

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Proposed Water Service Contract Palmer Creek Water District Improvement Company

Willamette River Basin Project, Yamhill County, Oregon

**Bureau of Reclamation
Pacific Northwest Region
Lower Columbia Area Office
Portland, Oregon**



**U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Portland, Oregon**

March 16, 2007

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

**BUREAU OF RECLAMATION
Pacific Northwest Region
Lower Columbia Area Office
Portland, Oregon**

Draft Environmental Assessment

**Proposed Water Service Contract
Palmer Creek Water District Improvement
Company
Willamette River Basin Project, Oregon**

Prepared for:

Bureau of Reclamation
Pacific Northwest Region
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**U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Portland, Oregon**

March 16, 2007

List of Acronyms and Abbreviations

| | |
|-------------|--|
| AFLHD | Agriculture/Forestry Large Holding District |
| BA | Biological Assessment |
| BIA | Bureau of Indian Affairs |
| cfs | cubic feet per second |
| Corps | U.S. Army Corps of Engineers |
| DEQ | Oregon Department of Environmental Quality |
| EA | Environmental Assessment |
| EFH | Essential Fish Habitat |
| EO | Executive Order |
| ESA | Endangered Species Act |
| ESU | Evolutionary Significant Units |
| hp | Horsepower |
| ITA | Indian Trust Assets |
| MSA | Magnuson-Stevens Fishery Conservation and Management Act |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| ODFW | Oregon Department of Fish and Wildlife |
| OWRD | Oregon Water Resources Department |
| PCWD | Palmer Creek Water District Improvement Company |
| Reclamation | Bureau of Reclamation |
| RM | River Mile |
| SHPO | State Historic Preservation Office |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |

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CHAPTER 1. - Purpose and Need for Action

1.1. Introduction

This Environmental Assessment (EA) analyzes the potential environmental impacts of allowing the Palmer Creek Water District Improvement Company (PCWD or District) to purchase irrigation water from reservoir storage in the Willamette River Basin Project (Project) through a proposed water service contract. The Bureau of Reclamation (Reclamation) is authorized to administer water service contracts for agricultural use of water stored in and released from the Project. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA).

1.2. Purpose and Need for Action

The underlying purpose and need to which Reclamation is responding is the PCWD request for a water service contract. The District is pursuing this contract as an “insurance policy” during dry years and against potential future competition for water resources. However, a water service contract does not guarantee Project water will be available.

1.3. Background

The following information is provided to help illustrate the Proposed Action described in Chapter 2 and justify Reclamation’s involvement.

The U.S. Army Corps of Engineers (Corps) constructed and operates the Willamette Basin Project consisting of 13 reservoirs with a combined total of 1.6 million acre-feet of water storage. Contracts for Project water are administered by Reclamation. The PCWD was organized in 1967 as a water improvement district under Oregon State law to manage and distribute water to farmland within its boundaries. Today, PCWD distributes water to irrigate approximately 6,150 acres on 56 farms in Yamhill County, Oregon. The water is supplied from a combination of sources: PCWD has water rights for Willamette River streamflow, a contract with Reclamation for Project water, and groundwater wells. Water from this combination of sources does not guarantee that PCWD will always have enough water to meet the needs of its members. PCWD is

concerned about the potential for a water supply shortage during drought conditions and when water users with senior water rights leave the District with a reduced supply. Other needs in the basin may further reduce the available supply of water. An additional water service contract will decrease future economic risk for PCWD members by increasing its water supply resources and options during times of shortage but does not guarantee that Project water will be provided.

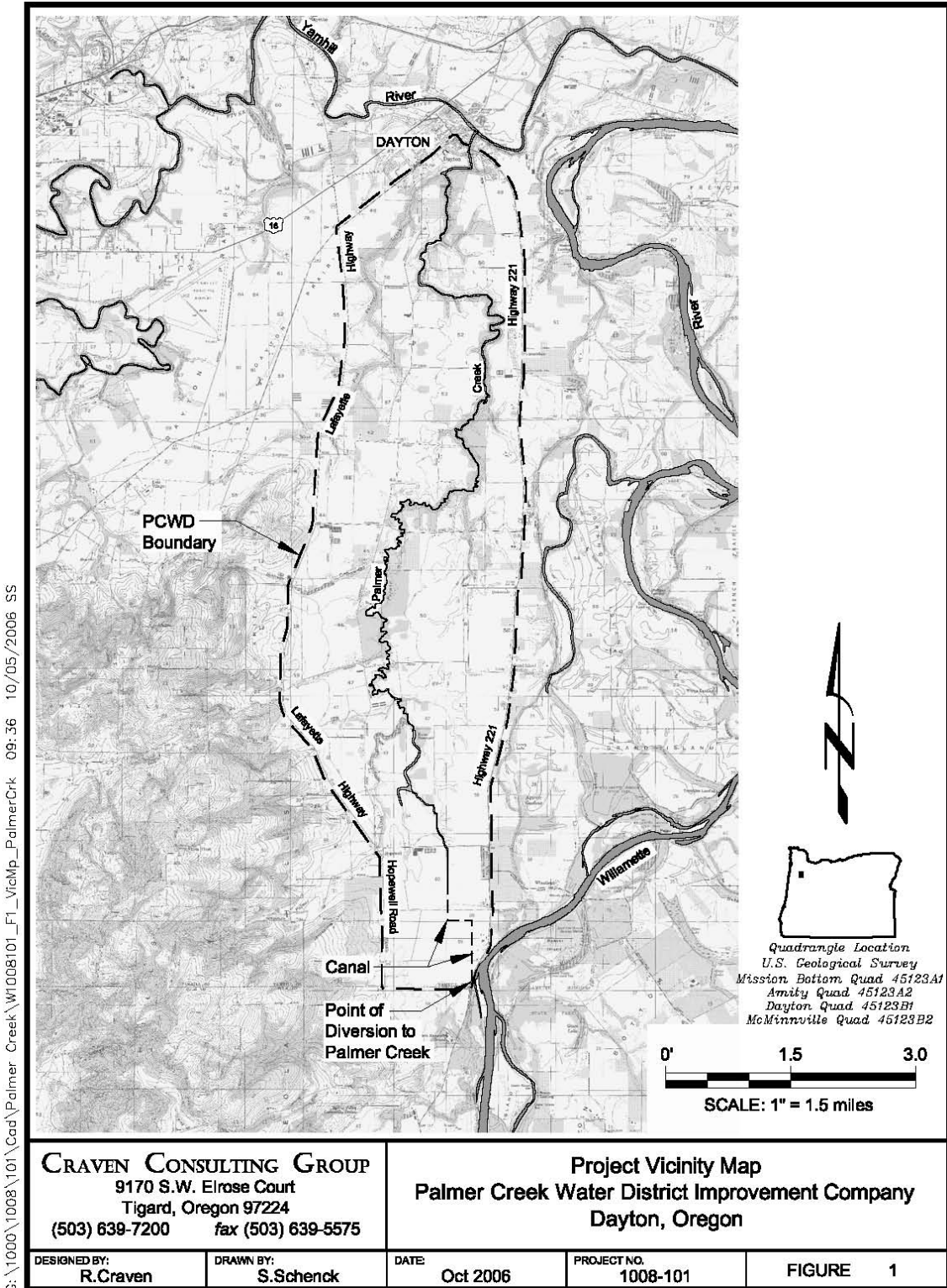
The PCWD made a similar contract request in the mid-1990s, and an EA was prepared and circulated for public comments in 1996. Several comments were received and are provided in Appendix A of this document including comments from Water Watch, a nonprofit environmental organization that works to restore and protect streamflows in Oregon's rivers. Water Watch objected to a number of missing details in the original EA. Among other things, they pointed out a lack of current water use data, and they suggested that the water service contract be issued for a temporary period until other studies were completed. Many of their comments were addressed through discussions between Reclamation and Water Watch. In 1999 Water Watch informed Reclamation of issues that remained to be addressed. This version of the EA addresses those comments. A Final EA and Finding of No Significant Impact (FONSI) were not completed, and Reclamation has not made a decision to grant or deny the PWCD contract request.

1.4. Location

The study area, within which PCWD's service area is located, is shown in Figure 1. The northern boundary is formed by the Yamhill River, the eastern boundary is the Willamette River, the southern boundary is the Yamhill County line, and the western boundary includes Jerusalem Hills and Lafayette Highway. The township and range locations of the general study area are approximately: Township 4 South, Range 3 West, Sections 15-22 and 26-35; Township 5 South, Range 3 West, Sections 3-10, 15-22, and 26-34; and Township 6 South, Range 3 West, Sections 4, 5, and 6 of the Willamette Meridian. Lands that are within the PCWD service area are owned by individual landowners except for approximately 1.5 acres of land owned by PCWD.

1.5. Description of Current Facilities

The PCWD diverts water from the Willamette River with a combination of three pumps located at its pump house (Photographs 1, 2, and 3) at River Mile (RM) 73.5 at the southern (upstream) end of the District service area. During the irrigation season that runs from April 1 through September 30, the pumps divert a maximum of 45 cubic feet per second (cfs) into a 3-mile-long earthen canal that runs from the pump house to Palmer Creek. The water runs down Palmer Creek (northward) for approximately 15 miles to the town of Dayton, Oregon, where it



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Figure 1. Project vicinity map, PCWD, Dayton, Oregon.



Photograph 1. East view of existing pump house. Intake at base of slope.



Photograph 2. East view of existing intake at base of slope.



Photograph 3. West view from intake showing pump house.

flows into the Yamhill River at RM 5. PCWD members divert their portion of the water supply from 40 separate locations on the canal, Palmer Creek, or the Yamhill River. The choices that District members make about crops, field rotation, irrigation systems, and other agricultural practices determine the volume of water used and number acres irrigated in any year, provided the place of use and the amount of water is within the amount allowed by Oregon Water Resources Department (OWRD).

1.6. Other Related Actions or Activities

The PCWD pump intake on the Willamette River is screened to prevent fish from getting caught in the intake, but the screen does not meet all of the current fish screen standards. The low velocity of the river at the pump intake has made designing a viable intake screen that meets State and Federal standards especially difficult and expensive. The District will install a slant retrievable intake screen

sized for up to 50 cfs. The fish screen improvement project is a separate and ongoing PCWD activity.

The Corps, the Bonneville Power Administration (BPA) and Reclamation are in consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) as required by Section 7(a)(2) of the Endangered Species Act (ESA) since the Project effects threatened and endangered species protected by ESA. Reclamation is a participant in this consultation because of the water service contracting program in the Willamette Basin.

CHAPTER 2. - Alternatives

2.1. Introduction

Alternatives which meet the objectives and the need for PCWD's proposal are described in this chapter. The PCWD considered other potential water supplies in addition to the Proposed Action but has eliminated all but the Proposed Action. The No Action Alternative is the most likely future scenario if the Proposed Action is not implemented and is provided for comparison with the Proposed Action.

2.2. No Action Alternative

The No Action Alternative is a decision by Reclamation to deny the PCWD application for a water service contract. The District would continue to use its available water supply including the one existing water service contract, groundwater, and surface flow water rights. No additional water from upstream Federal reservoirs would be utilized by PCWD. The District would continue to operate its pumps on the Willamette River to divert its water right and its existing supply of Project water. It would continue to use groundwater. New groundwater supplies are limited in PCWD service area.

To date, the District has been able to operate with the available combined water resources. In the future, without a secure and dependable supply of water from a variety of sources, the District and its members could face substantial economic risk during years when water demands in the Willamette River Basin exceed the available supply. The water supply is constrained by many factors: increasing demand for commercial and domestic water, cycles of drought, water for the river, water quality maintenance, and water for aquatic habitat. The District also is concerned that water users with senior water rights or claims for water rights that predate the 1909 Oregon water code could further restrict its available supply.

2.3. Proposed Action

The Proposed Action is the PCWD request for a water service contract for use of up to 12,250 acre-feet water from Federal reservoirs in the Willamette River Basin. Of this amount, 11,269 acre-feet is requested for supplemental water on 4,522 acres. The remaining 981 acre-feet is a primary irrigation water supply for

421 acres. Supplemental water is only available for use after the primary water supply is exhausted or becomes unavailable as determined by the State based on the water right priority date. Because the supplemental water cannot be used prior to or concurrently with the primary water, the supplemental water does not result in an increase in water diverted from the river. The primary irrigation water supply, when used to its fullest extent, increases pumping from the Willamette River by 5.27 cfs which is transported by canal to Palmer Creek. The PCWD is not constructing or expanding its water delivery system to accommodate additional water. Its facilities have the capacity to pump and transport the additional 5.27 cfs as does the channel of Palmer Creek.

2.4. Alternatives Considered but Eliminated from Further Consideration

2.4.1. Groundwater Supplies

Under this alternative, PCWD would continue diverting water in compliance with its existing water rights and a previously obtained Reclamation contract for stored water. PCWD would develop and pump groundwater as necessary for a supplemental water supply.

The groundwater resources in the PCWD area are very limited. PCWD members have attempted to install groundwater wells several times since 1956, and have found that the sand and fine gravels have unsustainable yields. Consultation with OWRD (Pers. Comm., Donn Miller, OWRD, Hydrogeologist, July 17, 2006) indicates that the feasibility of producing the required volume of water from groundwater resources in the Dayton area would be low (Appendix B). It is Mr. Miller's opinion that many wells, on the order of 250 feet deep, would be required. In addition, Mr. Miller indicated that it would be difficult to obtain water use permits for irrigation wells in this area due to the "potential for interference with nearby surface water."

Therefore, this alternative has not been examined in detail due to prohibitive costs of well development, the number of wells required to obtain the additional water, the lack of an extensive groundwater supply, and the inability of this option to provide even a short-term solution to PCWD's irrigation needs.

2.4.2. New Dams or Other Water Storage Facilities

The confluence of Palmer Creek and the West Fork of Palmer Creek (near the City of Dayton) was previously identified as a potential dam site by Reclamation and OWRD (Pers. Comm., Sam Sweeney, PCWD, former Secretary, November 24, 1993). This option is not a feasible alternative because of the need for a water storage right and construction expenses including individual conveyance systems to pump the water back up to the irrigable lands; the dam site would be lower in elevation than the majority of the lands in the PCWD service area.

This alternative has not been examined in detail due to the prohibitive costs of a fatal flaw analysis for dam or lake sites and lack of a suitable location for a water storage facility. Overall, the costs and environmental impacts associated with dam construction would far outweigh the benefits associated with the additional water supply.

2.4.3. New Water Right for Natural Flow from the Willamette River

This alternative would allow additional water diversion from the Willamette River to supplement existing natural flow water rights and storage contracts. This alternative is not a viable option because additional natural flows from the Willamette River generally are not available downstream of Salem, Oregon, during the irrigation season (Pers. Comm., Donn Miller, OWRD, Hydrogeologist, July 18, 2006). Even if an application is submitted and new rights are granted, it would not improve the current situation because the rights would be junior to other water right holders, and it is unlikely that water would be available during a low water year.

2.4.4. Conservation of Existing Irrigation Water Supply

This alternative would involve no new additional water rights or contracts. Existing PCWD water would be conserved in an attempt to meet demands.

The current delivery system consists of a 300-horsepower (hp) pump and two 130-hp pumps that divert water from the Willamette River at RM 73.5. The water is pumped into a 3-mile-long dirt canal which conveys it to Palmer Creek. The water is diverted from the canal by individual users and is applied primarily through sprinkler irrigation. Management practices employed by PCWD members are within agriculture industry standards for scheduling, operation, and maintenance of this irrigation equipment. PCWD members are motivated to operate their systems at high efficiency because of the costs associated with pumping, nutrient loss, and erosion.

Application rates are based on gypsum block studies of soil moisture content performed in this area in the 1960s. Nearly all irrigation in PCWD is by sprinklers and drip irrigation. In some cases, individual farms have built and operated irrigation water recycling systems (Pers. Comm., Sam Sweeney, PCWD, former Secretary, July 18, 2006).

PCWD collects data from totaling water meters at each farm diversion every year. Annual member surveys, which are voluntary, provide enough data to gauge efficiencies for many farms within PCWD's service area and to extrapolate district-wide efficiencies. On-farm efficiency is typically between 50 to 70 percent, which also is within agriculture industry standards for sprinkler systems. Drip systems achieve from 75 to 95 percent efficiency (Pers. Comm., Sam Sweeney, PCWD, former Secretary, July 18, 2006).

The cost associated with upgrading the conveyance and sprinkler equipment to improve system operating efficiency is expected to be prohibitive. Some incremental improvements could be realized by relatively low-cost, labor-intensive actions such as rejetting sprinklers, pan studies to fine tune application rates, and more soil moisture monitoring. These actions could result in a few percentage points of on-farm efficiency. Each incremental improvement in efficiency comes at a higher cost. Conversion to more efficient drip systems would improve on-farm efficiency to more than 80 percent, but at an initial cost of approximately \$400 per acre and an annual cost of more than \$250 per acre for row crops (Pers. Comm., Sam Sweeney, PWCD, former Secretary, July 18, 2006). Many operations in PCWD are already using drip systems. Even if the system were to operate at near 100 percent efficiency, the amount of additional water obtained in this manner would be inadequate to meet PCWD needs because the incremental increase in supply would not meet irrigation demand in a worst case scenario—severe drought or a call by senior rights.

Conveyance system efficiency is approximately 55 percent (Pers. Comm., Jon Barch, PCWD, Secretary, September 29, 2006). More water is diverted at the Willamette pumping station than is used within the District because of the configuration of the main canal and the use of Palmer Creek as a conveyance system (Pers. Comm., Sam Sweeney, PWCD, former Secretary, July 18, 2006). Water lost in this system flows as surface water in Palmer Creek to the Yamhill River, is consumed by riparian vegetation, lost to evaporation, and to a limited extent, infiltrates to the local aquifer.

PCWD is concerned by the potential for an irrigation water supply shortage. In a severe drought situation, or in the event of a far-reaching early priority call, PCWD would be enjoined from diverting any natural flow from the Willamette River. Technological water conservation measures would do little to increase the water available to irrigators if the water is simply not available for diversion. In a less severe drought, PCWD's water supply would be interrupted incrementally according to priority date. Conservation could buffer the effects of this reduction, but not in a cost-effective manner. Fallowing or resort to dry-land farming likely would be the outcome.

CHAPTER 3. - Affected Environment and Environmental Consequences

3.1. Introduction

Environmental resources potentially impacted by the Proposed Action and other issues of concern are described in this chapter. Following each resource is a discussion of the potential impacts of the Proposed Action and the No Action Alternative. The impacts include identifying and describing any direct, indirect, or cumulative effects. If mitigation is appropriate to reduce the impact on a resource, it will also be described. The following resources are not discussed in this chapter: climate, air quality, soils, geology, noise, mineral resources, topography, energy, or hazardous waste. Impacts to these resources were considered but not analyzed in detail because they are not affected by the project.

3.2. Economics

3.2.1. Affected Environment

Yamhill County has a population of approximately 85,000. The principal industry in the county is agriculture. The City of Dayton, which is the closest city to the PCWD service area, has a population of approximately 2,100. The Dayton-area economy is primarily driven by agriculture. Within the PCWD's service area, nurseries, fruit orchards, vineyards, and other row crop farms rely heavily upon irrigation water to support agricultural production.

3.2.2. Environmental Consequences

The proposed project would ensure continued and increased agricultural production in the PCWD service area by providing a supplemental water supply to 4,522 acres of land and a primary water supply to 421 acres of land. Presently, PCWD provides water to approximately 6,150 acres of irrigable land. Economic benefits to the community resulting from the proposed contract include helping to ensure future viability in the farming profession and future economic vitality in the region. In the event of a water-short year, the proposed contract would make available a supplemental water supply to irrigators, thereby reducing the potential for economic losses to farmers during dry years.

An increase in the gross personal income of some PCWD members may occur from application of the proposed contract water to the 421 acres of agricultural

land that is not presently irrigated. In addition, the availability of supplemental water during low-water years also could increase personal income by an unknown amount. The potential increase in gross personal income would occur without adverse impacts on the infrastructure of the community. The increase in farm production would not result in increases in services for schools, domestic water or sewage, fire protection, road improvement, or other community support programs because only minimal increases in employment opportunities would occur.

3.3. Hydrology

3.3.1. Affected Environment

The Project is operated as a system of dams and reservoirs by the Corps. Reclamation has no authority to make operational decisions. The Corps coordinates releases from 13 reservoirs to meet streamflow targets measured at gages on the mainstem Willamette River at Albany and Salem during the irrigation season. Project water that any current or future contractor may withdraw is not specifically released for irrigation contractors. Due to PCWD's point of diversion on the mainstem Willamette, water from any combination of the upstream reservoirs may contribute to the withdrawn water.

Each year the Corps makes operating decisions according to water availability hydrologic forecasts, and other factors. The United States reserves the right in its contracts to reduce or deny water supply when it is not available. It is possible and probable that any low-water year in which the Corps is unable to meet flow targets, the available water supply would be apportioned according to the priority dates of the diversion rights issued by the State of Oregon. Economic and other hardships to water users in drought years will occur. This is not unique to water users with Reclamation water service contracts; other water users such as municipal and industrial users will face water supply shortages in the Willamette Valley during these periods.

The Willamette River in the main channel generally flows within a range of 10,000 to 20,000 cfs during the irrigation season near PCWD. The OWRD estimates the Yamhill River has an annual range of 100 cfs to 4000 cfs, and Palmer Creek has an annual range of 0 to 140 cfs. The District pumps 45 cfs from the Willamette River. Annual rainfall strongly influences how early in the irrigation season PCWD starts using water from its contract supply.

3.3.2. Environmental Consequences

Impacts on water resources in the Project reservoirs, the Willamette River, Palmer Creek, and the Yamhill River were considered by evaluating potential changes in water levels and the effect on prior water rights (Table 1). The change to the

Table 1. Present water rights for existing natural flow, contract flow, and proposed contract flows for PCWD

| Source | Permit No. | Priority | Acres | Acre-Feet | Rate (cfs) |
|--|------------|----------|-----------------|------------------|---------------|
| 1.0 Natural Flow from Willamette River | 32243 | 1967 | 3,265.20 | 8,163.00 | 40.82 |
| | 34436 | 1969 | 288.70 | 721.75 | 3.61 |
| | 36216 | 1971 | 53.60 | 134.00 | 0.67 |
| | 39385 | 1975 | 219.60 | 549.00 | 2.75 |
| | 41499 | 1977 | 103.30 | 258.25 | 1.29 |
| | 42316 | 1977 | 60.00 | 150.00 | 0.75 |
| | 43380 | 1978 | 234.20 | 585.50 | 2.92 |
| | 44954 | 1980 | 294.90 | 737.25 | 3.69 |
| | 47405 | 1981 | 262.39 | 655.98 | 16.87 |
| | 50945 | 1987 | 397.20 | 993.00 | 4.97 |
| | 51959 | 1990 | 439.60 | 1,099.00 | 5.50 |
| | A-70109 | 1989 | 6.10 | NR | 0.06 |
| | A-70110 | 1989 | 431.70 | NR | 21.10 |
| A-72668 | 1992 | 94.20 | NR | 2.36 | |
| TOTAL | | | 6,150.69 | 14,046.73 | 107.36 |

| Source | Permit No. | Priority | Acres | Acre-Feet | Rate (cfs) |
|--|------------|----------|-------|-----------|------------|
| 2.0 Existing Storage Contract With Reclamation for Supplemental Water Supply | 43379 | 1984 | 806.4 | 927.36 | NR |

| Source | Application | Priority | Use | Acres | Acre-Feet | Rate (cfs) | Total cfs | |
|---|----------------------------|----------|------------|-----------------|------------------|------------------|--------------|--------------|
| 3.0 Proposed Contact with Reclamation | A-70109 | 1989 | Irrigation | 6.10 | 15.25 | 0.0250 | 0.15 | |
| | A-70110 | 1989 | Irrigation | 274.20 | 679.00 | 0.0250 | 6.86 | |
| | A-71731 | 1991 | Irrigation | 43.95 | 109.75 | 0.0125 | 0.55 | |
| | A-72668 | 1992 | Irrigation | 94.20 | 205.00 | 0.0250 | 2.36 | |
| | A-76860 | 1995 | Irrigation | 4,104.00 | 10,260.00 | 0.0125 | 51.3 | |
| | Supplemental Totals | | | | 4,522.45 | 11,269.00 | | 61.22 |
| | Primary Irrigation | A-71731 | 1991 | Irrigation | 56.50 | 141.25 | 0.0125 | 0.71 |
| | | A-72555 | 1992 | Irrigation | 48.00 | 48.00 | 0.0125 | 0.60 |
| | | A-76860 | 1995 | Irrigation | 316.67 | 792.00 | 0.0125 | 3.96 |
| | Primary Totals | | | | 421.17 | 981.25 | | 5.27 |
| TOTAL PRIMARY & SUPPLEMENTAL | | | | 4,943.62 | 12,250.25 | | 66.49 | |

NR = Not Reported in water right.

water surface elevation of the reservoirs in the Project will be insignificant because the irrigated land lies downstream of the reservoirs in the Project, and stored water could come from any one or several of the upstream reservoirs. As a result of the proposed contract, up to a total of 12,250 acre-feet would be removed from the reservoirs between April 1 and September 30, which equates to a maximum of 2,041 acre-feet per month. There would be no discernible change in water surface elevation as a result of these releases. The normal reservoir fluctuation and seasonal drawdown for flood control far exceed the changes caused by the Proposed Action. The Corps prepares for flood control operations by releasing stored water by autumn.

An increase in flow in the Willamette River would occur between the reservoirs providing the stored water and the PCWD diversion during the irrigation season. The increase in waterflow (up to 66.49 cfs if the total proposed water right is exercised) in the Willamette River would not significantly increase water surface elevations or velocities.

The contracted water would be diverted from the Willamette River using the existing PCWD diversion and would be transported via the PCWD canal to Palmer Creek where flows would be incrementally diverted by irrigation pump. According to PCWD, the system is adequate to handle the increased flow of 5.27 cfs for the additional primary water right, and no alterations to the pumps or the canal would be required in response to the proposed contract.

Flow levels in the irrigation canal that transports water to Palmer Creek would increase by up to the 5.27 cfs under the proposed contract. In the event of a drought year, the new contract would provide for irrigation water in the PCWD canal and Palmer Creek during what might otherwise be a dry period. This would decrease the chances that Palmer Creek would be drawn dry by water users in drought years.

Return flows to Yamhill River are inferred from observation of spill at the diversion dam 1 mile upstream from the Yamhill River confluence. PCWD personnel have observed fluctuations that correspond to irrigation applications that infer return flows ranging from 1 to 2 cfs during the irrigation season. The season average is approximately 1 cfs. The West Fork of Palmer Creek likely yields similar return flows, so the cumulative total return flow is approximately 2 cfs (Pers. Comm., Sam Sweeney, PWCD, Board Member, July 18, 2006). Return flows to Palmer Creek are used and reused by subsequent downstream diverters, which reduces their volume. The primary supply increase of 5.27 cfs to 421 acres, diverted and applied to crops, would result in an estimated 0.5 cfs increase to the return flow to Palmer Creek. Implementation of conservation measures could reduce return flows to the Palmer Creek watershed, offsetting the small increases from the proposed primary supply contract. The proposed supplemental

water supplies will not increase return flows to Palmer Creek because they will only be used to incrementally replace shortages of natural flow rights.

3.4. Water Quality

3.4.1. Affected Environment

The Willamette and Yamhill rivers are Water Quality Limited (WQL) streams. The 2002 Oregon Department of Environmental Quality (DEQ) 303(d) lists six water quality limited stream parameters for this area of the Willamette River: fecal coliforms, water temperature, iron, dissolved oxygen, mercury, and biological criteria. The Yamhill River (RM 0 to 11.2) has four parameters that appear on the 2002 303(d) list: water temperature, fecal coliforms, iron, and manganese. Palmer Creek is listed on the DEQ 303(d) list for high levels of chlorpyrifos, a widely used organophosphate insecticide. No additional pollution discharge is allowed into WQL streams. PCWD members are currently working with the DEQ and the Yamhill Water and Soil Conservation District to produce an Agricultural Water Quality Management Plan as part of the process under Senate Bill 1010. After the plan is finalized and circulated for public comment, it will be incorporated into the Oregon Administrative Rules. The Oregon Department of Agriculture will then use these rules to reduce nonpoint source pollution contributions to the Yamhill and Willamette rivers.

Existing water quality conditions on the Willamette River are generally fair or good near the diversion point at RM 73.5 (DEQ, 2004). The Willamette River typically has fast-moving currents in this area. The diversion, located in a backwater area off the main channel of the Willamette River, has a slow water current. The main channel substrate is composed of cobble and gravel. Substrate around the diversion consists of decayed organic matter, silt, and some sand.

3.4.2. Environmental Consequences

There is a strong potential for positive impacts on Palmer Creek from the supplemental water in this contract. Low to nonexistent flows in Palmer Creek degrade water quality in Palmer Creek and the Yamhill River. The 981.25 acre-feet of proposed primary supply would add up to 5.27 cfs to the base flow of Palmer Creek, an increase that would occur during low summer and fall flows. This seasonal addition would help maintain lower stream temperatures. The agricultural return flows will add an unknown amount of nutrients into Palmer Creek. The potential effects to Palmer Creek and the Yamhill River include: increased salinity, increased inorganic nutrient concentrations, increased water temperature, and decreased dissolved oxygen concentrations. The impacts expected for the Yamhill River are limited primarily to maintenance of flow levels. Since PCWD would use the proposed water contract only when natural flow is unavailable, the increased flow would most often occur during drought

years and would maintain Palmer Creek flows in an otherwise extremely low flow period.

Return flows to the Willamette River below the confluence with the Yamhill River are expected to increase the flow of the Willamette River by approximately 1 to 2 cfs and are expected to be similar in quality to the original diversion. There is minimal potential for negative impacts on Willamette River water quality. Impacts on Palmer Creek water quality are expected to be insignificant since the contracted water would be used in place of natural flows during years when natural flows are not available. The most significant anticipated change to current conditions is that contracted water would keep Palmer Creek wet when it might otherwise dry up.

3.5. Flood Plains and Wetlands

3.5.1. Affected Environment

The Project reservoir system is operated by the Corps according to release and refill schedules which support extensive wetland areas along the fringes of the reservoirs. The control of the water supply from the reservoirs for multiple needs minimizes large fluctuations along the flood plains downstream from the reservoirs. Annual spring and early summer high waters are generally predictable. The presence of wetlands along the 15 miles of Palmer Creek is varied. There are riparian wetlands directly adjacent to Palmer Creek, but wetlands do not occur next to the 3 miles of canal which carries diversion water to Palmer Creek. There are no identified wetlands on lands proposed for new irrigation development.

3.5.2. Environmental Consequences

Negative impacts of the Proposed Action on flood plains and wetlands are not anticipated. The removal of water from the Project would be minimal and would not lessen the acreage of flood plains or wetlands surrounding the reservoirs. The reservoirs' water surface levels cycle seasonally with average capacity reached in mid-June and drawdown levels reached in mid-January. The dramatic water surface level fluctuations caused by hydropower and fisheries enhancement would mask the loss of water delivered to PCWD. The contracted water constitutes an imperceptible amount compared to average and drawdown reservoir levels.

The maximum anticipated contract amount of 66.49 cfs released from storage to the Willamette River would be unnoticeable as far as the water surface level and velocity are concerned. The addition of the contract maximum for the primary water right (5.27 cfs) to the Willamette River would not have a beneficial or adverse impact on flood plains or wetlands. The increase of the water for the supplemental water right would only occur as needed when natural flows or other Reclamation contract flows are not available.

Increased flow in Palmer Creek would cause no change to flood plain or wetlands status. The increased flows for both the primary and supplemental water rights are below the existing natural flow conditions. The typically incised streambanks and riparian area would keep any increased flows in the stream channel. No wetlands would be drained. Presence of flow during low water years when flows would not occur or be very low in Palmer Creek may enhance existing riparian conditions.

A wetland determination was made for the irrigation intake where a fish protection screen would be installed. There are no wetlands located at the Willamette River intake where the fish screen would be installed.

Return flows to the Yamhill River are not measured. Since irrigation flows are efficiently used, the amount of additional water reaching the Yamhill River (estimated at 1 to 2 cfs) would not affect flood plains or wetlands there or below the confluence with the Willamette River.

3.6. Vegetation

3.6.1. Affected Environment

A review of plant communities of the Project area and the Palmer Creek drainage reveals that the Project area includes a diverse range of vegetative resources ranging from heavily forested areas around the reservoirs to sparsely vegetated areas in the cropland areas. Forested areas include such dominant species as western hemlock (*Tsuga heterophylla*), Douglas fir (*Pseudotsuga menziesii*), and western red cedar (*Thuja plicata*). Riparian vegetation typically consists of these species as well as Oregon ash (*Fraxinus latifolia*), cascara (*Rhamnus* spp.), red alder (*Alnus rubra*), and white dogwood (*Cornus nuttallii*).

Shrub cover is common along the riparian areas including Palmer Creek. It consists of red elderberry (*Sambucus arborescens*), blackberry (*Rubus* spp.), salmonberry (*Rubus spectabilis*), and Scotch broom (*Cytisus scoparius*). Various sedges (*Carex* spp.), sword fern (*Pteridium* spp.), orchard grass (*Dactylis glomerata*), reed canary grass (*Phalaris arundinacea*), foxtail (*Setaria* spp.), nettle (*Urtica* spp.), thistle (*Cirsium* spp.), and various composite flowers also are present.

Vegetation on the approximately 45-degree slope at the irrigation intake on the Willamette River where the fish screen infrastructure would be installed consists of reed canary grass at the lower elevation near the Willamette River backwater and Himalayan blackberry and other upland species on the upper slope. The underlying substrate is soil and riprap fill for the intake.

Cropland adjacent to the irrigation canal and Palmer Creek is dominated during the irrigation season by annual monocultures of corn, beans, beets, broccoli, and other crops.

3.6.2. Environmental Consequences

The release of water from the Project would not affect the forested areas in the PCWD lands. Water levels would not be affected because of the small quantity of water (less than 1 percent of the 1,592,800 acre-feet of usable conservation space available for joint use) removed from multiple reservoirs in response to the contract.

The Proposed Action would provide continued agricultural production for cropland areas within the PCWD service area. No adverse impacts on nonagricultural vegetation along the PCWD canal, Palmer Creek, or the Yamhill River are anticipated as a result of the Proposed Action. The proposed contract likely would result in a beneficial impact on existing riparian habitat.

Minimal disturbance of vegetation would occur on the sloped riprapped area (70 feet by 10 feet) where the track infrastructure for the fish screen at the irrigation intake would be installed. This area has previously been disturbed by construction activities for installation of the intake structure. The area will not need to be cleared of vegetation or stripped of soils. Two 6- to 8-inch metal support pilings would be required to support the track infrastructure.

3.7. Fisheries

3.7.1. Affected Environment

This section discusses the fisheries resources and habitat that occur in the vicinity of the PCWD diversion on the Willamette River, Palmer Creek, and the lower Yamhill River.

The majority of the fish species found in the Willamette River near the PCWD diversion are resident species with the exception of fall and spring Chinook (*Oncorhynchus tshawytscha*) and winter and summer steelhead (*Oncorhynchus mykiss*), which are migratory species. Resident species include cutthroat trout (*Oncorhynchus clarki*), white sturgeon (*Acipenser transmontana*), yellow bullhead (*Ictalurus natalis*), brown bullhead (*Ictalurus nebulosus*), yellow perch (*Perca flavescens*), largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), white crappie (*Pomoxis annularis*), black crappie (*Pomoxis nigromaculatus*), largescale sucker (*Catostomus macrocheilus*), common carp (*Cyprinus carpio*), chiselmouth (*Acrocheilus alutaceus*), northern pikeminnow (*Ptychocheilus oregonensis*), and reidside shiner (*Richardsonius balteatus*) (Corps, 1981; ODFW, 1992). Fish presence in the backwater area near the intake has not been documented. During

irrigation season it is likely that fish presence is low because of shallow water conditions, silt substrate, minimal to no large woody debris, and warm water temperatures.

Fish species present in the lower Yamhill River include winter steelhead, coho salmon (*Oncorhynchus kisutch*), Pacific lamprey (*Lampetra tridentata*), cutthroat trout, largescale sucker, northern pikeminnow, largemouth bass, speckled dace (*Rhinichthys osculus*), riffle sculpin (*Cottus gulosus*), and American shad (*Alosa sapidissima*) (Corps, 1981).

Palmer Creek is a low gradient, meandering stream that experiences low flows and warm water temperatures during most of the year. Riparian conditions along the stream corridor are generally considered good. No sampling has been done in the Palmer Creek drainage to determine species composition or distribution. Species which may be present in the Palmer Creek area include: coho salmon, cutthroat trout, largemouth bass, crappie, sculpins (*Cottus* spp.), dace (*Rhinichthys* spp.), red side shiners, common carp, northern pikeminnow, and chiselmouth (Pers. Comm., Steve Mamoyac and Todd Alsbury, ODFW, District Fish Biologists, July 20, 2006). Cutthroat trout also may occur in some of the local streams which flow into Palmer Creek. However, low flow conditions, warm water temperatures, and the presence of low head irrigation dams and flash board diversions which hinder upstream migrations make the use of Palmer Creek by cutthroat trout and coho salmon unlikely.

3.7.2. Environmental Consequences

Fisheries resources in the area would not be adversely affected as a result of the Proposed Action. No alteration would occur to water quality, native vegetation, stream habitat types, or fish. The irrigation water intake located at the diversion point on the Willamette River would be screened to meet Oregon Department of Fish and Wildlife (ODFW) and NMFS criteria for fish protection prior to diversion of water. The ODFW, NMFS, and USFWS have each evaluated and approved the proposed fish protection screen (Appendix B). Fish protection screens have been installed at diversion points along the PCWD canal and Palmer Creek.

The Proposed Action would provide an additional 5.27 cfs to Palmer Creek, and up to 66.49 cfs during drought years, thus potentially improving habitat for fish populations and increasing fishing opportunities. The increased Palmer Creek flows during drought years would potentially improve water quality conditions which would increase the amount of habitat (rearing and forage) available to the fisheries resource and provide more suitable conditions for aquatic invertebrate production.

3.8. Wildlife

3.8.1. Affected Environment

This section discusses the wildlife resources and habitat in the Palmer Creek watershed, which consists of upland, riparian, and aquatic habitats supporting diverse wildlife populations. Wildlife species can be separated into nongame, upland, and waterfowl species.

The following nongame species are known to occur in the Palmer Creek drainage: beaver (*Castor canadensis*), river otter (*Lutra canadensis*), raccoon (*Procyon later*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), spotted skunk (*Spilogale putoris*), silver gray squirrel (*Sciurus carolinensis*), red-tailed hawk (*Buteo jamaicensis*), turkey vultures (*Cathartes aura*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), and a variety of songbirds. These species are generally associated with aquatic and riparian habitats adjacent to fields.

Upland game species which are known to occur in the drainage include ring-necked pheasant (*Phasianus colchicus*), California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), and band-tailed pigeon (*Columba fasciata*). These species are generally found in fields adjacent to riparian areas or heavily vegetated fence lines and ditches. These habitats provide nesting and escape cover; however, the lands associated with PCWD typically do not have riparian areas or heavily vegetated fence lines and ditches, thus the use of these lands by upland game species is minimal.

Important breeding populations of mallard (*Anas platyrhynchos*) and wood ducks (*Aix sponsa*) are found in the middle Willamette Basin, of which the Palmer Creek drainage is a part. Wintering season waterfowl populations are predominantly mallard, wood duck, pintail (*Anas acuta*), American widgeon (*Anas americana*), and western Canada geese (*Branta canadensis*). Smaller numbers of gadwall (*Anas strepta*), northern shoveler (*Anas clypeata*), green-winged teal (*Anas crecca*), and ruddy ducks (*Oxyura jamaicensis*) also can be found. These species are generally found in aquatic and riparian habitats which provide nesting, escape cover, and forage areas.

3.8.2. Environmental Consequences

The Proposed Action would not adversely affect wildlife resources in the area. No alteration to native vegetation and habitat types would occur on the PCWD. As a result of the Proposed Action, PCWD members would be able to continue agricultural production of row crops during drought years, which would maintain existing forage opportunities for wildlife. Significant shifts in cropping practices, for example, conversion of pasture lands to row crops, are not anticipated at this time. An increase in Palmer Creek flow levels during drought years may improve

water quality conditions, which in turn would improve forage conditions for waterfowl and nongame species.

3.9. Threatened and Endangered Species

On July 17, 2006, PCWD requested a list of threatened, endangered, and candidate species occurring in Yamhill County. The USFWS provided its response including fish, wildlife, plants, and invertebrate species (Appendix B). Table B1 in Appendix B lists the species, additional habitat information, and conclusions about possible impacts and the likely presence of each species in the project area. Table 2 summarizes anticipated effects of the Proposed Action.

3.9.1. Affected Environment

The USFWS identified six species of plants that are protected as either threatened or endangered under the ESA (Appendix B, Table 1). Surveys have not been conducted for these species because no ground-disturbing activities will occur on the PCWD agricultural lands that are currently or proposed for a supply of

Table 2. Summary Table – Effects of the Proposed Action on ESA listed species for PCWD

| Common Name | Scientific Name | Federal Status | Effect Determination |
|-----------------------------|--|----------------|----------------------|
| Bradshaw's Lomatium | <i>Lomatium bradshawii</i> | Endangered | No Effect |
| Howellia | <i>Howellia aquatili</i> | Threatened | No Effect |
| Nelson's Checker-Mallow | <i>Sidalcea nelsoniana</i> | Threatened | No Effect |
| Golden Indian Paintbrush | <i>Castilleja levisecta</i> | Threatened | No Effect |
| Willamette Daisy | <i>Erigeron decumbens</i> var <i>decumbens</i> | Endangered | No Effect |
| Kincaid's Lupine | <i>Kincaidii sulphureus</i> var <i>kincaidii</i> | Threatened | No Effect |
| Chinook Salmon | <i>Oncorhynchus tshawytscha</i> | Threatened | No Effect |
| Steelhead | <i>Oncorhynchus mykiss</i> | Threatened | No Effect |
| Bald Eagle | <i>Haliaeetus leucocephalus</i> | Threatened | No Effect |
| Northern Spotted Owl | <i>Strix occidentalis caurina</i> | Threatened | No Effect |
| Marbled Murrelet | <i>Brachyramphus marmoratus</i> | Threatened | No Effect |
| Fenders Blue Butterfly | <i>Icaricia icarioides fenderi</i> | Endangered | No Effect |
| Oregon Silverspot Butterfly | <i>Speyeria zerene hippolyta</i> | Threatened | No Effect |

irrigation water. All lands are currently farmed with either supplemental or primary water rights, or are farmed without water rights. No new ground-disturbing activities would occur on the farm lands.

The District is implementing its own separate project to install a fish protection screen on the existing pump intake. Reclamation is not funding, authorizing, or constructing the fish screen. According to the PCWD, the fish screen project will have minimal disturbance in an area that is approximately 70 feet long and 10 feet wide from the low water to above the base of the concrete pump station. This area is on an approximately 45 degree slope that is part of the existing pump station. The underlying materials on the slope consist of soils and rock fill from the construction of the pump intake house. The lower slopes are dominated by reed canary grass and water parsley (*Oenanthe sarmentosa*). The upper slopes are vegetated with red alder, Himalayan blackberry (*Rubus discolor*), reed canary grass, bedstraw (*Gallium aparine*), horsetail (*Equisetum* sp.), Canadian thistle (*Cirsium arvense*), and wild lettuce (*Lactuca serriola*).

Upper Willamette River chinook (*Oncorhynchus tshawytscha*) and Upper Willamette River steelhead (*Oncorhynchus mykiss*) are listed as threatened Evolutionary Significant Units (ESUs) and migrate past PCWD's diversion on the Willamette River. Critical Habitat has been designated for both species. In addition, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) designated Essential Fish Habitat (EFH) for chinook and coho salmon. Coho salmon are not considered native species in the Upper Willamette Basin and are not protected under ESA in this area. Some coho salmon do inhabit the Willamette River, and although not protected under ESA they are protected under MSA (See Addendum to this EA).

As mentioned previously, Palmer Creek was drawn dry during the irrigation season prior to the formation of PCWD. This practice eliminated fish species residing in the stream. Since the formation of PCWD, water has been present in the stream on a year-round basis. Incremental increases in flow above the PCWD point of diversion on the Willamette River as a result of the Proposed Action will have no effect on the listed species.

USFWS has identified the marbled murrelet (*Brachyramphus marmoratus*), northern spotted owl (*Strix occidentalis caurina*), and bald eagle (*Haliaeetus leucocephalus*) as federally listed threatened species, potentially occurring in the vicinity of the project. The habitat for marbled murrelet consists of large trees in older forests usually within 50 miles of the coast, and it forages in the marine environment (Csuti, et al., 2001). The location of the intake is approximately 45 miles from the coast adjacent to agricultural area that does not have old growth forest. It is unlikely that marbled murrelet is present in the vicinity (Pers. Comm., Devin Simmons, ODFW, Habitat Biologist, July 21, 2006).

Northern spotted owl prefers larger forest stands with multiple layers and a closed canopy with its breeding season in late March (Csuti, et al., 2001). According to Csuti (2001), northern spotted owl has been displaced from lower elevation forests through timber harvest. According to ODFW (Pers. Comm., Devin Simmons, ODFW, Habitat Biologist, July 21, 2006), northern spotted owl would not be expected to be present in the project area; however if northern spotted owl was observed it would be a juvenile acting on a dispersal behavior pattern. The location of the intake in an agricultural area that does not have old growth forests or large stands suggests that the northern spotted owl likely would not be present in the vicinity of the intake.

The closest bald eagle nest is over 1.5 miles south of the intake location. Bald eagles likely frequent the general vicinity of the project area as the eagle seeks prey species in and around the Willamette River.

Fender's blue butterfly appears to be confined to the Willamette Valley, including sites in Yamhill, Benton, Polk, and Lane counties in Oregon. The primary habitat for the butterfly is native wetland prairie (Federal Register, Vol. 65, January 25, 2000). Kincaid's lupine or other lupines appear to be the host plant for Fender's blue butterfly. Its primary larval food plant, Kincaid's lupine (listed as Threatened), occurs on a few small prairie remnants in the Willamette Valley. Fender's blue butterfly is endangered because native prairie habitat has been converted to agriculture, subject to fire suppression, invaded by non-native plants, or otherwise developed. Refugia from these forces of change are mostly limited to fence rows and intervening strips of land along agricultural fields and roadsides. Although a survey was not conducted for this species, it would not be expected to be present in the area of the intake where minimal ground-disturbing activities would occur in a 70-foot-long by 10-foot-wide area for installation of the track infrastructure for the fish screen. No construction activities are proposed for other areas.

The Oregon silverspot butterfly is found only in the salt spray meadows along areas of the Pacific Coast (Federal Register, Vol. 43, July 3, 1978). This species is not expected to be present in the vicinity of the proposed project. The project area is approximately 45 direct miles from the coast area and on the east side of the coast mountain range. Critical Habitat has been designated to include a portion of Lane County near the Pacific Coast (Federal Register, Vol. 45, July 2, 1980). The area for designation of Critical Habitat does not include the project area.

3.9.2. Environmental Consequences

The Proposed Action will have no effect on plant species protected under the ESA because the land is already farmed for commercial agriculture. The Proposed Action would not result in changes in land use or agricultural practices. Although no surveys were conducted for the plants protected under the ESA at the irrigation intake, none of the listed species would be expected to be found in the irrigation

intake area where minimal construction activities for installation of the track infrastructure for the fish screen are proposed by PCWD. The protected plant species are either upland prairie or wetland prairie species that likely would not be found along the dry steep slope where installation of the fish screen would occur (an area 70 feet long by 10 feet wide).

The Willamette River near the PCWD diversion is used by two threatened fish species. Their use is seasonal during up-river migration of adults and down-river passage by juveniles. Both species reside as juveniles during rearing in pools with consistent flow, aeration, refugia, and cool temperatures. The habitat at the PCWD point of diversion is a backwater, an unlikely place for juvenile salmonids, especially in the pumping season when temperatures are inhospitable to these species. The presence of juveniles of either listed species has not been established in Palmer Creek or the Willamette River near the PCWD diversion; however these species are likely present at least at the intake. The existing fish screen at the diversion on the Willamette River does not meet standards of ODFW, USFWS, and NMFS to protect fish. PCWD has completed design of an approved fish screen and ODFW, USFWS, and NMFS have provided approval (Appendix B). Installation of the new fish screen would minimize entrainment in the intake flows, and thus reduce present loss of fish.

No impacts on the marbled murrelet, northern spotted owl, or bald eagle are expected. No impacts are expected on marbled murrelet or northern spotted owl because the habitat for these species is not present in the vicinity of the intake. The bald eagle nest site is approximately 1.6 miles south of the work area for installation of the fish screen on an existing diversion. The work would occur during the late summer or fall period and consist of limited work for less than a week. A crane would be used to lift the fish screen into place. Because of the distance from the nest (1.6 miles), limited amount of work with low noise levels, and the late summer and fall installation outside of the nesting season for bald eagle, no impacts are expected to occur on bald eagle.

No impacts are expected to occur on Fender's blue butterfly because there is no native wet prairie located near the ground-disturbing activities at the intake. Kincaid's lupine, a host plant for the butterfly that is found primarily in native upland prairie (Federal Register, Vol. 65, January 25, 2000), would not be expected to occur on the steep slope of the irrigation intake location. In addition, ground-disturbing activities are limited to an approximately 70-foot-long by 10-foot-wide area at the intake located on an approximately 45 degree slope near a backwater of the Willamette River. Any impact on the butterfly at this small location likely would not occur.

No impacts are expected to occur to Oregon silverspot butterfly as a result of the proposed project. The butterfly's habitat is not present in the project area, and the project area is not included in the Critical Habitat designation.

3.10. Visual Resources

3.10.1. Affected Environment

The existing intake structure is on a backwater area of the Willamette River. The Palmer Creek riparian zone is still largely intact and provides scenic opportunities and wildlife observation opportunities for local residents.

3.10.2. Environmental Consequences

The only portion of the system expected to experience aesthetic impacts as a result of the Proposed Action is Palmer Creek. Visual resources along Palmer Creek could potentially be improved during drought years by the maintenance of water flow in the creek.

3.11. Recreation

3.11.1. Affected Environment

Recreational opportunities along the Willamette River, Palmer Creek, and the Yamhill River include both passive (i.e., wildlife observation) and active (i.e., hiking, fishing) opportunities; however there are few public access locations within PCWD. Palmer Creek currently supports a localized sport fishery for largemouth bass and crappie between the Carlton Nursery Dam and the confluence of Palmer Creek and the Yamhill River. Prior to the establishment of PCWD, Palmer Creek was drawn dry during the irrigation season, a practice which eliminated spring and summer sport fishery opportunities. Since the formation of PCWD, flow has been maintained in the stream on a year-round basis.

3.11.2. Environmental Consequences

The only portion of the described system where impacts on recreation are anticipated is in the Palmer Creek area. Impacts on the Willamette River are not anticipated as the proposed contract constitutes less than 1 percent of the mean monthly flow of the Willamette River during the irrigation season; hence the increased flows would not be noticeable.

The potential exists for increased flows and recreational opportunities in Palmer Creek as a result of the Proposed Action, especially during drought years. Impacts on the Yamhill River would depend upon the return flows from Palmer Creek; however, since the contracted water would be used primarily during

drought years, no change is anticipated in recreational opportunities for the Yamhill River.

3.12. Land Use

3.12.1. Affected Environment

The northwestern and southwestern regions of Yamhill County are dominated by the Commercial Forestry District and the majority of the remaining areas in the eastern portions of the county are designated as Agriculture/Forestry Large Holding District (AFLHD) on the Yamhill County Comprehensive Plan map. The properties located in the PCWD service area are within the AFLHD, but most of the area is classified as Exclusive Farm Use.

The majority of the area within PCWD is used for agricultural activities, including nursery stock production and row crop production, such as corn, beans, beets, broccoli, and other crops. There is a small fraction of land in this area that is designated as very low density residential, and other plan designations are on the comprehensive plan map. The land use code limits or prohibits the latter type of development in the exclusive farm district in an effort to maximize the potential agricultural productivity.

3.12.2. Environmental Consequences

Land-use designations would not change as a result of the proposed project since the proposed supplemental water supply to 4,522.45 acres would be used on previously farmed lands, and the proposed primary water supply to 421.17 acres would be used on lands which were previously dryland farmed or received water from other sources. The additional irrigation water supply would provide a source of water during low water years when Palmer Creek is typically drawn dry. This water availability would allow the production of agricultural commodities to continue, as has been the practice since the mid 1800s. No impact on undeveloped land within the PCWD service area would occur as the result of the Proposed Action.

3.13. Historic and Cultural Resources

3.13.1. Affected Environment

No ground-disturbing activities would occur, except for installation of the track infrastructure for the fish screen at the existing intake on the backwater of the Willamette River. The intake area was extensively disturbed and backfilled with soil and riprap in the mid-1960s when the intake structure and pump house were constructed on an approximately 45 degree slope that extends to the backwater area of the Willamette River.

3.13.2. Environmental Consequences

The Proposed Action would have no effect on cultural and historic resources, since no alterations would be made to the existing conveyance system and no new lands (the 421.17 acres of lands proposed for a primary water right are already farmed) would be brought into production as a result of this proposal. The Oregon State Historic Preservation Office (SHPO) was contacted about the potential impacts on archeological and cultural sites at the previously disturbed construction area at the intake to determine if additional analysis should be conducted prior to installation of the new fish screen. SHPO concurred that installation of the fish screen would not require further review (Appendix C).

3.14. Indian Sacred Sites

3.14.1. Affected Environment

Executive Order (EO) 13007 defines an Indian sacred site as “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion.” None of the lands affected by the Proposed Action are Federal fee lands or lands where Federal easements or other realty interests pertain. There is no corollary statute in State codes pertaining to Indian sacred sites on non-Federal lands.

3.14.2. Environmental Consequences

No impacts would occur under EO 13007 because that authority does not extend to non-Federal lands.

3.15. Indian Trust Assets

3.15.1. Affected Environment

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Indian tribes or individuals, or property that the United States is otherwise charged by law to protect. Examples of resources that could be ITAs are lands, minerals, hunting and fishing rights, water rights, and streamflows. The Bureau of Indian Affairs (BIA) was contacted (Pers. Comm., Greg Norton, BIA, Realty Officer, Siletz Agency, September 26, 2006) regarding potential ITAs. According to Mr. Norton, there are no known land, mineral, hunting, fishing, or other Indian rights in the project area.

3.15.2. Environmental Consequences

No ITAs have been identified in the Project area, therefore, none will be affected by either the No Action Alternative or the Proposed Action.

3.16. Environmental Justice

3.16.1. Affected Environment

The Presidential EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations” (February 11, 1994) requires agencies to identify disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations, as well as the equity of the distribution of the benefits and risks of their decisions. The EO is intended to protect minority and low-income communities from discriminatory projects or practices that can result in a more hazardous or degraded environment cause by a Federal action. Federal agencies are directed to analyze the effects of Federal actions on minority and low-income communities and to avoid those impacts to the extent that is practicable.

3.16.2. Environmental Consequences

Reclamation did not identify any minority and low-income populations as being affected by this proposal. There would not be any modifications to present land use practices or removal of any housing projects. No impacts have been identified by the decision to implement either the No Action Alternative or the Proposed Action.

3.17. Cumulative Impacts

Cumulative impacts were evaluated by determining if there are other proposed or ongoing activities that could result in incremental impacts on various resources that could be affected by the Proposed Action. The potential for impacts has been considered by evaluating changes in reservoir operating schedules by the Corps, the water marketing program of Reclamation, and water rights applications OWRD has received.

- Flow Releases from the Willamette River Reservoir System by Corps
The project releases are normally operated from a rule curve which determines how much space must be maintained to capture floodwater. Corps does not anticipate changes in flow releases other than the month-to-month or year-to-year fluctuations that occur because of a difference of inflows to the reservoirs or to meet target flows. Flood abatement acts as a ceiling to Corps releases.

It is possible that reauthorization of the projects or demands for endangered species could change Corps operations. It is extremely unlikely that the proposed contract, taken alone or in concert with other pending water supply contracts, could interfere with the Corps’s primary commitments. This is true because the volume of water contracted for agriculture is relatively small, and releases would occur at times beneficial

to water quality improvement. Furthermore, water supply service contracts will defer in times of shortage to overriding Federal interests.

- Water Marketing Program of Reclamation
Currently there are approximately 1,592,800 acre-feet of conservation storage space available for multiple use, which includes irrigation contracting in the Project system. Of this use, approximately 50,230 acre-feet of water has already been contracted, and there are 61 other pending applications for the use of up to a total additional 30,197 acre-feet of water.
- OWRD Applications
OWRD was contacted to ascertain the status of new applications for diversion and storage of water from the Willamette River and tributaries. Additional water downstream of Salem, Oregon, generally is not available during irrigation season due to previous over-appropriations of water. OWRD's current practice is to refer potential applicants for Willamette River natural flow to Reclamation for water service supply contracts from the Project.

No significant cumulative impacts have been identified because the volume of water that may be contracted if all the pending applications to Reclamation are permitted represents less than 2 percent of the reservoir storage space available for joint use. Furthermore, the applications at OWRD are for natural flow from the Willamette River or tributaries rather than for reservoir system storage. The OWRD may or may not approve additional applications for natural flow at its discretion based on available water. No other private projects have been identified that may, in combination with the Proposed Action, result in incremental impacts on any resources resulting in a significant cumulative impact.

CHAPTER 4. - Consultation and Coordination

4.1. Agencies and Persons Consulted

The following agencies were consulted in the preparation of this EA:

- National Marine Fisheries Service
- Oregon Department of Fish and Wildlife
- Oregon Natural Heritage Program
- Oregon State Historic Preservation Office
- Oregon Water Resources Department
- U.S. Fish and Wildlife Service
- Bureau of Indian Affairs

4.2. Distribution List

This Draft EA was mailed to the persons and agencies on the distribution list (Appendix D).

CHAPTER 5. - Literature Cited

- Corps. 1981. Willamette River Projects. Hydrologic and Temperature Effects, Preliminary Literature Review and Data Analysis. U.S. Army Corps of Engineers, Portland District, Portland, Oregon.
- Csuti, B, T. A. O'Neil, M. M. Shaughnessy, E. P. Gaines, and J. C. Hak. 2001. Atlas of Oregon Wildlife. Distribution, Habitat, and Natural History. Oregon State University Press, Corvallis, Oregon.
- DEQ. 2004. Willamette River Initiative: Action Assessment and identification of Opportunities for Action. Memorandum from Stephanie Hallock, Director, DEQ, to Jim Brown, Governor's Natural Resources Director. June 1, 2004.
- ODFW. 1992. Coast Range Subbasin Fish Management Plan. Oregon Department of Fish and Wildlife, Portland, Oregon.

