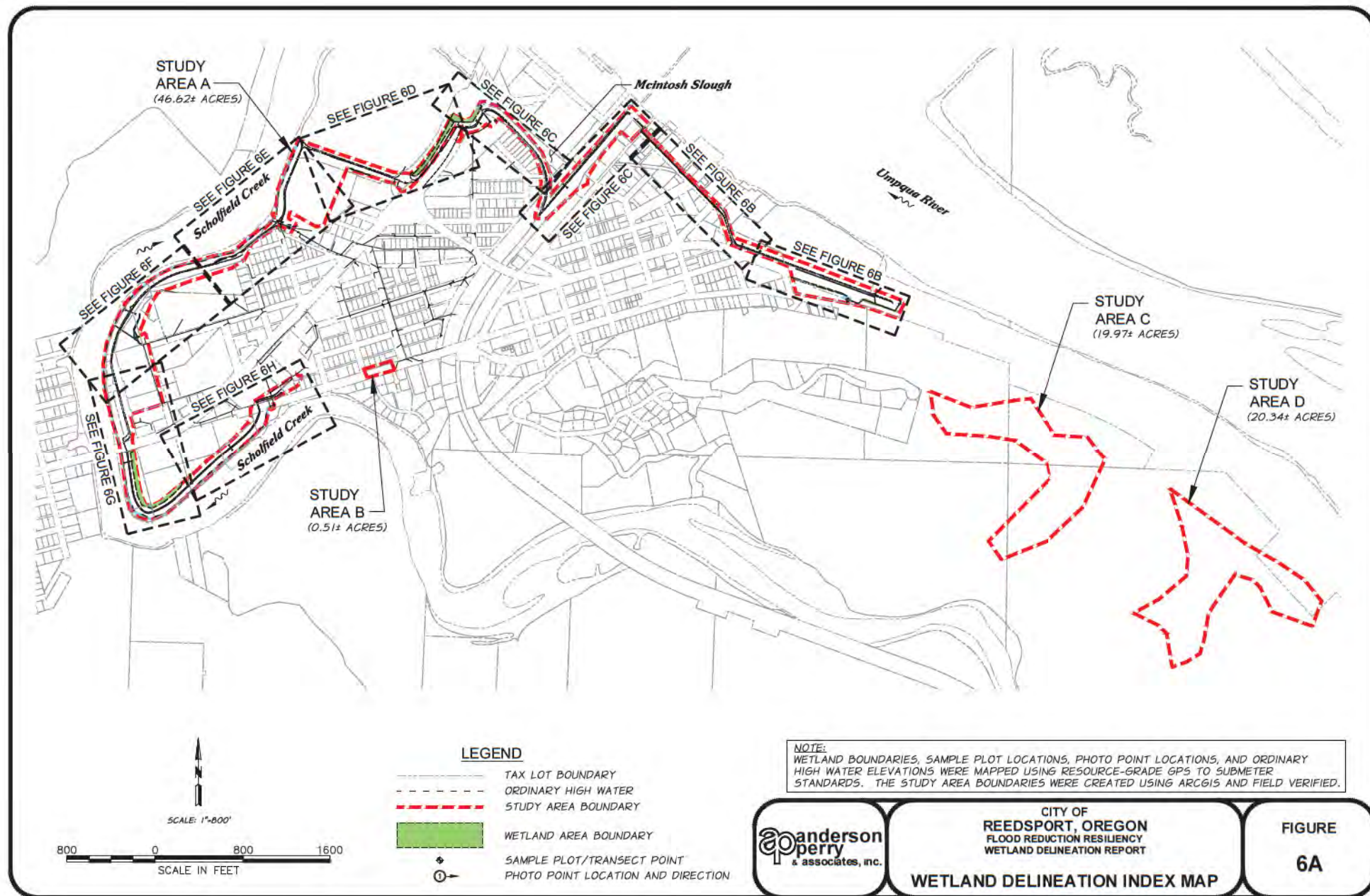
CROSS SECTIONS

SHEET

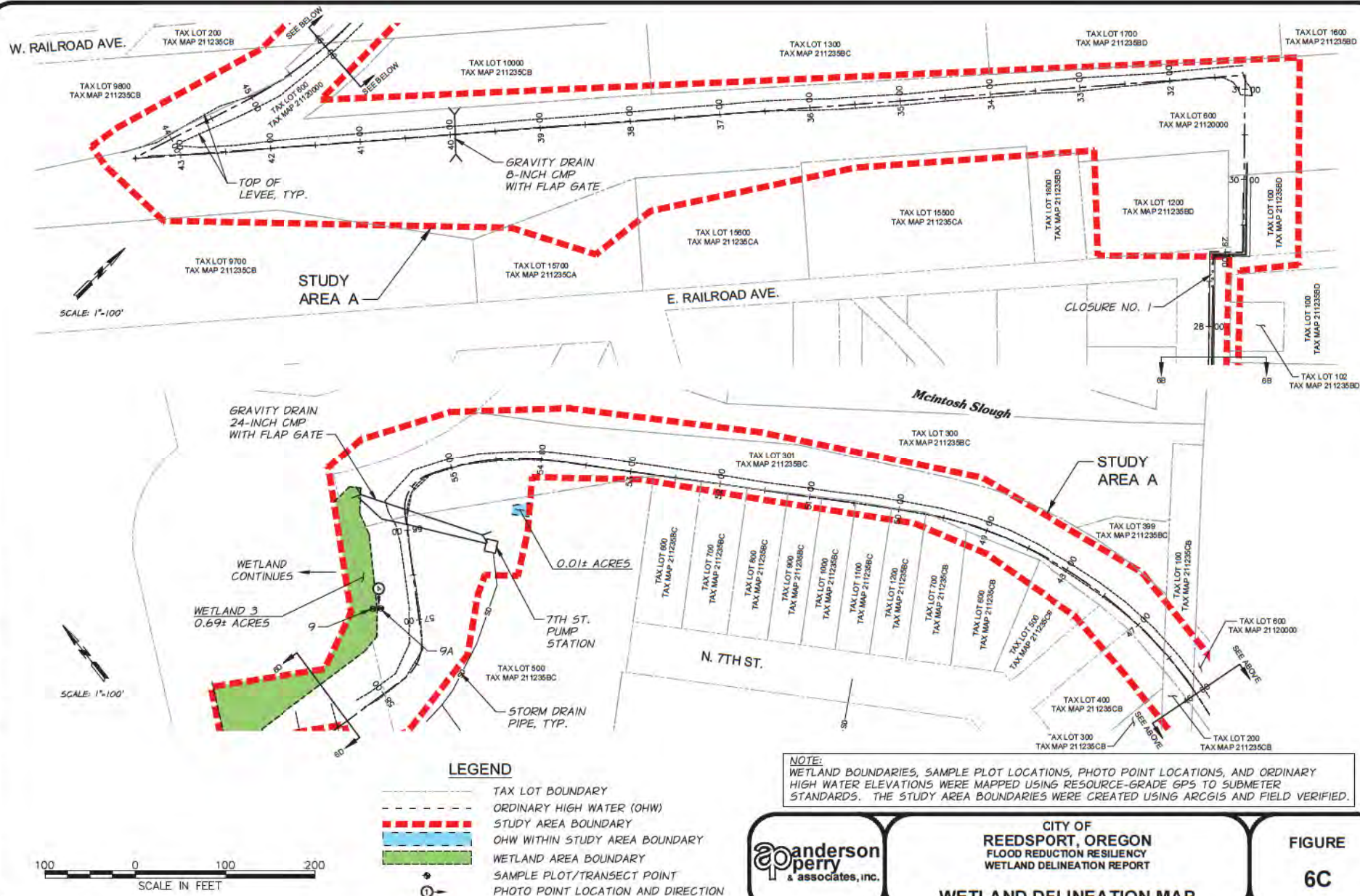
C-301

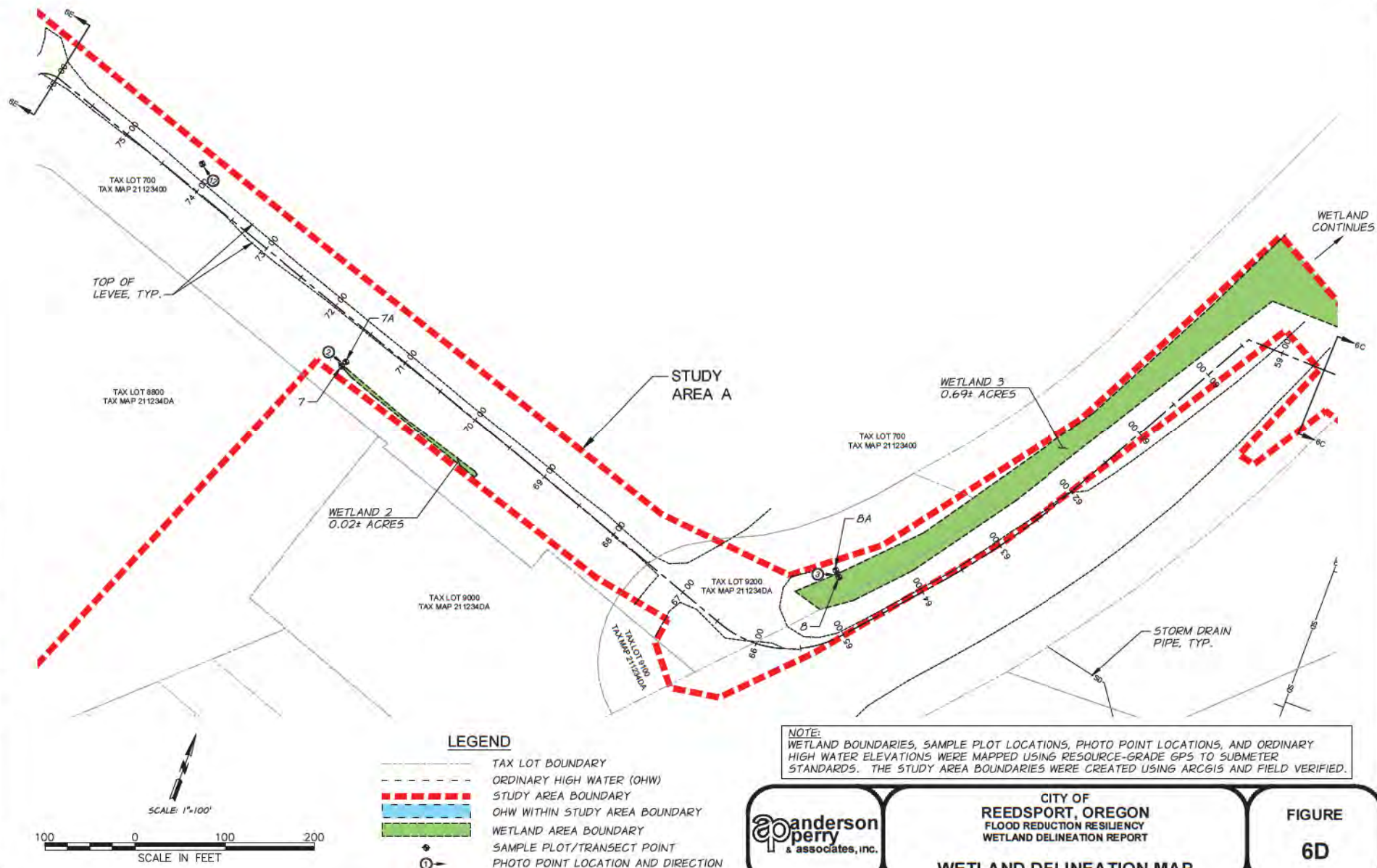
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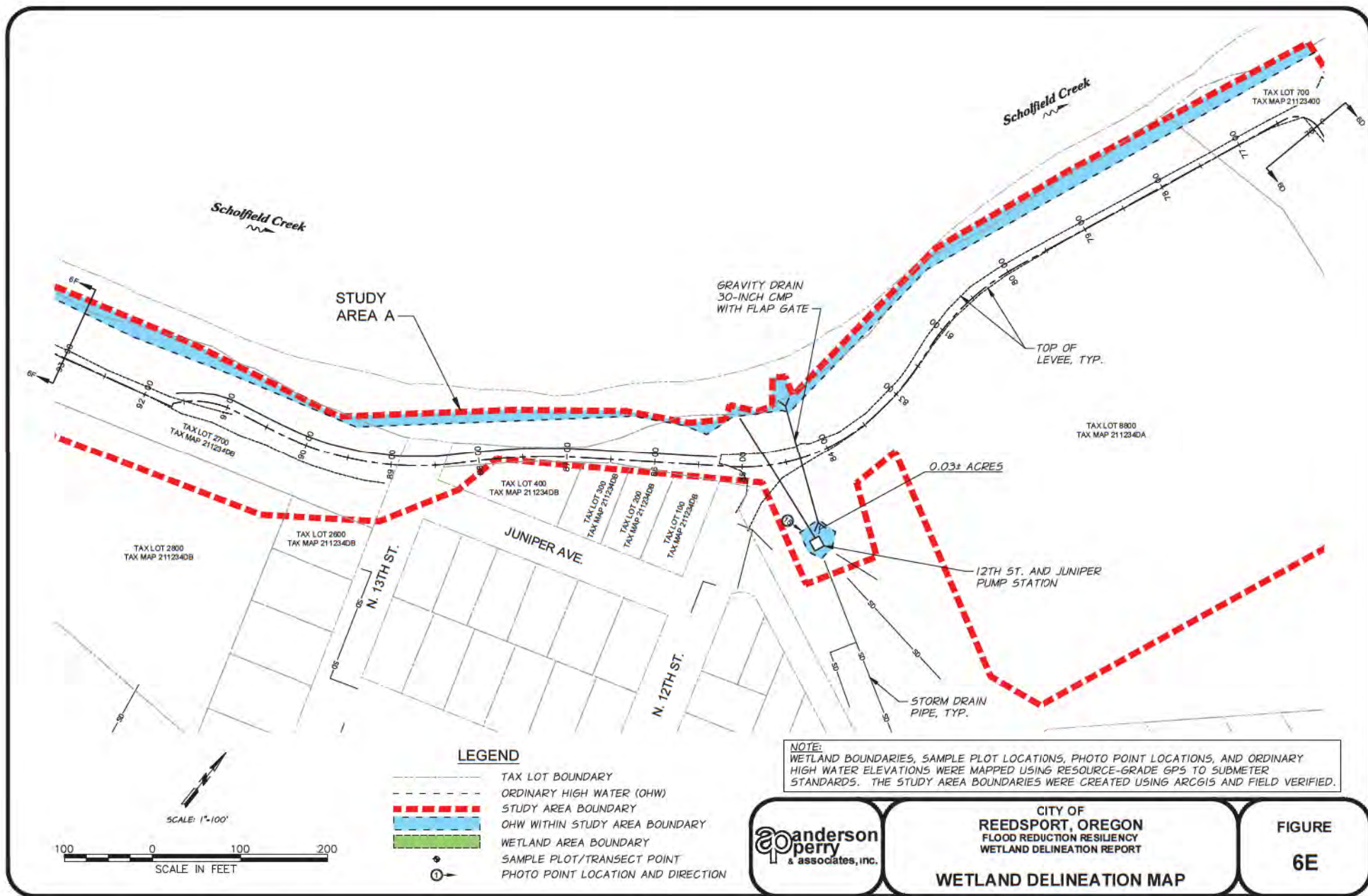
Wetland Delineation

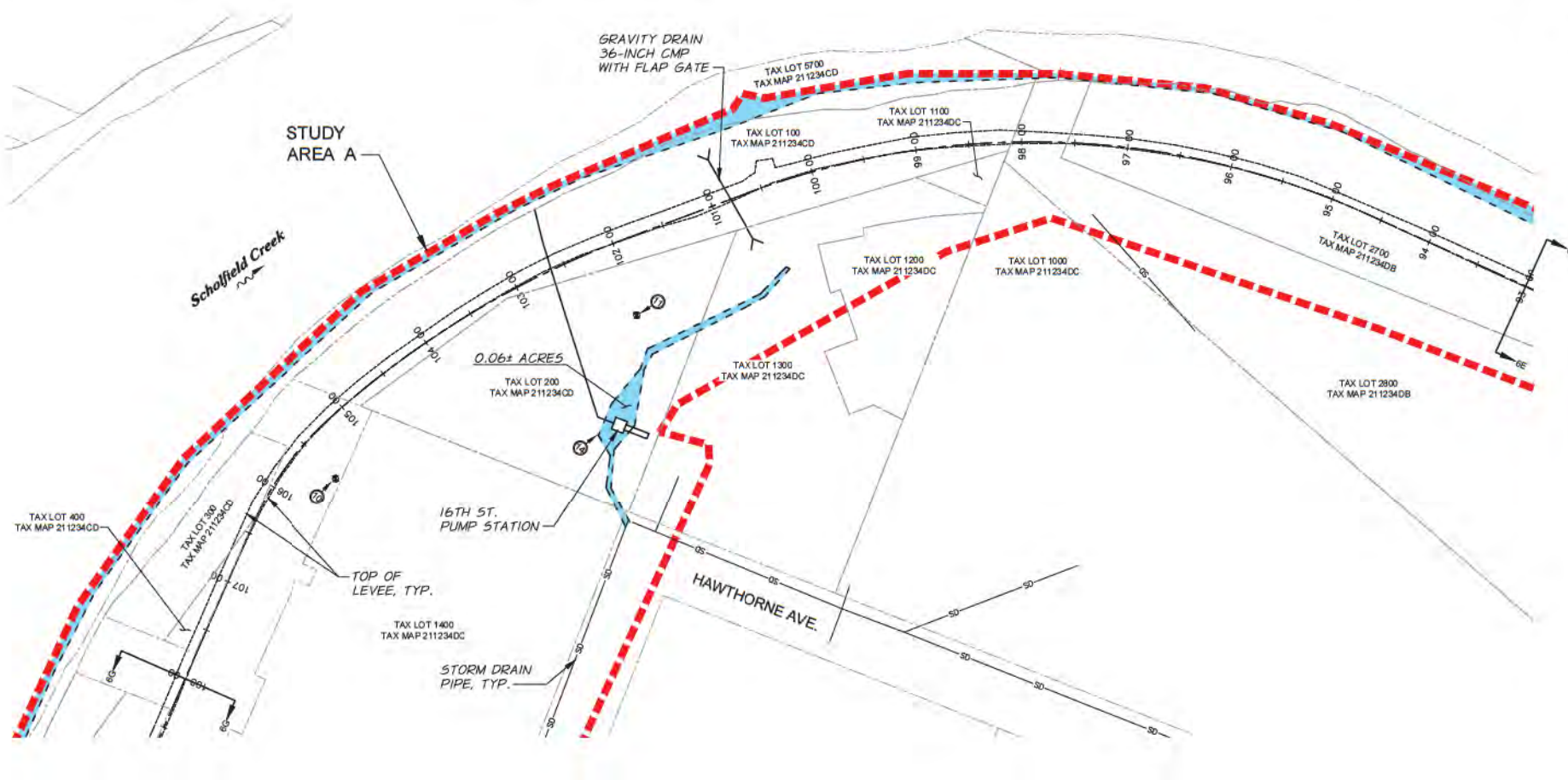












LEGEND

- TAX LOT BOUNDARY
- ORDINARY HIGH WATER (OHW)
- STUDY AREA BOUNDARY
- OHW WITHIN STUDY AREA BOUNDARY
- WETLAND AREA BOUNDARY
- SAMPLE PLOT/TRANSECT POINT
- PHOTO POINT LOCATION AND DIRECTION

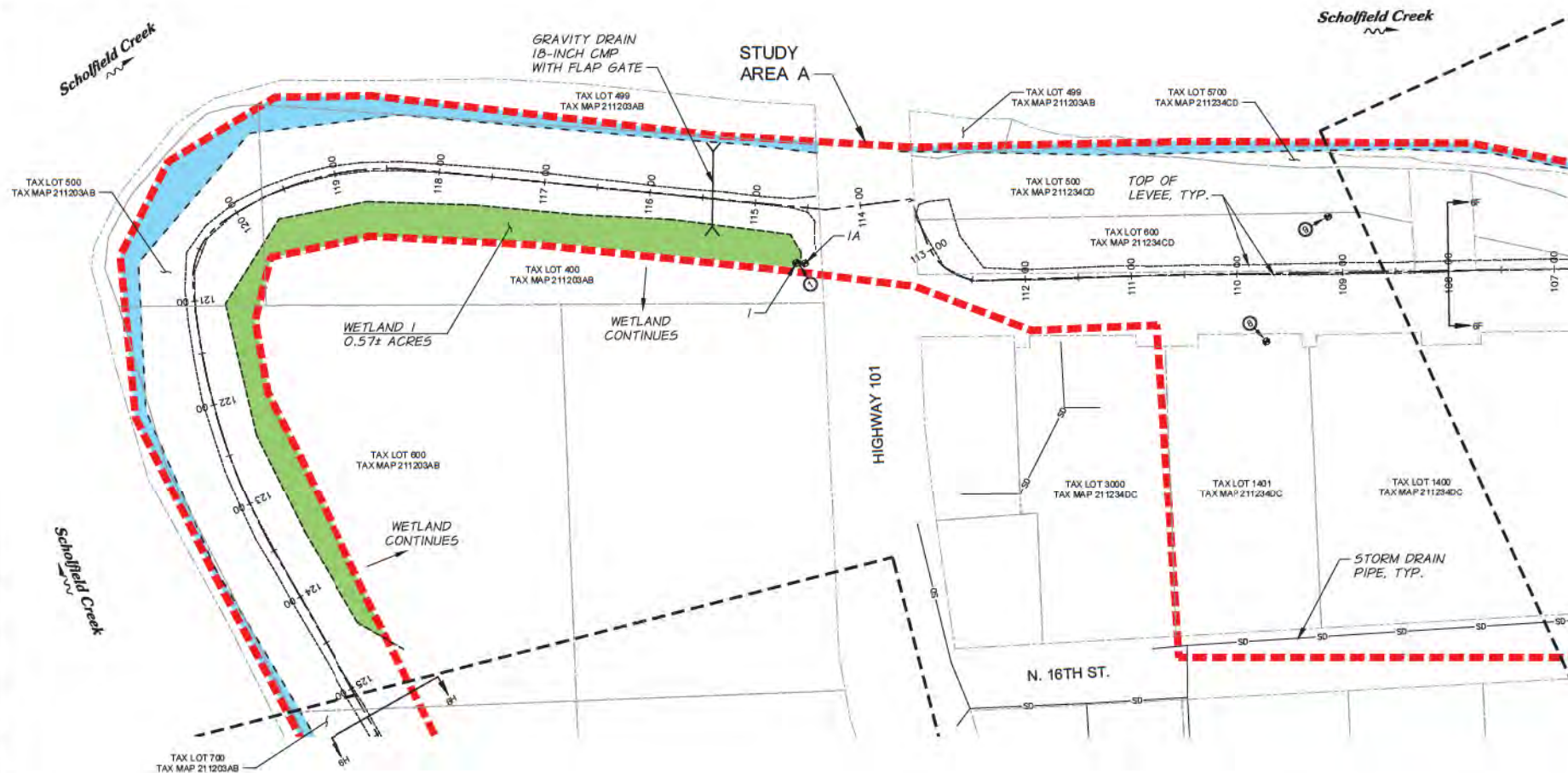
NOTE:
WETLAND BOUNDARIES, SAMPLE PLOT LOCATIONS, PHOTO POINT LOCATIONS, AND ORDINARY HIGH WATER ELEVATIONS WERE MAPPED USING RESOURCE-GRADE GPS TO SUBMETER STANDARDS. THE STUDY AREA BOUNDARIES WERE CREATED USING ARCGIS AND FIELD VERIFIED.

**apanderson
perry**
& associates, inc.

CITY OF
REEDSPORT, OREGON
FLOOD REDUCTION RESILIENCY
WETLAND DELINEATION REPORT

WETLAND DELINEATION MAP

FIGURE
6F



LEGEND

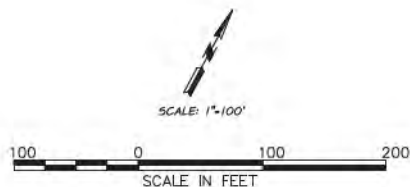
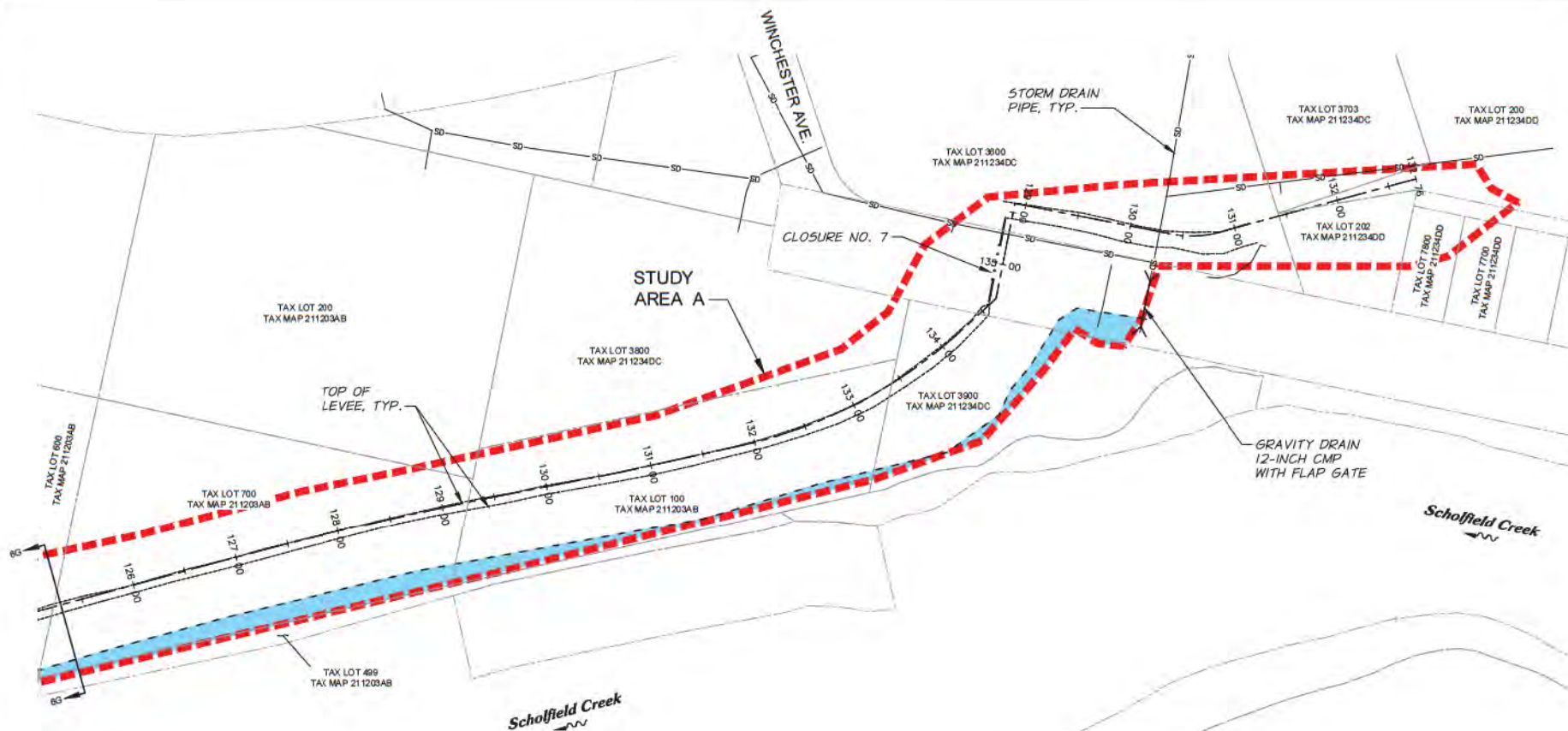
- TAX LOT BOUNDARY
- ORDINARY HIGH WATER (OHW)
- STUDY AREA BOUNDARY
- OHW WITHIN STUDY AREA BOUNDARY
- WETLAND AREA BOUNDARY
- SAMPLE PLOT/TRANSECT POINT
- PHOTO POINT LOCATION AND DIRECTION

NOTE:
WETLAND BOUNDARIES, SAMPLE PLOT LOCATIONS, PHOTO POINT LOCATIONS, AND ORDINARY HIGH WATER ELEVATIONS WERE MAPPED USING RESOURCE-GRADE GPS TO SUBMETER STANDARDS. THE STUDY AREA BOUNDARIES WERE CREATED USING ARCGIS AND FIELD VERIFIED.

**spanderson
perry**
& associates, inc.

CITY OF
REEDSPORT, OREGON
FLOOD REDUCTION RESILIENCY
WETLAND DELINEATION REPORT
WETLAND DELINEATION MAP

**FIGURE
6G**



LEGEND

- TAX LOT BOUNDARY
- ORDINARY HIGH WATER (OHW)
- STUDY AREA BOUNDARY
- OHW WITHIN STUDY AREA BOUNDARY
- WETLAND AREA BOUNDARY
- SAMPLE PLOT/TRANSECT POINT
- PHOTO POINT LOCATION AND DIRECTION

NOTE:
WETLAND BOUNDARIES, SAMPLE PLOT LOCATIONS, PHOTO POINT LOCATIONS, AND ORDINARY HIGH WATER ELEVATIONS WERE MAPPED USING RESOURCE-GRADE GPS TO SUBMETER STANDARDS. THE STUDY AREA BOUNDARIES WERE CREATED USING ARCGIS AND FIELD VERIFIED.

**apanderson
perry**
& associates, inc.

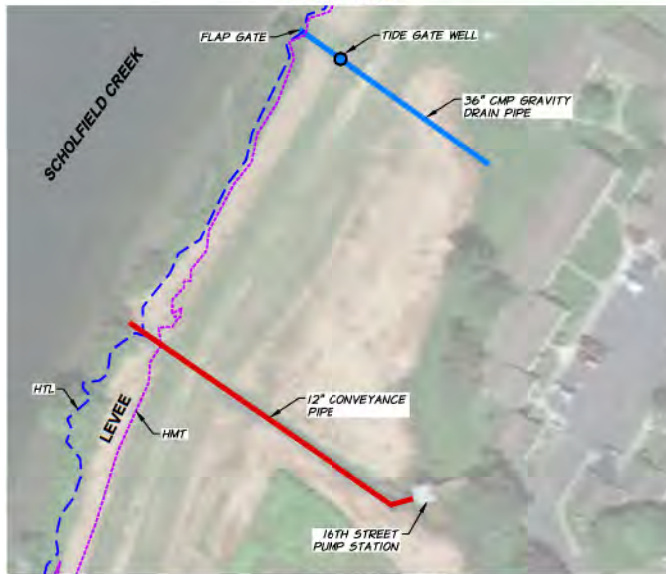
CITY OF
REEDSPORT, OREGON
FLOOD REDUCTION RESILIENCY
WETLAND DELINEATION REPORT
WETLAND DELINEATION MAP

FIGURE
6H

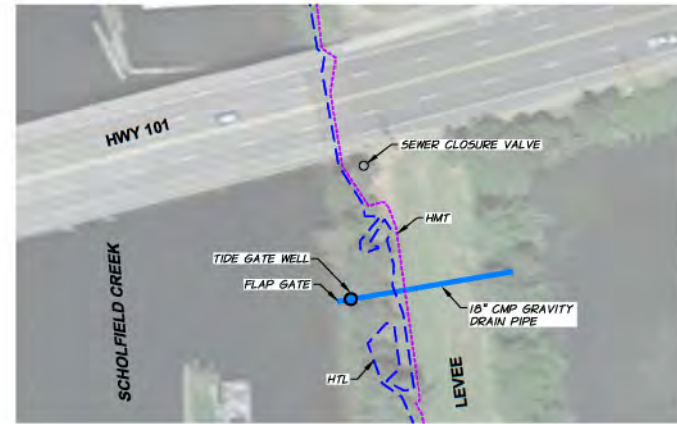
Gravity Drain Impacts



GRAVITY DRAIN NO. 1
TIDE GATE WELL



GRAVITY DRAIN NO. 3
TIDE GATE WELL



GRAVITY DRAIN NO. 2
TIDE GATE WELL

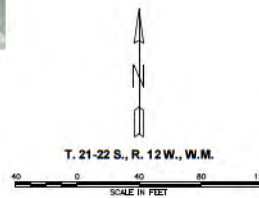


GRAVITY DRAIN NO. 4
TIDE GATE WELL

LEGEND

- CONVEYANCE PIPE
- GRAVITY DRAIN PIPE
- - - HIGH TIDE LINE (HTL)
- - - HIGH MEASURED TIDE (HMT)
- GRAVITY DRAIN

NOTES:
HIGH TIDE LINE (HTL) = 10.33' NAVD88
HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88



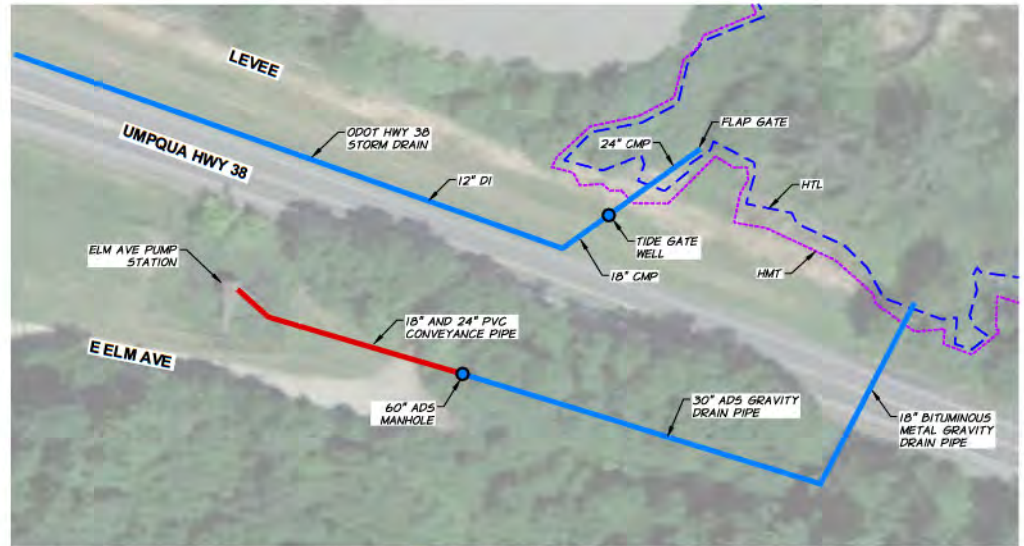
**apanderson
perry
& associates, inc.**

CITY OF
REEDSPORT, OREGON
FLOOD REDUCTION RESILIENCY
JOINT PERMIT APPLICATION
GRAVITY DRAINS

**FIGURE
5B**



GRAVITY DRAIN NO. 5
TIDE GATE WELL

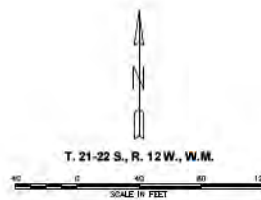


GRAVITY DRAIN NO. 6
TIDE GATE WELL

LEGEND

- CONVEYANCE PIPE
- GRAVITY DRAIN PIPE
- - - HIGH TIDE LINE (HTL)
- - - HIGH MEASURED TIDE (HMT)
- GRAVITY DRAIN

NOTES
HIGH TIDE LINE (HTL) = 10.33' NAVD88
HIGHEST MEASURED TIDE (HMT) = 11.04' NAVD88



**apanderson
perry
& associates, inc.**

CITY OF
REEDSPORT, OREGON
FLOOD REDUCTION RESILIENCY
JOINT PERMIT APPLICATION
GRAVITY DRAINS

**FIGURE
5C**

Floodplain FIRMS

National Flood Hazard Layer FIRMMette



124°6'13"W 43°42'31"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

124°5'36"W 43°42'5"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/8/2022 at 4:08 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMMette



124°6'56"W 43°42'16"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

124°6'18"W 43°41'50"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/8/2022 at 4:14 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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National Flood Hazard Layer FIRMette



124°7'3"W 43°41'47"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

124°6'26"W 43°41'21"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

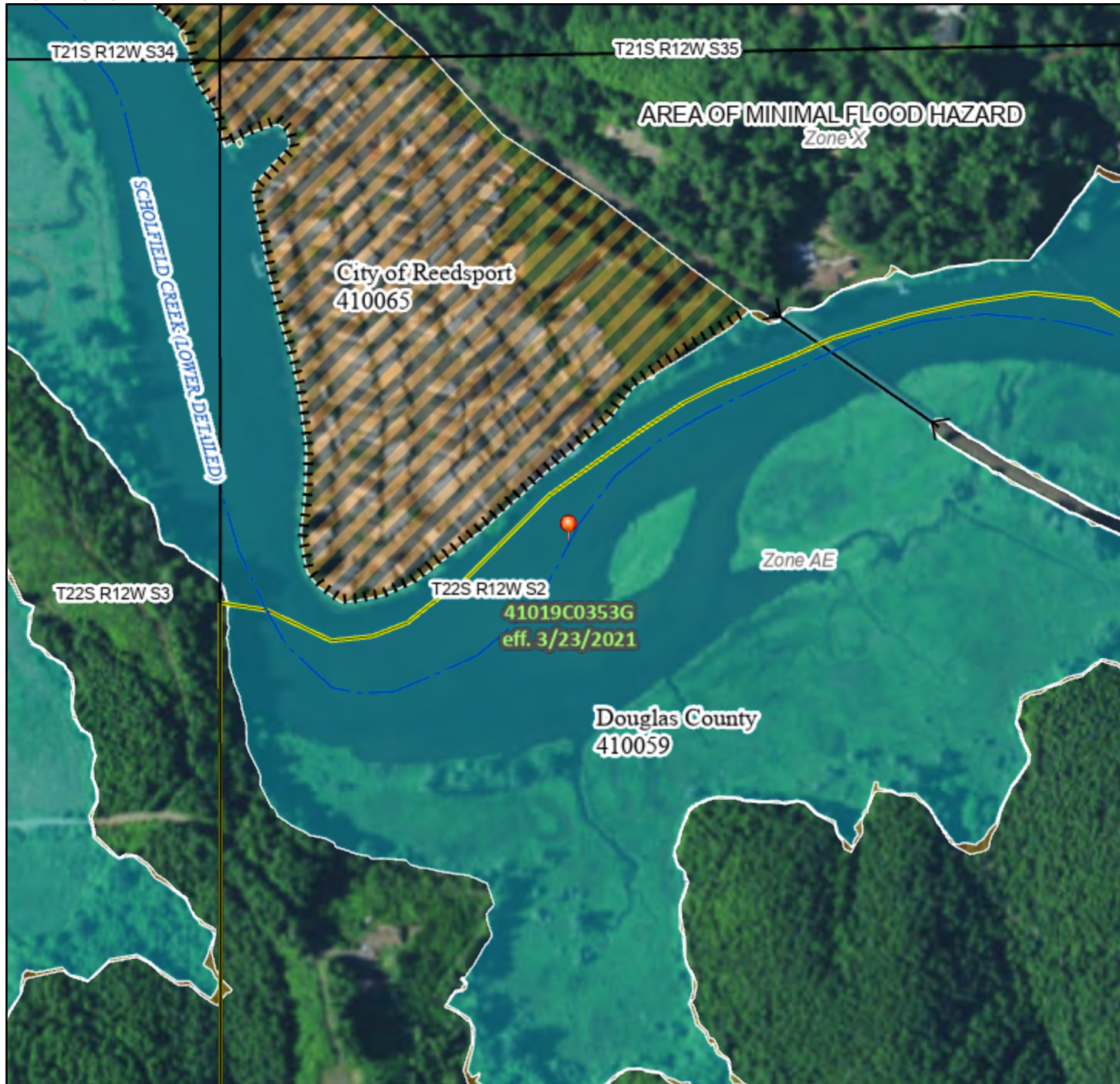
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This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMMette



124°6'21"W 43°41'52"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
OTHER FEATURES		Coastal Transect
		Base Flood Elevation Line (BFE)
OTHER FEATURES		Limit of Study
		Jurisdiction Boundary
OTHER FEATURES		Coastal Transect Baseline
		Profile Baseline
OTHER FEATURES		Hydrographic Feature
		Digital Data Available
MAP PANELS		No Digital Data Available
		Unmapped



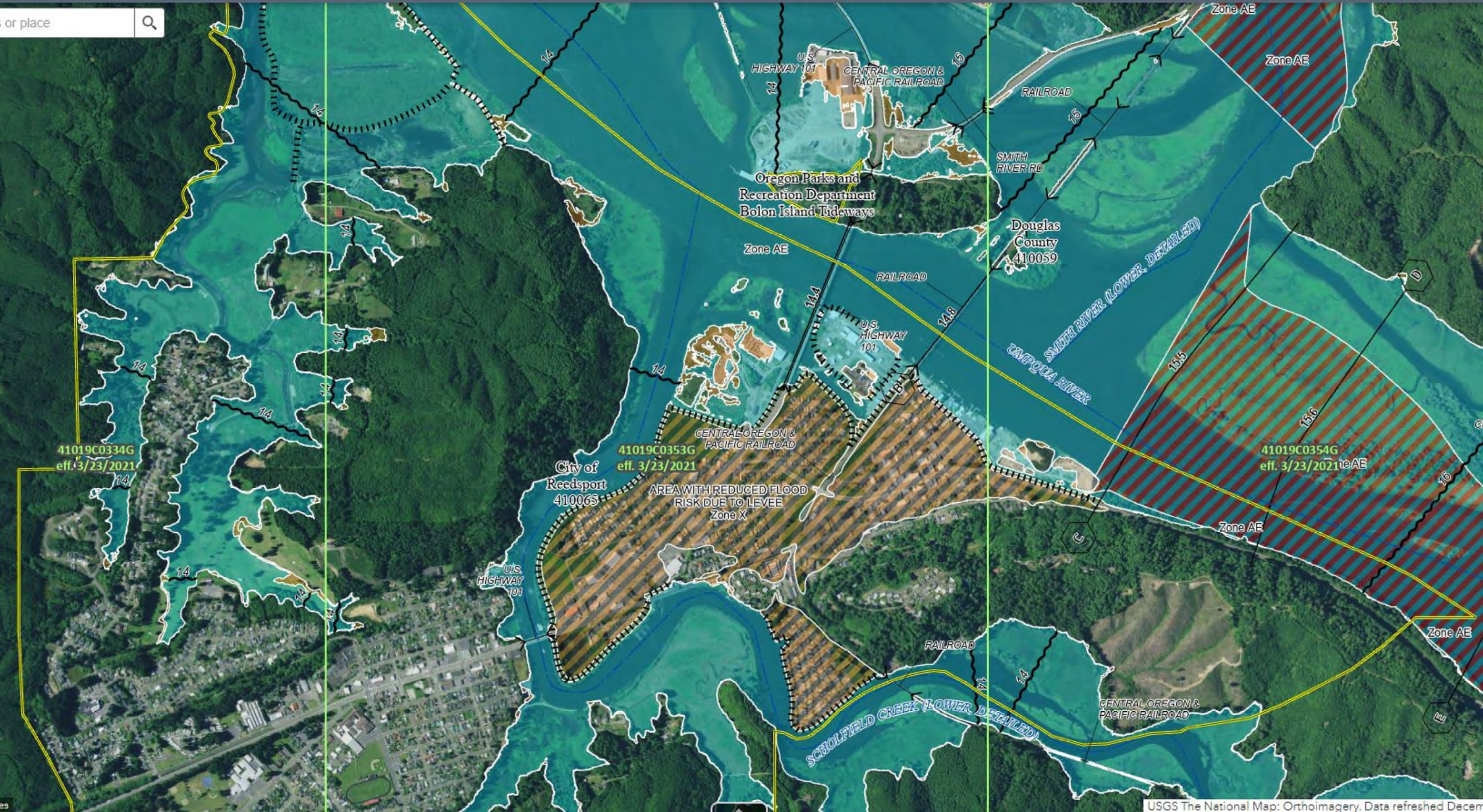
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **4/8/2022 at 4:00 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

or place



APPENDIX B: Agency and Tribal Coordination

Tribal Consultation

The following Tribes were contacted in October 2021 and provided a consultation letter similar to the one presented in this Appendix:

- Coquille Indian Tribe
- Cow Creek Band of the Umpqua Tribe of Indians
- Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians
- Confederated Tribes of the Grand Ronde
- Confederated Tribes of the Siletz Indians



FEMA

October 4, 2021

Courtney Krossman, Tribal Historic Preservation Officer
Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians
1245 Fulton Ave
Coos Bay, Oregon 97420
Sent via email

RE: FEMA PDM 2018-7 Reedsport Levee Mitigation, City of Reedsport, Oregon

Dear Ms. Krossman:

Please consider this follow up to the initial outreach for this project that the City of Reedsport's archaeological contractor Anderson Perry & Associates, Inc. initiated on November 7, 2018. The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) proposes to fund the City of Reedsport (Applicant), through the Oregon Office of Emergency Management (OEM), for a levee mitigation project (Undertaking). This funding is available from FEMA's Fiscal Year 2018 Pre-Disaster Mitigation Grant Program (PDM). The proposed Undertaking is being reviewed pursuant to Section 106 of the National Historic Preservation Act (NHPA), as amended. The City of Reedsport contracted with Anderson Perry & Associates, Inc. (AP) to complete a cultural resources assessment for the Undertaking and their draft report is enclosed. FEMA is also preparing an Environmental Assessment for this project per the National Environmental Policy Act.

Proposed Undertaking

This proposed Undertaking includes mitigation efforts to improve the existing City of Reedsport Levee. The project is located in Reedsport, Oregon (centered around Latitude 43.70399, Longitude - 124.10496) as shown on Figure 1 of the enclosed report. The Reedsport levee was constructed on highly organic soils with construction techniques from the 1920's through 1940's that are no longer accepted practice. This has resulted in 3 to 4 feet of settlement making critical parts of the levee very susceptible to failure even in floods much smaller than the 100-year event. The Reedsport levee must be raised back to the design height to avoid a major flood event. This project will provide the community with a levee system that will surpass the current design and significantly increase the longevity of the system and addressing, to the greatest extent possible, all other flood related threats. Work includes raising portions of the existing levee, improvements to pump stations, conveyance pipe work, additions to and improvement of flood walls, the addition of a drainage trench, construction of a proposed sand berm behind the levee, three (3) areas for staging of equipment, and two (2) proposed soil acquisition areas in the hills east of the city for material.

Area of Potential Effects

FEMA has determined that the Area of Potential Effects (APE) totals approximately 102.9 acres and includes the existing levee improvements, pump station improvements, conveyance pipe work, flood

wall addition and improvement, proposed drain trench, proposed sand berm, staging areas, and proposed soil acquisition areas as shown on Figures 2 and 3 of the enclosed report.

Historic Property Identification and Evaluation

The City of Reedsport contractor, AP, conducted a pedestrian survey, including 22 shovel test probes (STP) of the approximately 102.9 acres for the Undertaking. In addition, AP subcontracted Historical Research Associates (HRA) to conduct a compliance-level architectural resources survey of all historic-period built resources in and adjacent to the APE. In total, one historic age archaeological isolate and 18 historic-period built resources were identified.

Isolate 848-08-ISO-AP01 was identified in STP 15 and consists of two refit fragments of a milk glass Mason jar lid. Four radial STPs were placed around STP 15 and no cultural material was identified. According to historical accounts, it is likely that most of the tested sediment within the APE was historically dredged from the Umpqua River, and according to the subsurface testing, some of that same sediment has been disturbed and mixed in the modern era. Non-diagnostic materials (asphalt fragments, ceramic plate fragments, and Styrofoam) were observed in three STPs (3, 5, and 14) at various depths between 5 and 83 centimeters below surface. This is further supported by the fact that modern trash was found deeper in adjacent STPs than the isolate. The isolate is recommended as not eligible for inclusion in the National Register of Historic Places (NRHP) and no further work or protection is recommended. An isolate form has been prepared and will be submitted by AP.

Both AP and HRA recommend the Reedsport Levee as not eligible for listing in the NRHP. Based on archival research, it was determined that the levee was originally constructed from 1925 to 1945 and modified over the next 76 years with additional components constructed by the United State Army Corps of Engineers (USACE) in 1969. Research indicates that the Reedsport Levee is a contributing factor in the transition from floating houses and stilted homes to a more grounded land-based community, which is a significant event in the local history of Reedsport (Criteria A of the National Register Criteria for Evaluation).

However, despite the importance of this levee to the development and protection of the City of Reedsport, the levee has since suffered integrity loss to its original workmanship and design as a result of repeated flood events, reconstruction, and ongoing maintenance. Although the resource does retain its historic location, it currently exceeds its original footprint and volume due to scale upgrades during reconstruction which effects the space of its original design and covers the original materials from sight and the resource lacks in all aspects of integrity. Furthermore, the resources design has also been impacted by the additions and maintenance of technologies like concrete and metal floodwalls, gravity drains, pump stations, and piping that were not featured in the original construction. Due to the loss of integrity through repeated flood events, reconstruction, and maintenance, the resource no longer has the ability to convey significance regarding the transition from floating houses and stilted homes to a more grounded land-based community. Additionally, HRA emphasizes that the aspect of significance regarding the community's transition to waterfront development (Criterion A) is strongly connected to the levee's initial construction in the 1920s, and not the changes to the property that occurred in 1969. HRA recommends the Reedsport Levee not eligible for listing in the NRHP due to an irretrievable loss

of integrity from its initial period of construction (1925) and an inability to convey significance under any criteria from its period of evolution in 1969.

In addition to the Reedsport Levee, HRA identified 17 additional historic-period built resources within or adjacent to the APE during their architectural resources inventory. Based on the results, HRA recommends 16 of the historic-period built resources as not eligible for listing in the NRHP. This includes three previously recommended eligible properties now recommended as not eligible: 191 Riverfront Way, 130 Railroad Ave, and the Reedsport Levee "wall".

The building at 191 Riverfront Way was previously documented in the 2009 Reedsport Main Street RLS (Keeney and Osbourne 2009), at which time it was evaluated as eligible/contributing; however, at that time the construction date of the building was also incorrectly identified as ca. 1920. The storage building at 191 Riverfront Way was constructed ca. 1954. From its period of construction (ca. 1954), the building features integrity of location and setting, as it remains on its original parcel. It is currently used for storage, though was originally likely associated with the waterfront and adjacent pier; it is unclear if the building is currently associated with waterfront activities. The building no longer retains integrity of design, materials, workmanship, feeling, and association, due to the addition (by 1982) and alterations including replaced cladding and garage doors. HRA does not concur with the previous assessment and recommends 130 Railroad Ave. does not meet any criteria for individual listing in the NRHP. From its period of construction (ca. 1962), the building at 130 Railroad Ave. features integrity of location and setting, as it remains on its original parcel. The building no longer retains integrity of design, materials, workmanship, feeling, and association, due to alterations including replaced windows and doors. HRA does not concur with the previous assessment by Keeney and Osbourne (2009) and recommends 130 Railroad Ave. does not meet any criteria for individual listing in the NRHP. The Reedsport Levee "wall", specifically, was evaluated in context with the whole of the Reedsport Levee, which, as noted, is recommended not eligible for listing in the NRHP.

Historical Research Associates recommends that one built resource, Southern Pacific Railroad and Bridge, to be eligible for listing in the NRHP under Criterion A and that the proposed project will have no direct or indirect effect on the Southern Pacific Railroad. Therefore, FEMA is not planning additional identification or evaluation efforts and no protection is recommended for these resources. The results of HRA's architectural resources survey are included in Appendix IV of the report. FEMA also initiated consultation with the Oregon SHPO and the report has been included for their review.

Ms. Krossman
October 4, 2021
Page 4

Determination of Effects

Barring additional information from the Tribes and based on the assessment results, FEMA has determined the Undertaking will result in No Adverse Effect to historic properties. We respectfully request your review of AP's report and, if appropriate, your concurrence with FEMA's findings or additional comment. Should you have any questions, please contact Philip Fisher at (425) 471-9018 or philip.fisher@fema.dhs.gov. Thank you in advance.

Sincerely,

For

Science Kilner
Regional Environmental Officer

Cc. Anita Andazola, Project Manager USACE Portland District Regulatory Branch (via email)

Oregon State Historic Preservation Office



FEMA

October 4, 2021

Ms. Christine Curran
Deputy Oregon State Historic Preservation Officer
Oregon Parks and Recreation Department
725 Summer Street NE, Suite C
Salem, Oregon 97301-1266
Sent via email

RE: FEMA PDM 2018-7 Reedsport Levee Mitigation, City of Reedsport, Oregon

Dear Ms. Curran:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) proposes to fund the City of Reedsport (Applicant), through the Oregon Office of Emergency Management (OEM), for a levee mitigation project (Undertaking). This funding is available from FEMA's Fiscal Year 2018 Pre-Disaster Mitigation Grant Program (PDM). The proposed Undertaking is being reviewed pursuant to Section 106 of the National Historic Preservation Act (NHPA), as amended and the Programmatic Agreement (Agreement) in effect with your office and OEM. The City of Reedsport contracted with Anderson Perry & Associates, Inc. (AP) to complete a cultural resources assessment for the Undertaking and their draft report is enclosed. Also, AP secured the Oregon SHPO Archeological Excavation Permit No. 3034 for this survey.

Proposed Undertaking

This proposed Undertaking includes mitigation efforts to improve the existing City of Reedsport Levee. The project is located in Reedsport, Oregon (centered around Latitude 43.70399, Longitude - 124.10496) as shown on Figure 1 of the enclosed report. The Reedsport levee was constructed on highly organic soils with construction techniques from the 1920's through 1940's that are no longer accepted practice. This has resulted in 3 to 4 feet of settlement making critical parts of the levee very susceptible to failure even in floods much smaller than the 100-year event. The Reedsport levee must be raised back to the design height to avoid a major flood event. This project will provide the community with a levee system that will surpass the current design and significantly increase the longevity of the system and addressing, to the greatest extent possible, all other flood related threats. Work includes raising portions of the existing levee, improvements to pump stations, conveyance pipe work, additions to and improvement of flood walls, the addition of a drainage trench, construction of a proposed sand berm behind the levee, three (3) areas for staging of equipment, and two (2) proposed soil acquisition areas in the hills east of the city for material.

Area of Potential Effects

FEMA has determined that the Area of Potential Effects (APE) totals approximately 102.9 acres and includes the existing levee improvements, pump station improvements, conveyance pipe work, flood

wall addition and improvement, proposed drain trench, proposed sand berm, staging areas, and proposed soil acquisition areas as shown on Figures 2 and 3 of the enclosed report.

Historic Property Identification and Evaluation

The City of Reedsport contractor, AP, conducted a pedestrian survey, including 22 shovel test probes (STP) of the approximately 102.9 acres for the Undertaking. In addition, AP subcontracted Historical Research Associates (HRA) to conduct a compliance-level architectural resources survey of all historic-period built resources in and adjacent to the APE. In total, one historic age archaeological isolate and 18 historic-period built resources were identified.

Isolate 848-08-ISO-AP01 was identified in STP 15 and consists of two refit fragments of a milk glass Mason jar lid. Four radial STPs were placed around STP 15 and no cultural material was identified. According to historical accounts, it is likely that most of the tested sediment within the APE was historically dredged from the Umpqua River, and according to the subsurface testing, some of that same sediment has been disturbed and mixed in the modern era. Non-diagnostic materials (asphalt fragments, ceramic plate fragments, and Styrofoam) were observed in three STPs (3, 5, and 14) at various depths between 5 and 83 centimeters below surface. This is further supported by the fact that modern trash was found deeper in adjacent STPs than the isolate. The isolate is recommended as not eligible for inclusion in the National Register of Historic Places (NRHP) and no further work or protection is recommended. An isolate form has been prepared and will be submitted by AP.

Both AP and HRA recommend the Reedsport Levee as not eligible for listing in the NRHP. Based on archival research, it was determined that the levee was originally constructed from 1925 to 1945 and modified over the next 76 years with additional components constructed by the United State Army Corps of Engineers (USACE) in 1969. Research indicates that the Reedsport Levee is a contributing factor in the transition from floating houses and stilted homes to a more grounded land-based community, which is a significant event in the local history of Reedsport (Criteria A of the National Register Criteria for Evaluation).

However, despite the importance of this levee to the development and protection of the City of Reedsport, the levee has since suffered integrity loss to its original workmanship and design as a result of repeated flood events, reconstruction, and ongoing maintenance. Although the resource does retain its historic location, it currently exceeds its original footprint and volume due to scale upgrades during reconstruction which effects the space of its original design and covers the original materials from sight and the resource lacks in all aspects of integrity. Furthermore, the resources design has also been impacted by the additions and maintenance of technologies like concrete and metal floodwalls, gravity drains, pump stations, and piping that were not featured in the original construction. Due to the loss of integrity through repeated flood events, reconstruction, and maintenance, the resource no longer has the ability to convey significance regarding the transition from floating houses and stilted homes to a more grounded land-based community. Additionally, HRA emphasizes that the aspect of significance regarding the community's transition to waterfront development (Criterion A) is strongly connected to the levee's initial construction in the 1920s, and not the changes to the property that occurred in 1969. HRA recommends the Reedsport Levee not eligible for listing in the NRHP due to an irretrievable loss

of integrity from its initial period of construction (1925) and an inability to convey significance under any criteria from its period of evolution in 1969.

In addition to the Reedsport Levee, HRA identified 17 additional historic-period built resources within or adjacent to the APE during their architectural resources inventory. Based on the results, HRA recommends 16 of the historic-period built resources as not eligible for listing in the NRHP. This includes three previously recommended eligible properties now recommended as not eligible: 191 Riverfront Way, 130 Railroad Ave, and the Reedsport Levee "wall".

The building at 191 Riverfront Way was previously documented in the 2009 Reedsport Main Street RLS (Keeney and Osbourne 2009), at which time it was evaluated as eligible/contributing; however, at that time the construction date of the building was also incorrectly identified as ca. 1920. The storage building at 191 Riverfront Way was constructed ca. 1954. From its period of construction (ca. 1954), the building features integrity of location and setting, as it remains on its original parcel. It is currently used for storage, though was originally likely associated with the waterfront and adjacent pier; it is unclear if the building is currently associated with waterfront activities. The building no longer retains integrity of design, materials, workmanship, feeling, and association, due to the addition (by 1982) and alterations including replaced cladding and garage doors. HRA does not concur with the previous assessment and recommends 130 Railroad Ave. does not meet any criteria for individual listing in the NRHP. From its period of construction (ca. 1962), the building at 130 Railroad Ave. features integrity of location and setting, as it remains on its original parcel. The building no longer retains integrity of design, materials, workmanship, feeling, and association, due to alterations including replaced windows and doors. HRA does not concur with the previous assessment by Keeney and Osbourne (2009) and recommends 130 Railroad Ave. does not meet any criteria for individual listing in the NRHP. The Reedsport Levee "wall" specifically, was evaluated in context with the whole of the Reedsport Levee, which, as noted, is recommended not eligible for listing in the NRHP.

Historical Research Associates recommends that one built resource, Southern Pacific Railroad and Bridge, to be eligible for listing in the NRHP under Criterion A and that the proposed project will have no direct or indirect effect on the Southern Pacific Railroad. Therefore, FEMA is not planning additional identification or evaluation efforts and no protection is recommended for these resources. The results of HRA's architectural resources survey are included in Appendix IV of the report.

FEMA has also conducted consultation with the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians, the Confederated Tribes of the Grand Ronde, the Confederated Tribes of Siletz Indians of Oregon, the Coquille Indian Tribe, and the Cow Creek Band of Umpqua Tribe of Indians. We have also provided a copy of AP's report to the Tribes for review.

Christine Curran

October 4, 2021

Page 4

Determination of Effects

Barring additional information from your office or Tribes and based on the assessment results, FEMA has determined the Undertaking will result in No Adverse Effect to historic properties. We respectfully request your review of AP's report and, if appropriate, your concurrence with FEMA's findings or additional comment. Should you have any questions, please contact Philip Fisher at (425) 471-9018 or philip.fisher@fema.dhs.gov. Thank you in advance.

Sincerely,

For

Science Kilner
Regional Environmental Officer

Cc. Anita Andazola, Project Manager USACE Portland District Regulatory Branch



Oregon
Kate Brown, Governor

Parks and Recreation Department
State Historic Preservation Office
725 Summer St NE Ste C
Salem, OR 97301-1266
Phone (503) 986-0690
Fax (503) 986-0793
www.oregonheritage.org



November 4, 2021

Ms. Science Kilner
FEMA Region 10
130 228th Street SW
Bothell, WA 98021

RE: SHPO Case No. 21-1356
FEMA PDM 2018-7, Reedsport Levee Mitigation Project
Raising portions of the existing levee and improving components.
(21S 12w 34, 35) (22S 12W 1, 2, 3), Reedsport, Douglas County

Dear Ms. Kilner:

Thank you for submitting information for the undertaking referenced above. We concur that the isolate 848-08-ISO-AP01 is not eligible for the National Register of Historic Places and that there will be no adverse effect to historic properties for this undertaking.

This concludes consultation with our office under Section 106 of the National Historic Preservation Act (per 36 CFR Part 800) and/or Oregon Revised State (ORS) 358.905-961, ORS 358.653, and ORS 97.740-760 for archaeological resources. If you have not already done so, be sure to consult with all appropriate Native American tribes and interested parties regarding the proposed undertaking.

If the undertaking design or effect changes or if additional historic properties are identified, further consultation with our office will be necessary before proceeding with the proposed undertaking. Additional consultation regarding this case must be sent through Go Digital. In order to help us track the undertaking accurately, reference the SHPO case number above in all correspondence.

Our office has assigned SHPO biblio number 32003, details available on bibliographic database.

Please contact our office if you have any questions, comments or need additional assistance.

This letter refers to archaeological resources only. Comments pursuant to a review for above-ground historic resources will be sent separately.

Sincerely,

Jamie French, M.A.
Assistant State Archaeologist
(503) 979-7580
Jamie.French@oregon.gov

cc: Philip Fisher, FEMA Region 10

National Marine Fisheries Service



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OR 97232-1274

Refer to NMFS No:
WCRO-2021-01247

November 8, 2022

Science Kilner
Regional Environmental Officer
U.S. Department of Homeland Security
FEMA Region 10
130 – 228th Street, SW
Bothell, Washington 98021-8627

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the City of Reedsport Flood Reduction Resiliency, Lower Umpqua River (5th field HUC No.: 1710030308), Douglas County, Reedsport, Oregon

Dear Ms. Kilner:

Thank you for your letter of May 24, 2021, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.). The consultation is for the U.S. Department of Homeland Security's Federal Emergency Management Agency funding of the levee improvements for Reedsport Flood Reduction Resiliency.

The enclosed document contains a biological opinion (opinion) prepared by NMFS pursuant to section 7(a)(2) of the ESA. In this opinion, NMFS concluded that the proposed action is not likely to jeopardize the continued existence of Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*), southern distinct population segment North American green sturgeon (green sturgeon) (*Acipenser medirostris*), southern distinct population segment Pacific eulachon (eulachon) (*Thaleichthys pacificus*), or result in the destruction or adverse modification of OC coho salmon, green sturgeon, or eulachon designated critical habitat. We also concluded that the proposed action is not likely to adversely affect Southern Resident killer whale (*Orcinus orca*) or its designated critical habitat.

NMFS also reviewed the likely effects of the proposed action on essential fish habitat (EFH), pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act [16 U.S.C. 1855(b)], and concluded that the action would adversely affect the EFH of Pacific Coast salmon, Pacific Coast groundfish, and coastal pelagic species. Therefore, we have included the results of that review in section 3 of this document.

We have included five conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. Section 305(b) (4) (B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving these recommendations. If the response is inconsistent with the EFH conservation recommendations, FEMA must explain why the recommendations will not be followed, including the scientific justification for any disagreements over the effects of the action and the recommendations.

WCRO-2021-01247



In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH response and how many are adopted by the action agency. Therefore, we request that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

Please contact Michelle McMullin in the Oregon Coast Branch of the Oregon Washington Coastal Area Office, at 541-957-3378 or michelle.mcmullin@noaa.gov, if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kim W. Kratz".

Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

cc: Galeeb Kachra, FEMA
William Kerschke, FEMA
Deanna Schafer, City of Reedsport

**Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens
Fishery Conservation and Management Act Essential Fish Habitat Response for the**

City of Reedsport Flood Reduction Resiliency
Lower Umpqua River (5th field HUC No.: 1710030308)
Douglas County, Reedsport, Oregon

NMFS Consultation Number: WCRO-2021-01247

Action Agency: U.S. Department of Homeland Security's Federal
Emergency Management Agency


Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Oregon Coast coho salmon (<i>Oncorhynchus kisutch</i>)	Threatened	Yes	No	Yes	No
Southern distinct population segment North American green sturgeon (<i>Acipenser medirostris</i>)	Threatened	Yes	No	No	N/A
Southern distinct population segment Pacific eulachon (<i>Thaleichthys Pacificus</i>)	Threatened	Yes	No	Yes	No
Southern Resident killer whale (<i>Orcinus orca</i>)	Endangered	No	N/A	No	N/A

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast salmon	Yes	Yes
Pacific Coast groundfish	Yes	Yes
Coastal pelagic species	Yes	Yes

Consultation Conducted By: National Marine Fisheries Service,
West Coast Region

Issued By:


Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

Date: November 8, 2022

WCRO-2021-01247

The 80-page Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the City of Reedsport Flood Reduction Resiliency (WCRO-2021-01247) is available at NOAA's Repository at <https://repository.library.noaa.gov/view/noaa/47476>.

APPENDIX C: Floodplains and Wetlands Eight-Step Decision-Making Process

8-Step Analysis

Executive Order 11988 Floodplain Management Checklist (44 CFR Part 9)

Project Information

Project Title: **Flood Reduction and Resiliency Project**

Location: **Reedsport, Oregon**

Description of Proposed Action: **Modifications to the City's Levee System. See EA Section 3.2.**

Applicability

Actions which have the potential to affect floodplains or their occupants, or which are subject to potential harm by location in floodplains.

Will the proposed action potentially adversely affect the floodplain or support floodplain development? **YES**

Will the proposed action potentially be adversely affected by the floodplain? **YES. The Levees facilities can be affected by flooding events and associated hydrologic forces.**

Critical Action

Determine whether the proposed action is an action for which even a slight chance of flooding is too great. Critical actions must be reviewed against the 500-year floodplain.

Is the action a critical action? **Yes**

Step 1: Determine Proposed Action Location

Determine whether the proposed action is located in the 100-year floodplain (500-year floodplain for critical actions); and whether it has the potential to affect or be affected by a floodplain or wetland (44 CFR Section 9.7).

Floodplain Determination

Flood Hazard Data

Is the project located in a 100 year floodplain as mapped by a FEMA FIRM? **Yes. See EA Section 4.4.3.**

FEMA Flood Insurance Rate Map (FIRM) Panels Number 41019C0353G and 41019C0354G, effective, March 23, 2021 (Appendix A).

Is the project located in a 500 year floodplain as mapped by a FEMA FIRM? **Yes. See EA Section 4.4.3. The inner portions of the levee, including all four pump stations, are in areas identified on the FIRM as FEMA Zone X (500-year floodplain).**

Floodway/Coastal High Hazard Area

Is the project located in a floodway or coastal high hazard area? **No**

Wetland Determination

Is the project in a wetland as mapped by the National Wetlands Inventory? **YES. See EA Section 4.4.2**

Scope

All 8 Steps required

Step 2: Early Public Notice

Notify the public at the earliest possible time of the intent to carry out an action in a floodplain and involve the affected and interested public in the decision-making process (44 CFR Section 9.8).

Was notice provided as part of a disaster cumulative notice?

Not applicable for Pre-Disaster Mitigation (PDM) Grant Program

Was a project specific notice provided? Yes.

The World newspaper of general circulation published at Coos Bay Oregon. Published December 6, 2018

Additional notices will be provided as part of the NEPA public comment process.

Step 3: Analysis of Practicable Alternatives

Identify and evaluate practicable alternatives to locating the proposed action in a floodplain (including alternate sites, actions, and the “no action” option). If a practicable alternative exists outside the floodplain, FEMA must located the proposed action at the alternative site (44 CFR Section 9.9).

See Section 3 of the EA, which describes the no action alternative, the proposed action, and alternatives considered and dismissed.

Alternative Options

Is there a practicable alternative site location outside the 100-year floodplain (or 500-year floodplain for critical actions?) **No.**

Is there an alternative action which has less potential to affect or be affected by the floodplain? **No.**
The action is associated with an existing levee that is located adjacent to a special flood hazard (Umpqua River). The levee protects public and private property and infrastructure that is landward of the facility. Because it is impracticable and monetarily infeasible to move the exiting public and private infrastructure to relocate the levee, there is no practicable alternative to the proposed action that would meet the purpose & need to restore the revetment to protect public and private land and infrastructure.

Is the “no action” alternative the most practicable alternative? **No. See Section 3.1**

Step 4: Identify Impacts

Identify the potential direct and indirect impacts associated with the occupancy or modification of the floodplains and the potential direct and indirect support of floodplain development that could result from the proposed action (44 CFR Section 9.10).

Is the proposed action based on incomplete information? **No**

Is the proposed action in compliance with the NFIP? **Yes. The City will submit for a CLOMR and LOMR-F as described in Section 4.4.3 and obtain a local floodplain permit.**

Does the proposed action increase the risk of flood loss? **No.**

Will the proposed action result in an increased base discharge or increase the flood hazard potential to other properties or structures? **No/not anticipated.**

Does the proposed action minimize the impact of floods on human health, safety, or welfare? **Yes.**

Will the proposed action induce future growth and development, which will potentially adversely affect the floodplain? **No. The project is in an already built-up area and the project will rebuild pre-existing levees.**

Does the proposed action involve dredging and/or filling of a floodplain? **Yes. 0.355 acres of impact are**

unavoidable. See Section 4.4.3.

Will the proposed action result in the discharge of pollutants into the floodplain? **Yes. Construction actions and in-water work have the potential to result in short-term release of sediment, however, erosion and in-water work BMPs have been established to minimize any inputs.**

Does the proposed action avoid the long and short term impacts associate with the occupancy and modification of floodplains? **No. The project does not change the previous occupancy and modification of the floodplain.**

Will the proposed action forego an opportunity to restore the natural and beneficial values served by floodplains? **No. The proposed project will rebuild pre-existing levees.**

Does the proposed action restore and/or preserve the natural and beneficial values served by floodplains? **No, the proposed action will not restore the natural and beneficial values (see Section 4.4.3) but will help preserve the water quality as discussed in Section 4.4.1.**

Will the proposed action result in an increase to the useful life of a structure or facility? **Yes, to the levees and pumping stations.**

Will the action encroach on the Floodway in manner that causes any increase of flood levels within the community during the occurrence of the base flood discharge? **No. There is no encroachment into the floodway, and based on the scope of proposed actions and mapped special flood hazards, increase in flood levels within the community is not anticipated.**

Step 5: Minimize Impacts

Minimize the potential adverse impacts and support to or within floodplains as identified under Step 4; restore and preserve the natural and beneficial values served by floodplains (44 CFR Section 9.11).

Minimization Measures

Were flood hazard reduction techniques (see NFIP technical bulletins) applied to the proposed action to minimize flood impacts? Note: New construction or substantial improvement of a structure (i.e. walled or roofed building) requires elevation or flood proofing (non-residential), except for listed Historic Structures. **Yes. The building of the levees fulfils this function.**

Identify any flood hazard reduction techniques required as a condition of the grant: **N/A**

Were avoidance and minimization measures applied to the proposed action to minimize the short-term and long-term impacts on the floodplain? **Yes. See Section 4.4.3. Most of the work on the Reedsport Levee and pump stations would occur on the land side of the levee to decrease impacts on floodplains near the proposed project.**

Were measures implemented to restore and preserve the natural and beneficial values of the floodplain? **Yes. See Section 4.4.1 Water Quality**

Step 6: Reevaluate Practicable Alternatives

Reevaluate the proposed action to first determine if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain values. Second, evaluate if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. FEMA shall not act in a floodplain unless it is the only practicable location (44 CFR Section 9.9)

Is the action still practicable at a floodplain site in light of the exposure to flood risk and ensuing disruption of natural values? **Yes.**

Is the floodplain site the only practicable alternative? **Yes**

Is there any potential to limit the scope or size of the action to increase the practicability of previously-rejected non-floodplain sites or alternative actions? **No. The levee alignment pre-exists this project.**

Can minimization of harm to or within the floodplain be achieved using all practicable means? **Yes**

Does the need for action in a floodplain clearly outweigh the requirements of Executive Order 11988? **Yes**

Step 7: Final Public Notice

Prepare and provide the public with a finding and public explanation of any final decision that the floodplain is the only practicable alternative (44 CFR Section 9.12).

Was notice provided as part of a disaster cumulative notice? **N/A.**

Was a project specific notice provided? **Yes**

If yes, select the type of notice: **Public Notice dated November 1, 2022, of the availability of the Draft Environmental Assessment and accompanying 8-step analysis; and a public meeting to be held in Reedsport on November 15, 2022.**

After providing the final notice, FEMA shall, without good cause shown, wait at least 15 days before carrying out the proposed action.

Step 8: Implementation

Review the implementation and post-implementation phases of the proposed action to ensure that the requirements stated in 44 CFR Section 9.11 are fully implemented. Oversight responsibility shall be integrated into existing processes.

Was grant conditioned on review of implementation and post-implementation phases to ensure compliance of Executive Order 11988? **Yes**

The following conditions are not reflected in the Scope of Work and are required: **N/A**

APPENDIX D: Public Notices

Public Notices

PUBLIC NOTICE

**Federal Emergency Management Agency
Draft Environmental Assessment
City of Reedsport, Oregon
Flood Reduction and Resiliency Project
PDMC-PJ-10-OR-2018-007**

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) is proposing to fund the City of Reedsport, Oregon for modifications to its levee system as part of a broader flood and seismic hazard resilience strategy. Funding would be provided through the Oregon Office of Emergency Management (OEM) under FEMA's Pre-Disaster Mitigation Grant Program as authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

FEMA has prepared a Draft Environmental Assessment (Draft EA) for the proposed project pursuant to the National Environmental Policy Act of 1969 and FEMA's Implementing Instruction 108-1-1. The Draft EA assesses the potential impacts of the proposed action on the human and natural environment. It evaluates alternatives for compliance with applicable environmental laws and executive orders, including the National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Clean Water Act (CWA), and Executive Orders 11990 (Protection of Wetlands), 11988 (Floodplain Management), and 12898 (Environmental Justice).

FEMA is accepting comments on the Draft EA from the public; local, state and federal agencies; Tribes; and other interested parties. FEMA will use these comments to inform its decision-making. Please provide comments in writing and send to the FEMA contact listed below. Alternatively, please attend the public open house in person to learn about the project and submit comments.

The Draft EA will be available to the public for review after November 1, 2022 on the following websites:

- FEMA: <https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-repository> (search for Reedsport)
- City of Reedsport: <https://www.cityofreedsport.org>

A paper copy of the Draft EA will be available for review after November 1, 2022 at:

- Reedsport City Manager's Office at 451 Winchester Avenue
(Monday-Friday 9am-5pm, closed 12pm-1pm)
- The Lower Umpqua Library at 395 Winchester Avenue
(Tuesday through Friday 10am-6pm and Saturday 10am-2pm).

Anyone requiring a hard copy should contact either of the following, at least 15-days before the comment due date:

- Courteney Davis, City Manager's Officer (541) 271-3603, cdavis@cityofreedsport.org
- FEMA Region 10 Environmental and Historic Preservation Branch, FEMA-R10-EHP-Comments@fema.dhs.gov

AFFIDAVIT OF PUBLICATION

The World

Country Media Inc - Coos County
172 Anderson Avenue. Coos Bay, OR 97420
P.O. Box 1840, Coos Bay, OR 97420

STATE OF OREGON - COUNTY OF COOS

City of Reedsport
451 Winchester Ave.,
Reedsport, OR 97467

Natural Resource Specialist
Anderson Perry & Associates Inc.
1901 N. Fir St,
PO Box 1107
La Grande, OR 97850

REFERENCE: 40025/ 352051

I, **Dawn Smith**, first duly sworn, deposed and say that I am the Legal Advertising Clerk for THE WORLD, a newspaper of general circulation published at Coos Bay, Oregon, in the aforesaid county and state; that I know from my personal knowledge that the matter of the **Public meeting** copy was published in the entire issue of said newspaper one time(s) in the following issue(s):

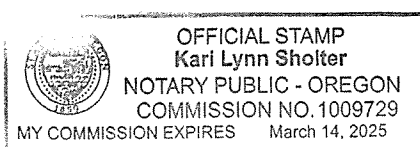
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Legal Clerk, **Dawn Smith**, Subscribed and sworn before
on this 1st of November 2022

Kari Lynn Sholter
Notary Public of Oregon-My Commission expires

March 14, 2025



PUBLIC MEETING
City of Reedsport, Oregon -
Flood Reduction and Resiliency
Project
Tuesday November 15, 2022
from 5:30pm to 7:30pm
Reedsport Community Center
451 Winchester Avenue,
Reedsport, Oregon 97467
The City of Reedsport will provide
an overview of the proposed
flood reduction resiliency project
and the Federal Emergency
Management Agency will
summarize the key findings of the
Draft Environmental Assessment.
The public will have the
opportunity to ask questions and
submit public comments.
A public notice with a link to the
draft Environmental Assessment
is available at:
FEMA: <https://www.fema.gov/-emergency-managers/practitioners/-environmental-historic/nepa-repository> (search for Reedsport)
City of Reedsport:
<https://www.cityofreedsport.org>
For more information, please
contact Courteney Davis, City
Manager's Officer
(541) 271-3603
cdavis@cityofreedsport.org
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