Draft Environmental Assessment

Westport Water Supply Project
FEMA-1733-DR-OR (Public Assistance)

April 2010

FEMA

U.S. Department of Homeland Security
FEMA Region X
130 228th Street SW
Bothell, WA 98021

Draft Environmental Assessment
Westport Water Supply Project

Westport, Oregon
FEMA-1733-DR-OR (Public Assistance)

Prepared for:

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Contents

Appendices

Tables

Figures

Acronyms and Abbreviations

APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
BMP	best management practices
BPA	Bonneville Power Administration
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CMP	corrugated metal pipe
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FR	Federal Register
gpm	gallons per minute
HUC	Hydrologic Unit Code
LCR	Lower Columbia River
MBTA	Migratory Bird Treaty Act
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NOAA Fisheries	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSP	No State Permit
OAR	Oregon Administrative Rules
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODSL	Oregon Department of State Lands
OPRD	Oregon Parks and Recreation Department
ORNHIC	Oregon Natural Heritage Information Center
ORS	Oregon Revised Statutes
OWRD	Oregon Water Resources Department

PA	Public Assistance
psi	pounds per square inch
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RMP	Recreation Management Plan
SHPO	State Historic Preservation Office
SPCC	Spill Prevention and Containment Plan
TCLP	Toxicity Characteristic Leaching Procedure
TESC	Temporary Erosion and Sediment Control Plan
TMDL	Total Maximum Daily Load
USC	United States Code
USFWS	United States Fish and Wildlife Service
Westport	Westport Water Association
WQC	Water Quality Certification

1.0 Purpose and Need for Action

1.1 INTRODUCTION

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) is proposing to support the Westport Water Association (Westport) by providing partial funding for an alternate project to redevelop an existing domestic water supply system in Clatsop County, Oregon (see Figures 1.1-1 and 1.1-2). Severe storms in the region during the period December 1 through 17, 2007, caused extensive flooding, landslides, and mudslides. A presidential disaster was declared in the region on December 8, 2007, making funds available to public entities for emergency work and repair or replacement of disaster-damaged facilities.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1973 (Stafford Act), as amended, provides federal assistance programs for both public and private losses sustained in disasters. FEMA provides assistance to private citizens, public entities, and non-profit groups following declared disasters. Under the Federal Disaster Public Assistance (PA) program, FEMA provides federal funding for repairs to restore public property and facilities to their pre-disaster condition or function. The purpose of FEMA's PA program is to assist communities in recovering from damages caused by natural disasters. Under the program, FEMA can help public entities develop a project proposal or an alternate project proposal.

1.2 AUTHORITY AND JURISDICTION

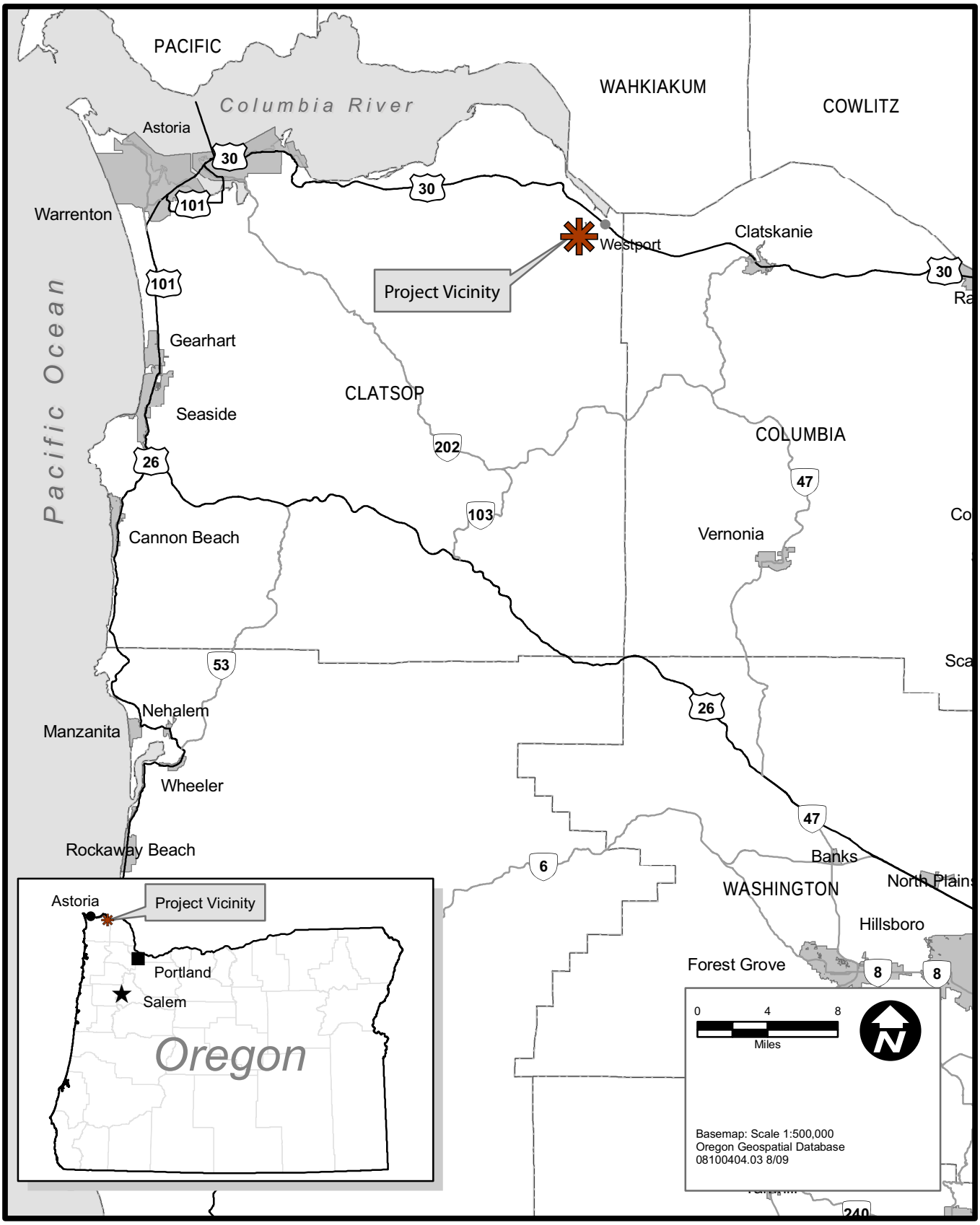
The National Environmental Policy Act (NEPA) of 1969 requires FEMA to evaluate the effects of the potential alternatives of a proposed action on the human and natural environments. Three alternatives for the Westport water supply project are compared in this Environmental Assessment (EA): a No Action Alternative (Alternative A), the Proposed Action (Alternative B), and Repair the Road and Water Facilities (Alternative C). The NEPA EA process allows FEMA to determine whether to issue a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), which is required under NEPA for federal actions that may have a significant environmental effect.

1.3 PROPOSED FEDERAL ACTION

The proposed federal action by FEMA is to provide partial project funding to Westport to implement an alternate project to replace an existing water supply facility that was damaged during floods in 2007 (FEMA disaster project 1733-DR-OR).

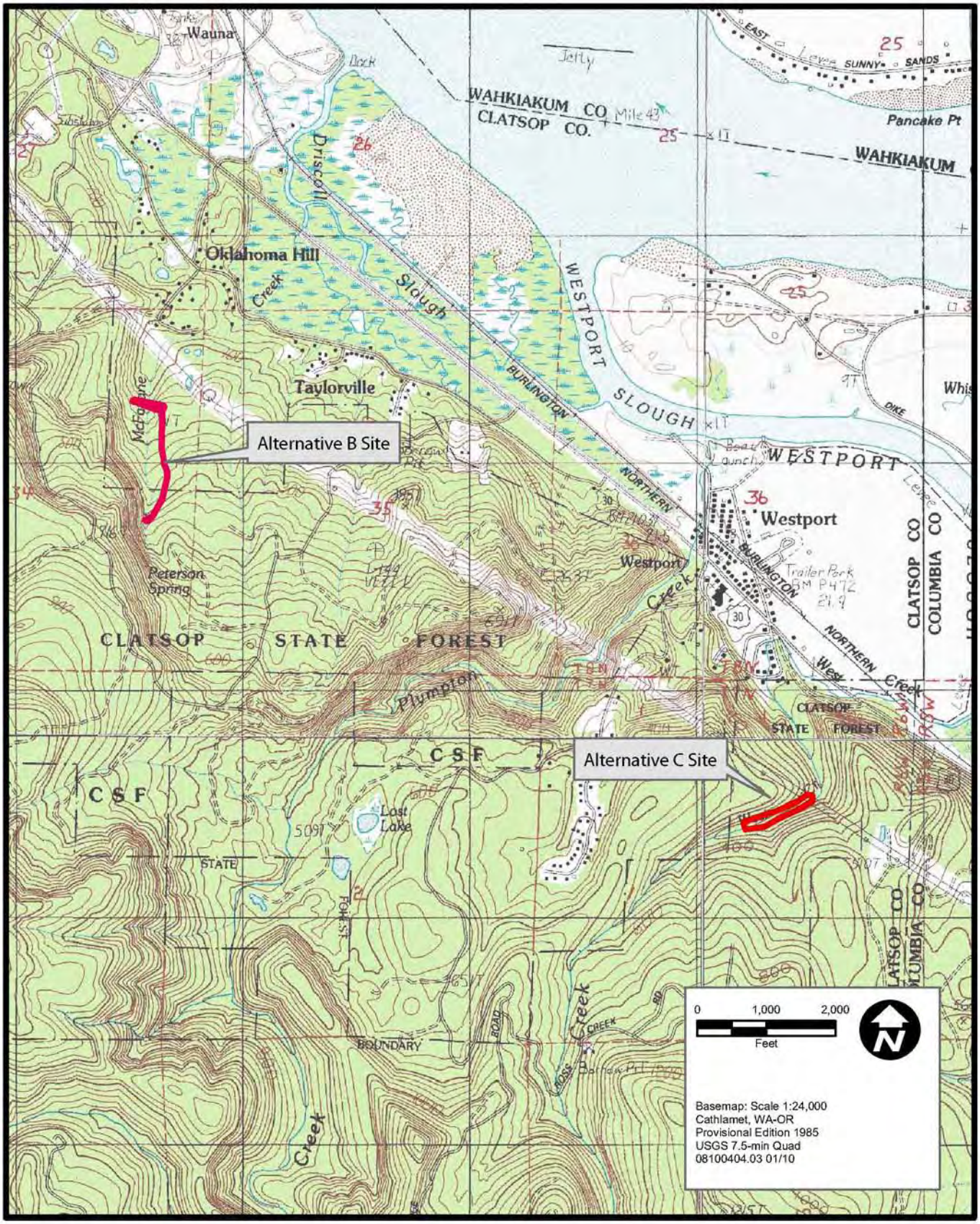
1.4 PURPOSE AND NEED

The purpose of the FEMA PA program is to assist local communities that request funding to recover from damages caused by presidentially declared disasters. The purpose of the proposed project is to provide FEMA PA program funding to Westport to meet their water supply facility needs. Westport has a need to provide a safe, continuous, and cost-effective domestic water supply to customers in its service area in Westport, Oregon; as of July 2008, the Westport water supply system was supplying water to 162 customers and consuming approximately 1.5 million gallons per month.



Project Vicinity Map

Figure 1.1-1



Site Locations

Figure 1.1-2

1.5 BACKGROUND AND LOCATION

Rainstorms in December 2007 caused severe flooding, landslides, and mudslides within several communities and counties in Oregon, including Westport and Clatsop County. Flooding from these storms caused extensive damage to the existing water supply facilities and access owned and operated by Westport. In particular, the storms caused extensive flooding along West Creek, which eroded approximately 565 linear feet of the access road (to depths of 20-30 feet) to Westport's existing 77,000-gallon water supply reservoir. Landslides also closed the access road and damaged a water pipeline that connected the water supply reservoir to the 200,000-gallon Westport water tank, rendering the water supply system unusable. The existing water supply facilities are located in the Plympton Creek watershed in the Lower Columbia-Clatskanie sub-basin of the Lower Columbia basin.

In the interim, Westport has been obtaining water through a temporary emergency intertie between Wauna, Oregon, and the community of Westport. Engineering estimates indicate that restoring the damaged access road and water supply facilities is not in the public interest, because of cost and technical constraints. Therefore, Westport (the Applicant) is proposing an alternate project to construct, operate, and maintain a domestic water supply system. Under the alternate project, Westport would enter into an agreement with the Wauna Water District (Wauna) to share use of two developed water supply springs in the project area – Peterson and Knapp springs. As part of the agreement, Westport would develop and construct water quality upgrades to the existing Wauna water supply system at the two springs. System upgrades currently proposed as part of the alternate project include constructing new access roads, upgrading existing access roads, replacing water supply pipelines, and redeveloping existing facilities at both Knapp and Peterson springs (described in more detail in Section 2.4).

The State of Oregon issued a certificate of water right to Wauna that confirms the right to use the waters of the Peterson Springs area for Quasi-Municipal use. The right was perfected under Permit S-43564. The date of priority is January 14, 1972. In 1972, the amount of water to which the right is entitled was limited to an amount actually used beneficially, and shall not exceed 0.18 cubic foot per second (cfs) or its equivalent in case of rotation, measured at the point of diversion. Construction of the Peterson Springs development began in July 1973 and was completed before September 30, 1974. Construction consisted of a 6-inch cast iron and 6-inch polyvinyl chloride (PVC) pipe gravity system serving 70 homes. In 1978, the amount of water was increased to 0.5 cfs. Remarks in the application to appropriate water (Permit S-46756) indicate that Peterson Springs is the primary source of water; Knapp Springs (Permit 30725) is a supplemental system.

Knapp Springs was proposed to be developed by Joan and Howard Knapp in 1965 for group domestic use and was assigned to Wauna in 1974. The application to appropriate the public waters of the State of Oregon states that spring water will be collected in a concrete box, a 4-inch pipeline, and approximately 5,000 feet of pipe length. Estimated capacity is 0.335 cfs. Based on available data, it appears that the facilities at Knapp Springs were constructed at the same time as Peterson Springs. Although Wauna lost its right to Knapp Springs several years ago, Wauna authorized Westport to apply for a Limited License (LL1194) to use 1 cfs from Knapp Springs for Quasi-Municipal use. Westport filed the application on April 1, 2009 and plans to file the permit application as soon as FEMA has completed its review.

The current Wauna water supply facilities include the following: Peterson Springs and Knapp Springs, a water tank, water pipelines, and an access road to Peterson Springs. The areas in the vicinity of the springs, water tank, and water supply infrastructure were cleared and graded to install the water supply facilities. Soil, especially along the road corridor, was compacted, and spring water was diverted into the water supply system. Peterson Springs, located at the headwaters of McFarlane Creek, was developed in the early 1970s to provide water for Wauna. Water system facilities include a spring box and collection pipes at Peterson Springs, an outlet pipe to a junction box, a junction box, a water tank, a buried distribution pipeline running under the access road from the springs to the water tank, vaults, and additional buried pipelines conveying water to the Wauna water supply system. To develop Knapp Springs, the slopes surrounding the springs and the west bank of McFarlane Creek were altered to install intake boxes at two spring locations, and pipelines. Knapp Springs is not operational and no water is currently being diverted. The water system facilities for both Peterson and Knapp springs have not been upgraded since the mid 1970s and are not currently well maintained.

The 2.9-acre project area for the Proposed Action for the Westport water supply project is defined as the following: an area including and surrounding Peterson Springs; a 50-foot wide corridor along an existing access road, extending approximately 1,800 feet that connects Peterson Springs with the existing Wauna water tank; and an area including and surrounding Knapp Springs and old and new connections with the Wauna water tank. The project area for the Proposed Action is located in Township 8 North, Range 6 West, Section 34, Willamette Meridian. The damaged road and water supply facilities are located in Township7 North, Range 6 West, Section 1.

1.6 SCOPING AND ISSUE SUMMARY

1.6.1 SCOPING

FEMA initiated the scoping process by sending out via email a scoping letter on September 1, 2009, to agencies and interested parties. The scoping letter explained the NEPA process and the proposal for implementing the alternate project to provide a domestic water supply. The key stakeholders, agencies, and Tribes were afforded 30 days to provide comments. The scoping letter and all comments received can be found in Appendix A.

The purpose of the scoping process was to inform agencies and stakeholders about the proposed project and allow the public, agencies, and Tribes to provide comments regarding the scope of the project, the proposed alternatives, and any issues of concern that should be considered in the NEPA EA. The public involvement process is fully described in Chapter 4 (*Consultation and Coordination*).

1.6.2 SUMMARY OF ISSUES

FEMA has identified a number of issues that need to be addressed in this EA. There were four responses to the scoping letter regarding the project (Table 1.6-1). Copies of the response letters are provided in Appendix A.

Table 1.6-1. Summary of Public Scoping Response Issues.

Agency	Issue or Comment Summary	Response in this EA
Coquille Indian Tribe	Project falls outside of the Tribe's area of interest; please refer all tribal comments to the Confederated Tribes of Siletz, the Confederated Tribes of Grand Ronde, and any other tribes that may have interest in the Westport area.	FEMA is coordinating with other tribes with a potential interest in the project; see Section 3.9 (*Cultural Resources*) and Chapter 4 (*Consultation and Coordination*).
Oregon Department of Environmental Quality (2 letters)	No obvious concerns regarding RCRA. If historic contamination is encountered on site, TCLP testing should be done and ODEQ should be contacted.	Hazardous waste issues for the project are addressed in Section 3.1 (*Geology and Soils*); DEQ will be contacted in the event that contamination is encountered on site.
State Historic Preservation Officer	Additional information will be required for SHPO to conduct a review of the project.	Additional information for SHPO review is included in Section 3.9 (*Cultural Resources*) of the EA; also see Chapter 4 (*Consultation and Coordination*). As described, FEMA has conducted additional consultation directly with the SHPO during preparation of the EA, and FEMA is sending the SHPO a copy of the EA and separate cultural resources inventory and evaluation report for their review and concurrence.

RCRA = Resource Conservation and Recovery Act; TCLP = Toxicity Characteristic Leaching Procedure; ODEQ = Oregon Department of Environmental Quality; SHPO = State Historic Preservation Office.

Based on a preliminary screening of resources in the project area and site reconnaissance, this EA includes an analysis of the following resources:

- Geology and soils
- Hydrology, water quality, and floodplains
- Vegetation and wetlands
- Fish and wildlife
- Land use and recreation
- Public utilities
- Transportation and access
- Environmental justice
- Cultural resources
- Cumulative effects

The following resources were evaluated during the screening process, and it was determined that these resources would not be affected by the project: topography, air quality and noise, endangered species, and visual quality. Thus, these resource areas are not covered further in this document.

1.7 RELATED ACTIVITIES

Wauna has agreed to provide water to Westport in exchange for Westport upgrading and maintaining the Wauna water system. If the Proposed Action as described in Chapter 2 is approved and funded by FEMA, Westport plans to abandon its existing water reservoir, related water supply facilities, and access road as required by local, state, and federal regulations. Westport would not abandon its water right at West Creek until it is assured of an adequate alternate source. Westport's activities related to abandoning its West Creek facilities are not part of the FEMA action and are not evaluated as part of this EA.

2.0 Alternatives, Including the Proposed Action

The following section describes the alternatives being considered for the Westport water supply project, and the process that was used to develop these alternatives. Three alternatives are analyzed: Alternative A (the No Action Alternative), Alternative B (the Proposed Action), and Alternative C (repairing the damaged road and water facilities). The following narrative describes the alternatives development process, and the three alternatives.

2.1 ALTERNATIVES DEVELOPMENT

NEPA requires federal agencies to consider a reasonable range of alternatives that meet the project purpose and need. The NEPA alternatives development process allows FEMA to work with interested agencies, Tribes, the public, and other stakeholders to develop alternatives that respond to identified issues. FEMA coordinated with Westport to develop the Proposed Action.

2.2 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

FEMA reviewed several other alternatives but eliminated them from further consideration in this EA because they did not meet the project purpose and need, they were not practical, or they were not applicable to FEMA funding under its PA program. These alternatives are listed and described below.

- **Eliminated Alternative 1** – **Develop new alternate access road to existing water supply facilities in the West Creek drainage**. This alternative was deemed impractical because of the difficulty in building a new road along unstable slopes, the inherent construction effects on the creek from needed armoring and vegetation removal, and the general unsustainable nature of such a road.

- **Eliminated Alternative 2** – **Develop surface water source from Plympton Creek**. This alternative was deemed impractical due to the presence of anadromous fish in Plympton Creek, the drainage just west of West Creek. Water diversions from the creek would be severely restricted because of the potential to affect fish and aquatic habitat. Given this, the alternative was not studied further.

- **Eliminated Alternative 3 – Improve the temporary intertie between Wauna and Westport to permanent standards**. While this alternative provides a temporary solution to the immediate lack of water supply for Westport, it does not address the need for a long-term reliable water supply of sufficient supply, particularly considering the future growth of Westport. The demand for water in the drier times of the year, particularly August, approaches the current capacity of the intertie and would not be sufficient to supply future Westport demands.

- **Eliminated Alternative 4** – **Upgrade facilities at either Knapp or Peterson Springs, but not both**. This alternative would only serve as a partial solution to supplying both water districts (a combined total of approximately 310 households); the capacity of both springs is

necessary to adequately serve both water districts during August. It therefore does not meet the purpose and need for the project and was eliminated from further consideration.

- **Eliminated Alternative 5 – Install new wells and supply infrastructure**. Installation of new wells and related infrastructure would require a number of long-term studies of groundwater capacity, engineering design, and permitting. It is not known at this time if there is available groundwater capacity to serve Westport's current and future needs and if Westport can obtain the necessary permits for water withdraws from the Oregon Department of Environmental Quality (ODEQ). In addition, the costs of studies and engineering design would be much greater than those of the Proposed Action, and the timeframe to conduct the work would be several years.

2.3 ALTERNATIVE A - NO ACTION

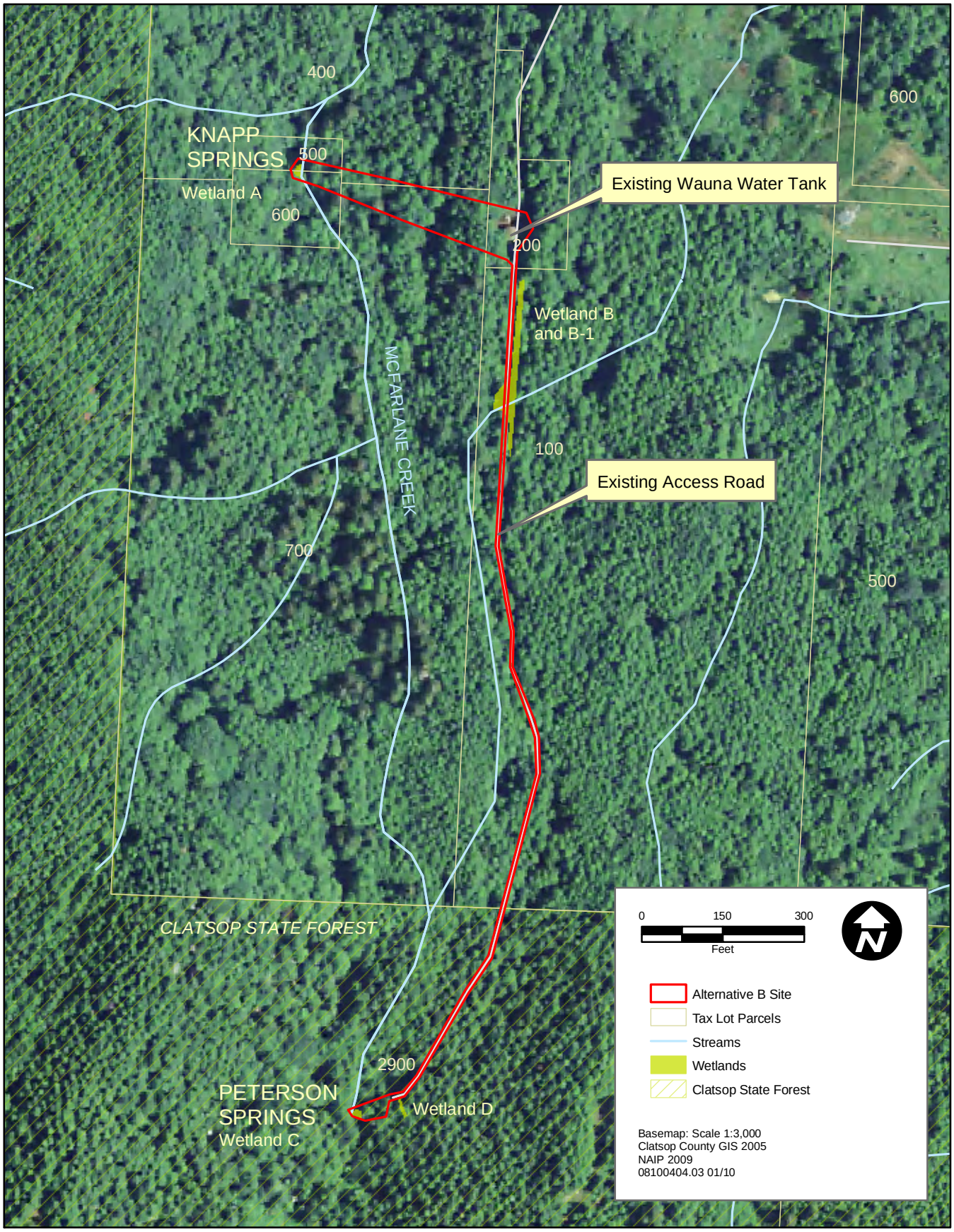
Under the No Action Alternative, FEMA would not provide federal funds to Westport to repair the existing road and water facilities or to develop and construct improvements to the existing Wauna water supply system. Westport would continue to rely on the temporary intertie with Wauna. The temporary intertie does not provide sufficient capacity in August for the combined systems, even without future population increases.

2.4 ALTERNATIVE B - PROPOSED ACTION

Under the Proposed Action, FEMA would provide funding to Westport to develop and construct improvements to existing water supply facilities owned by Wauna. The Alternative B site is illustrated in Figure 2.4-1. The proposed facilities, as currently designed, are summarized below.

At Knapp Springs, which is located on Wauna property, specific upgrades and new facilities include the following:

- Excavate one 40-foot-long intercepting ditch and berm above both spring collector boxes (north and south spring collector boxes).
- Upgrade existing concrete spring junction box by replacing pipes, valves, meter, and roof; and installing a high access opening with lockable door.
- Upgrade the north and south spring collector boxes by replacing boxes and pipes, welding connections to be water tight, stabilizing soils around boxes, and installing new galvanized screens at bottom of boxes.
- Replace pipe from the north and south spring collector boxes to junction box.
- Install new 30-foot pipe from existing junction box over McFarlane Creek to new pump house.
- Construct new pump house (8 feet by 10 feet).
- Install approximately 80 linear feet of new fencing around the springs for security.



Alternative B Site

Figure 2.4-1

At the existing Wauna water tank, which is located on Wauna property, specific upgrades include the following:

- Install new water lines at the existing Wauna water tank.
- Install valve gates for new water line from Knapp Springs.
- Thoroughly flush, chlorinate, and pressure test all water lines per Oregon plumbing specialty code.
- Repair and clean the Wauna water tank, inlet, outlet, overflow, and drain pipes.

Between Knapp Springs and the Wauna water tank, which is on private land but located within a 10-foot-wide easement, specific improvements include the following:

- Construct new access road (400 feet long, 9 feet wide) to Knapp Springs; this includes clearing and grubbing 0.08 acre of forested vegetation, and surfacing with gravel.
- Excavate a 3-foot deep, 2.5-foot wide, 400-foot long trench for laying the water pipe and power conduit.
- Install approximately 400 linear feet of 3-inch diameter PVC water outlet pipe, and associated sensor cable and power conduit.

At Peterson Springs, which is located on Clatsop State Forest land managed by the Oregon Department of Forestry (ODF) and accessed by Wauna through an easement, specific upgrades include the following:

- Excavate one 25-foot-long intercepting ditch and berm above the spring collector box.
- Replace existing spring collector box.
- Stabilize slope with clean rock.
- Excavate a 3-foot deep, 2-foot wide, 60-foot long trench for removing existing pipe and installing new pipe.
- Replace approximately 60 linear feet of existing outlet pipe and connect to existing PVC pipe.
- Install approximately 97 linear feet of new fencing around the springs for security.

Along the existing gravel road between Peterson Springs and the Wauna water tank, which is located on private land but located within a 50-foot easement, specific improvements include the following:

- Grade and gravel existing access road.
- Construct new compacted gravel turnout.
- Construct new chlorination building at the Peterson Springs site (8-foot by 10-foot Tuffshed model).
- Connect new chlorination building to existing water pipe.

Westport would adhere to state and federal regulations for construction and operation of the proposed project. In addition, the following best management practices (BMPs) would be implemented during construction-related activities:

- **Erosion and Sediment Control**: These specifications require the contractor to implement a Temporary Erosion and Sediment Control (TESC) Plan to comply with federal, state, and local laws, rules and regulations, and the National Pollutant Discharge Elimination System (NPDES) General Construction Permit regarding erosion prevention and sediment control for on-site construction activities. Erosion and sediment control specifications typically focus on soil and slope protection and stabilization measures, and site restoration methods (including planting materials and methods).

- **Environmental Protection**: These specifications direct the contractor to implement measures and comply with laws and regulations designed to protect sensitive environmental resources. To ensure that all construction-related pollutants are controlled and contained, a project-specific Spill Prevention, Control, and Countermeasures (SPCC) plan would be developed and implemented. This specification section addresses hazardous waste and hazardous substances; pollution control; protection of fish, wildlife, and plants; protection of wetlands; and protection of sensitive cultural resources and sites; as well as other applicable safety, health, and human resources issues.

- **Clearing and Grubbing:** These specifications direct the contractor regarding clearing operations, including removing, preserving, and trimming of trees and other vegetation. This specification section also addresses grubbing operations, and provides limits on the contractor's area of approved activity and scope of actions. These specifications provide protection to vegetation both inside and outside of approved work areas.

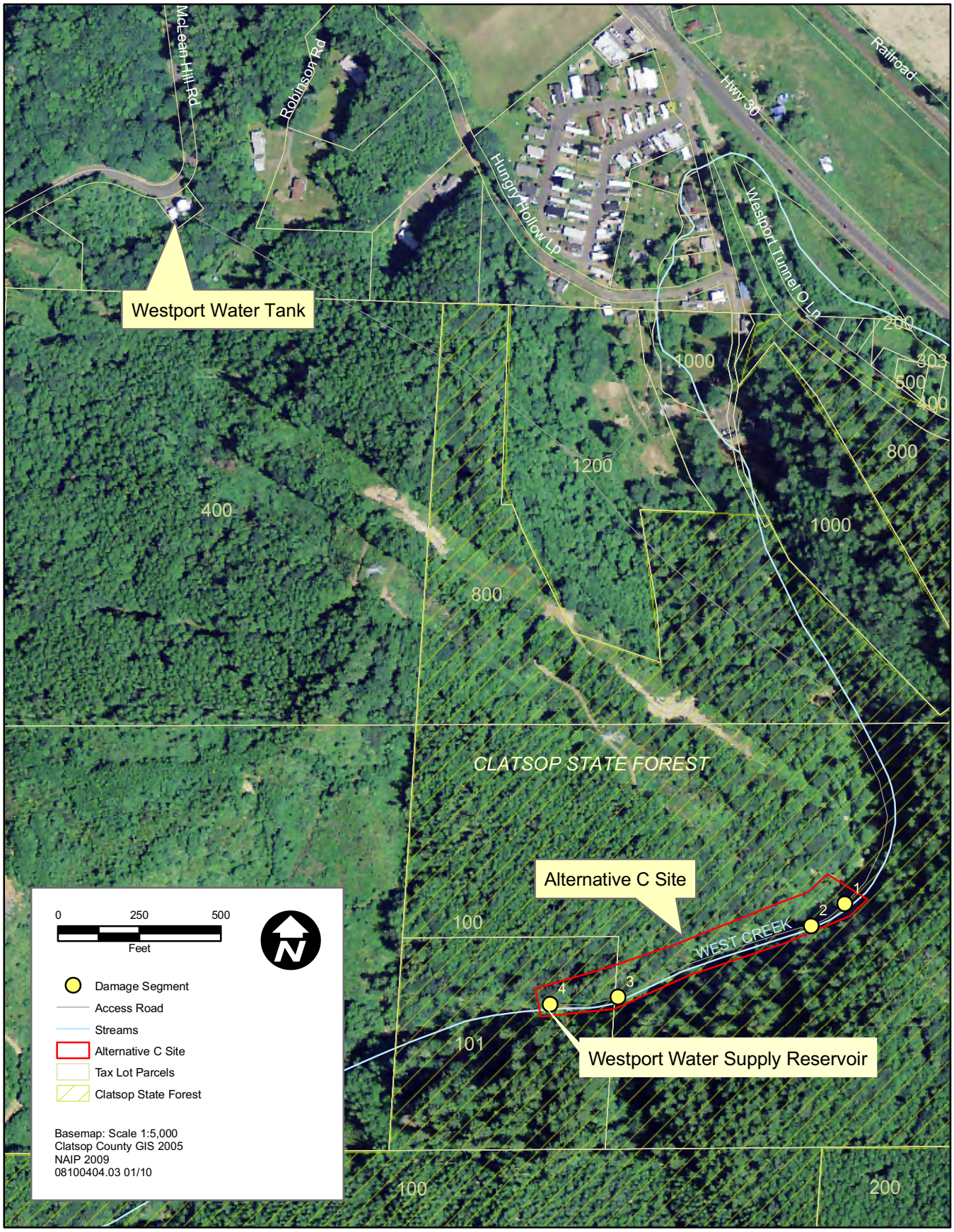
Under Alternative B, Westport would abandon its existing water reservoir, related water supply facilities, and access road. Westport's activities related to abandoning the West Creek facilities are not part of the FEMA action and are not evaluated as part of this EA. However, Westport would need to comply with local, state, and federal regulations regarding abandonment activities.

2.5 ALTERNATIVE C – REPAIR ROAD AND WATER FACILITIES

Under Alternative C, FEMA would provide funding to Westport to repair the damaged access road and water supply facilities in their current footprint, restoring them to predisaster condition. Based on preliminary engineering estimates and plans prepared for this alternative, the anticipated components of Alternative C are summarized below.

Flooding from the 2007 storms caused extensive damage to the existing water supply facilities and access road to Westport's existing 77,000-gallon water supply reservoir. In particular, flooding along West Creek eroded approximately 565 linear feet of the access road (to depths of 20-30 feet), in four distinct segments. Landslides also closed the access road and damaged a water pipeline that connected the Westport water supply reservoir to the Westport water tank on McLean Hill Road, rendering the water supply system unusable. As part of Alternative C, the access road and water pipeline would be repaired.

The damaged access road runs parallel to West Creek, a tributary to Westport Slough (which drains to the Columbia River). The road provides access from Hungry Hollow Loop Road to the Westport water supply reservoir along West Creek, a distance of approximately 3,000 feet (see Figure 2.5-1).



Alternative C Site

Figure 2.5-1

Most of the road is native surfaced, and the road varies in width from 8 to 12 feet. In this portion of the West Creek drainage, the stream flows through a relatively incised canyon with steep slopes. In places, the ridgeline rises to approximately 600 feet above mean sea level. The access road is perched approximately 35 to 40 feet above the stream channel, constructed on cut and fill slopes. Because of the relatively steep slopes, there is no road shoulder. Areas downslope of the road are deeply eroded and scoured. Most areas upslope of the road are densely forested with conifers and deciduous trees.

The primary effort in repairing the access road would be to reestablish and stabilize side slopes where erosion, scour, landslides, and debris flows have caused slope failures and road damage. Native material consists of siltstone that is easily fractured and difficult to stabilize. Slope reconstruction would require quantities of both large rocks (riprap), which would be needed to stabilize the toe of the steep slopes leading to the creek, as well as smaller granular fill (pit-run fill material) to recreate the slope from the toe to the top of the slope.

Table 2.5-1 summarizes the dimensions of the work necessary to restore the four washout segments.

Table 2.5-1. Road Damage and Estimated Repair Quantities.

Road Washout Section	Damaged Road Length (Width)	Eroded Depth	Estimated Riprap Required	Estimated Fill Material Required
Segment 1	110 ft (12 ft)	36 ft	3,960 CY	1,760 CY
Segment 2	160 f (10 ft)	8 ft	444 CY	593 CY
Segment 3	135 ft (8 ft)	8 ft	1,215 CY	720 CY
Segment 4	160 ft (10 ft)	10 ft	NA	758 CY
Totals	565 ft total length		5,619 CY	3,831 CY

CY = cubic yards.
Source: FEMA 2009.

Most of the damaged access road is approximately 35 to 40 feet above the active stream channel. The lower banks most likely can be repaired by placing rock with equipment staged along the access road. Side slope reconstruction would be accomplished by side-dumping riprap and fill material from dump trucks onto the side of the slope and moving it into place using a small excavator and backhoe. The excavator and backhoe would be staged along the side or at the toe of the slopes as necessary to perform the work. An estimated total of 876 truckloads of fill material would need to be transported to the site to repair the road (563 truckloads of riprap and 313 truckloads of smaller fill material). Riprap would likely be obtained from Teevin Quarry, about 5 miles from Westport.

Some of the repair work (e.g., along Segment 1) would occur within the ordinary high water of the West Creek channel. This effort could require the construction of temporary cofferdams to isolate a portion of the active creek channel without completely blocking the creek and allowing fish passage.

Approximately 1,000 feet of underground pipe connecting the Westport water supply reservoir to the Westport water tank also was damaged during the flood event. The existing pipe is buried within the prism of the access road. Alternative C would involve replacing this damaged segment of water pipe within the excavated trench. During road reconstruction, the damaged pipe segment would be

replaced with approximately 1,000 feet of 4-inch diameter iron pipe. In addition to the damaged pipe, underground utilities that connected to the water supply reservoir and pump facilities were damaged and would need to be replaced.

Alternative C would also involve the placement of corrugated metal pipe (CMP) culverts along the repaired roadway to improve road drainage. Specific culvert placement, sizing, and locations have not been designed at this phase. Following road repair, pipeline repair, and culvert installation, the repaired road would be regraded and resurfaced with native material. BMPs, similar to those described above in Section 2.4, would be employed during implementation of Alternative C to minimize construction-related effects.

Following the repairs to the access road and water facilities and when water is available for distribution by Westport Water Association for use by the community of Westport, the temporary water supply from the Wauna Water District would be shut off, but the existing infrastructure (intertie) would remain in place in case of future emergency needs.

2.6 SUMMARY OF EFFECTS

Table 2.6-1 provides a summary of the effects described and analyzed in Chapter 3 (*Affected Environment and Environmental Consequences).*

Table 2.6-1. Summary of Effects of the Alternatives.

Resource Area	Alternative A – No Action Alternative	Alternative B – Proposed Action	Alternative C – Repair Road & Water Facilities
Geology and Soils	No effect.	• No significant effect. • Minor short-term construction effects on soils related to slope stabilization at spring locations.	• Potential for significant long-term effects on soils due to ongoing erosion and sedimentation. • Minor to moderate short-term erosion effects due to steep slope construction and addition of 9,450 cy of fill.
Hydrology, Water Quality, and Floodplains	No effect.	• No significant effect. • Minor short-term construction effects related to spring development.	• No significant effect. • Moderate short-term construction effects related to in-water work. • Moderate long-term effects on West Creek from the placement of riprap in the creek channel or floodway (405 linear feet).
Vegetation and Wetlands	No effect.	• No significant effect. • Minor short-term construction effects related to temporary vegetation clearing and temporary wetland disturbance. • Minor long-term effects from permanent clearing of forest	• No significant effect. • Minor short-term construction effects related to temporary clearing of riparian vegetation. • Minor long-term effects related to permanent clearing of riparian vegetation.

Resource Area	Alternative A – No Action Alternative	Alternative B – Proposed Action	Alternative C – Repair Road & Water Facilities
		vegetation.	
Fish and Wildlife	No effect.	• No significant effect.	• No significant effect. • Moderate short-term construction effects on Lower Columbia River (LCR) coho salmon related to in-water work and fish exclusion. • Moderate long-term effects on LCR coho salmon related to the permanent removal of fish habitat (1,500 square feet).
Land Use and Recreation	No effect.	• No significant effect.	• No effect.
Public Utilities	• Significant adverse effect: lack of sufficient water supply.	• Beneficial effects on long-term water supply, including increased system capacity, implementation of deferred maintenance, facility improvements, metering data to support community planning. • Potential for minor, short-term service disruptions during construction. • Estimated initial construction cost: $234,677. • Long-term maintenance cost: relatively low.	• Potential significant adverse long-term effect on domestic water supply due to high risk of damage to physical infrastructure from anticipated repeated future storm events, disruptions to service, and associated costs of repair. • Potential for minor, short-term service disruptions during construction. • Estimated initial construction cost ranges from $407,000 to $1.1 million. • Long-term maintenance cost: relatively high.
Transportation and Access	No effect.	• No significant effect.	• No significant effect. • Minor short-term effects on access, wait times and traffic congestion during construction window.
Environmental Justice	No effect.	• No effect.	• No effect.
Cultural Resources	No effect.	• No effect.	• No effect.
Cumulative Effects	No effect.	• No significant effects.	• No significant effects.

3.0 Affected Environment and Environmental Consequences

The following presents an analysis of the affected environment and potential effects from implementing the three alternatives. Throughout the analysis, the terms "Alternative B site" and "Alternative C site" are used to distinguish the different locations of the two action alternatives. The term "project area" refers to both sites in general.

3.1 GEOLOGY AND SOILS

3.1.1 AFFECTED ENVIRONMENT

This section describes soils, land forms, and geologic features of the project area and its vicinity as they relate to the alternatives under consideration.

3.1.1.1 Geology

The project area is located within a series of large Quaternary landslide formations surrounded by mixed Miocene marine sedimentary rock and beds of several members of the Columbia River Basalt group flows (OGDC 2009). Deposits of Grande Ronde and Wanapum basalt are located upslope of the project area. Oligocene and Miocene marine sedimentary rock of the Astoria and Smuggler's Cove formations are located east and upslope of the Alternative B site, and west of the Alternative C site. These marine deposits were laid down in the mid-Miocene (Lund 1972), prior to the cataclysmic late-Pleistocene floods that shaped much of the region (Allen et al. 1986). The marine sedimentary rock was uplifted in the mid to late Miocene throughout the Coast Range and its foothills (Lund 1972), and subsequently overlain and intruded in areas by the Columbia River Basalt group flows. Extensive alluvial deposits are also present in the vicinity both near the present-day Columbia River and within several miles of the river, indicating ancestral Columbia River flows and flooding (Babcock 1989). Most landforms throughout the Columbia River Gorge were shaped by the Columbia River Basalt flows and Missoula flood events of approximately 12,000 to 17,000 years ago, in conjunction with the more geologically recent activity of the Columbia River.

The historic landslide formations surround the project area and comprise multiple unconsolidated sands, gravels, and cobbles derived from the surrounding volcanic and marine sedimentary rock formations (OGDC 2009). Terrain at the Alternative B site is moderately sloped (approximately 1.5:1) and concave, with a northeastern aspect toward the Columbia River. Terrain at the Alternative C site is a very steep (approximately 3:1) along the lower reaches of the West Creek ravine, with portions of the slope described as "near vertical" (Boatwright Engineers 1996a).

3.1.1.2 Soils

Soils in the project area are mapped by the Natural Resources Conservation Service (NRCS) as the Alstony-Scaponia-Braun general soil map unit (Table 3.1-1) (NRCS 1988). These soils are described as moderately deep to deep, well-drained soils, on mountains and are not noted to contain significant hydric soil inclusions (NRCS 2007). Detailed soil map units are described in Table 3.1-1. Most of the project area is mapped as a mix of Braun and Scaponia silt loams, with a very small southern-most portion of the Alternative B site mapped as Alstony gravelly loam. Soils in the vicinity of the

Alternative B site (the Proposed Action) are described in greater detail in the Wetland Delineation Report for the Westport Water Supply Project (AECOM 2010a), included as Appendix B.

Table 3.1-1. Mapped Soils in the Westport Water Supply Project Study Area.

Alternative Site	Soil Number – Name	Soil Classification	Taxonomy	Drainage Class	Significant Hydric Inclusions
B	7D-Braun-Scaponia silt loam 3-30 percent slopes	Non-Hydric	Dystric Eutrudepts; Typic Dystrudepts	WD	none
B	1D-Alstony gravelly loam 0-30 percent slopes	Non-Hydric	Alic Hapludands	WD	none
B	1E-Alstony gravelly loam 30-60 percent slopes	Non-Hydric	Alic Hapludands	WD	none
C	57E- Scaponia-Braun silt loam 30-60 percent slopes	Non-Hydric	Typic Dystrudepts; Dystric Eutrudepts	WD	none
C	2D- Anunde silt loam 3-30 percent slopes	Non-Hydric	Entic Dystrandepts	WD	none

WD: well drained.
Source: NRCS 1988.

3.1.1.3 Regulatory Considerations

Clatsop State Forest

Portions of the project area are within the Clatsop State Forest. The southern portion (Peterson Springs) of the Alternative B site is located on state forest land. The Alternative C site is located entirely on state forest land. These areas are managed under the Northwest Oregon State Forests Management Plan (ODF 2001). This plan lists three overarching management strategies intended to protect long-term soil productivity where forest management practices may occur. These strategies include:

- Comply with all Oregon Forest Practices Act requirements for soil protection, listed in Oregon Administrative Rules (OAR) 629-24-422.
- Minimize management-induced slope soil movements by obtaining timely geotechnical input.
- Maintain quantities of organic material in the soil (duff and litter).

These management strategies are generally intended to apply to timber management activities, although they also apply to other soil-disturbing activities that result in tree and vegetation removal in the Clatsop State Forest (ODF 2001).

Clatsop County

The northern portion of the Alternative B site is on privately held land within Clatsop County, subject to the Clatsop County Comprehensive Plan and the Clatsop County Code. The Clatsop County Comprehensive Plan describes Clatsop County's implementation of the Oregon Statewide Planning Goals (OAR 660-015). The county requires implementation of BMPs and consistency with

land use planning goals that integrate generally accepted practices to protect soils from erosion and incompatible land uses (Clatsop County 2007a).

3.1.2 ENVIRONMENTAL CONSEQUENCES

This section describes the potential effects of the No Action Alternative, and Alternatives B and C on geology and soil resources within the immediate vicinity of the project. Mitigation measures to offset any identified effects are also described.

3.1.2.1 Threshold of Significance

Significance under NEPA is determined by assessing the effect of a proposed action in terms of its context and the intensity of its effects. An alternative would result in a significant effect on geology and soil resources if it would:

- Present a reasonably increased risk to people or property because of geologic hazard such as landslides; or
- Result in long-term erosion of soils that cannot be prevented by the implementation of erosion control measures, BMPs, and periodic maintenance
- Conflict with applicable local, state, and federal regulations.

3.1.2.2 Alternative A: No Action

Under the No Action Alternative, FEMA would not fund the development and construction of upgrades to the existing Wauna water supply system. Westport would continue to rely on the temporary intertie with Wauna. Since there would be no soil disturbance under the No Action Alternative, there would be no indirect, cumulative, or construction effects.

No mitigation measures would be necessary under the No Action Alternative. Residual, significant, or unavoidable effects would not occur as a result of the No Action Alternative.

3.1.2.3 Alternative B: Proposed Action

Under the Proposed Action, FEMA would provide funds to support the construction of proposed upgrades and facilities, as described in Section 2.4. Vegetation removal and soils disturbance would be minimized, and would be restricted to that necessary for specific upgrades and new facilities.

Temporary effects would include minor vegetation and soils disturbances during the construction of pipelines, access road, and buildings/facilities. Water system upgrades at Peterson Springs can be performed using existing access and facilities of the existing Wauna water supply system. Specific upgrades to collector boxes would occur on moderate slopes.

Water system upgrades at Knapp Springs would require a new access road. Permanent effects may include the removal of up to 0.08 acre of native vegetation to install pipelines and access road and replanting disturbed areas with grass or low-growing vegetation, consistent with BMPs to minimize soil erosion. Specific upgrades to the collector boxes would occur on moderate slopes. The Proposed Action would comply with applicable requirements and objectives of the Clatsop County Code, the Clatsop County Comprehensive Plan, and the Northwest Oregon State Forests Management Plan.

Although the project is located within an old landslide formation, and previous logging and vegetation loss have been less extensive, no slope failures or geologic faults are mapped in the area. Slopes are less steep, and therefore more stable than those occurring at the Alternative C site. The existing water supply facilities and surrounding terrain have withstood recent storms, and no increase in risks associated with slope stability, landslides, or geologic hazards are anticipated. Long-term erosion of soils is not anticipated, and BMPs included within the Proposed Action would reduce and mitigate minor, short-term soil erosion expected during construction.

Effects on geology and soil resources are anticipated to be minor and temporary, mainly resulting from the installation and maintenance of water pipelines and related facilities.

Mitigation Measures and Residual Effects

BMPs as described in Section 2.4 would ensure that potential effects on geology and soil resources would be minimal. Westport would comply with all permit requirements; implementation of the TESC and SPCC plans and BMPs would meet or exceed local, state, and federal requirements. No additional mitigation measures are proposed.

Significant and Unavoidable Adverse Effects

No significant or unavoidable effects on geology or soils are anticipated from Alternative B (Proposed Action).

3.1.2.4 Alternative C: Repair Road and Water Facilities

Flooding and landslides have occurred repeatedly since construction of the existing West Creek access road in 1965, most recently during the 1996 floods, and the predisaster facilities have been the subject of repetitive damage (Boatwright Engineering 1996a, 2008). Vegetation loss from the current (December 2007) disaster has further destabilized slopes and may have increased the potential for future landslides and damage to any reconstructed roadway or facilities, as well as portions of the roadbed that were not visibly damaged from the current disaster.

Soils are deep and easily eroded in the West Creek stream basin, and the underlying geology is fractured and weakly aggregated; the West Creek system naturally carries a somewhat high sediment load with very active erosion and sedimentation dynamics. Long-term sedimentation and erosion may occur as a result of the steep slopes, depositing soils in West Creek. Soil deposition can alter channel flows and result in further erosion and sedimentation downstream, especially at the downstream end of the riprap and slope stabilization repair work (Harbor 1999).

Under Alternative C, the existing road and water system facilities would be repaired as described in Section 2.5 with funding assistance from FEMA. Disturbance to vegetation and soils would be minimized to only the amount necessary for the project, which would retain the original footprint of the predisaster road and water system facilities.

Temporary effects would include wear and tear on the remaining functional portions of the road due to the need to transport 876 heavy truck loads of material to the site. Concentrated use of the road by heavy trucks and machinery during project construction may increase the potential for additional

damage, including erosion and sedimentation, due to the naturally steep slopes and unstable soils. Placement of fill and riprap is likely to result is some sedimentation and erosion, although site-specific BMPs would be developed and employed to minimize these impacts.

Permanent effects include the addition of 5,619 cubic yards of riprap and 3,831 cubic yards of fill to stabilize the slopes at the damage site. Slopes between the new roadbed and West Creek would be constructed at a ratio of approximately 3:1, and may be prone to erosion in the future, especially in areas adjacent to the repairs that will not be stabilized under current plans. Steep slopes above and below the road will likely require additional ongoing stabilization, repairs, and maintenance due to natural soil instability at the site.

Alternative C may result in significant effects on soils at the Alternative C site and downstream along West Creek due to watershed-scale soil instability, very steep slopes, the addition of about 9,450 cubic yards of riprap and fill along the reconstructed roadway, and natural stream and erosion dynamics that could lead to upstream and downstream erosion and sedimentation after the project is complete.

Mitigation Measures and Residual Effects

Mitigation measures beyond the BMPs described as part the Proposed Action may be necessary to obtain required permits and ensure minimal erosion and stabilized slopes during and after work operations. These mitigation measures have not been developed at this stage. Residual effects arising from Alternative C include risks of long-term soil erosion and continued risk of landslides.

Significant and Unavoidable Adverse Effects

Significant and unavoidable adverse effects may occur to soils as a result of implementation of Alternative C due to the ongoing risk of landslides and continued erosion, evidenced by the long record of these events at this site and the inability of past repairs to ameliorate the situation. The addition of 5,619 cubic yards of riprap would reduce the likelihood of significant unavoidable adverse effects, although quantifying the extent of risk reduction would be difficult without more extensive analysis.

3.2 HYDROLOGY, WATER QUALITY, AND FLOODPLAINS

This section describes the hydrology, water quality, and floodplains in the vicinity of the project area; applicable plans, policies, regulations, and laws pertaining to work in or near waterways and the protection of water quality; and the effects of the project alternatives on water resources.

3.2.1 AFFECTED ENVIRONMENT

For the purpose of evaluating the potential effects of the project alternatives on hydrology, water quality, and floodplains, the affected environment is defined as the natural framework of surface water that includes the watershed characteristics, water features and locations, surface water quality, groundwater, and floodplains in the general area. In this section, the Alternative B and Alternative C sites are collectively referred to as the project alternative sites.

3.2.1.1 Watershed Characteristics

The project alternative sites are within the Coast Range ecoregion. They are located within the Lower Columbia River-Clatskanie subbasin (4th field hydrologic unit code [HUC] 17080003) and the Plympton Creek watershed (5th field HUC for this area is 1708000306).

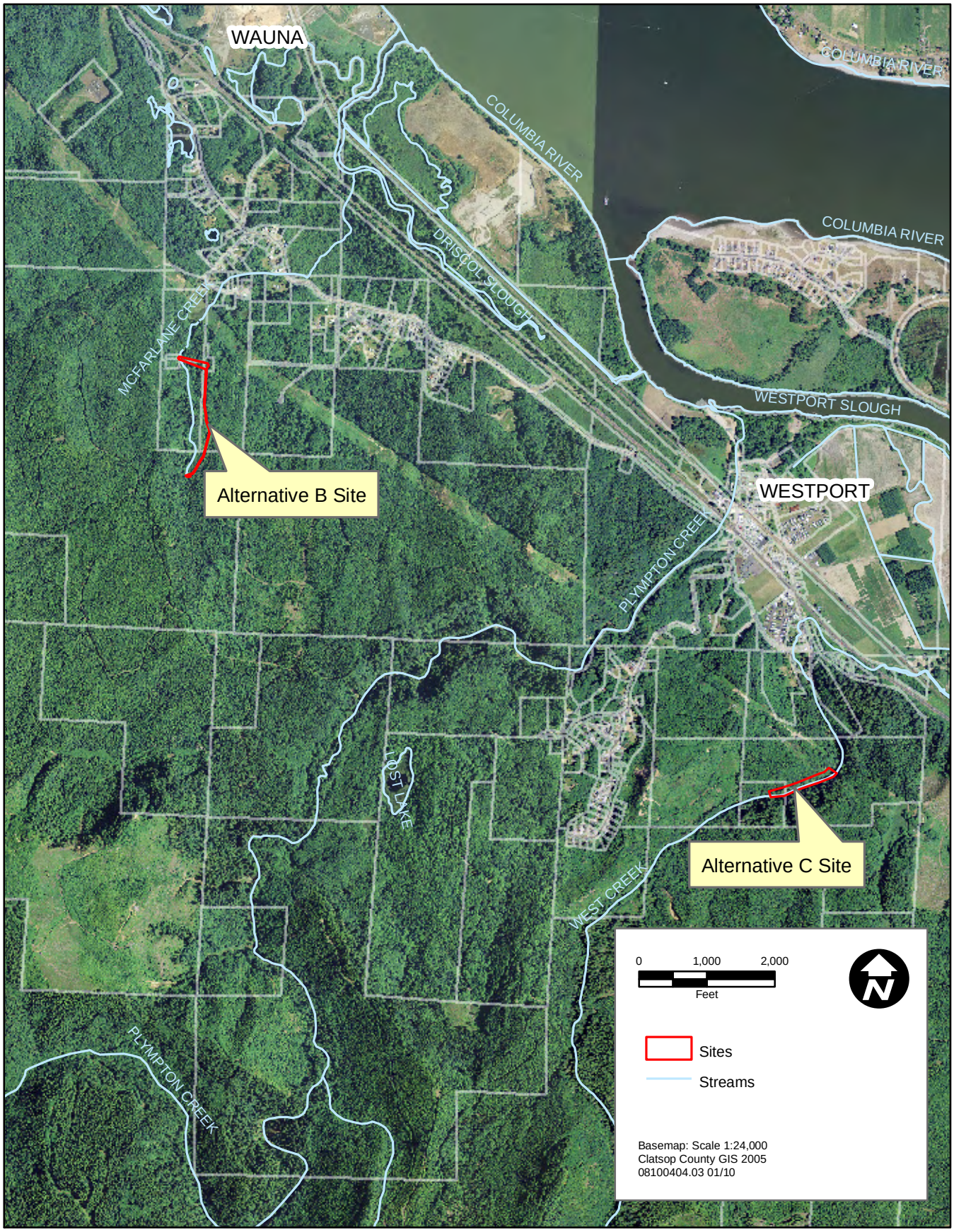
The 6th field HUC for the Alternative B site is 170800030602 (Hunt Creek subwatershed). The northern portion of the Alternative B site is on private land, and the southern portion is on state-owned ODF land within the Clatsop State Forest.

The 6th field HUC for the Alternative C site is 170800030601 (West Creek subwatershed). The Alternative C site is on state-owned ODF land within the Clatsop State Forest. The entire project area is located outside of the Oregon Coastal Zone (Oregon Coastal Management Program 2010) and not subject to the Coastal Zone Management Act.

The climate of Clatsop County is greatly tempered by wind from the Pacific Ocean (NRCS 1988). Summers are fairly warm, but hot days are rare. Winters are cool, but snow and freezing temperatures are not common except at higher elevations. In summer, rainfall is extremely light, and often several weeks pass without precipitation. Rains are frequent during the rest of the year, especially during late fall and winter. The growing season in the project area is from February 15 to December 11 based on the historical climate information for the Astoria Airport weather station (WRCC 2010). The Astoria Airport is the closest data collection station to both sites, and climate data were used from the Astoria Airport because its weather pattern is similar to project area vicinity. Monthly temperatures vary from average lows of approximately 36.6 ^{o}F (January) to average highs of 68.7 ^{o}F (August). Average annual rainfall is 68.26 inches, and average annual snow fall is 4.6 inches.

3.2.1.2 Water Features and Locations

Water features in the vicinity of the project area are shown in Figure 3.2-1 (*Aerial Photograph*). Water features within the Alternative B site include Peterson Springs, Knapp Springs, McFarlane Creek, an unnamed tributary to McFarlane Creek, and five small wetlands (Figure 2.4-1, *Alternative B Site*). West Creek is the water feature on the Alternative C site (Figure 2.5-1, *Alternative C Site*).



Aerial Photograph

Figure 3.2-1

Alternative B Site

Peterson Springs

Peterson Springs is located in the southern portion of the Alternative B site within the Clatsop State Forest, managed by the ODF. The Peterson Springs area includes three spots where water is discharging through the rocky soil surface. The springs are on a 40 to 50 percent slope at an elevation of approximately 415 feet. Water from Peterson Springs flows into the headwater wetlands to McFarlane Creek. In the early 1970s, Peterson Springs was developed to distribute water for quasi-municipal use through the Wauna Water District (Figure 3.2-2, *Water Features Photos*). The Peterson Springs water system is currently operational and used by both the Wauna and Westport. Existing water system structures are described in Section 1.5 (*Background and Location*).

Wauna has agreed to provide water to Westport; that water is currently is being obtained from Peterson Springs. However, the amount of water available under the current water system is not enough to supply the needed capacity for the residents of Westport during the summer. Approximately 60 to 70 gallons per minute (gpm) of water is being diverted from Peterson Springs.

Knapp Springs

Knapp Springs is located in the northern portion of the Alternative B site on Wauna land that was recently obtained from private landowners (i.e., boundary lines adjusted). The Knapp Springs area includes several locations where water is discharging through the rocky soil surface (Figure 3.2-2, *Water Features Photos*). Two collection boxes have been built on two of these locations. The springs are on a 30 percent slope at an elevation of approximately 165 feet. Knapp Springs flows into McFarlane Creek. In the late 1960s, Knapp Springs was developed to distribute water for domestic use. The Knapp Springs water system is currently not operational and no water is being diverted. Existing water system structures are described in Section 1.5 (*Background and Location*). Approximately 90 gpm of water could be diverted from Knapp Springs.

MacFarlane Creek

McFarlane Creek is a tributary to Driscoll Slough, which drains to the Columbia River (Figure 3.2-1, *Aerial Photograph*). The perennial creek is in the northern portion of the Alternative B site (Figure 2.4-1, *Alternative B Site*). Stream gradient along this reach of creek is approximately 5 percent. The active channel is 5 to 15 feet wide and the creek forms a broad valley bottom. Channel morphology is unconstrained. The channel is stable on both banks of the creek. The stream substrate is primarily cobble.

Unnamed Tributary to MacFarlane Creek

The unnamed tributary is a side channel of McFarlane Creek that flows into an impounded freshwater pond before flowing back into McFarlane Creek. The perennial creek is in the northeast portion of the Alternative B site, south of the existing Wauna water tower. The creek crosses under the access road/water pipeline corridor to the Peterson Springs via a 24-inch culvert.

Alternative B Site:
Peterson Springs Junction Box

Alternative B Site:
Knapp Springs Collector Box

Alternative B Site:
Knapp Springs Junction Box

Alternative B Site:
McFarlane Creek Upstream from Knapp Springs

Alternative B Site:
Unnamed Tributary to McFarlane Creek

Alternative C Site:
Eroded Banks on West Creek

Water Features Photos

Figure 3.2-2

Wetlands

Five wetlands were identified at the Alternative B site during a wetland investigation conducted by AECOM (2010a). Note: wetland areas described in this EA have not been verified by the Oregon Department of State Lands (ODSL) or the U.S. Army Corps of Engineers (Corps) and are subject to agency review. Wetland A is associated with Knapp Springs. Wetlands B and B-1 are associated with the unnamed tributary to McFarlane Creek referred to in this report as Creek 1. Wetland C is associated with Peterson Springs at the headwaters of McFarlane Creek. Wetland D is a linear wetland located in the southern portion of the Alternative B site. Descriptions of these wetlands are provided in Section 3.3 (*Vegetation and Wetlands*).

Alternative C Site

West Creek

West Creek is a tributary to Westport Slough, which drains to the Columbia River (Figure 3.2-1, *Aerial Photograph*). West Creek is approximately 4 miles long with the upper reaches within a steep, narrow valley that flattens out and opens up below where the creek follows a confined channel through the city of Westport and under Highway 30 into Westport Slough. West Creek crosses through approximately 0.5 mile of the Alternative C site (Figure 2.5-1, *Alternative C Site*). At the site, water is diverted from West Creek to an existing water supply reservoir. West Creek has been the primary water source for Westport since 1966 and is located in a drinking water protection area. The February 1996 and December 2007 flood events resulted in substantial volumes of sediment and debris that scoured West Creek and damaged the Westport water system facilities. The stream in the vicinity of the Alternative C site is confined by steep slopes on the right bank and an access road on the left bank. The access road is located 30 to 40 feet above the creek. The banks of West Creek are unstable and actively eroding, changing the structure and geometry of the channel.

Wetlands

Based on observations during a site reconnaissance, the geomorphology of West Creek, steep slopes, steep stream gradient, and high velocity stream flow, wetlands are not likely present on the Alternative C site. However, a wetland delineation was not conducted for the damage site.

3.2.1.3 Surface Water Quality

Surface water includes water that sits or flows on the surface such as streams, rivers, lakes, or wetlands. Surface water rights include rights originating from these sources. There are two water rights for surface water in the Alternative B site (OWRD 2010). One water right was issued to Wauna at Peterson Springs. The certificate (Permit S43564) was issued on January 14, 1972 for community water supply and quasi-municipal use. The other water right in the Alternative B site was originally issued to private landowners at Knapp Springs. The certificate (Permit S30725) was issued on July 20, 1965 for community water supply and group domestic use. It was recently cancelled when the Oregon Water Resources Department (OWRD) determined that surface water had not been diverted for domestic use since the 1990s. On April 1, 2009, a limited license (LL1194) was issued to Westport for community water supply and quasi-municipal use, as described in Section 1.5. There is one water right on the Alternative C site (OWRD 2010). The water right at West Creek (Permits S30688 and S52496) was issued to Westport in 1965 for community water supply and quasi-municipal use.

Based on a review of the Water Quality Assessment - Oregon's 2004/2006 Integrated Report Database (ODEQ 2010), streams in the project alternative sites are not 303(d) listed (as described in Section 3.2.1.6) and have no water quality concerns. Hunt Creek, located approximately 4 miles west of the Alternative B site, has a potential water quality concern for alkalinity, ammonia, chloride, pH, and phosphate phosphorus (Category 3). Plympton Creek, located 0.75 mile to the east of the Alternative B site and 0.5 mile west of the Alternative C site (Figure 3.2-1, *Aerial Photograph*), has potential concern for temperature (Category 3). However, neither Hunt nor Plympton creek is 303(d) listed.

A Source Water Assessment was completed by ODEQ and the Oregon Health Division in 2003 for the Westport water supply system in West Creek (Alternative C site); the assessment identified managed forest land with clearcut harvest less than 35 years old as a potential contaminant source type. The clearcut areas scattered throughout the watershed have the potential for increased erosion, resulting in turbidity and chemical changes in the drinking water supply (ODEQ 2003). In addition, the water system facilities for both Peterson and Knapp springs have not been upgraded or regularly maintained since the mid 1970s.

3.2.1.4 Groundwater

Groundwater includes water that is held beneath the ground surface, such as in soil, pervious rocks, or aquifers. Groundwater rights include rights originating from these sources. OWRD manages statewide groundwater use through water rights applications, permits, certificates, transfers, and leases. The project alternative sites are located within the North Coast Groundwater Basin, District 1, Region NW, Division 33 Lower Columbia. No records of groundwater rights or wells are found on either project alternative site (OWRD 2010). Therefore, groundwater is not described further in this EA.

3.2.1.5 Floodplains

Both project alternative sites are located outside of the 100-year and 500-year floodplains in Zone C (areas of minimal flooding), per the FEMA Flood Insurance Rate Map Community Panel No. 4100270027A (effective date July 3, 1978) (FEMA 1978). The Alternative C site is approximately 1 mile upstream from Zone B (moderate flood hazard, between the 500- and 100-year floodplain) and Zone A (100-year floodplain). According to FEMA's review of the project worksheet and based on the Executive Order (EO) 11988 Floodplain Management - Checklist, it was determined that the Eight Step Planning Process was not necessary for this project (FEMA 2009). The public notice for this disaster and completion of this EA will serve as the public notice for FEMA's Eight Step Planning Process for Executive Order 11988 for floodplains.

3.2.1.6 Regulatory Considerations

Numerous federal, state, and regional laws, rules, regulations, plans, and policies define the framework for regulating water quality in the vicinity of the project alternative sites. The following description focuses on water quality requirements applicable to the project.

Federal Regulations

Clean Water Act, Section 303

Under Section 303(d) of the 1972 Clean Water Act (CWA), states, territories, and authorized tribes are required to develop lists of impaired waters. These impaired waters do not meet water quality standards that states, territories, and authorized tribes have set for them, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters. As described above, McFarlane Creek (Alternative B site) and West Creek (Alternative C site) are not 303(d) listed and have no water quality concerns.

Clean Water Act, Section 401

Section 401 of the CWA requires that applicants proposing projects with a federal nexus (i.e., federal funding, authorization, or permits) obtain certification for activities that could result in the discharge of pollutants into waters of the United States. Certification is obtained from the state in which the discharge would originate. Therefore, all projects that have a federal component and may affect the quality of the state's waters must also comply with CWA Section 401. In Oregon, ODEQ is tasked with granting a 401 Water Quality Certification (WQC), and also certifies that applicants meet all state requirements under the following rules and standards:

- Oregon Revised Statues (ORS) 468B.020, 025, and 035 et seq.
- ORS 468B.040 and 045 (for hydroelectric projects)
- ORS 468B.047 (fees)
- OAR 340-048 et seq.
- Federal Clean Water Act Section 401

ODEQ will review and evaluate a project requiring a 401 WQC and develop appropriate conditions to ensure consistency with state water quality standards that include beneficial uses and criteria and all water quality programs and policies. Water quality standards include: Narrative Criteria, Bacteria, Biocriteria, Dissolved Oxygen, Nuisance Phytoplankton Growth, pH, Temperature, Total Dissolved Gas, Total Dissolved Solids, Toxic Substances, Turbidity, and Basin-Specific Criteria (OAR 340-041-0001 et seq.).

Clean Water Act Section 402

Section 402 of the CWA requires the regulation of stormwater runoff from construction activities, which is implemented through NPDES permits. The U.S. Environmental Protection Agency (EPA) has delegated the administration of NPDES permits to ODEQ. ODEQ regulates stormwater runoff from construction activities that disturb 1 or more acre of land through 1200-C construction stormwater NPDES permits. ODEQ also certifies that applicants meet all state requirements under the following rules and standards: ORS 468B.025 et seq., OAR 340-045-0015 and 0033(5) et seq., and CWA 402. Section 404 of the CWA is described under Section 3.3 (*Vegetation and Wetlands*).

Executive Order 11988 (Floodplain Management)

Executive Order (EO) 11988 (Floodplain Management), established in May 1977, addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding a project to:

- Avoid incompatible floodplain development.
- Be consistent with the standards and criteria of the National Flood Insurance Program (NFIP).
- Restore and preserve natural and beneficial floodplain values.
- Involve the public in the decision-making process for floodplain activities.
- Evaluate effects, both by the floodplain and on the floodplain.

As noted above, FEMA (2009) determined that the Eight Step Planning Process was not necessary for this project. However, the public notice for this disaster and completion of this EA are consistent with FEMA's Eight Step Planning Process for Executive Order 11988 for floodplains.

State Regulations

State Water Quality Programs

State water quality program and policy-based elements include: Antidegradation Policy, Water Quality Limited Waters, load allocations in approved TMDLs for water quality limited water bodies, and subsequent TMDL implementation plans (OAR 340-041-0001 et seq. and OAR 141-042-0001 et seq.).

Drinking Water Protection Program

Oregon promotes drinking water protection through a partnership of the ODEQ and the Oregon Department of Human Services, which regulates public water systems in Oregon. This program establishes assessments and protections for surface water and groundwater drinking water supplies.

Water Use Permit

A Water Use Permit is the authorization from the OWRD necessary to construct a water system and use water. Once the OWRD issues a permit, if users comply with the conditions of the permit and develop their water right, the department cannot later decide to revoke or change the permit or impose new standards for use. Water Use Permits meet all state requirements under the following rules and standards: ORS 537.141 et seq., OAR 690-310 et seq., ORS 537.143-537.144, and OAR 690-340-030.

OWRD reviews Water Use Permit applications to ensure that allowing the proposed use will not injure other users or public resources. OWRD also determines if water is likely to be available for use and considers many other factors in analyzing the application. These factors include reviewing basin plan restrictions that might prohibit certain uses or further appropriations, local land use restrictions, effects on sensitive, threatened or endangered species, water quality, and other state and federal rules.

Oregon Forest Practices Act

The ODEQ water quality program for forest lands is administered by the Oregon Board of Forestry through the Forest Practices Act administrative rules. These rules apply to harvesting, reforestation, road construction and repair; slash disposal (treetops, branches, brush, and tree limbs left on the ground after logging operations); chemical use; and stream, lake, and wetland protection. Sensitive resource sites, such as bird nesting and roosting locations, and threatened and endangered species sites are also protected under the rules. Oregon Forest Practices rules are approved as sufficient to implement water quality standards under the CWA. These rules specify BMPs for forest operations, which ensure that water quality will meet ODEQ standards. Any forest operation that complies with the rules is deemed to comply with the state's water quality standards. ORS 527.710, 527.765, and 527.770 contain the Forest Practices Act rules to achieve these water quality standards

3.2.2 ENVIRONMENTAL CONSEQUENCES

Potential environmental consequences of each alternative on hydrology, water quality, and floodplains are considered from regulatory and ecological perspectives. To conduct the analysis, two AECOM ecologists assessed the affected environment through a 3-day site visit conducted on August 12-14, 2009, documenting watershed characteristics through field notes and photographs of notable features. Existing information was gathered from ODEQ, OWRD, and Westport, and applicable scientific literature pertaining to hydrology, water quality, and floodplains within the affected area was reviewed. The analytic approach focused on:

- Existing hydrology, water quality, and floodplains.
- Level and intensity of effect(s) due to the proposed project.
- Potential of any project activities to affect flow rates, paths, and pollutant loads
- Consistency with applicable local, state, and federal regulations.

3.2.2.1 Threshold of Significance

An alternative would result in a significant effect on hydrology, water quality, or floodplains if it would:

- Violate any water quality standards or waste discharge requirements, create or contribute runoff water that would provide substantial additional sources of polluted runoff, or otherwise substantially degrade water quality;
- Result in a substantial net loss of the 100-year floodplain; or
- Alter the existing drainage pattern of the project site in a manner that would result in substantial erosion or siltation on or off the site, or result in flooding on or off the site.

3.2.2.2 Alternative A: No Action

Under the No Action Alternative, no project-related land disturbance would occur in either of the project alternative sites; therefore, there would be no short-term construction effects on hydrology, water quality, or floodplain resources in the project area. Operational effects on surface hydrology would continue at Peterson Springs, where water withdrawal is relatively minor. Wauna would continue to supply water to Westport under an emergency situation. In addition, the repairs to the existing water system at Peterson Springs would not occur, and deterioration to a water system that was built in the 1970s would continue and have a minor long-term effect on water quality. The amount of water withdrawal from Peterson Springs would remain constant and not affect the hydrology.

3.2.2.3 Alternative B: Proposed Action

Under Alternative B, a reliable water supply would be developed at Peterson and Knapp Springs for a community water system in Westport. Short-term effects could include soil erosion and sediment generation from land-disturbing activities, release of hazardous materials into water resources, and spills and leaks from construction equipment. Construction-related activities would temporarily disturb soils and disrupt hydrology at Peterson and Knapp Springs, associated wetlands, and potentially McFarlane Creek.

Similar to the No Action Alterative, long-term operational effects on surface hydrology would continue at Peterson Springs. Alternative B would upgrade the existing water system that was built in the 1970s to current standards. At Knapp Springs, the existing collection structures would be modified to allow water to be withdrawn. Peterson Springs would continue to divert approximately 60 to 70 gpm and Knapp Springs would divert 90 gpm. The amount of water collected from these springs would benefit customers in Westport's service area. The amount of water proposed for diversion to the community water systems does not exceed the entitled amount under the water rights issued by OWRD and complies with Oregon water laws for beneficial uses of surface water. The upgrade, repair, and refurbishment of the existing water system infrastructure would increase the efficiency of water collection and ensure that the system meets water quality standards. In addition, the collection area around Peterson Springs would be capped with clean crushed rock to stabilize the slope from long-term erosion. Based on these factors, operational effects on water quality and hydrology would be less than significant.

Mitigation Measures and Residual Effects

BMPs as described in Section 2.4 would ensure that potential effects on hydrology and water quality would be less than significant. Westport would comply with all permit requirements; implementation of the TESC and SPCC plans and BMPs would meet or exceed local, state, and federal requirements. No additional mitigation measures are proposed.

Significant and Unavoidable Adverse Effects

Implementation of Alternative B would have no significant or unavoidable adverse effects on hydrology, water quality, or floodplain resources.

3.2.2.4 Alternative C: Repair Road and Water Facilities

Under Alternative C, the water system and distribution facilities at West Creek would be repaired and this facility would resume providing water service to customers in Westport's service area. Similar to Alternative B, Alternative C would result in short-term effects that include soil erosion and sediment generation from land-disturbing activities, release of hazardous materials into water resources, and spills and leaks from construction equipment. In contrast to Alternative B, Alternative C proposes stabilization of the slope embankment for road repairs and placement of riprap for a retaining wall in the floodway of West Creek. These construction activities include:

- Disturbance, removal, or burial of stream channel substrate.
- Operation of heavy equipment in stream channels.
- Alteration or arrest of fluvial sediment processes.
- Alteration of channel dimensions.
- Temporary mobilization of fine sediment in surface water.

Construction activities would substantially disturb soils (as described in Section 3.1, *Geology and Soils*) and surface drainage courses adjacent to or within the wetted perimeter of West Creek. Construction-related contaminants could potentially be carried into surface waters with surface runoff from the project corridor during construction. Implementation of BMPs would reduce these construction-related effects to less-than-significant levels but would have a greater effect on hydrology and water quality than Alternative B.

Under Alternative C, like the No Action Alternative, operational effects on surface hydrology would continue at Peterson Springs. The water supply from this spring would continue to be available to Westport in emergency situations. Unlike Alternative B, Alternative C would include permanent effects on West Creek from narrowing the channel or floodway through the placement of riprap and rebuilding the access road. These effects have a potential for long-term increases in surface runoff volume and changes in runoff patterns. Alternative C would require riprap and bank hardening for repair to Segments 1, 2, and 3 of the roadway embankment (Figure 2.5-1). Bank hardening along 405 feet (2 percent) of a 4-mile long drainage area would have a moderate additive effect on hydrology. Although slope stability for the roadway embankment would be repaired, changes in hydrology could result in flooding off site.

Based on these impacts and the history of flooding in West Creek, there is a high probability under Alternative C for future repetitive damage to the water supply and access road.

Implementation of permanent stormwater BMPs under Alternative C would minimize offsite erosion, sedimentation, and water quality impairments and reduce operational effects to less-than-significant levels but would have a substantially greater effect on hydrology and water quality than Alternative B.

Mitigation Measures and Residual Effects

As with Alternative B, the BMPs described in Section 2.4 would ensure that potential effects on hydrology and water quality would be less than significant. Westport would comply with all permit requirements and would meet or exceed local, state, and federal requirements.

Significant and Unavoidable Adverse Effects

Implementation of Alternative C would have no significant or unavoidable adverse effects on hydrology, water quality, or floodplain resources. However, Alternative C would have a greater effect on hydrology and water quality than Alternative B.

3.3 VEGETATION AND WETLANDS

The following section describes the vegetation and wetlands in the vicinity of the project area; applicable plans, policies, regulations, and laws pertaining to work in or near sensitive plant species, plant communities, wetlands, and invasive plants; and the effects of the project alternatives on vegetation and wetlands.

3.3.1 AFFECTED ENVIRONMENT

To evaluate the potential effects of the project alternatives on vegetation and wetlands, the affected environment has been defined as sensitive plant species, plant communities, wetlands, and invasive plants known to occur in the project area. In this section, the Alternative B and Alternative C sites are collectively referred to as the project alternative sites.

3.3.1.1 Federally Listed Plant Species

AECOM contacted the Oregon Natural Heritage Information Center (ORNHIC) to request a data system search for rare, threatened, and endangered plant records within both project alternative sites (ORNHIC 2009). A review was also made of federally listed plant species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) that may occur within Clatsop County (USFWS 2010). A literature review was conducted using the Oregon Flora Project rare plant guide (OSU 2010). Based on the review of data from ORNHIC, USFWS, and Oregon Flora Project and the field evaluation of potential habitat in the vicinity of the project alternative sites conducted in August 2009, federally listed threatened or endangered plant species are not likely to occur in the project area.

3.3.1.2 Upland Vegetation

Historically, the project area and vicinity included conifer forests typical of the western hemlock (*Tsuga heterophylla*) forest zone in the Coast Range Province of northwestern Oregon (Franklin and Dyrness 1988). Most of these forests have been converted to relatively young forest stands that have followed clearing, logging and wildfire, and development of the water system. Upland vegetation at the Alternative B site includes disturbed uplands, mixed conifer / hardwood forest, Douglas-fir (*Pseudotsuga menziesii*) forest, red alder (*Alnus rubra*) forest, and mixed urban environments. Upland vegetation at the Alternative C site includes disturbed uplands, mixed conifer / hardwood forest, and mixed urban environments.

Alternative B Site

Disturbed Uplands

The majority of the Alternative B site consists of previously disturbed and maintained areas associated with the existing water pipeline right-of-way that is also used as an access road. Many of these previously disturbed areas have compacted soils and are steep and/or rocky; they support only very sparse vegetation. Flat portions of the right-of-way have compacted soils that perch water and support hydrophytic plant species such as creeping bentgrass (*Agrostis stolonifera*), curly knotweed (*Polygonum lapathifolium*), reed canarygrass (*Phalaris arundinacea*), stinging nettle (*Urtica dioica*), toothed dock (*Rumex dentatus*), and creeping buttercup (*Ranunculus repens*). Himalayan blackberry

(Rubus armeniacus) and stinging nettle are found scattered throughout the Alternative B site in association with roadside vegetation and pullouts (Figure 3.3-1, *Plant Communities Photos*).

Mixed Conifer / Hardwood Forest

Mixed conifer / hardwood forest (Figure 3.3-1) comprises 30- to 40-year old trees ranging in height from 30 to 50 feet. The understory is generally open with a low shrub layer. Mixed conifer / hardwood forest on the Alternative B site is composed of red alder, Douglas-fir, big-leaf maple (*Acer macrophyllum*), western hemlock, vine maple (*Acer circinatum*), red elderberry (*Sambucus racemosa*), salmonberry (*Rubus spectabilis*), red huckleberry (*Vaccinium parvifolium*), western hazelnut (*Corylus cornuta*), redwood sorrel (*Oxalis oregana*), and sword fern (*Polystichum munitum*). This forest type is common and abundant around both of the proposed Peterson and Knapp Springs development areas.

Douglas-fir Forest

Even-aged stands of young Douglas-fir forest are common on Clatsop State Forest land and are intermixed with mixed conifer / hardwood stands and red alder stands on the Alternative B site. The forest conditions are typical of even-age timber stands managed by ODF (Figure 3.3-1). The 30-year old trees are approximately 40 feet tall. The understory is open with little shrub species. Douglas-fir forest on the Alternative B site is composed of Douglas-fir, sword fern, and redwood sorrel.

Red Alder Forest

Red alder trees form a dense, tall tree layer that shades the understory. Salmonberry, red elderberry, and sword fern are common understory species. These stands grow in substrates that are generally rocky and have thin, poorly developed topsoil.

Mixed Urban Environments

The mixed urban environment area is limited to the cleared, unvegetated gravel area around the Wauna water tank and related facilities.

Alternative C Site

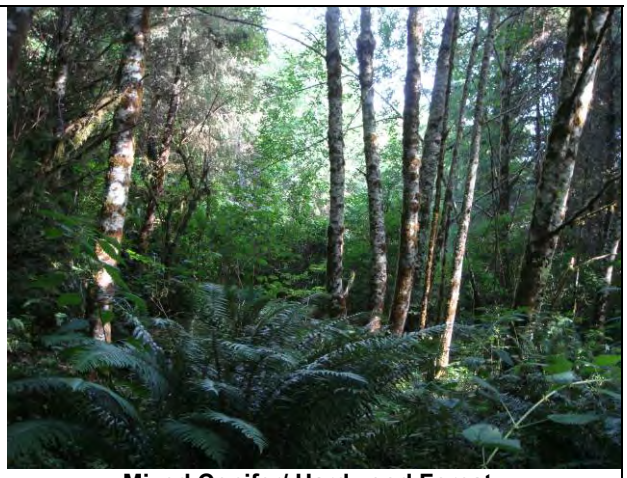
Disturbed Uplands

Similar to the Alternative B site, the majority of the Alternative C site consists of previously disturbed and maintained areas associated with the existing water pipeline right-of-way, which is also used as an access road to the West Creek reservoir. Many of these previously disturbed areas have compacted soils and are steep and/or rocky; they support only very sparse vegetation.

Mixed Conifer / Hardwood Forest

Similar to the Alternative B site, mixed conifer / hardwood forest comprises 30- to 40-year old trees ranging in height from 30 to 50 feet. The understory is generally open with a low shrub layer. Mixed conifer / hardwood forest on the Alternative C site occurs on steep slopes west of the access road. Typical vegetation is composed of red alder, Douglas-fir, big-leaf maple, vine maple, red elderberry, red huckleberry, western hazelnut, redwood sorrel, and sword fern.

Disturbed Uplands



Mixed Conifer/ Hardwood Forest

Douglas Fir Forest

Red Alder Forest

Mixed Urban Environments

Gravel Access Road

Plant Communities Photos

Figure 3.3-1

Mixed Urban Environments

The mixed urban environment area is limited to the cleared, unvegetated gravel area around the Westport reservoir dam and associated facilities.

3.3.1.3 Wetland and Riparian Vegetation

Alternative B Site

Wetlands

Five small wetlands were delineated in or near the Alternative B site (AECOM 2010a). Wetlands in the northern portion of the Alternative B site include Wetlands A, B, and B-1; wetlands in the southern portion of the Alternative B site include Wetlands C and D (Figure 2.4-1). Photos of each wetland are provided in Figure 3.3-2, *Wetland Photos*.

Wetland A extends from Knapp Springs to McFarlane Creek. The Cowardin class for this wetland is palustrine scrub-shrub. Dominant vegetation in the shrub stratum consists of salmonberry and thimbleberry (*Rubus parviflorus*). The slopes surrounding the spring and the west bank of McFarlane Creek have been altered due to the installation of a pump house, intake boxes at two spring locations, and pipes. Site alterations around Knapp Springs due to water system development include vegetation clearing around the water system facilities.

Wetland B occurs adjacent to an unnamed tributary to McFarlane Creek and along the existing Peterson Springs water pipeline. Wetland B occurs in a convex valley bottom. This wetland extends off site to the northeast (downstream) and to the east/southeast, upslope within a broad, shallow depressional area supporting red alder. The Cowardin class for this wetland is palustrine scrub-shrub/forested. The dominant plant species in Wetland B included stinging nettle, reed canarygrass, and creeping buttercup. Wetland B-1 is on the existing access road and buried Peterson Springs pipeline right-of-way, and is part of the same convex valley bottom that supports Wetland B. The Cowardin class for this wetland is palustrine emergent. Dominant vegetation is reed canarygrass and creeping buttercup. Vegetation was disturbed during road construction.

Wetland C is fed by Peterson Springs and is the headwaters of McFarlane Creek. This wetland extends off site to the west within a natural channel depression that quickly transitions into McFarlane Creek. The Cowardin class for this wetland is palustrine scrub-shrub. The dominant plant species recorded at Wetland C includes salmonberry, stink current (*Ribes bracteosum*), devils club (*Oplopanax horridus*), Pacific golden saxifrage (*Chrysosplenium glechomifolium*), stinging nettle, and youth on age (*Tolmiea menziesii*). The headwater wetland vegetation has been partially cleared and maintained as part of previous water system development (access road and water diversion vault) at the site. The natural channel portion of Wetland C was also disturbed during past water development but appears to have been recontoured and become naturalized since then.

Wetland D is a linear wetland associated with outflow from a small, ephemeral drainage that originates from the south and outside of the Alternative B site. This wetland extends off site to the south. The Cowardin class for this wetland is palustrine forested. Vegetation is composed of red alder and water parsley (*Oenanthe sarmentosa*). Other herbaceous species present include Fendler's waterleaf (*Hydrophyllum fendleri*), stinging nettle, and reed canarygrass.

Wetland A

Wetland B, B-1

Wetland C

Wetland C

Wetland D

Unnamed Tributary to McFarlane Creek

Wetland Photos Figure 3.3-2

Riparian Forest

Riparian forest occurs along McFarlane Creek in the Knapp Springs area. In this area, the scoured rocky portion of the creek bed ranges in width from 5 to 15 feet. Riparian vegetation includes red alder, western red cedar (*Thuja plicata*), salmonberry, thimbleberry, youth on age, and Scouler's fumewort (*Corydalis scouleri*) and extends an average of 5 to 10 feet beyond the scoured bed along both banks of the creek. An unnamed tributary to McFarlane Creek in the Peterson Springs development area has a scoured bed averaging 12 inches in width with only rudimentary riparian vegetation along narrow, incised banks, except where the banks overlap (and become indistinguishable from) Wetland B vegetation.

Alternative C Site

Wetlands

Based on observations during a site reconnaissance and the geomorphic position of the Alternative C site, wetlands are not likely to occur. However, a formal delineation was not conducted at the Alternative C site.

Riparian Shrubland

Riparian shrublands adjacent to West Creek are dominated by salmonberry, thimbleberry, and vine maple. These areas are sparsely vegetated because of the active debris instability and exposed rocky substrate.

3.3.1.4 Invasive Plants

Himalayan blackberry is on the Oregon Department of Agriculture (ODA) weed "B" list and occurs primarily in pullouts or other areas cleared during past logging operations or during previous water pipeline development, primarily in the Peterson Springs area of the Alternative B site. A "B" designated weed is a weed of economic importance that is regionally abundant, but which may have limited distribution in some counties.

3.3.1.5 Regulatory Considerations

Numerous federal, state, and regional laws, rules, regulations, plans, and policies define the framework for protecting vegetation and wetlands in the vicinity of the project area. The following discussion focuses on requirements for vegetation and wetland protection applicable to the project.

Federal Regulations

Federal Endangered Species Act of 1973

The Endangered Species Act (ESA) serves as the primary federal protection for species and habitat, by providing a formal designation and implementing programs through which conservation of both populations and habitats may be achieved. The USFWS is responsible for the administration of ESA listed-plants. No federally listed plant species or habitats occur in the project area.

Section 404 of the Clean Water Act

Actions affecting waters of the United States and the discharge of dredged or fill material into U.S. waters, including wetlands, are regulated by Section 404 of the CWA. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the waters of the United States. The Corps regulates Section 404 activities and provides approvals and permits.

Executive Order 11990 Protection of Wetlands

Executive Order (EO) 11990 on Protection of Wetlands defines wetlands as "those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction." The EO directs federal agencies to avoid, to the extent possible, both short-term and long-term adverse effects from the occupancy and modifications of wetlands. FEMA uses the Eight Step Planning Process to meet the requirements for complying with EO 11990, as required by regulation 44 Code of Federal Regulations (CFR) Part 9. Step 1 of the planning process is to determine whether the proposed action is located in a wetland; as described above in Section 3.3.1.3 *(Wetland and Riparian Vegetation)*. The public notice for this disaster and completion of this EA will serve as the public notice for FEMA's Eight Step Planning Process for Executive Order 11990 for wetlands.

Executive Order 13112 - Invasive Species

EO 13112 requires federal agencies to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health effects that invasive species cause. The Environmental Protection standard specifications direct the contractor to implement measures and comply with laws and regulations designed to protect sensitive environmental resources including measures to prevent the spread of invasive species.

State Regulations

Oregon´s Removal-Fill Law

Oregon´s Removal-Fill Law (ORS 196.795-990) requires people who plan to remove wetland soil or place fill material in waters of the state to obtain a permit from ODSL. ODSL, in accordance with OAR 141-090-0005 through 141-090-0055, has jurisdiction over wetlands, including isolated wetlands, provided that they meet all three qualifying criteria - a prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology. ODSL, in accordance with OAR and the Corps, will conduct its own determination of the jurisdictional status of wetlands and other waters of the state and U.S. If effects on wetlands and other waters of the state or U.S. are proposed as part of a project, then the project proponent is required to submit a Joint Section 404/Removal-Fill Permit Application.

There are situations where a landowner or local government might need a determination from ODSL that a permit is not required for a specific project (ODSL 2008). While ODSL can provide general information regarding exemptions and jurisdiction, it will only provide official confirmation that a permit is not required if an application is submitted for review. If ODSL determines that the activity is exempt or otherwise not subject to its jurisdiction, then ODSL will issue a No State Permit (NSP)

Determination Letter. This letter is designed to protect the landowner. NSP Determination Letters are agency decisions and are appealable.

Noxious Weed Control

The ODA Noxious Weed Control Program provides statewide leadership and coordination for noxious weed management in Oregon; county programs enforce the state weed laws. Clatsop County has a vegetation management program to control vegetation within the county road rights-of-way. The county performs regular maintenance of roads, shoulders, and ditches to control vegetation that impedes visibility and drainage, and damages road surfaces and shoulders. The program includes mechanical and manual vegetation removal and herbicide application. County roads in the project area are a part of this program.

3.3.2 ENVIRONMENTAL CONSEQUENCES

This section describes the potential effects of the project alternatives on vegetation and wetland resources in the project area. To conduct the analysis, two AECOM ecologists assessed the affected environment through a 3-day site visit conducted on August 12-14, 2009, to collect information on general site conditions, special habitat features (including wetlands), and vegetation communities at the project site. Existing information was gathered from NRCS, USFWS, ODSL, Oregon Department of Fish and Wildlife (ODFW), and ODF regarding site conditions in the project area and vicinity, and from a literature review for applicable data pertaining to vegetation types in the vicinity, particularly sensitive wetland habitats. The analytical approach to assessing environmental consequences focuses heavily on project design elements that avoid and minimize the potential for effects on sensitive wetland resources.

3.3.2.1 Threshold of Significance

An alternative would result in a significant effect on vegetation or wetlands if it would:

- Substantially disturb or degrade a substantial amount of sensitive natural communities such as wetlands and riparian habitats
- Conflict with applicable local, state, and federal regulations.

3.3.2.2 Alternative A: No Action

Under the No Action Alternative, the proposed water system would not be constructed and the existing conditions would remain intact. Since no vegetation or wetland loss is attributable to the No Action Alternative, there would be no direct, indirect, cumulative, or construction effects.

3.3.2.3 Alternative B: Proposed Action

Under Alternative B, a reliable water supply would be developed at Peterson and Knapp Springs for the Westport community water system. Short-term effects include land-disturbing activities that impact native vegetation. At this stage of design, no effects on Wetlands B, B-1, or D are planned. Existing water system structures in wetland areas would be replaced. Removal of existing facilities and installation of new facilities would occur within the existing footprints.

Short-term construction-related effects include temporary disturbance of wetlands and vegetation. Wetland A and Wetland C could be disturbed during construction. Approximately 549 square feet of temporary effects on Wetland A are anticipated during redevelopment of Knapp Springs. Approximately 6 cubic yards of wetland soil would be temporarily removed and fill placed within Wetland A during the replacement of existing collection boxes at Knapp Springs. Approximately 152 square feet of temporary effects on Wetland C are anticipated during redevelopment of Peterson Springs. Approximately 11 cubic yards of wetland soil would be temporarily removed and fill placed during the replacement of the existing pipeline at Peterson Springs. Westport would likely obtain a removal-fill permit or a determination from ODSL that a permit is not required for this specific project. Construction also could lead to the spread and colonization of invasive, non-native species including noxious weeds. Soil disturbance provides opportunities for noxious weeds to compete with native plants species.

Operation under Alternative B would permanently alter existing plant communities. Approximately 0.04 acre of mixed conifer / hardwood forest and 0.04 acre of riparian forest would be permanently cleared and removed to install a pipeline to convey water from Knapp Springs to the Wauna water tank. No permanent impacts on wetlands near Peterson or Knapp Springs are anticipated. These effects are minor and implementation of vegetation and wetland protective measures would reduce these operational effects to less-than-significant levels.

Mitigation Measures and Residual Effects

BMPs as described in Section 2.4 would reduce potential effects on vegetation and wetlands. Westport would comply with all permit requirements; implementation of the TESC and SPCC plans and BMPs would meet or exceed local, state, and federal requirements. The following mitigation measures also would be implemented prior to or during construction to ensure that effects on wetlands would be less than significant:

- Consult/coordinate with ODSL and the Corps on permit requirements.
- Use flagging and fencing to protect wetlands.
- Salvage wetland soil where possible.
- Develop/implement a weed management plan.
- Develop/implement a revegetation plan for temporarily disturbed wetland areas.

Significant and Unavoidable Adverse Effects

Implementation of Alternative B, as mitigated, would have no significant or unavoidable adverse effects on vegetation or wetlands.

3.3.2.4 Alternative C: Repair Road and Water Facilities

Under Alternative C, the access road and water system distribution facilities at West Creek would be repaired. Short-term construction-related activities that could affect vegetation and wetlands include stabilization of the slope embankment for road repairs and placement of riprap for a retaining wall within the West Creek floodway.

Short-term effects would include clearing of riparian vegetation between the access road and West Creek. Reconstruction of the access road to the reservoir and repair of the water conveyance system

would remove less than 0.01 acre of riparian shrubland habitat. Some areas would be permanently impacted from the placement of fill material and riprap; the remaining areas would be revegetated following construction. Under Alternative C, like the Alternative B, Westport would likely obtain a removal-fill permit. Construction also could lead to the spread and colonization of invasive, non-native species including noxious weeds.

Operation under Alternative C would permanently alter existing riparian areas. These effects would be minor, and implementation of vegetation protective measures would reduce these operational effects to less-than-significant levels, comparable to the effects on vegetation under Alternative B.

Mitigation Measures and Residual Effects

Like Alternative B, BMPs as described in Section 2.4 would reduce potential effects on vegetation and wetlands. Westport would comply with all permit requirements; implementation of the TESC and SPCC plans and BMPs would meet or exceed local, state, and federal requirements. The consultation requirements and mitigation measures listed above for Alternative B would not be implemented, given the assumption that no wetlands are present on the Alternative C site.

Significant and Unavoidable Adverse Effects

Implementation of Alternative C would have no significant or unavoidable adverse effects on vegetation or wetlands. It would not involve the temporary construction-related effects on wetlands described above for Alternative B.

3.4 FISH AND WILDLIFE

The following section describes the fish and wildlife in the vicinity of the project; applicable plans, policies, regulations, and laws pertaining to work in or near sensitive fish and wildlife habitats and the protection of fish and wildlife; and the effects of the project alternatives on fish and wildlife.

3.4.1 AFFECTED ENVIRONMENT

To evaluate the potential effects of the project alternatives on fish and wildlife, the affected environment has been defined as those species known to occur in the vicinity of the project area or likely to occur given the presence of suitable habitat and known distribution in the general area. In this section, the Alternative B and Alternative C sites are collectively referred to as the project alternatives sites.

3.4.1.1 Wildlife and Habitat

Wildlife habitats in the immediate vicinity of the project include mixed conifer / hardwood forest, Douglas-fir forest, riparian forest, and wetlands. The disturbed uplands and mixed urban environments are small and described as part of the mixed conifer / hardwood forest. A description of each plant community is provided in Section 3.3 (*Vegetation and Wetlands*). Habitat in the vicinity of both the Alternative B and Alternative C sites is similar and primarily composed of mixed conifer/hardwood forest and Douglas-fir forest. Each of these habitats is described below.

Mixed Conifer / Hardwood Forest

The mixed conifer / hardwood forest is the dominant wildlife habitat on both project alternative sites. In the northern portion of the Alternative B site, this habitat occurs on the edge of rural residences in the community of Oklahoma Hill and a Bonneville Power Administration (BPA) transmission line corridor. This habitat also occurs on the western portion of Alternative C site. Wildlife typical of low-density urban environments and disturbed upland areas frequently use the mixed conifer / hardwood forest habitat. The northern flicker (*Colaptes auratus*), downy woodpecker (*Picoides pubescens*), dark-eyed junco (*Junco hyemalis*), American robin (*Turdus migratorius*), and black-capped chickadee (*Poecile atricapillus*) are common birds of the vicinity. Black-tailed deer *(Odocoileus hemionus columbianus)* are commonly observed in the area. Deer mouse (*Peromyscus maniculatus*) and Douglas squirrel (*Tamiasciurus douglasii*) were also observed in this habitat. Garter snakes (*Thamnophis* spp.) are one of the common reptiles likely to inhabit this forest.

Douglas-fir Forest

Douglas-fir forest occurs on the southern portion of the Alternative B site and in the general vicinity of the Alternative C site. This habitat is less diverse than the mixed conifer / hardwood forest and has little to no coarse woody debris in the understory. Common birds that occur in this habitat include American robin, dark-eyed junco, winter wren (*Troglodytes troglodytes*), and red-breasted nuthatch (*Sitta canadensis*). Mammals and reptiles that occur in the adjacent mixed conifer / hardwood forest are also common in this habitat.

Riparian Forest and Wetland

Riparian forest and wetlands on the Alternative B site occur along the unnamed tributary to McFarlane Creek, McFarlane Creek, and Knapp and Peterson springs. Portions of the Alternative C site include riparian shrublands, but no wetlands are present because of the steep terrain where the original road was built. Riparian and wetland habitats typically have a high degree of diversity because of lateral inputs of organic matter, disturbance regimes, microclimate, and proximity to water (Johnson and O'Neil 2001). Wildlife associated with the mixed conifer / hardwood forest frequently move between riparian forest and wetland habitats. The golden crown sparrow (*Zonotrichia atricapilla*), common yellowthroat (*Geothlypis trichas*), and warbling vireo (*Vireo gilvus*) are common in the riparian forest and wetland habitats. Amphibian species typically encountered include the northern red-legged frog (*Rana aurora*) and Pacific treefrog (*Hyla regilla*). Columbia torrent salamanders (*Rhyacotriton kezeri*) were observed near Knapp Springs in Wetland A during the August 2009 site visit.

3.4.1.2 Fish and Habitat

Alternative B

McFarlane Creek is the only fish-bearing stream on the Alternative B site. The segment of McFarlane Creek that crosses the Alternative B site is primarily riffle habitat. Stream gradient along this reach of the creek is 5 to 10 percent. The creek's active channel is 15 to 20 feet in width and forms a broad valley floor with a constraining terrace 6 feet wide. Channel morphology is unconstrained and the channel is stable on both banks of the creek. The stream substrate is characterized by fines/silts with a subdominant substrate of cobbles on the terrace. McFarlane Creek and its tributaries on the Alternative B site support a community of resident fish and aquatic invertebrates.

Resident species that potentially occur in McFarlane Creek include cutthroat trout (*Oncorhynchus clarki*), prickly sculpin (*Cotus asper*), speckled dace (*Rhinichthys osculus*), redside shiner (*Richardsonius balteatus*), and three-spine stickleback (*Gasterosteus aculeatus*). Only cutthroat trout and sculpin have been confirmed on the Alternative B site (pers. comm., T. Murtagh 2009). Aquatic organisms that constitute the prey base for resident fish in McFarlane Creek likely include floating insect larvae and adults.

Alternative C

West Creek is the primary water feature on the Alternative C site. The segment of West Creek that crosses the Alternative C site is primarily riffle habitat. Stream gradient along this reach is approximately 10 percent. The valley floor is 50 feet wide and confined by steep slopes. The stream substrate is primarily cobble with areas of sediment and debris that were deposited by landslides and flooding.

Southwest Washington winter run steelhead trout (*Oncorhynchus mykiss*) are documented throughout West Creek. This run of steelhead trout is a federal species of concern (NOAA Fisheries 2010). Spawning habitat occurs above the water supply reservoir from river mile 2.49 to 4.08 (StreamNet 2010). Migrating steelhead adults occur in West Creek year round. Winter-run fish typically enter freshwater from November to April. Spawning occurs from January through May, with fry emerging from March into July, generally peaking in April and May. Smolt outmigration

generally occurs from March to June, with peak smolt movement usually in April or May (69 Federal Register [FR] 74616). Resident species that potentially occur in West Creek include cutthroat trout, prickly sculpin, speckled dace, redside shiner, and three-spine stickleback.

3.4.1.3 Federally Listed Species

AECOM contacted the ORNHIC to request a data system search for rare, threatened, and endangered animal records within both project alternative sites (ORNHIC 2009). Based on the data system search, a review of the federally listed species under the jurisdiction of the USFWS that may occur within Clatsop County (USFWS 2010), federally listed species under the jurisdiction of the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) (NOAA Fisheries 2010), evaluation of potential habitat in the vicinity of the project, and field observations, no rare, threatened, or endangered fish or wildlife species are likely to occur in the vicinity of the Alternative B site. However, threatened fish are documented in the Alternative C site as described below.

Alternative B

On the Alternative B site, no sensitive salmonid species use McFarlane Creek or its tributaries. A culvert on the unnamed tributary to McFarlane Creek is a velocity barrier to fish downstream of the Alternative B site. McFarlane Creek crosses under Oklahoma Hill Road, Taylorville Road, and Highway 30 via culverts before reaching Driscoll Slough. According to StreamNet (2010), no sensitive salmonid species are present in McFarlane Creek or Driscoll Slough despite a direct surface connection to the Columbia River. ODFW conducted a fisheries resource evaluation within the Alternative B site and vicinity. ODFW district fish biologists confirmed that no federally listed fish use McFarlane Creek (pers. comm., T. Murtagh 2009).

Alternative C

Lower Columbia River (LCR) coho salmon (*Oncorhynchus kisutch*) are documented in West Creek within the damage site (Alternative C) (StreamNet 2010). LCR coho salmon are listed as threatened under the federal ESA (NOAA Fisheries 2010, ORNHIC 2009). In West Creek, LCR coho salmon use is limited to rearing and migration; no spawning habitat is documented (StreamNet 2010). The damage site reach features a moderate gradient and fast-moving riffle habitat. Table 3.4-1 summarizes federally listed fish species documented in West Creek and the damage site.

Table 3.4-1. Federally Listed Species in the Damage Site (Alternative C).

Common Name (*Scientific Name*) ESU	Federal Status	Oregon Status
Coho salmon (*Oncorhynchus kisutch)* Lower Columbia ESU	Threatened	Endangered

ESU = evolutionarily significant unit.
Sources: NOAA Fisheries 2010, ORNHIC 2009, StreamNet 2010.

In general, coho salmon enter rivers in October and spawn in November and December. Smolts spend one spring and summer rearing in small, low-gradient streams, beaver ponds, and freshwater

tidal marshes and move to off-channel slow-moving water refuge during the winter. The following spring, juvenile coho salmon migrate downriver and feed in the estuary for a period of time before entering the ocean (NOAA Fisheries 2005).

3.4.1.4 Regulatory Considerations

Numerous federal, state, and regional laws, rules, regulations, plans, and policies define the framework for protecting fish and wildlife in the vicinity of the project area. The following description focuses on fish and wildlife protection requirements applicable to the project.

Federal Endangered Species Act of 1973

The Endangered Species Act (ESA) serves as the primary federal protection for species and habitat, by providing a formal designation and implementing programs through which the conservation of both populations and habitats may be achieved. Two agencies are responsible for the administration of the ESA: the USFWS and NOAA Fisheries. No federally listed fish or wildlife species or habitats occur on the Alternative B site. Only the federally listed coho salmon (LCR Evolutionarily Significant Unit [ESU]) are documented in West Creek within the Alternative C site (StreamNet 2010). Any federal action in West Creek would require compliance with the ESA.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill…any migratory bird, or any part, nest or egg of any such bird, included in the terms of conventions" with certain other countries (16 U.S. Code [USC] 703). This prohibition includes direct and indirect acts, although harassment and habitat modification are not included unless they result in the direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds in Oregon, including the recently delisted bald eagle (*Haliaeetus leucocephalus*).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits the take, possession, sale, purchase, barter, offer to sell, purchase, or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 USC 668(a); 50 CFR 22). No bald or golden eagle habitat occurs in the project area.

Fish and Wildlife Coordination Act Consultation (16 USC 661-666)

The Fish and Wildlife Coordination Act (as amended) requires consultation with the USFWS and the fish and wildlife agencies of states where "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted, or otherwise controlled or modified" by any agency under a federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources."

Magnuson-Stevens Act

The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 104-267), as amended by the Sustainable Fisheries Act of 1996, mandates federal action agencies that fund,

permit, or carry out activities that may adversely affect the Essential Fish Habitat (EFH) of federally managed fish species to consult with NOAA Fisheries regarding the potential adverse effects of their actions on EFH (Section 305 (b)(2)). EFH does not occur on the Alternative B site. Coho salmon are documented on the Alternative C site in West Creek (StreamNet 2010). Any federal action in West Creek would require compliance with the Magnuson-Stevens Act.

3.4.2 ENVIRONMENTAL CONSEQUENCES

This section describes the potential effects of the alternatives on fish and wildlife and their habitat within the vicinity of the project. To conduct the analysis, two AECOM ecologists assessed the affected environment through a 3-day site visit conducted on August 12-14, 2009, documenting the characteristics of habitats, plants, and wildlife in field notes and through photographs of notable habitat features. Existing information was gathered from the NOAA Fisheries, USFWS, ORNHIC, ODFW, and from a review of applicable scientific literature pertaining to species and habitats within the affected area. The analytic approach focused on the following:

- The level and intensity of effect(s) associated with the proposed project.
- The level of species use of the affected environment.
- Home ranges and habitat needs of species using the affected environment.
- Relative importance of the affected environment to species.
- The uniqueness of the affected environment within the landscape.

3.4.2.1 Threshold of Significance

An alternative would result in a significant effect on fish and wildlife if it would:

- Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, or reduce the number or restrict the range of a federal or state endangered, rare, or threatened species;
- Interfere substantially with the movement of any native resident or migratory wildlife or fish species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or
- Conflict with the provisions of an approved local, regional, or state habitat conservation plan or other applicable local, state, and federal regulations.

3.4.2.2 Alternative A: No Action

Environmental Consequences

Under the No Action Alternative, the proposed water system would not be constructed and the existing conditions would remain intact. Since no fish or wildlife habitat loss is attributable to the No Action Alternative, there would be no indirect, cumulative, or construction effects.

3.4.2.3 Alternative B: Proposed Action

Under the Proposed Action, potential short-term effects on fish and wildlife species could result from construction activities. Initial effects on the Alternative B site during construction would include vegetation clearing, ground disturbance, and soil compaction. In addition, short-term effects on fish and wildlife species include construction noise. General construction-related terrestrial noise and underwater vibration would be associated with heavy equipment, such as bulldozers and backhoes. Noise and other disturbances caused by construction crews may cause fish and wildlife to move away from the construction area. Since the habitat areas found on the Alternative B site are connected to other similar habitats, many species would temporarily relocate in these nearby areas during construction. In the long term, wildlife species would return to the area.

If environmental protection measures are not implemented, the project could also affect fish and wildlife habitat through the introduction and spread of noxious and invasive plant species during construction. Because construction effects would be limited in duration and low in intensity, short-term construction effects on fish and wildlife under the Proposed Action would be minor.

Effects of the Proposed Action on wildlife would result from wildlife habitat that would be permanently altered by the proposed project. Approximately 0.04 acre of mixed conifer / hardwood forest and 0.04 acre of riparian forest would be permanently cleared and removed to accommodate a pipeline to divert water from Knapp Springs to the Wauna water tower. Approximately 20 cubic yards of wetland soil is anticipated to be displaced at Knapp Springs during the replacement of existing collection boxes. Because these areas are small and connected to larger habitat areas, wildlife would be able to adjust to the modified habitat. The Proposed Action would have no long-term operational effects on fish. Water withdrawal from Knapp Springs would be minor and not affect the flow of McFarlane Creek. Long-term operational effects on fish and wildlife under the Proposed Action would likely be minimal and considered less than significant.

Mitigation Measures and Residual Effects

BMPs as described in Section 2.4 would reduce potential effects on fish and wildlife. The following mitigation measures also would be implemented prior to or during construction to ensure that effects on fish and wildlife would be less than significant:

- Conduct construction-related activities to coincide with periods when fish and wildlife are least sensitive to disturbance. These would include, among others, nesting and brooding periods (from nest building to fledgling of young).
- If possible, inspect vegetation for active nests prior to clearing (USFWS 2005).
- If an active nest is encountered, avoid disturbing the nest or surrounding vegetation until the young have fledged.
- Work during the driest time of year and recommend in-water work window. The preferred in-water work period for the project area is July 15 to September 15 (ODFW 2008).

Significant and Unavoidable Adverse Effects

Implementation of Alternative B, as mitigated, would have no significant or unavoidable adverse effects on fish and wildlife or their habitat.

3.4.2.4 Alternative C: Repair Road and Water Facilities

Because Alternative C is separated geographically from Alternative B and has different resources, the analysis for wildlife and fish effects are described separately.

Wildlife

Similar to Alternative B, Alternative C could have potential short-term effects on wildlife species that result from construction activities. Initial effects at the damage site during construction would include vegetation clearing, ground disturbance, and soil compaction. Construction-related effects on wildlife under Alternative C are comparable to Alternative B. Because construction effects would be limited in duration and low in intensity, short-term construction effects on wildlife under Alternative C would be minor.

Effects of Alternative C on wildlife would result from wildlife habitat being permanently altered. Because these areas are small and connected to larger habitat areas, wildlife would be able to adjust to the modified habitat. In addition, the damage site and wildlife habitat are already disturbed from the 2007 storms, with trees down and debris in West Creek. Rebuilding the access road to the reservoir and repairing the water conveyance system would remove less than 0.01 acre of riparian shrubland habitat. Operational effects on wildlife under Alternative C would likely be minimal, considered less-than-significant, and comparable to effects under Alternative B.

Fish

Construction-related effects on fish under Alternative C would be greater than under Alternative B. It is anticipated that portions of West Creek would need to be dewatered during construction and slope stabilization. Dewatering of West Creek would likely include fish handling and exclusion of threatened juvenile coho salmon. Fish handling can stress fish and cause mortality, and would have a direct effect on species that inhabit the stream (including steelhead trout and federally threatened coho salmon). In addition, construction practices would increase turbidity and sedimentation in West Creek. Sedimentation and turbidity are primary contributors to the degradation of salmonid habitat (Bash et al. 2001). High levels of turbidity can reduce feeding efficiency and food availability, clog gillrakers, and erode gill filaments of salmonids (Bruton 1985; Gregory 1993).

All construction activities would occur during the recommended ODFW in-water work window of June 15 through September 15 (ODFW 2008), when the abundance of outmigrating and rearing juvenile coho salmon in West Creek would be at its lowest for the year. There would be a long-term adverse effect on fish habitat from the placement of riprap for stabilization on the banks of West Creek (Cramer and Bates 2003; Roni and Quinn 2001). However, the area affected by riprap would be small (less than 1,500 square feet) along 3 segments of damaged embankment. Based on these factors, Alternative C effects on fish are considered less less-than-significant but substantially greater than the Alternative B.

If Alternative C were constructed (rather than Alternative B), FEMA would need to prepare a Biological Assessment in compliance with the ESA and consult with NOAA Fisheries regarding the adverse effects on coho salmon habitat from the reconstruction of the road.

Mitigation Measures and Residual Effects

BMPs as described in Section 2.4 would reduce potential effects on fish and wildlife. The mitigation measures listed above for Alternative B also would be implemented prior to or during construction to ensure that effects on fish and wildlife would be less than significant.

Significant and Unavoidable Adverse Effects

Implementation of Alternative C, as mitigated, would have no significant or unavoidable adverse effects on fish and wildlife or their habitat. Under Alternative C, there would be effects on a federally listed fish species (LCR coho salmon), but these effects would not substantially degrade the quality of the environment, substantially reduce the habitat of LCR coho salmon, or reduce the number or restrict the range of this threatened species.

3.5 LAND USE AND RECREATION

Land use and recreation in the project area are described in this section, including current conditions and how each of these resource areas may be affected by the alternatives under consideration.

3.5.1 AFFECTED ENVIRONMENT

3.5.1.1 Land Use

The project area is primarily second-growth forest land, and the primary land use is forestry with water supply facilities in the immediate area. Informal recreation use also occurs at both the Alternative B and C sites.

The Alternative B site is located on five tax parcels; the Wauna facilities, including the access road, Wauna water tank, and minor water collection infrastructure, are the primary developments in the Alternative B site area. One of the five parcels, parcel number 806000002900, is part of the Clatsop State Forest, owned by the State of Oregon and zoned as Forest-80 (F-80) lands, with timber production the primary land use under this designation (Clatsop County 2010). The four remaining parcels are privately owned and located outside of the Clatsop State Forest; these are zoned Agriculture-Forestry (AF) (Clatsop County 2010). All five properties are designated in the Clatsop County Comprehensive Plan as Conservation Forest Lands (Clatsop County 2007a). Wauna has an easement with ODF to access water supply facilities and withdraw water on state forest land. Similarly, there is a 50-foot wide easement for portions of the access road that cross private lands as well as a new 10-foot easement for the pipeline to access Knapp Springs. Ownership, acreages and land use class according to the tax assessor's office (Clatsop County 2010) are listed in Table 3.5-1.

The Alternative C site is located on two parcels within the Clatsop State Forest, that are zoned F-80 with timber production the primary land use (Clatsop County 2010).

Table 3.5-1. Tax Parcel Land Use Class and Zoning for Alternative B and C Sites.

Alternative Site	Tax Parcel #	Acreage	Ownership	Zoning Designation
B	806000002900	400	State of Oregon	F-80
B	80634A000100	32.11	Gerttula	AF
B	80634A000200	0.92	Wauna Water District	AF
B	80634A000400	14.78	Knapp	AF
B	80634A000700	18.67	Knapp	AF
C	706070000100	64	State of Oregon	F-80
C	706010000101	9.9	State of Oregon (Leased by Westport Water Association)	F-80

Source: Clatsop County 2010. Zoning regulations (Clatsop County 2007b).

Water supply facilities (e.g., intake, distribution, treatment, and reservoir/impoundment facilities) are permitted under the conditions described in Section 3.550 (F-80) and Section 3.510 (AF) of the Clatsop County Zoning Ordinance (Clatsop County 2007b). Access to the Wauna facilities at the Alternative B site is via Oklahoma Hill Road, continuing south of the regional power transmission line. Roads in the vicinity of the Alternative B site are primarily dirt with a crushed rock surface, and lead directly from Highway 30 through rural residential areas to the Clatsop State Forest lands,

encouraging local recreational access along these roads. Figure 2.4-1 depicts the affected parcels and Clatsop State Forest boundary within the project area.

The Alternative C site is accessed via Hungry Hollow Loop Road, which connects to a dedicated native-surfaced road that parallels West Creek and provides access to the Westport water supply system facilities. This dedicated road is gated and is intended only for access to the water supply facilities. Westport has an easement with ODF to access water supply facilities and withdraw water on state forest land, as well as easements with private landowners along the access road.

3.5.1.2 Recreation

There are no developed recreation facilities within or near the project area, and there is no formal recreation access to the project area. Recreation opportunities in the portion of the Clatsop State Forest near the study area are informal and have been defined by users. According to the Clatsop State Forest Recreation Management Plan, the area is designated for non-motorized recreational use (ODF 2000). The roads providing access to Wauna and Westport water system facilities are gated; however, dispersed hiking, wildlife viewing, forest edibles gathering, mountain biking, and other activities common to forest recreation likely occur, especially among locals who are familiar with the area. There is some evidence of unauthorized off-road (ORV) vehicle use and informal ORV trails at the Alternative B site. These trails do not connect with the designated ORV areas approximately 1.2 miles to the south (ODF 2000).

3.5.1.3 Regulatory Considerations

Oregon State

Under Oregon law, all water is publicly owned (ORS 537.110). With some exceptions, cities, farmers, factory owners, and other users must obtain a permit or water right from OWRD to use water from any source, whether or not the water source is on land or property owned by the permit applicant. Wauna, the partner agency joining with Westport to facilitate Alternative B, has current water use rights dating from 1972 under certificate # 82813 for both Peterson and Knapp Springs (OWRD 2010). Westport has water use rights for West Creek at the Alternative C site under certificate #79995 dating from 1965 (OWRD 2010).

Clatsop State Forest

The southern portion of the Alternative B site and all of the Alternative C site are within the Clatsop State Forest, which is managed under the Northwest Oregon State Forests Management Plan (ODF 2001), and the Clatsop State Forest Recreation Management Plan (RMP) (ODF 2000). The Northwest Oregon State Forests Management Plan notes that over 90 percent of State Forest lands are forested, and directs that these lands be managed primarily for timber production revenues for counties, local taxing districts, and the Common School Fund (ODF 2001). Water supply facilities are recognized as a necessary land use within the management plan, and are permitted and managed through OWRD (ODF 2001).

Although there are no developed recreation facilities in the general vicinity of either alternative site, both the Clatsop State Forest Recreation Management Plan and the Northwest Oregon State Forests Management Plan list five overarching management goals intended to protect recreation resources within the State Forests. These strategies include:

- Goal 1: Provide diverse forest recreation opportunities that supplement, rather than duplicate, opportunities available in the region.
- Goal 2: Provide opportunities for interpretation and outdoor education on State Forest lands.
- Goal 3: Manage recreational use of the forests to minimize adverse impacts on other resources and adjacent ownerships.
- Goal 4: Minimize conflict among user groups.
- Goal 5: Maintain compatibility with Oregon's Statewide Planning Goal 8 (Recreational Needs).

Clatsop County

The northern portion of the Alternative B site is on privately held land within Clatsop County, subject to the Clatsop County Comprehensive Plan, which describes the county's implementation of the Oregon Statewide Planning Goals (OAR 660-015). Under the Clatsop County Comprehensive Plan, the county suggests implementation of BMPs and consistency with land use planning goals that integrate accepted practices to protect recreation resources and discourage incompatible land uses (Clatsop County 2007a). Development and maintenance of water supply facilities are permitted under the Clatsop County Zoning Ordinance for zoning designations AF and F-80, generally subject to planning and design review by the county (Clatsop County 2007b). Mike Weston, Clatsop County Planner, confirmed the applicability of the Clatsop County Zoning Ordinance and Clatsop County Comprehensive Plan to these facilities (pers. comm., Weston 2010).

3.5.2 ENVIRONMENTAL CONSEQUENCES

This section describes the potential effects of the alternatives under consideration on land use and recreation resources within the immediate vicinity of the project. Mitigation measures to offset any identified effects are also described, as applicable.

3.5.2.1 Threshold of Significance

An alternative would result in a significant effect on land use and recreation resources if it would:

- Have a significant, adverse impact on existing, authorized land uses in the vicinity;
- Be significantly impacted by existing, authorized land uses in the vicinity;
- Have a substantial direct or indirect impact on the quantity or quality of recreation activities in the vicinity; or
- Conflict with the land use or recreation policies, goals, or management intent as set forth in the Northwest Oregon State Forests Management Plan (ODF 2001), Clatsop County Comprehensive Plan (Clatsop County 2007a), or Clatsop County Zoning Ordinance (Clatsop County 2007b).

3.5.2.2 Alternative A: No Action

Under the No Action Alternative, FEMA would not provide funding assistance for the Proposed Action; no changes to land use or recreation resources would occur and no impacts are anticipated.

3.5.2.3 Alternative B: Proposed Action

Under Alternative B, the existing Wauna water supply facilities would be improved. This change would be minor, would disturb less than 1 acre of state and private forest land, and would not change the existing land use. Water supply facilities for municipal use are specifically permitted under the applicable Clatsop County Zoning Ordinance (Clatsop County 2007b) and are consistent with the Clatsop County Comprehensive Plan (Clatsop County 2007a).

Upgrades to security fencing would preclude unauthorized access to either water supply source and related facilities and roads. No developed recreational facilities are available; therefore, no changes to formal recreational opportunities would occur. The fencing would preclude local access to the springs and reduce unauthorized access. Since the access road is already fenced, the effect on existing informal recreation use would be minor.

Land use would not change with the improvements to the water supply facilities and access. Although security would be improved, informal recreation use may still occur in the vicinity. Plans and designs for the proposed project would comply with all permit requirements (Clatsop County 2007b). The Proposed Action also would be consistent with provisions of the Clatsop County Comprehensive Plan (Clatsop County 2007a), Northwest Oregon State Forests Management Plan (ODF 2001), and Clatsop State Forest Recreation Management Plan (ODF 2000).

Mitigation Measures and Residual Effects

No mitigation measures are proposed for land use or recreation resources for Alternative B, and no residual effects are anticipated.

Significant and Unavoidable Adverse Effects

No significant or unavoidable adverse effects on land use or recreation resources are anticipated from Alternative B.

3.5.2.3 Alternative C: Repair Road and Water Facilities

Under Alternative C, repair of the existing Westport facilities at West Creek would occur with the assistance of FEMA funding. Land use at the site would remain the same with reconstruction of the damaged facilities. The project footprint would remain within the current footprint of the road and facilities, although some minor changes to the west side of West Creek may occur due to the addition of riprap to stabilize the roadbed and slope.

Any informal recreation opportunities would also remain unchanged, and no recreation facilities or access would be altered by the project under Alternative C.

Mitigation Measures and Residual Effects

No mitigation measures are proposed for land use or recreation resources for Alternative C, and no residual effects are anticipated.

Significant and Unavoidable Adverse Effects

No significant or unavoidable adverse effects on land use or recreation resources are anticipated from Alternative C.

3.6 PUBLIC UTILITIES

The public utilities analysis in this EA is limited to the domestic water supply system, as there would be no impact on other utilities (e.g., power, communication).

3.6.1 AFFECTED ENVIRONMENT

This section describes the existing water supply system and communities served. The affected environment includes the domestic water supply system, service areas, and water recipients for the communities of Westport and Wauna in Clatsop County, Oregon. These are described below.

3.6.1.1 Water Supply System

Westport Water Supply System

Westport is a small unincorporated community on Highway 30, located on the eastern edge of Clatsop County. Prior to the 2007 storm damage, the community used the surface waters of West Creek as their water supply. The Westport Water Association, a non-profit cooperative formed in 1965, owns and operates the water supply system. Westport's water supply system infrastructure consists of a reinforced concrete diversion dam on West Creek, a 77,000-gallon water supply storage basin/reservoir behind the dam, a screen intake system and gravity supply line to the 200,000-gallon steel standpipe type reservoir (Westport water tank), and a local distribution system. Additionally, Westport installed a pressure sand filter and diatomaceous earth filter with chlorination that uses the steel reservoir as a chlorine contact chamber. Other infrastructure includes an access road to the diversion dam and associated facilities. The surface water of West Creek backs up in the storage basin/reservoir behind the concrete dam, allowing the water to pond and drop sediment loads carried by the creek before passing through the intake screen system into the gravity supply line that is buried in the road prism. A portion of the gravity supply line runs parallel to West Creek (Boatwright Engineering 2008).

Westport's water supply infrastructure has a history of damage from major storm events. During major storms, woody debris periodically dams the creek and redirects streamflow, resulting in bank erosion and subsequent damage to the adjacent access road and gravity supply line. In 1996, a storm filled the storage basin behind the dam with 365 cubic yards of rock, dirt, and woody debris, and the access road and gravity supply line were subjected to three major washouts. These facilities had to be rebuilt before water from West Creek could again be diverted for quasi-municipal use. The engineer's cost estimate to repair the 1996 damage was $148,658 (Boatwright Engineering 1996b).

The storm-related flooding in December of 2007 caused substantially greater damage to Westport's water supply system infrastructure than the 1996 storms. Approximately 565 linear feet of the access road to the concrete dam and storage reservoir, along which the gravity supply line runs, was eroded to depths of 20-30 feet. Landslides also closed the access road and damaged the gravity supply line between the storage reservoir and the Westport water tank rendering the water supply system unusable.

In December 2008, Westport began obtaining their water from the neighboring Wauna Water District through a temporary emergency intertie to Wauna's water distribution system. Wauna's water supply distribution system is connected to Westport's distribution system along Highway 30

near the midpoint between the two systems. Valves and meters were installed to measure water flow in either direction (to each community's distribution system) (Westport Water Association 2008). Wauna's water supply system is described below.

Wauna Water Supply System

The unincorporated community of Wauna is located approximately 1.5 to 2 miles west of Westport. The community uses local springs as its water supply. The Wauna Water District (formerly Taylorville Water District) currently has water rights to two existing water supply springs – Peterson and Knapp springs – for quasi-municipal use. Peterson Springs, located at the headwaters of McFarlane Creek, was developed in the early 1970s and is Wauna's primary source of water; Knapp Springs is a supplemental source. Wauna's water supply system was developed in 1973 and consists of a spring box and collection pipes at Peterson Springs, an outlet pipe to a junction box, a junction box, a buried distribution pipeline running under the access road from the springs to a 100,000-gallon, in-line steel stand pipe type water storage tank (Wauna water tank), vaults, and additional buried pipelines conveying water from the storage tank to the Wauna water distribution system. The spring intake collects the majority of the spring water by gravity where it flows to the 100,000-gallon Wauna water tank. The Wauna water tank is located approximately 2,000 feet downslope from the springs. The Wauna water tank has a water surface elevation of approximately 200 feet above mean sea level. Most of the services on the Wauna system are located between 10 and 30 feet in elevation, so the gravity-operated water system would typically operate in the range of 52 to 82 pounds per square inch (psi), adequate to supply water to the 200,000-gallon Westport water storage reservoir. The Wauna Water District water distribution system has 60 metered service connections, with 12 connections reported as being inoperable (Boatwright Engineering 2008).

Observations regarding the existing condition of the Wauna water supply system made by Boatwright Engineering during site visits in early 2008 (Boatwright Engineering 2008) included the following:

- A short reach of overland flow spring water was observed on the ground, in addition to observations of surface water discharge near the spring box from a second undeveloped spring, Knapp Springs.
- The spring field was unfenced; oil cans and other potentially damaging residue were observed in the area.
- The water storage tank appeared to need maintenance, including exterior painting, inspection, cleaning, and repair to the coating system on the tank's interior surface.
- The springs are not metered.
- Twelve service meters were inoperable.

Water supply system infrastructure at Knapp Springs includes intake boxes at two spring locations, a junction box, and associated pipelines. However, Knapp Springs is not currently being used as a water supply source. Water collected from the spring is currently cut off at the junction box and diverted through an outtake pipeline to McFarlane Creek (personal observation, Mejia G., 2008).

3.6.1.2 Service Areas and Water Recipients

In 1996, Westport's water supply system served approximately 85 water association members, including several businesses, a grade school, mobile home park, church, and residences. The water supply system provided water for domestic use to approximately 300 people in addition to providing fire protection (Boatwright Engineering 1996b). As of July 2008, the Westport water supply system was supplying water to 162 customers and consuming approximately 1.5 million gallons per month (Westport Water Association 2008). Westport's water distribution system has the capacity to supply the equivalent of 250 homes (FEMA 2009).

Prior to the installation of the temporary intertie to the Westport water distribution system, the Wauna water supply system served approximately 60 water district customers (Westport Water Association 2008).

The current combined Westport Water Association and Wauna Water District service area capacity is for 310 customers.

3.6.1.3 Water Supply and Demand

According to Westport (Westport Water Association 2010), the existing single water supply source (Peterson Springs) is just sustaining the existing combined service area customer base (approximately 222 customers) and would not allow additional customers to be added to the distribution system. The estimated average annual amount of water produced by the Peterson Spring is 28,372,970 gallons. Average yearly demand for the combined Westport/Wauna service area based on past data from 2006 to 2008 is 29,200,000 gallons. Peak demand occurs between June 9 and September 9 (8,935,000 gallons). The peak one-month period is July 20 to August 20 (2,831,900 gallons). According to Westport, the water supply is inadequate during summer due to a decline in the Peterson Springs output.

3.6.2 ENVIRONMENTAL CONSEQUENCES

This section describes the potential effects of the project alternatives on the water supply system and communities served. The impact analysis addresses both physical impacts to infrastructure (i.e., impacts that could disrupt service or require facility relocations due to proposed development) and capacity impacts (i.e., the ability of existing water supply sources and infrastructure to meet demand). Measures to avoid, minimize, or compensate for any identified impacts are also included.

3.6.2.1 Threshold of Significance

An alternative would result in a significant effect on public utilities, in this case, the domestic water supply system, if it would:

- Reduce the water supply to the extent that it would not meet the short- or long-term service needs of the community and require measures such as water rationing or periodic or long-term service disruptions.

- Subject the physical infrastructure of the water supply system to the risk of frequent and severe damage such that periodic or long-term service disruptions would occur and jeopardize the financial ability of the communities served to mitigate such risk.

3.6.2.2 Alternative A: No Action

Under the No Action Alternative, FEMA would not provide federal funds to Westport to develop and construct improvements to the existing Wauna water supply system or repair its existing access road and water facilities. Westport would continue to rely on the temporary intertie with the Wauna water supply system. Based on the average yearly demand of the combined Westport/Wauna service area for 2006-2008 (29,200,000 gallons) (Westport Water Association 2010) and the yearly amount of water produced by the existing water supply (28,372,970 gallons) (Westport Water Association 2010), the existing water supply (Peterson Springs) falls short of meeting the average yearly demands of the communities served.

According to information provided by Westport (2010), the output of the springs declines during the summer, and the water supply runs short during the peak season (July 20 to August 20). Given that the current water supply does not meet existing demand, primarily during the summer when the springs' output declines, water rationing may be necessary. Additionally, the water supply would not allow for any growth in the number of water users or growth in demand for any other reason, such as type of recipients/use, and would not meet the long-term needs of the communities served. In addition to the lack of sufficient capacity to meet the combined needs of the Westport/Wauna service area, the existing infrastructure would likely remain in its current degraded condition due to the lack of maintenance. The lack of sufficient capacity to meet the combined needs of the Westport/Wauna service area during the peak season, the inability to accommodate growth, and the degraded condition of the facilities are considered to be a potentially significant adverse impact on the domestic water supply system and Westport Water Association.

3.6.2.3 Alternative B: Proposed Action

Under the Proposed Action, FEMA would provide funding to Westport to develop and construct improvements to the existing Wauna water supply sources and physical infrastructure, as described in Section 2.4. During construction, water supply could be temporarily disrupted. The development of Knapp Springs would increase the capacity of the water supply sufficiently to meet the existing average yearly demand for the combined Westport/Wauna service areas and would prevent the potential need for water rationing during the peak season (July 20 to August 20) when the existing water supply capacity declines. The additional water supply capacity from Knapp Springs would allow for some growth in the number of water recipients over the long term. The addition of meters to determine the flow of the developed and redeveloped supply springs would provide information regarding the overall capacity of the water supply system to determine the number of additional water recipients that could potentially be added to the system in the future and would support future community water supply planning. The effects of the Proposed Action (i.e., increased capacity, implementation of deferred maintenance, facility improvements, metering data to support water supply planning) are considered to be beneficial effects on the domestic water supply system and affected communities. The engineering cost estimate for implementation of Alternative B is $234,677 (Boatwright Engineering 2008).

Mitigation Measures and Residual Effects

The effects of Alternative B are considered to be beneficial over the long term. Minor temporary disruptions to water supply service may be necessary during construction. Westport would notify water recipients in the combined service area in advance of any planned disruption about the estimated timing and duration of any service disruption. No additional mitigation measures are proposed.

Significant and Unavoidable Adverse Effects

No significant adverse effects are anticipated as a result of Alternative B.

3.6.2.4 Alternative C: Repair Road and Water Facilities

Under Alternative C, FEMA would provide funding to Westport to repair its original water supply system to its predisaster condition. Westport's original water supply source, the surface waters of West Creek, have sufficient capacity to meet the demands of the Westport service area and current number of water users, and allow for future population increases. There would be no significant short-term disruption to service to the Westport water recipients during construction of Alternative C as they would remain connected to the Wauna water supply until construction is completed. There would be a minor short-term disruption in service to Westport water recipients once construction is completed to allow for reconnection to the Westport water supply. Westport obtained two estimates for repairing the damage to their water supply system, ranging from approximately $407,000 (Boatwright Engineering 2008) to $1,120,000 (Kynsi Construction 2008).

Given the location of the Westport Water supply system and history of damage to the diversion dam, storage basin reservoir, gravity supply line, and access road, the physical infrastructure of the water supply system appears to be inherently at risk of periodic damage from flooding, instream debris flows, erosion, and landslides such that complete service disruptions are likely to reoccur in the future. Westport does not have the financial means to pay for the repair of damage from the December 2007 storm event and, similarly, it is not anticipated to be able to pay for similar repairs in response to future storm events. The high risk of future damage, disruption of service, and burdensome repair costs is considered to be a potentially significant adverse impact on the domestic water supply system and Westport Water Association.

Mitigation Measures and Residual Effects

Minor temporary disruptions to water supply service may be necessary during construction. The Westport would need to notify water recipients in the service area in advance of any planned disruption about the estimated timing and duration of any service disruptions. No mitigation measures have been identified to offset the potentially significant adverse impact on the Westport water supply system and affected community (as described below).

Significant and Unavoidable Adverse Effects

The high risk of future damage, disruption of service, and burdensome repair costs under Alternative C are considered to be a potentially significant and unavoidable adverse impact on the domestic water supply system and Westport Water Association.

3.7 TRANSPORTATION AND ACCESS

This section describes the local transportation network, existing roads and access to the project site, and potential effects of the project alternatives on local transportation and access.

3.7.1 AFFECTED ENVIRONMENT

Highway 30 is the major highway in the project vicinity, running approximately parallel to the Columbia River. Local roads in the vicinity connect with Highway 30. Westport and Wauna are mainly located on the north side of Highway 30, near the Columbia River. Traffic originates primarily from local residents and tourism related to the Columbia River Gorge National Scenic Area, to the east of Clatsop County (USFS 2007).

Access to the Alternative B site is via Highway 30, south on Driscoll Slough Road which intersects with Oklahoma Hill Road, and continues generally southwest to the Wauna water supply facilities. This access road is surfaced with large, crushed rock to the Wauna water tank. The primary sources of traffic on Driscoll Slough Road and Oklahoma Hill Road are the residences clustered around these roads, away from the main thoroughfare of Highway 30. Maintenance and inspection vehicles for the water utility also contribute slightly to local traffic, as do people in vehicles searching for access to the Clatsop State Forest.

A secondary access to the Alternative B site is via Taylorville Road to McFarlane Creek Road. This route winds south of Highway 30 west of the site, making a large loop and intersecting with Oklahoma Hill Road. McFarlane Creek Road provides access for logging trucks and is maintained with a crushed rock surface to accommodate heavy loads.

Access to the Alternative C site is also via Highway 30, located just east of Plympton Creek. Hungry Hollow Loop Road winds southeast for approximately 0.33 mile to a dirt access road, which curves to the right around the steep slopes on the northwest side of West Creek. Figure 3.7-1 depicts Highway 30 and the local access roads for both the Alternative B and C sites.

Additional roads in the local vicinity include abandoned logging roads throughout the project area and in the Clatsop State Forest; many of these are not mapped and some of them are impassable by standard passenger vehicles. While these roads are generally overgrown with vegetation, they may provide occasional access to hikers and off-road vehicles.

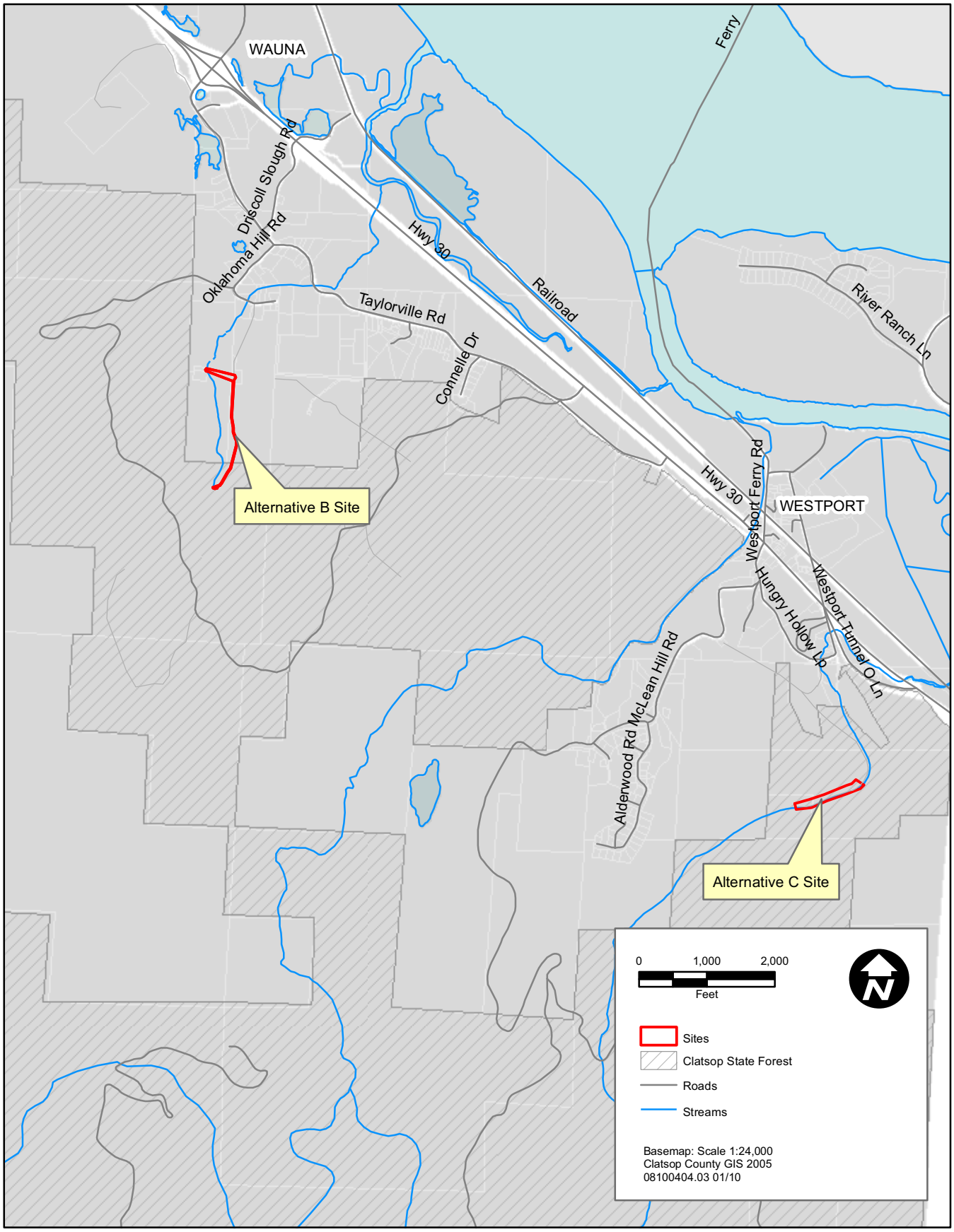
3.7.2 ENVIRONMENTAL CONSEQUENCES

This section describes the potential effects of the alternatives on transportation and access in the project vicinity. Mitigation measures to offset any identified effects are also described, as applicable.

3.7.2.1 Threshold of Significance

An alternative would result in a significant effect on transportation and access if it would:

- Substantially increase traffic relative to the existing traffic volume and capacity of the road system; or
- Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses.



Transportation Systems

Figure 3.7-1

3.7.2.2 Alternative A: No Action

Under the No Action Alternative, FEMA would not provide funding for the Proposed Action and no upgrades or construction would take place. No effects on transportation or access would occur.

3.7.2.3 Alternative B: Proposed Action

Alternative B would require transporting construction equipment and supplies such as a backhoe, fencing, waterlines, and smaller miscellaneous materials and equipment. This would add several trips with heavy equipment at the beginning and end of the construction period. Additional passenger car trips also would be necessary to transport workers and inspection staff to and from the site throughout construction. These trips would be a minor addition to local traffic volumes and would not cause congestion; local disruption or blockage, if any, would be temporary and minor.

The new water supply pipelines would be placed in the currently overgrown (and fenced off) access road to the Wauna facilities at Peterson Springs, south of the residential areas and in forest land. To install and maintain the water supply facilities, the road between the Wauna water tank and Peterson Springs may need to be improved (i.e., regraded and graveled). Activities such as removing vegetation, installing the waterline, and resurfacing the existing roadbed may restrict access to Peterson Springs during the initial phases of construction. This would mainly affect access to the Wauna facilities; local residents would not be affected, although those seeking informal recreation access could be slightly inconvenienced over the short term.

No increase in traffic volume, beyond a negligible and temporary increase during construction, is anticipated and no hazards would be created or increased due to any aspect of the Proposed Action.

Mitigation Measures and Residual Effects

No mitigation measures are proposed for transportation and access under Alternative B. Potential impacts on this resource area are negligible and temporary.

Significant and Unavoidable Adverse Effects

Significant and unavoidable adverse effects on transportation and access would not occur from Alternative B.

3.7.2.4 Alternative C: Repair Road and Water Facilities

Alternative C would also require transporting construction equipment and supplies as described for Alternative B above; however, 876 heavy truck trips of materials for roadbed reconstruction would be the main impact of this alternative. These heavy equipment trips would occur throughout the construction period, adding noise, dust, and traffic during hours of constructions, mostly during weekday daylight hours. Additional passenger car trips would be necessary to transport workers and inspection staff to and from the site throughout construction.

During construction activities, Hungry Hollow Loop Road may experience increased traffic and delays for residents and other motorists. These effects are expected to be temporary, although moderate, and local residents may experience longer wait times than normal, or may be diverted to detour around the loop if multiple truckloads are accessing the site at once. Although traffic volumes

would increase, the impact would be temporary and the multiple access routes to residences along Hungry Hollow Loop road would provide alternatives and reduce traffic impacts to low or moderate levels. In addition, the wear and tear on Hungry Hollow Loop Road from the truck trips could damage the road and require repairs.

Due to steep slopes above and below the roadbed, there is the potential for additional slope failure and landslides that could close the road in the future. Such potential slope failures and landslides would only affect the water supply system and facilities, not the surrounding area or other roads or access points. These impacts would not substantially increase hazards to transportation and access beyond the existing or predisaster conditions.

No long-term or residual increases in traffic volume are anticipated under Alternative C. No impediments to transportation or access are expected outside the construction window.

Mitigation Measures and Residual Effects

No mitigation measures are proposed for transportation and access under Alternative C. Potential impacts on this resource area are negligible and temporary.

Significant and Unavoidable Adverse Effects

Significant and unavoidable adverse effects on transportation and access would not occur from Alternative C.

3.8 ENVIRONMENTAL JUSTICE

3.8.1 AFFECTED ENVIRONMENT AND REGULATORY CONSIDERATIONS

Environmental justice refers to the potential effects on minority and low-income populations, especially disproportionate adverse or unfair effects on those populations. Under NEPA, federal agencies are required to evaluate their actions for the potential to cause "disproportionately high and adverse human health and environmental effects on minority and low-income populations," as stated in Executive Order 12898 (Environmental Justice, 59 Federal Register 7629 [1994]). Potential effects are evaluated by examining the demographics of the area affected by the proposed action(s) and the potential of those actions to have adverse effects on minority and low-income populations.

For the purpose of evaluating environmental justice effects in this EA, the affected environment is defined as the population of Clatsop County, Oregon; statistics for the state of Oregon are also provided for comparison. Table 3.8-1 lists the race and ethnicity of Clatsop County and Oregon state residents as reported by the 2000 U.S. Census of Population and Housing (U.S. Census Bureau 2003). The most prevalent race or ethnicity in the affected area is identified as white (at 93.1 percent of the total population); at 4.5 percent, Hispanic or Latinos of any race are the most prevalent minority group.

Table 3.8-1. Race/Ethnicity in Clatsop County and Oregon State, 2000.

Race/Ethnicity	Clatsop County (Percent)	Oregon State (Percent)
White	93.1	86.6
Black	0.5	1.6
American Indian and Alaska Native	1.0	1.3
Asian	1.2	3.0
Pacific Islander and Native Hawaiian	0.2	0.2
Some other race	1.6	4.2
Two or more races	2.3	3.1
Hispanic or Latino (of any race)	4.5	8.1

Source: U.S. Census Bureau 2003.

The U.S. Census Bureau's 2008 poverty estimates are used to determine low-income populations. The federal poverty threshold for a family of four is $22,025. Estimated median household income in Clatsop County in 2008 was $44,307; for Oregon state as a whole, it was $50,165 (U.S. Census Bureau 2009). In 2008, approximately 13.3 percent of the Clatsop County population lived below the poverty threshold, compared to 13.5 percent of the population of Oregon State as a whole.

3.8.2 ENVIRONMENTAL CONSEQUENCES

The methodology used to evaluate effects on environmental justice included a review and comparison of minority and low-income populations in Clatsop County with Oregon state minority and low-income populations. The Council on Environmental Quality (CEQ) defines "minority" to consist of the following groups: Black/African American, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaskan Native, and Hispanic/Latino populations (CEQ 1997). For this analysis, "minority" also includes all other non-white racial categories within the U.S. Census

Bureau's 2000 Census of Population and Housing such as "some other race" and "two or more races."

Data were obtained from the U.S. Census Bureau. Westport is an unincorporated town, and Clatsop County is the finest scale for which demographic data were available. Quantifying a "significant proportion" of the population is determined by following EPA guidelines published in *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis* (EPA 1998). According to these guidelines, a minority population refers to a minority group or groups that comprise greater than 50 percent of the affected area's general population. No guidelines are published to determine a significant low-income population; therefore, this analysis asserts that a low-income population exists if there is a community whose general population comprises 25 percent or more of households living under the poverty threshold.

3.8.2.1 Threshold of Significance

An alternative would result in a potentially significant effect on environmental justice if:

- One or more minority groups represent greater than 50 percent of the county's population; or
- 25 percent or more of the county's residents live under the poverty threshold; **and**
- The alternative would result in a "disproportionately high and adverse effect" on either or both of these populations.

3.8.2.2 Alternative A: No Action

Neither minority populations nor low-income populations exceed the thresholds of significance in the project area. Low-income households in Clatsop County comprise 13.3 percent of county population and do not reach the minimum threshold of 25 percent; therefore, no disproportionate adverse effects would be expected. Likewise, minority populations are well below the 50 percent threshold criteria for determining significant effects on minority populations.

However, without a reliable source of water to the community, it is likely that water shortages and boil orders would disproportionately impact those residents who are low-income and institutions such as schools and nursing facilities.

3.8.2.3 Alternative B: Proposed Action

Neither minority populations nor low-income populations reach thresholds of significance in the region surrounding the project area. Alternative B would not disproportionately affect minority or low-income populations.

The Proposed Action may provide employment opportunities (related to facility construction and maintenance) to area populations, including low-income and minority groups. Standard contracting methods would be used, and no significant adverse effects on environmental justice would result.

Proposed Mitigation Measures

No mitigation measures are proposed for Alternative B. Environmental justice effects would be below the thresholds of significance.

Significant and Unavoidable Adverse Effects

No significant or unavoidable adverse effects on environmental justice are anticipated from Alternative B.

3.8.2.4 Alternative C: Repair Road and Water Facilities

Neither minority nor low-income populations reach thresholds of significance in the region surrounding the project area. Alternative C would not disproportionately affect minority or low-income populations.

Implementation of Alternative C may provide employment opportunities to area populations, including minority and low-income groups. Because the work for this project is more substantial relative to Alternative B, jobs provided may be either more in number or longer term than those provided under the Proposed Action. Standard contracting methods would be used, and no significant adverse effects on low-income or minority populations would result.

Proposed Mitigation Measures

No mitigation measures are proposed for Alternative C. Environmental justice effects from Alternative C would be below the thresholds of significance.

Significant and Unavoidable Adverse Effects

No significant or unavoidable adverse effects on environmental justice are anticipated from implementation of Alternative C.

3.9 CULTURAL RESOURCES

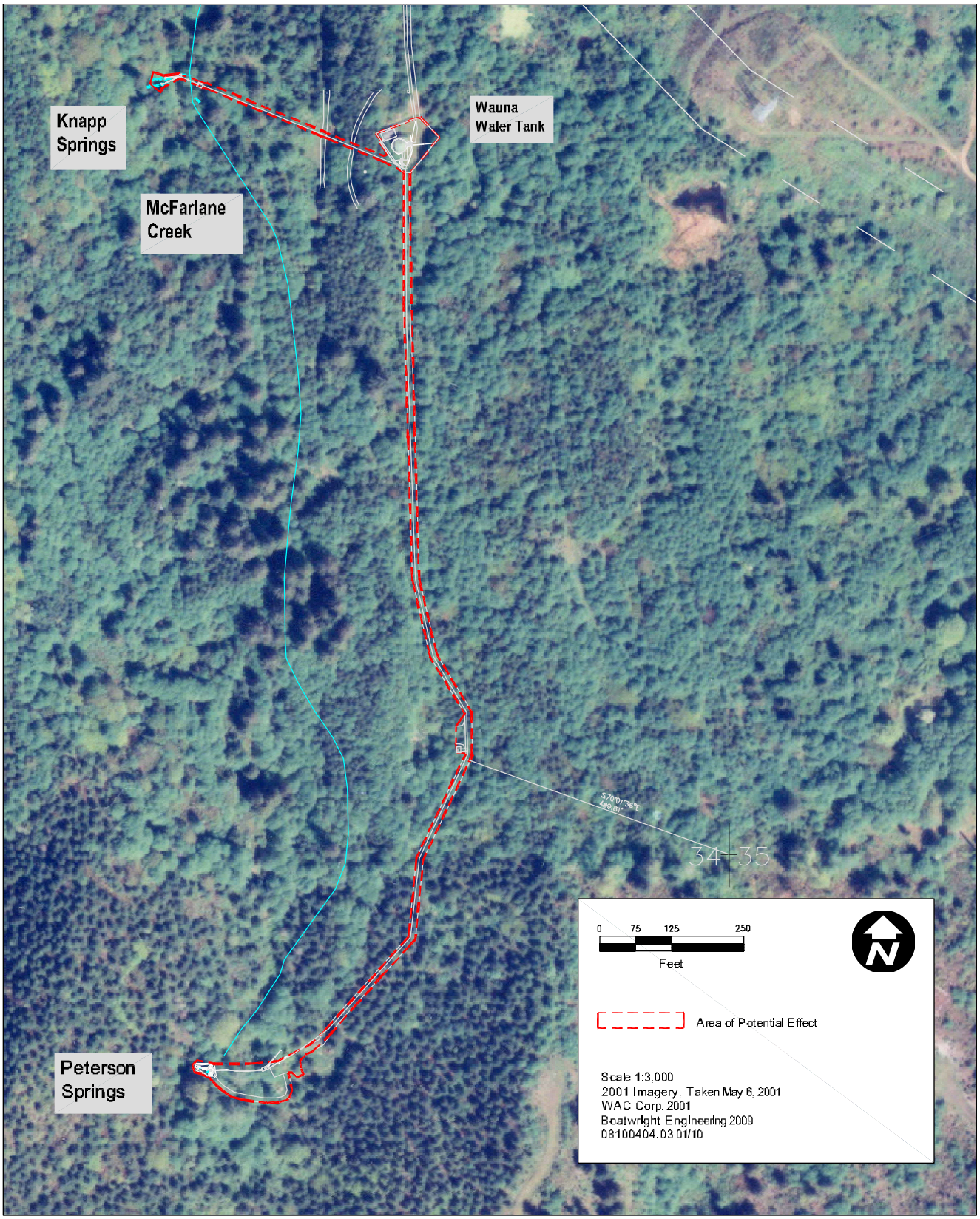
Cultural resources include properties of historical, cultural, and/or archaeological significance. For purposes of this document, the term "archaeological resources" is used to refer to prehistoric or historic-era subsurface sites or objects; and the term "historic resources" is used to refer to above-ground historic buildings, sites, objects, structures, or districts currently listed or recommended eligible for listing on the National Register of Historic Places (NRHP). Information presented in this section is summarized from the *Cultural Resources Inventory and Evaluation Report for the Westport Water Supply Project*, conducted specifically for this project (AECOM 2010b), included as Appendix C.

The Area of Potential Effect (APE) was determined for the Proposed Action, and documented in detail in the *Cultural Resources Inventory and Evaluation Report for the Westport Water Supply Project* (AECOM 2010b). In determining the APE for an undertaking (i.e., a project), consideration must be given to those effects that would occur immediately and directly as well as those that are reasonably foreseeable and may occur later, are farther removed in distance, or are cumulative, but might still result from the undertaking. Areas immediately and directly affected by the Proposed Action include those areas within the project footprint. The APE for the Proposed Action has been defined to include the approximately 0.95 acres and 5,061 linear feet of wooded land within the pipeline and roadway corridors and the small proposed construction footprints at Peterson and Knapp Springs; the APE is depicted in Figure 3.9-1. No design work has been conducted for Alternative C, and only the Proposed Action (Alternative B) was included within the defined APE. The preliminary project footprint for Alternative C is inclusive of damaged facilities described in Section 2.5 and a small surrounding buffer, resulting in a preliminary project footprint of approximately 0.5 acre. The Alternative C site is depicted in Figure 2.5-1.

3.9.1 AFFECTED ENVIRONMENT

The earliest phases of human occupation of the Lower Columbia River region may date to 15,000 years ago, but the best-documented Native American activities and archaeological resources date from about 8,000 years before present through approximately 225 years before present. Native American peoples in the Lower Columbia River area historically included the Clatsop, Kathlamet and potentially the Tlatskanai (Clatskanie) peoples, all of whom used the abundant fisheries resources of the river extensively (AECOM 2010b). In 1805-1806, the Lewis and Clark expedition made their westernmost camp in Astoria, marking the beginning of extensive influence of Euro-Americans on the Native Peoples of the Lower Columbia Region.

Early exploratory, trading, and trapping expeditions occurred throughout the 18th century in the Lower Columbia River region, with the fur trade dominating the Euro-American economy during the first half of the 19th century. By the mid 19th century, regional fur-bearing animal populations had been decimated and agriculture, fishing, and timber harvesting became the primary industries. Westport played a major role in these endeavors, and the town's founder and namesake, "Captain" John West, established several major milling and canning companies.



APE Map for the Proposed Action

Figure 3.9-1

Archival research, ongoing Native American consultation, and an archaeological field survey were conducted for the Proposed Action. Archival research was conducted for Alternative C. According to research conducted using the Oregon Parks and Recreation Department (OPRD) archives, and in coordination with the Oregon State Historic Preservation Officer (SHPO), no previous cultural resources surveys have been conducted near the APE or the Alternative C site, and no cultural resources have been documented within 1 mile of either site (AECOM 2010b; Applied Archaeological Research 2010).

The geophysical characteristics of the APE (moderately steep slopes and narrow, scoured creek banks) suggest that it is unlikely that any prehistoric or historic-era cultural resources not currently identified would be discovered within the project APE (AECOM 2010b). The Alternative C site has had extensive construction activities and fill placed to create and maintain the roadbed, making the project footprint itself unlikely to contain undiscovered archaeological artifacts. However, West Creek and areas adjacent to the footprint of Alternative C may contain previously undiscovered artifacts due to the proximity of West Creek and historically present anadromous fish runs.

No prehistoric, ethnographic, or historic-era cultural sites, features, artifacts, or culturally sensitive properties have been documented within or in the immediate vicinity of the Proposed Action APE (AECOM 2010b). No archaeological or historic-era resources are known to occur within or near the APE (AECOM 2010b).

Although no intensive surface or subsurface investigations have been conducted, no known artifacts or properties defined as cultural resources have been documented within or near the project footprint for Alternative C (Applied Archaeological Research 2010).

Structures within the Proposed Action APE do not meet NRHP criteria for listing. Therefore, AECOM recommends that these structures do not constitute cultural resources per Section 106 of the National Historic Preservation Act (NHPA). No structures are present within the Alternative C footprint.

3.9.1.1 Regulatory Considerations

Section 106 – National Historic Preservation Act

Section 106 of the NHPA is the main regulatory framework for this project. Section 106 NHPA requires federal agencies to consider the effects of their actions, or those they fund or permit, on properties that may be eligible for listing or are listed in the NRHP. Note: other federal regulations such as the Native American Graves Protection and Repatriation Act (NAGPRA) and the Archaeological Resources Protection Act (ARPA) are not applicable to this project, as these acts only apply to federal lands.

Oregon Revised Statutes

In Oregon, the OPRD functions as the SHPO, managing cultural resources. ORS 358.905 to 358.961 prohibit the sale of artifacts and damage to sites on public, non-federal, and private lands. ORS 358.920 specifically prohibits the intentional excavation, destruction, or disturbance of archaeological sites on private or public land without a permit from the OPRD.

3.9.2 ENVIRONMENTAL CONSEQUENCES

3.9.2.1 Threshold of Significance

An alternative would result in a significant effect on cultural resources if it would:

- Remove or destroy prehistoric sites, objects, or artifacts of cultural significance as defined by the NHPA or ORS;
- Remove, destroy, or significantly alter the character of historic buildings, sites, objects, structures, or districts; or
- Violate any applicable laws.

The unanticipated discovery of previously undocumented cultural or historical resources during project work would trigger additional consultation with the Oregon SHPO and Native American tribes under the appropriate laws and implementing regulations.

3.9.2.2 Alternative A: No Action

Under the No Action Alternative, no FEMA funding would be provided, and the project would not be constructed. No ground disturbance or clearing would occur, and there would be no potential for discovery of undocumented cultural resources. Therefore, the No Action Alternative would have no significant effect on cultural resources.

3.9.2.3 Alternative B: Proposed Action

Under Alternative B, construction and soil-disturbing activity would be limited to the APE. Archival and field investigations indicate that prehistoric and historic-era resources are not present within the APE. However, if any unanticipated archaeological finds occur within the APE, all work will cease and a qualified archaeologist would be brought in to determine the significance of the find, assess potential effects, and determine appropriate mitigation or avoidance procedures. Consultation with applicable Native American tribal representatives would be re-initiated should archaeological resources be found.

Proposed Mitigation Measures

No known cultural resources are present within the APE. No mitigation measures are proposed for Alternative B. As noted above, if unanticipated cultural resources are found during construction, all work will cease and appropriate actions will be taken.

Significant and Unavoidable Adverse Effects

No significant or unavoidable adverse effects are anticipated from Alternative B.

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3.9.2.4 Alternative C: Repair Road and Water Facilities

Alternative C disturbance would be focused on the predisaster footprint of the road and water supply system facilities, minimizing soil-disturbing activities to areas of previous disturbance. No cultural resources are known to occur within the Alternative C footprint; however, it is possible that previously undiscovered artifacts may occur in or near West Creek and could be encountered during

stabilization work within or near the creekbed. If any unanticipated archaeological finds occur within the project footprint, all work will cease and a qualified archaeologist would be brought in to determine the significance of the find, assess potential effects, and determine appropriate mitigation or avoidance procedures. Consultation with applicable Native American tribal representatives would be re-initiated should archaeological resources be found.

Proposed Mitigation Measures

No known cultural resources are present within the Alternative C footprint. No mitigation measures are proposed for Alternative C. As noted above, if unanticipated cultural resources are found during construction, all work will cease and appropriate actions will be taken.

Significant and Unavoidable Adverse Effects

No significant or unavoidable adverse effects are anticipated from Alternative C.

3.10 CUMULATIVE IMPACTS

Cumulative impacts are those that result from the incremental effect of a proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other action (40 CFR 1508.7). Only those resources related to cumulative effects are described below.

Potential cumulative effects from the Proposed Action added to other activities in the area would result primarily from vegetation clearing and soil disturbance. These activities could have minor cumulative effects on soils, water quality, vegetation and wetlands, and fish. Under Alternative C, minor to moderate short-term and long-term effects on LCR coho salmon could occur. Although these effects are not considered significant for this project, the effects would incrementally add to the cumulative effects on this protected species in the basin, including water quality effects and habitat loss.

The land surrounding the project area is state-owned forest land and privately owned parcels that also are primarily designated for forest-related use. These surrounding lands are mostly stands of 30- to 40-year old trees. There are no planned timber sales in the project vicinity (pers. comm., C. Bangs 2010). Clusters of rural and large-lot residential development are located along Taylorville Road to the north. The project would result in the temporary disturbance of approximately 701 square feet of wetland vegetation, permanent clearing of approximately 0.08 acre of mixed conifer / hardwood and riparian forest, related soil disturbance, and incremental loss of local habitat. However, the cumulative contribution during construction would be minor, and cumulative effects over the long term would be negligible.

4.0 Consultation and Coordination

4.1 PUBLIC INVOLVEMENT

FEMA sent a scoping letter to agencies, Tribes, and local interested parties on September 1, 2009. The letter provided a description of the proposed project and requested comments on issues and concerns, the range of alternatives, and potential effects regarding the project that should be analyzed in the EA. The scoping letter and the comments received are included in Appendix A. A summary of comments received is included in Section 1.6.

Westport has discussed the alternate project at its regular meetings and has met with Wauna to discuss the agreement for Wauna to provide water in exchange for system upgrades from Westport.

4.1.1 COMMENTS ON THE DRAFT EA

FEMA's Draft EA will be released for public review. The public will be afforded 30 days to review and provide comments on the Draft EA.

4.2 AGENCY AND TRIBAL CONSULTATION AND COORDINATION

FEMA consulted with several federal and local agencies throughout the EA process to gather valuable input and to meet regulatory requirements (see scoping list). This coordination was integrated with the public involvement process.

4.2.1 NATIONAL HISTORIC PRESERVATION ACT

In compliance with Section 106 of the National Historic Preservation Act, the research into cultural resource issues for the project began with a records search of pertinent cultural resource information available through the office of the OPRD SHPO in Salem, Oregon. The SHPO office curates archaeological site records, historic maps, and other documents relevant to the APE. In addition, the SHPO provided background materials and documents specifically relevant to the settlement and historic-era developments that occurred within and near the town of Westport. FEMA is submitting a copy of this EA, as well as the Cultural Resources Inventory and Evaluation Report (AECOM 2010b), for SHPO's review and requesting concurrence.

4.2.2 TRIBAL COORDINATION

The relationship between federal agencies and sovereign Tribes is defined by several laws and regulations addressing the requirement of federal agencies to notify or consult with Native American groups or otherwise consider their interests when planning and implementing federal undertakings. Among these are the following:

- National Environmental Policy Act
- Executive Order 12875, Enhancing the Intergovernmental Partnership
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

- Presidential Memorandum: Government-to-Government Relations with Native American Tribal Governments
- Executive Order 13084, Consultation and Coordination with Indian Tribal Governments

FEMA has adhered to these laws and regulations as applicable to the development of the EA. Consultation with the Native American community, as required under Section 106, included letters sent to representatives of the Confederated Tribes of Grand Ronde Community of Oregon and the Confederated Tribes of Siletz Indians to inform them of the cultural resource investigations and provide these communities an opportunity to comment on the project. AECOM also followed up with phone calls to both tribal representatives; neither had any particular concerns about potential project-related cultural resources effects.

5.0 Preparers

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Linda Howard, Environmental Planner

6.0 Distribution

The Draft EA was sent to the following agencies and stakeholders for review and comment. In addition, the EA is posted on FEMA's website, and notices of its availability were placed in local news media.

FEDERAL AGENCIES

U.S. Department of Homeland Security, FEMA Region X

STATE AGENCIES

Oregon State Historic Preservation Office

Oregon Department of Environmental Management

Oregon Department of Forestry, Clatsop State Forest

TRIBAL GOVERNMENTS

Confederated Tribes of Grand Ronde Community of Oregon

Confederated Tribes of Siletz Indians

LOCAL GOVERNMENTS AND MUNICIPALITIES

Westport Water Association

Wauna Water District

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PERSONAL COMMUNICATIONS

Bangs, Cullen. Oregon Department of Forestry, Astoria District, Clatsop State Forest, Oregon. March 1, 2010. Phone conversation with G. Mejia, AECOM, Seattle.

Murtagh, Tom. District Fish Biologist, Oregon Department of Fish and Wildlife, North Willamette Watershed District, Clackamas, Oregon. July 17, 2009. Email to Barbara Gimlin, Environmental Specialist, FEMA.

Weston, Mike. Clatsop County Planner, Clatsop County, Astoria, Oregon. January 27, 2010. Phone conversation with A. Pauley, AECOM, Seattle WA, about Clatsop County permitting requirements for expansion and extension of the Wauna Water District's water utility facilities to extend to Westport, OR. Conversation included confirmation that the county's Zoning Ordinance and Comprehensive Plan would apply, and a conditional use permit would be needed.

Appendix A

Correspondence and Consultation

Appendix B

Wetland Delineation Report

Appendix C

Cultural Resources Inventory and Evaluation