



# ENVIRONMENTAL ASSESSMENT

## BULL RUN WATERSHED CONDUIT TRESTLES RETROFIT PROJECT Sandy, Oregon

**December 2005**

*Prepared for:*

**CITY OF PORTLAND WATER BUREAU**  
**FEMA PROJECT NO. PDMC-OR-009**  
*URS Project No. 15702306*

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The National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508), and the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) regulations for NEPA compliance (44 CFR Part 10) direct FEMA to consider environmental consequences of proposed projects having federal funding. This environmental assessment (EA) will assist FEMA in evaluating the project's compliance with NEPA, and in making a determination as to whether any "significant" impacts would result from the Proposed Action.

The City of Portland Bureau of Water Works (Bureau), Multnomah County, Oregon, proposes to upgrade a portion of the Portland water supply system to mitigate against natural and manmade hazards. Currently, three conduits, or water transmission pipelines, carry water by gravity flow from the Bull Run headworks to reservoirs on Powell Butte and Mt. Tabor. The conduits are vulnerable to landslide, scour, tree fall, flooding, earthquakes, and other hazards.

## 1.1 LOCATION AND BACKGROUND

The location of the Proposed Action is in Multnomah County, Oregon in the Sandy River watershed, in Sections 16 and 22, Township 1S, Range 4E, Willamette Meridian, latitude 45.4811 North, Longitude 122.3120 West. The project consists of two sites: the Diack's Pond site located in Section 22 and the Sester's Pond site in Section 16 (Appendix A). The Sester's Pond site is located at the headwaters of Beaver Creek within a large-scale plant nursery on private property and is located north of Lusted Road between Altman Road to the west and Hosner Road to the East.

The primary water supply to Portland and surrounding cities served by the Portland Water Bureau (Bureau) is the Bull Run Watershed. The watershed supplies 100 to 210 Million Gallons of water per Day (MGD) for Portland and surrounding cities served by the City's Water Bureau. The water supply is served by three conduits (e.g. pipes), which carry water by gravity flow from the Bull Run headwaters to reservoirs on Powell Butte and Mt. Tabor. The first conduit was installed in the late 1800s but later decommissioned; the current conduits, Conduits # 2, 3, and 4, were installed in 1911, 1925, and 1953, respectively, and are steel pipes measuring from 52 to 58 inches in diameter.

Sester's Pond is situated at the headwaters of Beaver Creek, a tributary to the Sandy River. The pond was created when the Soil Conservation Service constructed a non-engineered earthen dam in 1953 in order to provide water storage related to agricultural activities (Seright pers. comm. 2005). The pond accumulates water from Beaver Creek, and drains toward the Sandy River. The project site is located on the Sester's Nursery, immediately downstream of an artificial pond/dam. The dam is maintained and in current use; water contained by the dam is used for crops and recycled upslope to a smaller reservoir. Conduits #2 and #4 cross at this location and are supported on trestles as they pass over a wetland swale (Appendix B). In the event of a dam breach, the pipes would be expected to act as a barricade that would likely be broken due to scour and/or inundation from the flow. In addition, the configuration of the overflow spillway dam combined with flood conditions could contribute to rapid erosion and possible failure of the dam. Finally, the site has unstable soils vulnerable to liquefaction.

Diack's Pond is situated on the west bluffs of the Sandy River on private property and is accessed from Lusted Road east of its intersection with Cottrell Road. This site is located on the property of Sam Diack immediately downhill from the Lusted Hill Water Treatment facility and just downstream of a non-engineered dam. Diack's pond, like Sester's Pond, was created when the Soil Conservation Service constructed a non-engineered earthen dam in 1953 in order to provide water storage related to agricultural activities (Seright pers. comm. 2005). The pond accumulates water from Lusted Creek, an intermittent tributary to the Sandy River, at an elevation of 600 feet above sea level. The dam is no longer maintained and is likely to self-breach. Conduits #2, #3, and #4 are supported on trestles as they pass over the channel at this location (Appendix B). The trestles are exposed to scour due to large water flows, extensive erosion, and potentially catastrophic failure should the upstream dam fail either under flooding (overtopping) or earthquake-induced inertial failure. A break of the dam at this location could result in simultaneous failure of all three conduits; this represents the only site along the Bull Run conduit corridor where the three pipes are co-located.

## 1.2 PURPOSE AND NEED

The City of Portland Bureau of Water Works (Bureau), Multnomah County, Oregon, has applied to the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) for assistance to mitigate for potential hazards resulting from seismic and other natural events affecting the Portland water supply system. The requested funds would be used to upgrade three conduits that are vulnerable to landslide, scour, tree fall, flooding, earthquakes, and other hazards.

A 2005 engineering study concluded that the three gravity flow conduits that currently carry water from the Bull Run watershed to reservoirs on Powell Butte and Mt. Tabor are vulnerable to landslide, scour, tree fall, flooding, earthquakes and other hazards (G&E Engineering 2005). In the event of a disruption in this service, the Bureau's Ground Water Pump Station (GWPS) is capable of supplying approximately 90 MGD. However, the wells and well field piping serving the GPWS are highly vulnerable to earthquakes. It is estimated that in its current condition, a moderately strong earthquake in the Portland area would require at least 30 days to fully restore the ground water supply (G&E Engineering 2005). The need for this project is to reduce the seismic vulnerability of the conduits at Sester's Pond and Diack's pond and thus, ensure that the Bull Run watershed continues to be a safe and reliable source of drinking water for the Portland area. The proposed preventative upgrades to the conduit system would address this need.

### Conditions of Current Bull Run Conduit Facilities

At the Sester's Pond site:

- Conduits #2 and #4 run parallel to one another and are exposed for 60 feet and 100 feet, respectively.
- The site is immediately downstream of an earthen dam.
- In the event of an accidental dam breach, the two pipes would be expected to form a barricade that would be likely be broken as a result of scour and/or inundation flow from the breach.

At the Diack's Pond site:

- Conduits #2, #3, and #4 are supported on trestles with shallow foundations in the creek.
- This site is located approximately 200 feet downstream of an earthen dam.
- Trestles are vulnerable to movement, thus potentially damaging the pipes under moderate to strong ground shaking.
- Damage could occur to the pipes during an earthquake if an accidental breach of the dam that could release water at a high velocity. Under this scenario, the pipes could be directly affected by the extreme flows and/or the trestles could be scoured resulting in a possible collapse of all three pipes.
- The pipes are subject to vandalism.

This section provides a discussion of the alternative scenarios evaluated for each site as well as the criteria used to select the proposed action. Section 3.1 presents the No Action Alternative, Section 3.2 discusses the proposed action, and Section 3.2 provides information about other alternatives that were evaluated earlier in the project but discounted.

## 2.1 NO ACTION ALTERNATIVE

With this alternative, there would be no upgrades or other changes to the water conduits that currently serve the Bureau's water supply. The risk of a water supply failure caused by the aging conduits would not be addressed.

## 2.2 ACTION ALTERNATIVE (PROPOSED ACTION)

The Proposed Action would retrofit the water supply system at Diack's and Sester's ponds. Specific details are provided below. The retrofit would eliminate or reduce the system's hazard vulnerability. With the current schedule, project construction would be initiated in Fall 2006 and completed during Spring 2007.

### Sester's Pond

At the Sester's Pond site, the Proposed Action would relocate Conduits #2 and #4 to a site further downstream of an earthen dam. The relocation would require extensions of approximately 585 feet of new steel pipe on Conduit #2 and 610 feet of new steel pipe on Conduit #4. The pipes would be encased where they would cross under the probable scour depth and buried beneath the creek. After the conduits are been relocated, they would be buried beneath Beaver Creek below the scour depth. During construction, an area measuring approximately 6.4 acres at the location of the trestles would be temporarily disturbed at this site. An additional 2.6 acres, mostly within the western portion of the temporary easement, would be used as a contractor staging area (Appendix C). Bedding and fill would replace excavated material so there would be essentially no net fill at this location. An aerial overview is provided in Appendix D. The location of the ground disturbance would be confined within the limits of the temporary and permanent easements shown (Appendix C). The area to be disturbed is currently occupied by the conduits and a small wetland, which covers approximately 0.35 acre (DEA 2005). The project area is designated Exclusive Farm Use (EFU) (Multnomah County 1999).

During construction at the Sester's Pond site, standard construction equipment, including one or more excavators and backhoes, would be used to excavate the trench for the new alignment. Soils excavated from the site would be stockpiled in a staging area with topsoils separated from subsoils. The contractor would be allowed to use any portion of the temporary easement for each of the sites for staging construction materials and equipment (Collins pers. comm. 2005). The conduits would then be retrofitted with new steel pipe and encased, as described above. Once the new sections of pipe has been connected to the existing conduits, the entire pipe would be buried. The pipe would be buried first with  $\frac{3}{4}$ - gravel and then with soil. A source for the borrow material has not yet been identified.

## Diack's Pond

At the Diack's Pond site, Lusted Creek, an intermittent stream, would be placed into a new culvert under the existing conduit pipes. The culverted creek would then pass under Conduits #2, #3, and #4 at Diack's Pond (Appendix D). The headwall of the culvert would be designed to retain flow from the dam in the event of an accidental breach of the dam. A bypass canal would also be constructed around the existing trestle to retain any flow that cannot be immediately retained in the culvert. The existing conduits would be buried to obscure them from view. The estimated volume of excavation required to construct the new culverts under the existing roadway and conduits is based on an average depth of excavation of 7 ft over the area of the culverts to be installed under the roadway (approximately 50 ft long x 20 ft wide) and an average depth of excavation of 2 ft over the area of the culverts to be installed under the conduits (approximately 65 ft long x 20 ft wide) for a total of approximately 355 cubic yards of excavation. Backfill around the new conduits and headwalls, and fill to encapsulate the conduits would result in fill of approximately 1,600 cubic yards. During construction, an area measuring approximately 2.3 acres would be temporarily disturbed. An additional 0.94 acre would be potentially temporarily disturbed as a contractor staging area within the northwest portion of the temporary easement (Appendix F). The location of the ground disturbance would be confined within the limits of the temporary and permanent easements shown. The area to be disturbed is currently occupied by the conduits and a small wetland, which measures approximately 0.15 acre (DEA 2005). The project area is designated EFU (Multnomah County 1999).

During construction at the Diack's Pond site, flow would be shut off initially to one conduit and rerouted to one of the other two conduits. Standard construction equipment would then be used to excavate the soil near both ends of the pipe to expose the point of attachment for the replacement pipe. Soils excavated from the site would be stockpiled in a staging area as described above for the Sester's Pond site. Once the pipe section has been replaced on the first conduit, this conduit would be buried first with  $\frac{3}{4}$ - gravel and then with soil. A source for the borrow material has not yet been identified. Each of the other two conduits would be retrofitted in the same fashion. The conduits would then be retrofitted with new steel pipe and encased, as described above. Once the new pipe has been connected to the existing conduits, the entire pipe would be buried.

## 2.3 OTHER ALTERNATIVES CONSIDERED BUT DISCOUNTED

### Sester's Pond

A total of seven alternative actions were evaluated for the Sester's Pond site (Black & Veatch 2005). These included:

- SP-1: Open cut with armoring adjacent to alignment
- SP-2: Open cut downstream of alignment and dam
- SP-3: Trenchless near dam or downstream
- SP-4: Open cut trench, reroute in road
- SP-5: Open cut, reroute north of stream
- SP-6: Open cut, reroute east and north of pond
- SP-7: Cover in place

After a preliminary evaluation, alternatives SP-4 and SP-5 were eliminated because of higher cost without added benefit. Alternative SP-7 was eliminated because it required work on the dam and also because the conduits were at risk from soil liquefaction. Alternative SP-6 was removed from consideration because of the significant disruption that would occur to the landowner's extensive irrigation and utility system compared to some of the remaining alternatives.

Alternative SP-1 was eliminated due to risk of working in close proximity to the dam. The two remaining alternatives, SP-2 and SP-3, were evaluated further. For costs and other reasons, SP-3 was eliminated and SP-2 was chosen as the proposed action.

### Diack's Pond

Eight alternative scenarios were evaluated for the Diack's Pond site (Black & Veatch 2005).

These included:

- DP-1: Open cut trench upstream of alignment
- DP-2: Open cut trench downstream of the alignment
- DP-3: Trenchless near dam or downstream
- DP-4: Fill over pipe with flow under or over fill
- DP-5: Breach dam and flow under or over pipe
- DP-6: Open cut west of pond
- DP-7: Open cut in road
- DP-8: Open cut through pond

After preliminary evaluation, Alternatives DP-1 and DP-2 were eliminated due to high cost, risks of working in close proximity to the dam, and risks of working around operating conduits. Alternatives DP-3 and DP-7 were eliminated due to significantly higher cost without much added benefit. Alternative DP-6 was eliminated due to slope stability concerns between the pond and the road. Alternative DP-8 was removed from consideration because it included similar components to those in DP-5. The two remaining alternatives, DP-4 and DP-5, were evaluated further. For costs and other reasons, DP-4 was eliminated and a modified DP-5 that did not include breaching the dam was chosen as the proposed action.

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This section provides a discussion of existing conditions at the Sester's and Diack's Pond sites as well as a discussion of existing baseline conditions and the type and severity of potential impacts that would occur as a result of the Proposed Action. The following resources were not addressed because they were determined to have no potential for significance during the applicant's internal alternatives analysis (Black and Veatch 2005): aesthetics and urban design, air quality, hazardous and toxic material, land use planning, mineral resources, noise, population growth and housing, public health and hazards, public services, recreation, and transportation and traffic.

### **3.1 CLIMATE, GEOLOGY, SOILS**

The project sites lie within Climate Division 2 (Willamette Valley) as established by the National Climatic Data Center (OCS 2005). The climate of the Valley is relatively mild throughout the year, characterized by cool, wet winters and warm, dry summers. Typical distribution of precipitation includes about 50 percent of the annual total from December through February, lesser amounts in the spring and fall, and very little during summer (OCS 2005). Rainfall tends to vary inversely with temperatures, that is, the cooler months are the wettest while the warm summer months are driest.

Geologically, the entire Bull Run reservoir sits atop volcanic rocks belonging to the Columbia River basalt group (PWB 2005). This formation, which can be seen in some of the watershed's steep canyons, estimated to be 10 to 20 million years old (PWB 2005). Landforms in this area have been impacted by glacial advance and retreat during the Pleistocene and Holocene and are characterized by high mountain peaks, deeply incised river valleys, gently rolling hills, and alluvial floodplain environments. A 1980 study of landslide risk in the watershed identified approximately 3 percent of the watershed as unstable terrain called a "slump-earthflow" (PWB 2005).

Soils at this site are mapped as Wollent silt loam, which is described as a poorly drained hydric soil with a very dark grayish brown loam surface layer with mottles and a subsoil of gray mottled silt loam.

#### **Environmental Consequences:**

##### ***No Action Alternative***

The No Action alternative would have no effect on soils, geology, or climate in the project area.

##### ***Proposed Action Alternative***

With the Proposed Action, excavation within the wetlands (see Section 4.4, below) could directly affect the soils by mixing hydric and non-hydric soils, thus altering the soil profiles, and by compacting soils during construction. However, these effects would be largely mitigated by (1) stockpiling topsoil and subsoils separately and replacing them in the same order after construction and (2) avoiding use of heavy machinery over excavated areas after soils has been replaced to reduce potential for compaction. These impacts would be minimal and short-term. No impacts are expected to geology or climate.

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### **3.2 WATER RESOURCES**

The Bull Run Watershed occupies approximately 102 square miles in East Multnomah County. The system includes Bull Run Lake, a natural reservoir, and two manmade reservoirs. Bull Run River is a major tributary to the Sandy River.

The Lower Bull Run River and Beaver Creek, tributaries to the Sandy River, are 303d listed for exceeding set temperature and bacteria levels, respectively (DEQ 2004). Further, segments of the Sandy River are 303d listed for violating established temperature, bacteria, and dissolved oxygen levels.

Sester's Pond is situated at the headwaters of Beaver Creek. The project site is located at the Sester's Nursery, immediately downstream of an earthen dam on Beaver Creek. There is no surface water connection to Beaver Creek from the wetland swale within the project footprint. However, it appears that the earthen dam allows water to seep from the pond downstream to the creek.

Diack's Pond is situated on the western cliffs of the Sandy River. This site is located on the property of Sam Diack immediately downhill from the Lusted Hill Water Treatment Facility and just downstream of an earthen dam. The trestle site is centered on Lusted Creek (an intermittent tributary to the Sandy River), which continues downstream from its impoundment at Diack's Pond. There is no fish access on Lusted Creek at this location due to the steep gradient of Lusted Creek below the project site towards the Sandy River. As with the Sester's Pond site, it appears that water leaks through the earthen dam.

#### **Environmental Consequences:**

##### ***No Action Alternative***

With the No Action alternative, the water resources in the area would remain at risk in the event of conduit failure. These effects could include large increases in sediment loads and potential erosion and bank cutting in the stream channels.

##### ***Proposed Action Alternative***

With the Proposed Action, excavation within the Ordinary High Water Mark (OHWM) at both sites could result in temporarily elevated sediment loads in the stream channels. However, Best Management Practices (BMPs) and other measures would be used to avoid or minimize this from occurring. Any change in sediment loads is expected to be minor.

### **3.3 VEGETATION**

At the Sester's Pond site, plant communities included a reed canarygrass (*Phalaris arundinacea*) monoculture, an emergent wetland of soft rush (*Juncus effusus*) and small-fruited bulrush (*Scirpus microcarpus*), an Armenian blackberry (*Rubus armeniacus*) thicket and a mixed deciduous-coniferous upland forest of mainly bigleaf maple (*Acer macrophyllum*), Douglas fir (*Pseudotsuga menziesii*), Armenian blackberry, hazelnut (*Corylus cornuta*), trailing blackberry (*Rubus ursinus*), and sword fern (*Polystichum munitum*) (DEA 2005). Both reed canarygrass and Armenian blackberry, non-native species typically found in disturbed areas, are present within the Sester's Pond project area.

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At the Diack's Pond site, there were three dominant plant communities. The riparian deciduous forest was composed primarily of red alder (*Alnus rubra*), salmonberry (*Rubus spectabilis*), Armenian blackberry, creeping buttercup (*Ranunculus repens*), and piggyback plant (*Tolmeia menziesii*). The upland scrub-shrub community was dominated by Armenian blackberry, deadly nightshade (*Solanum dulcamera*), stinging nettle (*Urtica dioica*), and trailing blackberry. An emergent wetland community was comprised of mannagrass (*Glyceria elata*) and skunk cabbage (*Lysichitum americanum*) (DEA 2005). Both Armenian blackberry and deadly nightshade are non-native species that compete with vegetation native to this area.

### **Environmental Consequences:**

#### ***No Action Alternative***

The No Action alternative would result in no effects to vegetation.

#### ***Proposed Action Alternative***

With the Proposed Action, vegetation at both sites would be directly affected due to clearing necessary to access and construct the project. However, these impacts would be mostly temporary, as these areas would be replanted after construction with site-appropriate native herbs, grasses, shrubs, and trees. Replanting with native species would provide a net benefit in areas that are currently dominated by non-native weedy species. No riparian trees would be removed. Impacts to vegetation would be minimal.

### **3.4 FLOODPLAINS AND WETLANDS**

Executive Order 11988 requires federal agencies to take action to minimize occupancy and modification of the floodplain. FEMA's regulations for complying with EO 11988 are described in 44 CFR Part 9. The project does not occur within a designated floodplain (Appendix G).

Similarly, Executive Order 11990 requires federal agencies to act to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. A 2005 wetland delineation identified wetlands at both project sites.

At Sester's Pond, an area measuring approximately 0.35 acre was identified as palustrine emergent wetland (Appendix H) (DEA 2005). In addition, the OHWM of the on-site portion of Beaver Creek was delineated as a "water of the State and of the US."

At Diack's Pond, a palustrine scrub-shrub wetland was delineated with an approximate area of 0.15 acre (Appendix I) (DEA 2005). This wetland is adjacent to the unnamed creek that flows into it. Diack's Pond and its OHWM were delineated as "waters of the State and of the US."

The Oregon Division of State Lands (DSL) concurred on the wetland boundary delineations and conclusions of the 2005 delineation report on September 1, 2005 (DSL 2005).

### **Environmental Consequences:**

#### ***No Action Alternative***

The No Action alternative would result in no effects to the floodplain or the wetlands.

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### ***Proposed Action Alternative***

Unavoidable impacts to wetlands with the Proposed Action, potentially include temporary removal of vegetation, soil compaction, and altered wetland hydrology during site preparation and construction resulting in a direct impact of 0.05 at Sester's Pond and 0.015 acre at Diack's Pond. Permanent impacts to the wetlands would be limited to filling approximately 0.08 acre at the Diack's Pond site. No impacts would occur to the floodplain.

Temporary impacts would be restored with a native seed mix and native seedlings appropriate to the site. The native seed mix shall contain: blue wildrye (*Elumus glaucus*), California brome (*Bromus carnatus*), Native red fescue (*Festuca rubra rubra*), and tufted hairgrass (*Deschampsia caespitosa*). Suggested shrubs and trees to be installed as seedlings include: vine maple (*Acer circinatum*), big-leaf maple, clustered wild rose (*Rosa pisocarpa*), Nootka rose (*Rosa nutkana*), sword fern, and western red cedar (*Thuja plicata*).

Impacts specifically to wetlands were not considered for all 15 of the alternatives evaluated during the alternatives analysis. Therefore, it is not clear if other alternatives would have resulted in lower impacts to wetlands than those projected for the proposed action. Whatever the case may be, the impacts at the Sester's and Diack's sites are extremely minor; all less than 1/10 acre. The proposed action would avoid or minimize impacts to wetlands where practicable using Erosion Control Best Management Practices (BMPs) such as temporary sediment fencing, bio-filter bags, mulching and other erosion control measures (see Section 8). Any unavoidable impacts would be mitigated using replacement ratios established by the DSL. Therefore, once restoration has been completed, a net gain of wetlands could be expected within the project area.

### **3.5 LISTED SPECIES, CRITICAL HABITAT, ESSENTIAL FISH HABITAT**

During the information review phase of the project, the USFWS provided a countywide list of species that may occur within the project area (Appendix J). The list included the following listed species: Columbia white-tailed deer (*Odocoileus virginianus leucurus*), northern spotted owl (*Strix occidentalis caurina*), bald eagle (*Haliaeetus leucocephalus*), Lower Columbia River Chinook salmon (*Oncorhynchus tshawytscha*), Lower Columbia River steelhead trout (*Oncorhynchus mykiss*), Lower Columbia River coho salmon (*Oncorhynchus kisutch*), golden paintbrush (*Castilleja levisecta*), howellia (*Howellia aquatilis*), and Bradshaw's lomatium (*Lomatium bradshawii*). The ONHP database was searched for records of federal listed species known to occur within a 2-mile radius of the project sites.

A field reconnaissance conducted on September 14, 2005 determined that no suitable habitat was available for the Columbia white-tailed deer, northern spotted owl, or bald eagle. In addition, the ONHP had no database records of occurrence for any of these species within a 2-mile radius of the project. Similarly, there is no suitable habitat for the golden paintbrush, howellia, or Bradshaw's lomatium. There are barriers to fish passage to both project sites (greater than 25 percent gradient barrier below Diack's Pond, and intermittent flow as well as several manmade barriers on Beaver Creek below Sester's Pond), therefore, Lower Columbia River Chinook salmon, Lower Columbia River steelhead trout and Lower Columbia River coho salmon are not present with the project area.

No Critical Habitat exists within the project area for any of the species identified above.

No Essential Fish Habitat (EFH) occurs within the project area.

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### Environmental Consequences:

#### ***No Action Alternative***

The No Action alternative would result in no effects to listed species, critical habitat, or EFH.

#### ***Proposed Action Alternative***

With the Proposed Action, no effects would occur to the Columbian white-tailed deer, northern spotted owl, bald eagle, Lower Columbia River Chinook salmon, Lower Columbia River steelhead trout, Lower Columbia River coho salmon, golden paintbrush, *Howellia*, and Bradshaw's lomatium because these species do not occur within the project area or near vicinity. Similarly, the Proposed Action would result in no impacts to Critical Habitat or EFH because no Critical Habitat or EFH is located within the area of the Proposed Action.

### **3.6     AGRICULTURAL**

The project sites are both located within designated EFU land. "The purposes of the EFU District are to preserve and maintain agricultural lands for farm use consistent with existing and future needs for agricultural products, forests and open spaces; to conserve and protect scenic and wildlife resources, to maintain and improve the quality of the air, water and land resources of the County and to establish criteria and standards for farm uses and related and compatible uses which are deemed appropriate (Multnomah County 2005)." The Sester's Pond site is located within an active farming operation. The Diack's Pond site is not actively farmed. Among the non-farm uses permitted on EFU lands are actions related to utilities and wetland restoration (ORS Chapter 215). Thus, the proposed action would be permitted on EFU lands.

### Environmental Consequences:

#### ***No Action Alternative***

The No Action alternative would result in no effects to agricultural resources.

#### ***Proposed Action Alternative***

The Proposed Action would temporarily affect agricultural resources by potentially altering soil profiles (see Section 4.1, above) and potentially disrupting farming operations within both the temporary and permanent easements at the Sester's Pond site. As the Diack's Pond site is not actively farmed, impacts at this site would be limited to potential alteration of soil profiles within the easements.

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### **3.7**     **CULTURAL RESOURCES**

Prior to a site inventory, a review of existing information was conducted. The review included a record search at the Oregon State Historic Preservation Office (SHPO), Salem, on October 19, 2005. The record search indicated that the APE has not been previously surveyed, and no cultural resources have been previously recorded in the project area. In addition, no notable historic features were noted in the project area or surrounding areas. Other information reviewed during this phase of the cultural resources investigation included: 19th century General Land Office plat maps, data from previous surveys and previously recorded archaeological sites in the vicinity, and regional ethnographic, historic, and archaeological references.

Tribal consultation is currently being conducted by FEMA. To date, no specific concerns regarding the project area have been relayed.

At Diack's Pond, no archaeological materials were identified during the site inventory conducted on October 19, 2005. Much of the project area that is proposed for use as equipment laydown areas is covered with dense vegetation including Himalayan blackberry and reed canarygrass. Consequently, ground visibility is poor except adjacent to the exposed conduits and along the roadway. While mostly undeveloped, the area proposed for subsurface disturbance has been severely impacted historically and recently, and is considered to have low probability for containing significant cultural resources. Previous disturbances to the project area include four phases of pipeline construction spanning from 1895 to the 1950s, as well as construction of the dam. Subsurface disturbance would be confined to areas already disturbed during the previous phases of construction.

At Sester's Pond, no archaeological materials were identified during the October 19, 2005 site inventory. Much of the project area is covered with dense grass and wetland vegetation, and is completely surrounded by an active nursery operation. The proposed project area ground surface is also comprised of rows of potted plants and gravel access roads related to nursery operations. The likelihood of encountering significant buried resources in this area is considered low given the extent of disturbance caused by twentieth century dam and conduit construction in the area to be impacted.

#### **Environmental Consequences:**

##### ***No Action Alternative***

The No Action alternative would result in no effects to cultural resources.

##### ***Proposed Action Alternative***

With the Proposed Action, no effects would occur to cultural resources because no cultural resources were identified during the field survey, no information on the presence of traditional properties has been received, and the likelihood of encountering significant resources is low based on the extent of historic disturbances. The project area has been disturbed by a combination of agricultural uses; four phases of pipeline construction; dam construction; and periodic flooding of the ponds. Together, these disturbances have greatly reduced the possibility of cultural resources being present within the project area.

## **SECTION THREE**     **Affected Environment and Environmental Consequences**

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### **3.8 HISTORICAL RESOURCES**

The project sites are located within the Bull Run Water System (BRWS) Historic District. The BRWS Historic District consists of the three main water supply conduits; Bull Run Lake and Dam; Bull Run Reservoirs #1 and #2; Bear Creek Dams #1 and #2; Powell Butte, Washington Park and Mt. Tabor Reservoirs and associated facilities; Bear Creek Cabins #1 and #2; and the Bear Creek Construction Camp.

Bull Run conduits #2, #3, and #4 are integral components to the BRWS that has supplied water to the City of Portland since the 1890s. The BRWS Historic District was determined eligible for the National Register of Historic Places (NRHP) by FEMA (Donovan & Associates 2005). The SHPO concurred with the determination of eligibility through the Section 106 documentation process and FEMA's level of effect determination on December 2, 2005 (Appendix K).

The first criteria is the BRWS Historic District's association with the development of Portland's municipal water supply system and its relationship to the emergence of the national forest reserves and conservation movements (Donovan & Associates 2005). The other two criteria refer to the BRWS's engineering, which reflects late 19<sup>th</sup> century/early 20<sup>th</sup> century construction methods and for its ability to provide information important to understanding the construction history of the system.

The period of significance is from 1895, the date when the first phase of the system was completed, through 1953, when the last pipeline conduit (#4) was completed.

At Sester's Pond, sections of the existing conduits would be replaced with same type of steel pipe. The new alignment would not adversely affect the site because it would be buried like many of the other conduit sections associated with the water system. Of the existing 126,720 linear feet of the pipeline, only 585 feet of Conduit #2 would be replaced and 610 feet of Conduit #4.

At Diack's Pond, the existing conduits would be retained; the only proposed alteration to the pipelines is the construction of a new box culvert in the creek bed that would replace the original trestle system. Covering the existing pipeline after the culvert is built would not affect the integrity of the system since other sections of the pipeline are buried.

#### **Environmental Consequences:**

##### ***No Action Alternative***

With the No Action Alternative, there would be no modifications to historic resources and therefore, no effects would occur.

##### ***Proposed Action Alternative***

An application of the criteria of effect indicates a finding of "No Historic Properties Adversely Affected" for the sections of the conduit system at Diack's and Sester's ponds of the Bull Run Water System because the historic value and engineering integrity of the pipeline or historic district as a whole are not affected. The Proposed Action would not adversely affect the integrity of the conduit system or the BRWS Historic District as a whole, a historic district potentially eligible for listing in the National Register of Historic Places. Therefore, no measurable effects are expected to historic resources as a result of the Proposed Action.

## SECTION THREE Affected Environment and Environmental Consequences

### 3.9 ENVIRONMENTAL JUSTICE

EO 12898, entitled, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” directs federal agencies, “...to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States...” In compliance with FEMA policy, the socioeconomic conditions and potential effects related to this project have been reviewed.

Demographic information for Sandy, Oregon was compiled using 2000 Census Data. Sandy represents the nearest community with census data available. Table 1 lists Sandy race and ethnicity census information.

**Table 1. Sandy Demographics**

Race or Ethnicity	Number*	Percentage (%)
White	5,163	95.9
Black or African American	21	0.4
American Indian or Alaska Native	121	2.2
Asian	79	1.5
Native Hawaiian or Other Pacific Islander	22	0.4
Other Race	110	2.0
Total Population: 5,385		

Source: 2000 Census, <http://censtats.census.gov/>

\*In combination with one or more of the other races listed. Numbers may differ slightly from the total population and percentages may add up to more than 100% because individuals may report more than one race.

Sandy has a lower minority percentage than that of Multnomah County (13.4 %) and a lower minority percentage than the State of Oregon (8.7 %). The lower percentage may reflect the City of Sandy’s distance from a large urban area and relatively low agricultural use compared to the Willamette Valley.

#### Environmental Consequences:

##### ***No Action Alternative***

The No Action alternative would result in no disproportionately high or adverse effect on any low-income or minority populations.

##### ***Proposed Action Alternative***

The scope of this project is limited and would not include business or residential relocation, displacement or division. The Proposed Action would have no effect on disproportionate low-income or minority populations.

Cumulative effects resulting from the Proposed Action's incremental impacts when these impacts are added to the other impacts of other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor by collectively significant actions taking place over a period of time.

Past actions at the Sester's Pond site include installation and maintenance of the Bureau's water lines and establishment and operations of the Sester Farms nursery. Current actions at this site are limited to water supply maintenance and nursery operation. In the future, it is likely that the nursery would continue to farm the site and possibly expand operations at the site and the Bureau would continue to maintain the conduits. These actions are not expected to result in any cumulative impacts at the Sester's Pond site.

Past and current actions at the Diack's Pond site include installation and maintenance of the Bureau's water lines and establishment and habitation of a residence near the pond. In the future, it is likely that the Bureau would continue to maintain the conduits at the site. In addition, arrangements have been made for the residence to be donated to The Nature Conservancy at an unspecified date. These actions are not expected to result in any cumulative impacts to the Diack's Pond site.

The Proposed Action would require permits from the Corps/DSL, and Multnomah County before construction is initiated. Permits that may be required include:

- Section 404 Permit prior to conducting any work in the delineated wetlands. The Bureau submitted a completed permit application to DSL on July 29, 2005. This permit would be issued jointly by the U.S. Army Corp of Engineers and the DSL. The DSL approved the permit and sent a letter of concurrence to the Bureau dated September 1, 2005. At the time of this writing, the Corps had not issued a permit for removal/fill of wetlands within the project area.
- Non-conforming Use Permit – issued by Multnomah County
- Grading and Erosion Control Permit – issued by Multnomah County
- Floodplain Development Permit – issued by Multnomah County
- Significant Environmental Concern (water resources) Permit – issued by Multnomah County.

Both the Sester's and Diack's Pond sites have existing permits for National Pollutant Discharge Elimination System (NPDES) (Collins pers. comm. 2005).

The alternative scenario evaluation process was conducted by the City with the assistance of the City's engineering consultant, Black & Veatch. The evaluation process included several meetings and/or workshops with Black & Veatch and City staff and/or stakeholders. A brief description of the meetings and workshops and their attendees is provided here.

- A Project Initiation Workshop – City, consultant, stakeholders
- The Initial Development of Alternative Scenarios Meeting - City and consultant
- The Conceptual Scenarios Screening Workshop – City, consultant, stakeholders
- Conceptual Scenarios Workshop – City, consultant, stakeholders
- Predesign Scenarios Workshop – City, consultant, stakeholders

Following the Predesign Scenarios Workshop, Black & Veatch prepared a Basis of Design Memorandum, which identifies permitting, easement, construction, geotechnical issues as well as costs associated with each of the alternatives evaluated at each of the sites.

A public hearing may be required as part of the 404 permitting process. As of this writing, a permit application has not been submitted to the Oregon DSL or the U.S. Army Corps of Engineers (Corp). The hearing would provide an opportunity for neighbors and other interested entities to comment on the Proposed Action.

Mitigation measures include avoidance, minimization, and restoration. Where sensitive resources are present with the area of impact, efforts would be made to avoid the resources, where practicable. If avoidance is not practicable, measures would be taken to minimize the impact. In areas where impacts occur, measures would be taken to restore the site to its pre-construction condition. The City has developed BMPs required for implementation on all City projects. The BMPs that pertain to this project are briefly described below. The City's Erosion Control Manual contains additional details about BMPs (City of Portland 2000).

### Best Management Practices

- Install measures intended to keep soil on site or out of water bodies, storm drainage systems or the public right-of-way as the first step in any development. These measures shall be made functional prior to any upslope development taking place.
- Remove any soil that enters the public right-of-way.
- Protect stormwater inlets that are functioning during the course of the development by approved sediment control measures so that sediment-laden water cannot enter the inlets without first being filtered.
- Apply permanent or temporary soil stabilization to denuded development site areas in conformance with the following schedule:
  - Between October 1 and April 30, all denuded sites shall immediately be provided with either temporary or permanent soil stabilization.
  - Between May 1 and September 30, temporary erosion and sediment control measures to reduce dust and sediment transport shall be applied as soon as practicable, but in no case more than seven days after ground disturbing activity occurs.
  - Ground cover shall be installed on any portion of a site that is denuded for more than six months. Sports fields or playgrounds surrounded by vegetative cover or permanently installed curbing are exempt from this requirement.
  - Temporary measures shall be maintained until permanent measures are established.
  - Ground disturbing activity taking place between October 1 and April 30 for sites located in the Balch Creek and Northwest Hills subdistricts of the Skyline plan district is prohibited, and is not subject to Alternate Methods review per Section 10.40.040. (See Chapter 33.575 of the City of Portland Zoning Code.)
  - Permanent non-permitted ground disturbing activities may achieve compliance with the standards set out in subsections a-e above, with the installation and maintenance of approved permanent BMPs that meet the purpose of this Title.
- Plant replacement vegetative cover that does not include plants listed in either the Nuisance or the Prohibited Plant List, as set forth in the City of Portland Plant List. Agriculture, timber production, or residential crop growing activities are exempted from this requirement.

- Stockpile topsoil and subsoils separately during excavation. Replaced stockpiles soils in same order.
- Secure or protect soil stockpiles throughout the project with temporary or permanent soil stabilization measures. The responsible party is accountable for the protection of all stockpiles on the site, and those transported from the site. Depositions of soil may be subject to additional regulations requiring permit, review or erosion and sediment control.
- Select BMPs from the City's Erosion Control Manual (City of Portland 2005).
- Post signage on the site of the permitted ground disturbing activity that identifies the City's Erosion Control Complaint Hotline number or the responsible City project manager/inspector.
  - Post a sign on the site that is clearly visible from the right-of-way. The sign shall be at least 18" by 18" and made of materials that shall withstand weather for the duration of the project. Lettering shall be at least 3" high and easily readable. Signs shall be color coded or otherwise marked to identify the appropriate enforcing bureau; or
  - Another visual notification method approved by the Director of the designated enforcing bureau.

### Other required mitigation measures

- Any fill or removal and most other alterations within jurisdictional wetlands require a Joint Removal/Fill permit from the Corps and DSL.

### NEPA Conditions

Any change to the approved scope of work would require re-evaluation for compliance with NEPA and other laws and EOs.

This review does not address all Federal, State, and local requirements. Acceptance of Federal funding requires recipient to comply with all Federal, State, and local laws. Failure to obtain all appropriate Federal, State, and local environmental permits and clearances may jeopardize Federal funding.

### NHPA Conditions

If ground-disturbing activities occur during construction, applicant would monitor ground disturbance and if any potential archeological resources are discovered, would immediately cease construction in that area and notify the State and FEMA.

The findings of the draft EA conclude that the proposed retrofit of water supply conduits at Sester's Pond and Diack's Pond would result in no significant environmental impacts to the human or natural environment. After the comment period is concluded and should no significant issues be identified, FEMA will prepare a Finding of No Significant Impact (FONSI) under NEPA and will not prepare an Environmental Impact Statement.

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