DOE/EA-2044

Final Environmental Assessment

Energy Northwest WNP-1/4 Lease Renewal, Hanford Site, Washington

January 2017

U.S. Department of Energy
Richland Operations Office
Richland, WA 99352

Terms Used in this Document

Area of Potential Effect (APE) – the geographic area within which an undertaking may cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking.

Best Management Practices (BMPs) – Standard activities, operating procedures, and practices that are used to prevent or reduce potential environmental impacts from project activities.

Cultural Resources - A general term used to refer to a wide range of resources, including historic structures, archaeological sites, places of traditional, religious and cultural significance, sacred sites, Native American human remains, and associated objects that are entitled to special consideration under federal statute, regulations, and executive orders.

Energy Northwest (EN) – the municipal corporation and joint operating agency that owns both the Industrial Development Complex (IDC) and the Columbia Generating Station (CGS)

Federal Threatened or Endangered Species - Plant or animal species that are at risk of becoming endangered in the near future throughout all or a significant part of their range. Threatened or endangered status is formally designated by a listing process under the Endangered Species Act (16 USC 1531 et seq.).

Industrial Development Complex (IDC) – the collective name applied to the area occupied by Washington Nuclear Projects Number 1 and Number 4 (WNP-1/4) that reflects the current industrial nature of the site. The terms IDC and WNP-1/4 are used interchangeably in this environmental assessment (EA).

Habitat - The combination of biotic (living) and abiotic (non-living) components that provides the ecological support system for plant and animal populations.

Hanford Reach - The Hanford Reach is the last free-flowing stretch of the Columbia River in the United States. It flows 51 miles from approximately Priest Rapids Dam to Richland, Washington.

Historic District - A specific, definable geographic area with a significant number of historic buildings, features, structures, or objects that are united by historical events or aesthetic associations.

State Endangered Species – Any taxon in danger of becoming extinct or extirpated from Washington within the foreseeable future if factors contributing to its decline continue. Populations of these taxa are at critically low levels or their habitat have been degraded or depleted to a significant degree.

State Sensitive Species – Any taxon that is vulnerable or declining and could become Endangered or Threatened in the state without active management or removal of threats.

State Threatened Species – Any taxon likely to become Endangered in Washington within the foreseeable future if factors contributing to its population decline or habitat degradation or loss continue.

Washington Nuclear Projects Number 1 and Number 4 (WNP-1/4) – The names for the two nuclear power facilities whose construction was halted in 1982 and later terminated.

Acronyms Used in this Document

BMP	Best Management Practice
BPA	Bonneville Power Administration
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DOE	U. S. Department of Energy
EA	Environmental Assessment
EFSEC	Washington State Energy Facility Site Evaluation Council
EN	Energy Northwest
ESA	Endangered Species Act
FR	Federal Register
FONSI	Finding of No Significant Impact
HCP-EIS	Final Hanford Comprehensive Land Use Plan – Environmental Impact Statement
IDC	Industrial Development Complex
LOS	Level of service
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRC	U. S. Nuclear Regulatory Commission
SHPO	State Historic Preservation Officer
USFWS	U. S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WNP	Washington Nuclear Project

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Appendix A

1 Introduction

The National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Part 1500 through 1508) direct the U.S. Department of Energy (DOE) and other federal agencies to take into consideration the environmental consequences of proposed federal actions. In compliance with NEPA and its implementing regulations, DOE prepared this environmental assessment (EA) to analyze potential environmental impacts of the Proposed Action and other reasonable alternatives that would meet the purpose, need, and objectives of the proposed project as well as a No Action Alternative. Reasonable alternatives include those that are "practical or feasible from the technical and economic standpoint and using common sense…" (CEQ 1981).

The No Action Alternative also serves as an environmental baseline against which another alternative can be compared.

DOE will use the findings in this EA to determine whether to prepare an environmental impact statement (EIS). If the Proposed Action is determined not to significantly affect the quality of the human environment, DOE will issue a Finding of No Significant Impact (FONSI) rather than prepare an EIS.

1.1 Background and Purpose and Need for Action

In 1975, the Washington Public Power Supply System [now known as Energy Northwest (EN)] obtained a lease from the U.S. Government for Washington Nuclear Projects Number 1 and 4 (WNP-1/4), which included options for renewing the lease. It is now time to renew the lease.

During the 1970s and 1980s, this area on the Hanford Site was developed for construction of two nuclear reactors and related infrastructure (see Figure 1-1). The Nuclear Regulatory Commission (NRC) provided oversight and conducted environmental and regulatory reviews for the construction permit and operating license. Construction of the reactors was subsequently abandoned. The lease area, which is also referred to as the Industrial Development Complex (IDC) has been graded and filled approximately 30 feet in depth or more, and is highly industrialized. Renewal of the lease would allow EN to continue its operations and complete restoration of the site as required by the Washington State Energy Facility Site Evaluation Council (EFSEC), Bonneville Power Administration (BPA) and DOE. Restoration has been ongoing since abandonment of the nuclear plant projects.

The DOE's federal action, or the "Proposed Action," is to renew the lease, extending it through June of 2030 with additional options for renewal to January 1 of 2052. As the Proposed Action is for renewal of an existing lease, the analysis in this EA is for activities authorized by the proposed lease amendment (see the description of the Proposed Action in Section 2.2).

1.2 Objectives

The following are proposed project objectives:

- Provide beneficial use, through leasing of existing IDC buildings, warehouses, and office spaces.
- Discontinue use of the two groundwater wells.
- Provide adequate potable water to support ongoing activities in the IDC in a cost effective and operationally efficient manner.
- Minimize impacts to cultural and resources.
- Minimize impacts to ecologically important habitats and species of concern.

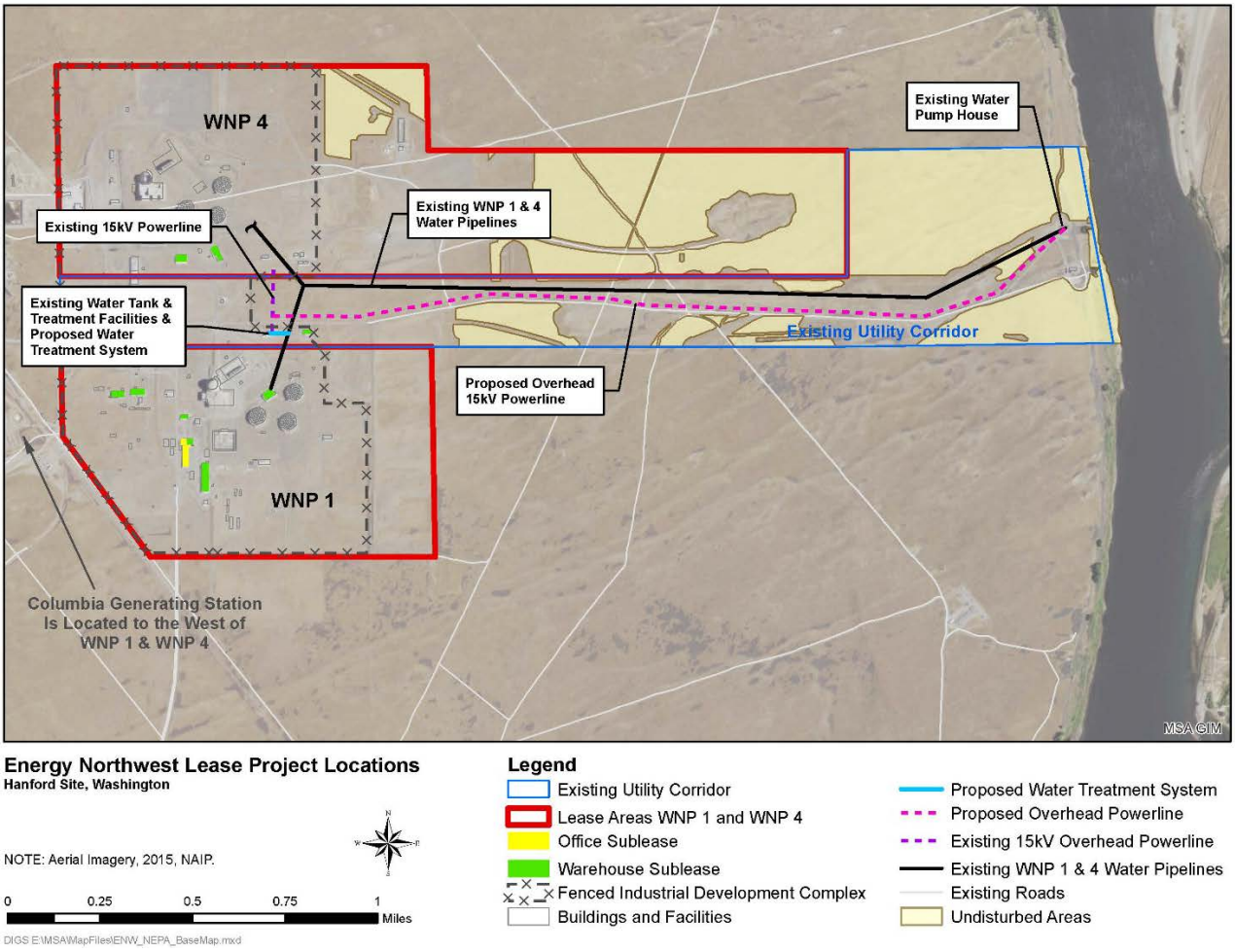

Figure 1-1. Energy Northwest WNP-1/4 Lease Renewal Project Locations

2 Alternatives Considered

This section discusses the alternatives considered in this EA: the No Action Alternative and the Proposed Action.

2.1 No Action Alternative

Under the No Action Alternative, DOE would not renew the lease and the EN WNP-1/4 lease would continue in holdover status (year-to-year lease with current terms and conditions in effect). Subleasing of office and warehouse space to tenants would continue and the water source would continue to be ground water wells. Although the groundwater wells are monitored to prevent impacts to health, the beneficial impact of providing a safe water source (the Columbia River) in the long term would not take place.

The proposed lease amendment includes a provision that EN will cease using groundwater wells by July 1, 2022. In the event EN discontinues well use and cannot use river water, EN evaluated having water trucked to the site, and calculated that 40 truck deliveries per week would be needed to provide water. This option would be costly and operationally inefficient, and is not considered a reasonable alternative (see Section 1 regarding reasonable alternatives).

The No Action Alternative represents the environmental baseline discussed in this EA, and the affected environment or existing conditions are discussed under the various environmental topics. Under this alternative, the impacts of the Proposed Action would not take place, and ongoing activities that are reflected in the environmental baseline or affected environment, would continue to the extent possible. Operations could be curtailed or cease if an adequate water source is not available for EN operations at the IDC and for subleasing. Subleasing generates revenue for EN to continue restoration of the IDC.

2.2 Proposed Action

Under the Proposed Action, DOE would renew the EN WNP-1/4 lease, which includes continuation of subleasing office and warehouse space. Existing buildings would be used and new buildings would not be constructed, however, minor maintenance or other modifications to meet building codes may be required.

Additionally, DOE is proposing to have EN transition from groundwater wells to surface water to supply the IDC with potable water. Groundwater wells would be removed from service and decommissioned per Washington Department of Ecology guidelines. As proposed, water distribution system modifications would include the following:

- Intake Structure. One of three existing intake structures for WNP-1/4 located in the Columbia River would be used to gravitationally fill the existing pump house vault.

  An identically designed intake structure is currently operated to supply surface water to WNP-2 (the Columbia Generating Station, CGS). During the NRC's Informal Consultation process with the National Marine Fisheries Service (NMFS) under Section 7 of the *Endangered Species Act* (ESA), the intake screen design was challenged as not

meeting current design criteria. After discussions, EN and NMFS are developing an agreement to evaluate the screen as an experimental design while continuing use of the water intake structure for CGS. This evaluation would likely begin in the summer of 2017. If results establish the screen meets design criteria, this evaluation will form the basis for NMFS approval of the intake screen design; if the design is not approved by NMFS, then EN will modify the screen to meet NMFS design criteria.

If the intake screen needs to be modified, then it would be replaced using a barge to remove the existing screen and install the replacement. Specific screen design modifications and methods to install the replacement have not been planned at this time.

- Pump House Electricity. To pump water from the existing pump house to the IDC, a 15 kV overhead powerline would be installed from the IDC to the pump house in an existing utility corridor. The powerline would be located within 10 feet of the north side of the existing access road (see Figure 1-1), and consist of 30-foot tall wooden poles installed at approximately 100-foot intervals. Poles would be installed to a depth of approximately 6 feet using a truck-mounted auger.

- Treatment of Water at the IDC. An area up to 15 feet by 15 feet around the existing 18-inch water supply pipe close to the existing storage tank would be excavated to approximately 5 feet in depth to expose the pipe. A 6-inch diameter pipe would be connected to the existing 18-inch pipe to send water to the storage tank.

    - Pipe Trench. A trench from the access and diversion area described above would be dug for the 6-inch diameter pipe. The trench to the existing water storage tank would be approximately 220 feet long, 18 inches wide, and 3 feet deep.

    - Skid-Mounted Water Treatment System. A water treatment system would be mounted on a skid, which would be installed adjacent to the existing storage tank on a 6-inch thick concrete slab approximately 10 feet wide by 12 feet long. The 6-inch pipe would pass through the river water treatment system prior to entering the water storage tank. Power would be provided to the water treatment system from the existing well house adjacent to the water tank in an approximately 100 foot long, 12- to 18-inch wide, and 18-inch deep trench.

    - Water Distribution. Water would be delivered to IDC facilities from the existing 400,000-gallon water storage tank via the existing water distribution system.

3 Affected Environment, Environmental Consequences, and Mitigation Measures

This section includes an analysis of the affected environment, potential environmental impacts that could result from the No Action Alternative and the Proposed Action, and mitigation measures. It also addresses topics not requiring detailed analysis, as well as cumulative impacts. Cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). No reasonably foreseeable future actions are planned or known in the proposed project area (Khounnala 2016).

To identify potential impacts on a resource or subject area, a geographic area is considered, referred to as the Study Area. The Proposed Action is to renew a lease and authorize minor modifications to an existing water distribution system, which would affect terrestrial and aquatic environments. The only change in the terrestrial environmental baseline, which also represents the No Action Alternative, would be from the installation of 30-foot-tall wooden power poles adjacent to the existing road and within an existing utility corridor, and the installation of pipes and a skid-mounted water treatment system within the IDC.

The terrestrial biological and cultural resources Study Area encompasses:

- The area within the IDC where the existing water tank is located, pipes would be installed in trenches, and a skid-mounted water treatment system will be placed, and
- The area within 20 feet of the north side of the access road (10 feet beyond power pole locations) between the IDC and the pump house where the overhead powerline will be constructed.

The Study Area for aquatic resources for analysis of withdrawing 80 acre-feet/year of Columbia River water includes the area of the Hanford Reach between the north end of Island 11 (also known as North Forked Island) and the south end of Island 14 (also known as Wooded Island).

3.1 Topics Not Requiring Detailed Analysis

The CEQ regulations (40 CFR 1500-1508) require agencies to "identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (§1506.3), narrowing the discussion of these issues to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere." §1501.7(3).

Accordingly, the sections below provide an analysis and explanation of subjects that do not warrant detailed evaluation.

3.1.1 Land Use

Per the *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement* (HCP-EIS, DOE 1999) and Record of Decision (ROD), the property leased by Energy Northwest (EN) from DOE is designated Industrial: "an area suitable and desirable for activities, such as reactor operations, rail, barge transport facilities, mining, manufacturing, food processing, assembly, warehouse, and distribution operations. Includes related activities consistent with Industrial uses." Industrial activities and operations have been taking place on the WNP-1/4 lease area since the 1970s.

Ongoing office and warehouse activities and modifications to the existing water distribution system are allowable uses under the existing lease. The Proposed Action would not affect land use maps, designations, policies, or procedures established by the HCP-EIS and ROD.

The Proposed Action would not conflict with other land uses in the vicinity (10 miles), which include:

- Columbia Generating Station (CGS) adjacent to, and west of, the IDC on lease WNP 2.
- Laser Interferometer Gravitational-Wave Observatory located 8 miles from the IDC.
- Fast Flux Test Facility – a non-operational DOE facility located 3 miles west in the Hanford 400 Area.
- DOE radioactive waste burial grounds – 618-10 located 3 miles south-southwest of the IDC; and 618-11 located on the northwest side of the WNP-2 lease area.
- Hanford 300 Area is located 10 miles south of the IDC.

3.1.2 Transportation and Traffic

The WNP-1/4 site transportation infrastructure was built to accommodate traffic associated with construction and operation of WNP-2 (CGS) and the two nuclear reactors that were never completed. Thus the transportation system was designed for heavier use than would occur under the Proposed Action.

Proposed construction would temporarily increase traffic on Hanford Site roads that lead to WNP-1/4. Work crews of up to 8 people and construction materials and equipment would be transported to and from the worksite.

Regarding the surrounding roads, level of service (LOS) road designations (LOS is used to measure the quality of service of transportation routes in traffic analyses from "A" being high service to "F" being low service) in the EN vicinity are adequate (NRC 2010). The main feeder road to EN, for example, is SR-240, which is designated LOS B. Similarly, the major commuter roads in the Tri-Cities area, US 395 and I-182, are LOS A and B, respectively. As noted in Regulatory Guide 4.2, Supplement 1, (NRC 2013) roads with LOS A and B are associated with small impacts because operation of individual users is not substantially affected by the presence of other users. At this level, no delays occur and no improvements are needed.

3.1.3 Soils and Geology

The Proposed Action includes minor ground-disturbing activities, and all existing structures and modifications to the existing water distribution system are or would be on structural backfill. No

subsurface geologic features, including faults, have been identified that would pose a hazard to the water distribution system (NRC 2005).

Modifications to the existing water distribution system under the Proposed Action would have little effect on soils and geology. During construction, Best Management Practices (BMPs) would be used to reduce wind and water erosion and control fugitive dust.

3.1.4 Water Resources

Under the Proposed Action, the source of water for EN WNP-1/4 would shift from existing groundwater wells to the Columbia River. Groundwater from this area recharges the Columbia River, and it is anticipated that there would be no net change in quantity of water in the river by changing the water source from groundwater to river water. The state of Washington has authorized the withdrawal of up to 80 acre-feet/year from the Columbia River for use in the IDC. This is a minute amount of water compared to the total volume of the river, and, since the volume of withdrawal would be less than 1 cubic-feet/second, the permit application to Ecology was exempt from the State Environmental Policy Act (SEPA).

Trenching to install pipes would take place on the IDC, which is 2 miles from the Columbia River and, it is unlikely any surface water runoff would reach the river and affect water quality because of the flat topography and lack of surface water pathways to the river. Power poles along the north side, within 10 feet of, the access road would be installed using truck-mounted augers. Due to the limited area of disturbance for each pole, flat topography, and lack of surface water pathways, it is unlikely any runoff would be produced, or would reach the river and affect water quality.

Potential impacts of water withdrawal from the Columbia River on fish, and specifically on salmonid species listed under the ESA, are evaluated in Section 3.2.1 of this EA.

3.1.5 Floodplains (EO 11988) and Wetlands (EO 11990)

Executive Orders 11988, *Floodplain Management*, and 11990, *Protection of Wetlands*, direct federal agencies to identify the presence of floodplains or wetlands and prepare an assessment for any action proposed in a floodplain and new construction proposed in a wetland. DOE's regulations, Floodplain and Wetland Environmental Review Requirements (10 CFR Part 1022), require that any floodplain or wetland assessment normally be included in an EA or EIS, if one is being prepared (10 CFR 1022.13(b)) (DOE 2004).

Per the HCP-EIS (Figure 4-11; DOE 1999), no floodplains exist on the EN lease areas, including during a Columbia River probable maximum flood (which exceeds the 500-year flood).

Large Columbia River floods have occurred in the past (DOE 1987), but the likelihood of recurrence of large-scale flooding has been reduced by construction of several flood control/water-storage dams upstream of the Hanford Site. Water storage behind these dams regulates the Columbia River for power, flood control, fisheries, and irrigation. The accident analysis for external events concluded the WNP-1, WNP-2, and WNP-4 sites meet NRC standard review criteria for flooding and the risk is less than 1.0×10^{-6} (one in a million) per year (Parrish 1995; EN 2005).

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory database shows no wetland areas on the EN Lease area (USFWS 2010c). No wetlands were identified during ecological field surveys in the Study Area in 2016.

3.1.6 Visual Quality

The Study Area is situated on a relatively flat plain within a shrub-steppe ecosystem composed of sagebrush interspersed with perennial native and introduced annual grasses. Change to the view would occur primarily from the proposed 15kv powerline, with 30-foot tall wooden poles for a distance of 2 miles, which would be located on the north side of the road to the pump house in the utility corridor from the IDC to the river pump house.

Predominant features to the west of WNP-1/4 are the WNP-2 reactor building (230 feet tall), turbine generator building (139 feet tall), six cooling towers (each 60 feet tall), and a 245-foot tall meteorological tower. Remaining structures of two nuclear power plant construction projects (Units WNP-1 and WNP-4), buildings, roads, power lines, a water storage tank, and other structures are on WNP-1/4. Figure 3-1 provides views of the industrial area where the Proposed Action would occur.

Figure 3-1. Views in the Vicinity of the ProposedAction Showing Key Features

As shown in Figure 3-2, this area is already crossed by a number of large and small powerlines. The color and small size of wooden poles in comparison to other structures within the view, would result in a minor addition to the view, especially from off-site locations.

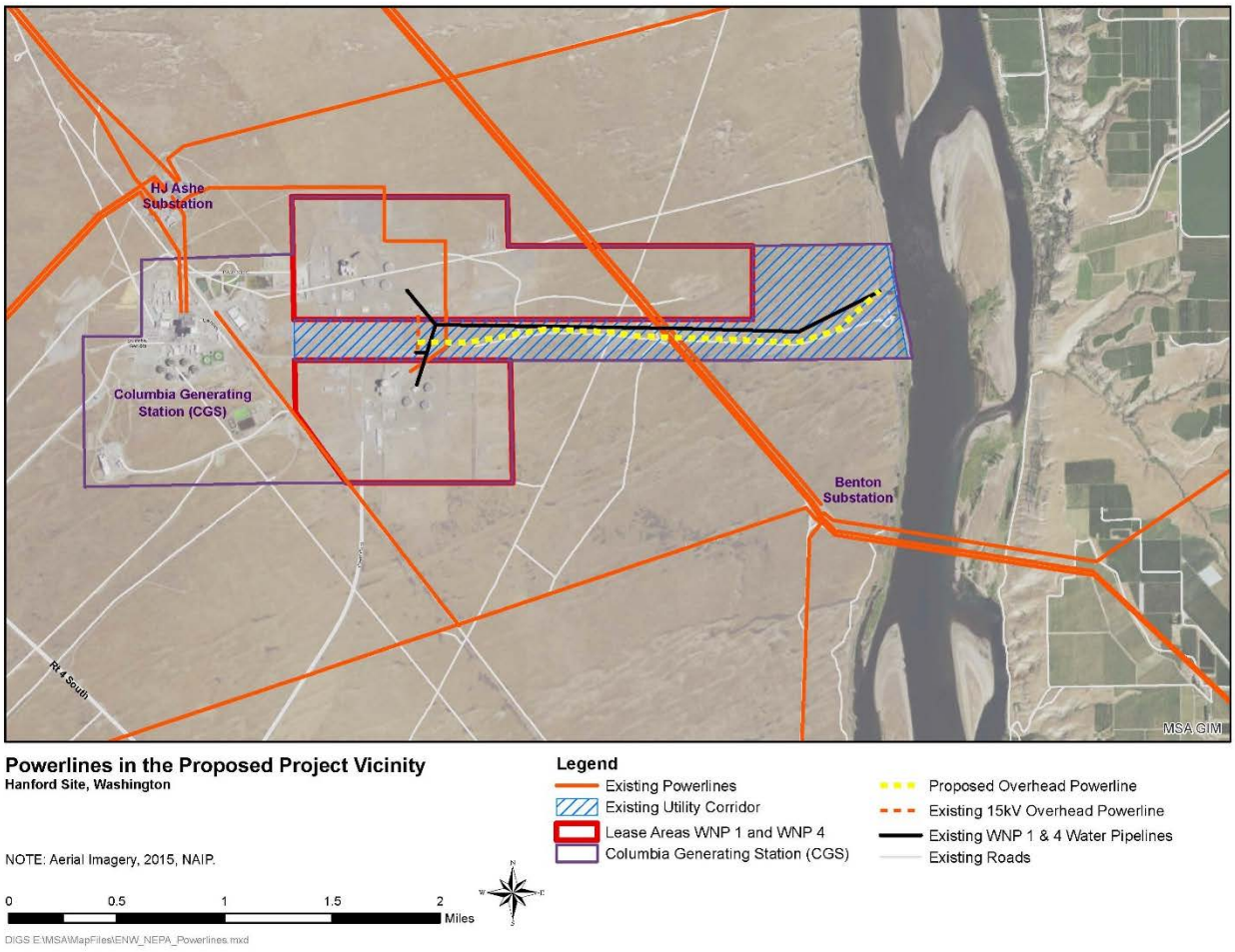

Figure 3-2. Powerlines in the Proposed Project Vicinity

3.1.7 Socioeconomics and Environmental Justice (EO 12898)

The minor construction work force of up to 8 personnel that would be required for the Proposed Action over 12 weeks for construction would have little effect on socioeconomic conditions in the Tri-Cities.

Executive Order 12898, "Federal Action to Address Environmental Justice in Minority and Low-Income Populations," directs federal agencies to identify and address human health or environmental effects of federal actions, which might have disproportionately high and adverse effects on minority populations and low-income populations.

Due to the minor nature of the Proposed Action (described in Section 2.2), and its location on the Hanford Site, within the Energy Northwest lease area, and being located 10.3 miles from the nearest residence, the Proposed Action would not have disproportionately high and adverse human health or environmental effects to minority or low-income populations (DOE 2015a).

3.1.8 Air Quality

The Proposed Action is in Benton County, Washington, where the air quality is considered to be good and the Environmental Protection Agency has designated the county as unclassified/attainment for all criteria pollutants (DOE 2012). Elevated particulate matter (dust) concentrations are of greatest concern and result from windy and arid conditions. Construction activities from the Proposed Action would include temporary emissions of carbon monoxide from one: backhoe, bulldozer, boom truck, and flatbed truck, and up to 8 worker vehicles, as well as particulate matter from equipment and vehicle operation and ground disturbance. Because of the limited nature of construction activities and use of BMPs such as application of water to disturbed areas, air quality impacts would be negligible.

3.1.9 Climate Change

Climate change is a global phenomenon that the proposed project would not alter. However, climate change would result in a new affected environment in the future. DOE considered if this new future environmental baseline would be impacted differently by the Proposed Action than the current baseline environment would be impacted. While climate change would affect the region, DOE identified no plausible nexuses between the Proposed Action and global climate change that would alter its impact determinations for the affected environment.

As discussed under "Air Quality," the Proposed Action would create negligible carbon monoxide and particulate matter associated with proposed construction activities.

3.1.10 Noise

The WNP-1/4 lease area has background noise from a variety of industrial activities including equipment, machinery, and vehicles. Noise from construction (vehicles and equipment) of the overhead powerline and trenching within the IDC would be localized, temporary, and inconsequential (see description of the Proposed Action in Section 2.2). There are no sensitive receptors, such as residences, hospitals, and schools, in the area.

The effect of noise on wildlife species is considered in Section 3-2.

3.1.11 Intentional Destructive Acts

DOE considers intentional destructive acts, such as acts of sabotage or terrorism, in its NEPA documents. For the Proposed Action, the likelihood of environmental consequences associated with an intentional destructive act is extremely low. Although it is possible that random acts of theft or vandalism could happen, it is anticipated that Energy Northwest's security measures would be implemented. A variety of measures to control access and maintain security are used to protect facilities, personnel, and intellectual property. These include identification badges, surveillance cameras, motion sensors and other technology, and physical security such as security guards or gates and fences.

3.2 Biological Resources

The analysis of biological resources includes aquatic and terrestrial communities in the Study Area.

3.2.1 Water Intake

Under the Proposed Action, one of three existing 20-foot long, 42-inch diameter intake structures would be used to withdraw water. These intake structures are positioned approximately parallel with river flow and have exterior porous-plate screens with pores nominally 3/8th of an inch in diameter. The intake structure can withdraw 12,500 gallons per minute. Velocities in the river channel where the intake structures are located generally exceed 3 feet/second.

The intake structures are linked by an underground pipe to the pump house adjacent to the river (see Figure 3-3). One intake structure would be opened to allow water to enter the intake structure and to gravitationally fill the existing pump house vault.

The pump house is located approximately 450 feet from the Columbia River shoreline. As shown in Figure 3-4, the pump hose is a reinforced concrete building approximately 75 feet by 63 feet. Located below the building is a 40-foot deep vault and sump where water would be stored.

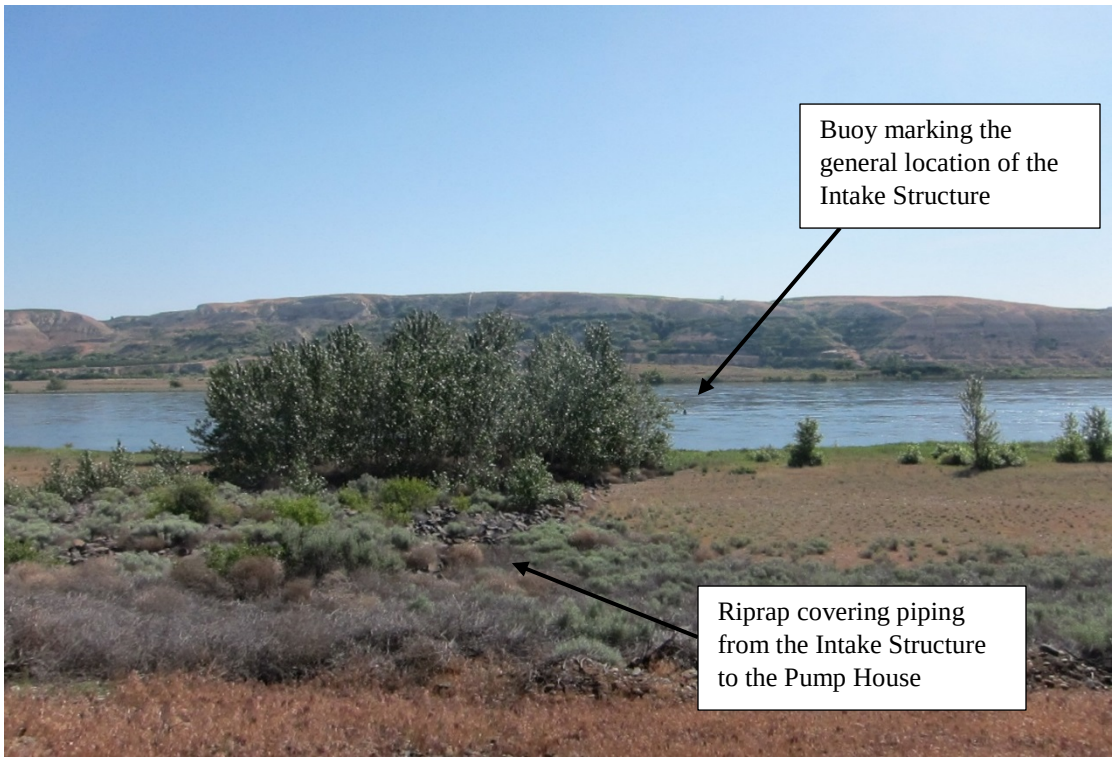

Figure 3-3. View of the Intake Structure and Piping Corridor from the Pump House

Figure 3-4. Views of the Pump House from the River (L) and from Parking Lot (R)

3.2.1.1 Affected Aquatic Environment

The abundance and diversity of the aquatic organisms within the Hanford Reach of the Columbia River are influenced by the hydrologic conditions created by upstream dams and agricultural practices. Retention of waters within upstream reservoirs allows for the development of a diverse and abundant phytoplankton community that transits downstream through the Hanford Reach. Zooplankton are generally sparse with concentrations varying greatly from a summer peak to low winter levels. Rooted aquatic plants are relatively uncommon in the Hanford Reach due to strong river currents, rocky bottoms, and fluctuating water levels. All major freshwater benthic taxa are represented in the Hanford Reach, including caddis flies, midge flies, black flies, clams, limpets, snails, sponges, and crayfish (Duncan 2007).

The Hanford Reach supports a total of 45 resident and migrant fish species, including 16 that are introduced species. Migrating salmonids include Chinook (*Oncorhynchus tshawytscha*), sockeye (*Oncorhynchus nerka*), coho (*Oncorhynchus kisutch*), and steelhead trout (*Oncorhynchus mykiss*). Other migrant fish include Pacific lamprey (*Lampetra tridentata*) and American shad (*Alosa sapidissima*). Resident native sport fish found in the Hanford Reach include whitefish (*Prosopium williamsoni*) and white sturgeon (*Acipenser transmontanus*), and introduced sport fish include smallmouth bass (*Micropterus dolomieui*), crappie (*Pomoxis* sp), catfish (*Ictalurus punctatus*), walleye (*Stizostedion viteum*), and yellow perch (*Perca flavescens).* Other fish species found in the Hanford Reach include carp, shiners, suckers, and northern pikeminnow (*Ptychocheilus oregonensis*) (Duncan 2007).

Surveys of redds (spawning nests) performed since the 1950's indicate that Chinook and steelhead use the Hanford reach for spawning (Duncan 2007).

- In 2015, the peak redd count for fall run Chinook salmon was 20,678 for the Hanford Reach, which well exceeds the previous 10-year average of 8,813 and was the highest since 1948. The portion of the Reach that lies with the Study Area contained a peak

count of 1,193 redds in 2015 (Nugent 2016). Figure 3-5 shows a pair of fall run Chinook salmon at a redd.

- The maximum count of 43 steelhead redds in 2015 was the highest number recorded in the Hanford reach since 1998, when 75 redds were documented. Although the 2015 number is a recent high count, 220 redds were documented in 1968, so this number is still far below historic numbers. Of the 43 steelhead redds, 15 redds were observed within the Study Area (Nugent and Cranna 2016).

Figure 3-5. Pair of Fall Run Chinook Salmon at a Redd

Three fish species that occur within the Study Area are federally-listed as either threatened or endangered under the ESA (Krupka 2016), (Driscoll 2016). The table below lists these species and indicates where the critical habitat designation for each species is published. Critical habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.

Scientific Name	Common Name	Federal Status	Critical Habitat Designation
Oncorhynchus tshawytscha	Upper Columbia River spring Chinook salmon	Endangered	Critical habitat designated September 2, 2005; 70 FR 52630
Oncorhynchus mykiss	Upper Columbia steelhead	Threatened	Critical habitat designated September 2, 2005; 70 FR 52630
Salvelinus confluentus	Bull trout	Threatened	Critical habitat designated October 6, 2004; 69 FR59995; revised 75 FR 63898

Of the federally-listed fish species, only the steelhead trout spawns in the Hanford Reach, and as noted above, roughly one third of the redds counted in 2015 were found in the Study Area (Nugent and Cranna 2016). Spring Chinook migrate through the area on their way to spawning grounds upstream. Bull trout have been occasionally found in the Reach, but are not considered resident species. The critical habitat designation for all three species includes the Hanford Reach (DOE-RL 2015).

3.2.1.2 Environmental Consequences

Under the No Action Alternative, the impacts of the Proposed Action would not take place and would not change the environmental baseline for aquatic biological resources described in Section 3.2.1.1. There would be no withdrawal of water from the Columbia River or need to evaluate screen size and, there would be no effect on aquatic species or habitat.

Under the Proposed Action, NMFS is responsible for administering the ESA with regard to steelhead and Chinook salmon, and the U.S. Fish and Wildlife Service (USFWS) is responsible for administering the ESA with regard to bull trout. Under Section 7 of the ESA, federal agencies are required to consult with the administering agency on any activities that may affect a listed species. In addition, federal agencies are required under 305(b)(2) of the *Magnuson-Stevens Fishery Conservation and Management Act* (Magnuson-Stevens Act) and its implementing regulations, to consult with NMFS regarding actions that may adversely affect essential fish habitat. The Magnuson-Stevens Act defines essential fish habitat as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The Proposed Action would require consultation under Section 7 of the ESA before water could be withdrawn from the Columbia River. Compliance with conditions of the water permit from the state would also be required.

The intake structure that would be used under the Proposed Action is identical to the two intake structures currently operated to supply surface water to the CGS. These intake structures are located within the same region of the Study Area and are roughly 650 feet from the structure that would be used under the Proposed Action. Therefore, the Biological Assessment that would be prepared for the Proposed Action would be expected to be similar to the one that the NRC prepared for ESA Section 7 consultation during the relicensing of the CGS in 2011 (NRC 2011).

Based on NRC's assessment of the impacts, it concluded that water intake through the existing structure being used by CGS "*may affect, but is not likely to adversely affect"* listed fish and their critical habitat (NRC 2011). This assessment was the basis for entering into Informal Consultation with the USFWS for bull trout and the NMFS for spring Chinook salmon and steelhead. The USFWS concurred with this finding for bull trout; however, the NMFS disagreed with the finding that impacts were *not likely to adversely affect* spring Chinook or steelhead. In the NMFS decision, the intake screen design was challenged as not meeting current design criteria. After discussions, EN and NMFS are developing an agreement to evaluate the screen as an experimental design while continuing to use the water intake structure. This evaluation would likely begin in summer of 2017. If results establish the screen meets design criteria, this evaluation will form the basis for NMFS approval of the intake screen design; if the design is not approved by NMFS, then EN will modify the screen to meet NMFS design criteria.

ESA Section 7 consultation would depend on results of the evaluation described above for the existing CGS water intake structures. If the screen is demonstrated to effectively prevent entrainment of fish, the intake structure will be addressed as an experimental design. If the intake screen needs to be modified, then it would be replaced using a barge to remove the existing screen and install the replacement. The specific screen design modifications and methods that would be used to install the replacement screen have not been planned at this time.

In either case, the finding that the Proposed Action "*may affect, but is not likely to adversely affect"* listed species or their critical habitat would be the expected outcome of the ESA informal consultation processes with USFWS and NMFS.

The NMFS would also review the intake screen for withdrawal of Columbia River water for potential effects on essential fish habitat designated under the Magnuson-Stevens Act, including conservation measures and any determinations made regarding the potential effects on fish habitat. This review would be pursuant to Section 305(b) of the Act, implementing procedures at 50 CFR 600.920 and agency guidance for the use of the ESA consultation process to complete essential fish habitat consultation. Because the expected outcome of the ESA consultation process is that the withdrawal of water would not adversely affect essential fish habitat, consultation under the Magnuson-Stevens Act would likely not be required for this action.

3.2.1.3 Mitigation Measures

The *Threatened and Endangered Species Management Plan: Salmon, Steelhead, and Bull Trout* (DOE 2015b) defines DOE's commitment to protecting the stocks of Upper Columbia spring Chinook salmon, Upper Columbia River steelhead, and bull trout within the Hanford Reach. Some protection measures in this plan include the following BMPs and designing and implementing projects to meet the following criteria:

- Avoid adverse impacts due to water withdrawal by reducing the amount of water withdrawn from existing intakes, when possible, and ensuring all water diversions meet state of Washington and NMFS screening criteria or appropriate administrative controls, such as the timing of withdrawal.

- Minimize heavy equipment use below the ordinary high water mark. When heavy equipment below the ordinary high water mark is required, strict BMPs will be followed to prevent spills, sedimentation, and other potential impacts.

- Minimize removal of native riparian or emergent vegetation. Whenever possible, projects in riparian areas will be located where vegetation is already disturbed; vegetation will be mowed when complete removal is not needed. Damaged vegetation will be replaced with native species for erosion protection. Whenever possible, hand-tools will be used for in-water work.

- Minimize adverse impacts to listed salmonids when working below the ordinary high water mark, but above the wetted perimeter, by conducting disruptive activities at locations and during time periods when fish are absent or present in low numbers.

- Refrain from conducting activities that could result in capture or harm to steelhead or spring Chinook salmon without undergoing consultation with NMFS, or that would adversely modify critical habitats (the Columbia River and its riparian zone) or essential fish habitat as defined in the MSA without specific consultation with NMFS.

- Refrain from conducting activities that could result in capture or harm to bull trout or that would adversely modify critical habitat (the Columbia River and its riparian zone) without specific consultation with USFWS.

The *Threatened and Endangered Species Management Plan: Salmon, Steelhead, and Bull Trout* (DOE-RL 2015) also specifies BMPs to minimize impacts to essential fish habitat for fall Chinook and other anadromous salmonids, including the following:

- Perform all work occurring between the ordinary high water mark and the wetted shoreline during the low flow season (generally August 1 through February), a timeframe that falls outside the emergence and rearing period for fall Chinook salmon.

- Leave any excavation that extends beyond the ordinary high water mark in a condition that prevents any potential stranding while juvenile salmonids are present (between March and July).

- Refrain from performing in-water work without further consultation with NMFS.

3.2.1.4 Unavoidable Adverse Impacts

No unavoidable adverse impacts would be expected from either the use of the existing water intake structure if it is demonstrated that the screen adequately protects listed fish, or the

modification of the intake structure to include a new screen that meets current design requirements (NMFS 2011).

3.2.1.5 Cumulative Effects

The *Biological Assessment and Essential Fish Habitat Assessment* for the CGS license renewal provides a detailed examination of past, present, and future actions that likely contribute to cumulative impacts on ESA-listed fish and their critical habitat as well as essential fish habitat for anadromous salmonids (NRC 2011, Appendix D-1, Section D-1.7). Because cumulative effects were considered for water intake structures identical to the one that would be used for WNP-1/4, and because these intake structures are located in proximity (nominally 650 feet) to the intake structure for WNP-1/4, the information provided in NRC's Biological Assessment is incorporated herein by reference. This document analyzes cumulative effects resulting from the following activities:

- Hydropower projects.
- River fluctuations, now intentionally managed at the Priest Rapids Dam during the fall-run Chinook spawning season.
- Construction and operation of nine nuclear reactors on the Hanford Site during the 1940s – 1980s.
- Exposure to groundwater contaminants from the Hanford Site due to seasonal and daily water fluctuations.
- Withdrawal of Columbia River water.
- Development and increase in urbanization within the Columbia River Basin.
- Pressures from recreational and commercial fishing within the Columbia River Basin.
- Climate changes, which may include warmer temperatures with more winter rainfall, less snowpack, and lower summer stream flows as well as ocean conditions that may be less favorable for adult salmonids from the Columbia River Basin.

3.2.2 Water Distribution System

Under the Proposed Action, the water delivery system would maximize use of the existing infrastructure. Existing pumps would be used to deliver water from the pump house vault through the existing pipe structure to the IDC. Water leaves the pump house via a 36-inch diameter pipe (see Figure 3-6) to facilities at the IDC that would use this water system, located approximately 2 miles from the pump house. At the IDC, water would be treated in a skid-mounted water treatment system before being delivered to the existing 400,000 gallon storage holding tank. The existing water distribution system would supply water to the IDC buildings.

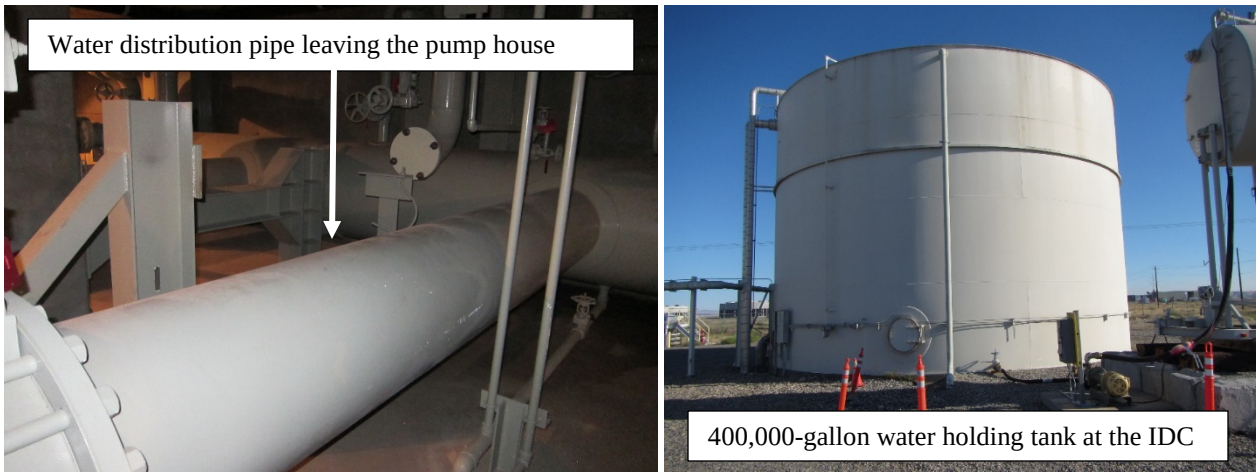

Figure 3-6. Existing Infrastructure to be used for Proposed Water Distribution System

Construction activities would include the following:

- An overhead powerline would be extended 2 miles from a tie-in at the IDC, and be installed within 10 feet of the north side of the existing access road to supply power to the pump house (see Figure 1-1). The proposed powerline would consist of wooden poles 30 feet in height placed approximately every 100 feet.

  Ground penetrating radar would be used at pole locations to ensure there were no underground interferences, then truck-mounted augers would be used to install each pole to a depth of 6 feet[1]. Figure 3-7 shows a typical wooden pole transmission line at the IDC. Guy wires would be required for anchoring poles at either end of the transmission line and at approximately two other locations along the route. Mechanical equipment would be used to "shoot" the guy wire anchors into the ground. The line would also be grounded at both ends. Placement and tensioning of the wires on the poles would be done from a bucket on a boom truck. Construction of the power line would take about 12 weeks.

  Vegetation clearing for these activities would be minimal because the pole locations are close to the road, and equipment would be operated from the paved or graveled road surface or shoulder area. In addition, no large areas would be necessary for installing guy wires or for tensioning on a line of this size.

[1] If the area where the pole would be placed is determined to be near the existing make-up water line for the CGS, then a vacuum truck would be used to establish the hole.

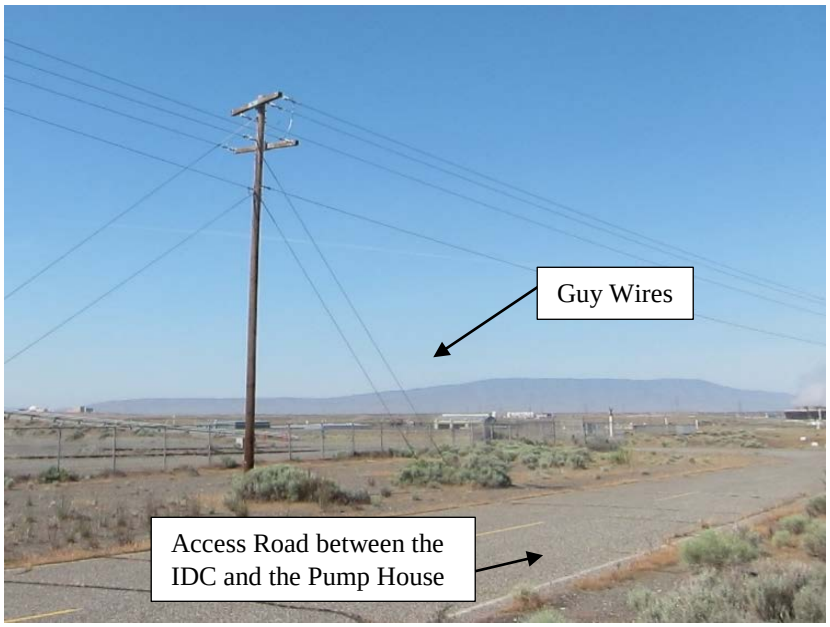

Figure 3-7. Typical Utility Pole near Tie-In Point for the Proposed Powerline

At the IDC the following trenching and pipe installation would occur:

- An area 15 feet by 15 feet around the existing 18-inch diameter water pipeline would be excavated to access the pipe and connect a 6-inch diameter pipe. An excavator with an 18-inch bucket would be used to excavate 5 feet deep to expose the pipe. The 6-inch diameter pipe would take water to the storage holding tank.

- A trench would be dug for the 6-inch diameter pipe using an 18-inch bucket truck. This trench would be approximately 220 feet in length, at a depth of 3 feet.

- A skid-mounted water treatment system would be installed in an area adjacent to the existing water storage tank (Figure 3-8). The 6-inch water pipe would pass through the skid-mounted water treatment system before entering the tank. The water treatment system would be placed on a 6-inch thick concrete slab, approximately 10 feet wide by 12 feet long. Power would be routed to the slab in an 18-inch deep trench from the existing well house located next to the storage tank. This trench would be 12 to 18 inches wide and roughly 100 feet long.

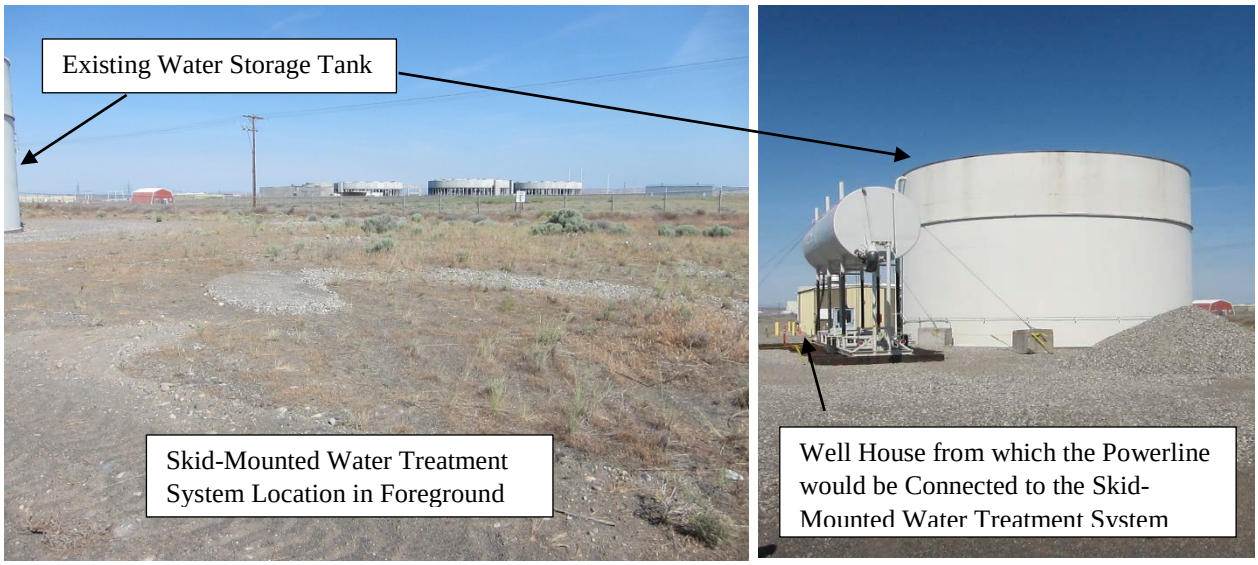

Figure 3-8. Proposed Skid-Mounted Water Treatment System Location

Construction of the trenches and the water treatment system pad would take an estimated six weeks and would require a small crew operating three to four vehicles including a back hoe outfitted with a bucket for digging, a bulldozer, a dump truck for transporting fill material if needed, and a concrete truck to pour the pad.

3.2.2.1 Affected Terrestrial Environment

The Study Area is located in the southeast portion of the Hanford Site in a relatively flat area with medium to coarse sandy soils (NRC 2010). The Study Area is located in the driest and hottest part of the Columbia Plateau Ecoregion in a shrub-steppe environment dominated by various species of drought-tolerannt shrubs, forbs, and grasses (Franklin and Dyrness 1973).

Two portions of the terrestrial Study Area would be affected by the Proposed Action. The first is the north side of the access road to the pump house where the powerline would be built, and the second is the highly disturbed industrial area (the IDC) within the fence where the water storage holding tank is located and the water treatment system would be installed. The sections below describe the plant and animal communities in each of these areas based on pedestrian surveys done on May 4 and 17, 2016.

Proposed Powerline

The Study Area along the access road from the IDC to the pump house is characterized by an overstory consisting of gray rabbitbrush (*Ericameria nauseosa*) and green rabbitbrush (*Chrysothamnus viscidiflorus*) with occassional occurrences of antelope bitterbrush (*Purshia tridentata*) and big sagebrush (*Artemisia tridentata*) (see Figure 3-9). Snow buckwheat (*Eriogonum niveum*), a small shrub often found in sandy soils on the Hanford Site, was also present throughout this area. The dominance of rabbitbrush in the overstory generally indicates the community is in a mid-successional stage, which is probably due to a range fire in August 1984 that burned much of the bitterbrush and big sagebrush in this area (NRC 2010). The pump

house is surrounded by a gravel parking lot, which does not support vegetation. The proposed powerline would end in this parking lot where it connects with the pump house.

Figure 3-9. Dominant Overstory Shrubs in the Study Area along the Access Road
Green and Gray Rabbitbrush (L to R) and Antelope Bitterbrush (far R)

Grasses found in the Study Area included native bunch grasses and non-native invasive grass species. Native species observed included Indian ricegrass (*Achnatherum hymenoides*), needle-and-thread grass (*Hesperostipa comata*), sand dropseed (*Sporobolus cryptandrus*), and Sandburg's bluegrass (*Poa secunda*); the most prevalent non-native grass was cheatgrass (*Bromus tectorum*). Similarly, the forbs present represented a mix of native and non-native species. Common forbs in the Study Area included bastard toadflax (*Comandra umbellata*), turpentine spring-parsley (*Pteryxia terebinthina*), pale evening primrose (*Oenothera pallida*), yarrow (*Achillea millifolium*), Jim Hill's tumblemustard (*Sisymbrium altissium*), Russian thistle (*Salsola tragus*), fiddleneck tarweed (*Amsinckia lycopsoides*), Carey's balsamroot (*Balsamorhiza careyana*), clusterlily (*Triteleia grandiflora*), whiteleaf scorpionweed (*Phacelia hastata*), threadleaf scorpionweed (*Phacelia linearis*), stalked-pod milkvetch (*Astragalus sclerocarpus*), matted cryptantha (*Cryptantha circumscissa*), and asparagus (*Asparagus officinalis*). Several species of noxious weeds were seen on site including rush skeletonweed (*Chondrilla juncea*), diffuse knapweed (*Centaurea diffusa*), and Dalmatian toadflax (*Linaria dalmatica*). Figure 3-10 shows typical habitat on the north side of the access road.

Figure 3-10. Typical Habitat along the Access Road in the Study Area

Wildlife or wildlife signs observed during the survey of the Study Area included mule deer (*Odocoileus hemonius*), coyote (*Canis latrans*) tracks and scat, and Nuttall's cottontail rabbit (*Sylvilagus nuttallii*) scat. Other wildlife species poentially present, but not observed during the survey include black-tailed jackrabbit (*Lepus californicus*) and American badger (*Taxidea taxus*).

Birds observed during the site survey included Horned Larks (*Eremophila alpestris*), Western Meadowlarks (*Sturnella neglecta*), Common Raven (*Corus corax*), and Red-tailed Hawks (*Buteo jamaicensis*). One raven's nest was situated on a utility pole within the Study Area and two Red-tailed Hawk nests were located just outside the Study Area in 2015 (Nugent et al. 2016). In 2014, 51 species of birds were noted during roadside bird surveys on the Hanford Site (Wilde 2015); many of the upland bird species seen in that survey are likely to be seen in the study area during the year. In addition, a list of birds that have been sighted at the EN site over the last 15 years or more can be found in the Environmental Report for the CGS relicensing (NRC 2010).

Although not a resident within the Study Area, a Bald Eagle night roost is located abou 1¼ miles down river from the WNP-1/4 pump house just upstream of Wooded Island (Island 11). In 2013, the first successful bald eagle nest on the Hanford Site was documented at this roost site. The same eagle pair has returned to nest at this location every year since 2013; however, in 2016 they relocated their nest to a utility pole near the BPA substation, which is within a mile of the Study Area. Figure 3-11 shows this pair with two juvenile birds in May of 2016.

Figure 3-11. Bald Eagle Nest near BPA Substation with Adult Bird and Juveniles

Water System Modifications for the Area within the IDC Fence

Construction activities that would occur for water distribution system modifications include excavating trenches for the installation of water pipes and a powerline, and the installation of a skid-mounted water treatment system and pad. A portion of the affected area was shown in Figure 3-8; Figure 3-12 provides additional views of this part of the Study Area.

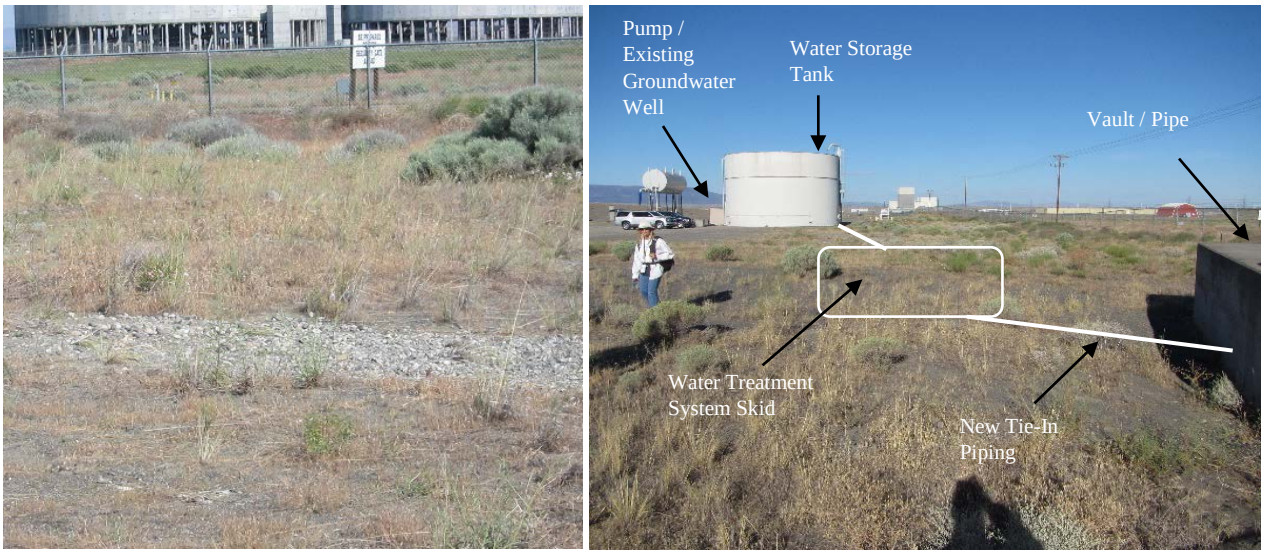

Figure 3-12. Views of the Study Area within the IDC Fenceline

This area was highly disturbed during the initial construction of the now abandoned WNP-1 reactor in the 1970s and early 1980s. The substrate in this area consists of gravelly fill material rather than native soils, and the vegetation on the site includes a high proportion of non-native invasive species. Non-native plant species noted during the field survey include cheatgrass, Russian thistle, rush skeleton-weed, and redstem stork's bill (*Erodium cicutarium*). Some early successional native species were also present at this site, including gray rabbitbrush, pale evening primrose, Sandberg's bluegrass, and needle-and-thread grass. No wildlife was observed during the site survey; however, the same bird and animal species seen along the access road (discussed above) are likely to be seen in this area as well.

Federal and State Listed Species of Concern within the Study Area

Other than the three salmonid fish species discussed above, no plant or animal species protected under the ESA, candidates for such protection, or species listed by the state of Washington as threatened or endangered were observed during field surveys or are expected to occur in the vicinity of the proposed project. The Ute ladies' tresses (*Spiranthes diluvialis*) is an ESA-listed threatened species for Benton and Franklin counties (Krupka 2016); however, this orchid is not known to occur anywhere on the Hanford Site and was not observed during the field survey of the Study Area. This area also does not contain any designated critical habitat.

Species likely present in the Study Area that, although not listed as threatened or endangered, have a federal or state conservation status are discussed briefly below.

- The Loggerhead Shrike, Burrowing Owl, and Sagebrush Sparrow have been sighted near the Study Area in the past (NRC 2010). All three species are Washington State candidate species for threatened, endangered, or sensitive status. In addition to being a state candidate species, the Burrowing Owl is also a federal species of concern.

- Although they were removed from the endangered species list in 2007, Bald Eagles are listed as a Washington sensitive species and a federal species of concern. The *Bald and Golden Eagle Protection Act* and the *Migratory Bird Treaty Act* still provide protection for eagles, their nest sites, and communal night roosts. On the Hanford Site, eagles are managed in accordance with the *Bald Eagle Management Plan for the Hanford Site* (DOE 2013a). This plan defines buffer zones around nest and roost sites duirng some parts of the year.

Biological Resource Values in the Study Area

Biological resources on the Hanford Site are prioritized based on a hierarchical classification of relative resource value (DOE 2016, Section 5.2). Rare (e.g., individual species or vegetation communities) or largely intact resources (i.e., unaltered by natural or human disturbances) are assigned a higher resource level and are given greater preservation or conservation priority compared with more common or partially disturbed or altered resources. Resources are defined by species, habitat, or a combination of both, and are assigned a resource priority level of 0 to 5, with 5 representing the highest value resource.

As shown in Figure 3-13, the Study Area within the IDC comprises a Level 1, "Marginal or Common Species" resource. Level 1 resources include relatively common native species as well as fragmented habitats that are too small, too degraded, and/or too isolated to be of conservation value. These areas are not high-priority areas for restoration, and mitigation for these resources is generally not required.

The majority of the Study Area along the north side of the access road is considered to be a Level 2, "Mid-Successional or Low Priority Species" resource (see Figure 3-14). Mid-successional habitats include shrub-steppe or steppe communities where the herbaceous layer is dominated by non-native species (e.g., cheatgrass). The goal for Level 2 resources is to conserve and sustain those native species and habitats present. Sowing native plant seed where existing vegetation has been removed is generally required to minimize impacts to Level 2 resources.

As it approaches the WNP-1/4 pump house, the final section of the powerline would be built either in the gravel lot surrounding the pump house (Resource Level 0 "Industrial") or within 10 feet of the road. The area that is close to the access road would be considered to be a Level 2 Resource, although further away from the road this area becomes a Level 3 Resource as shown in Figure 3-13.

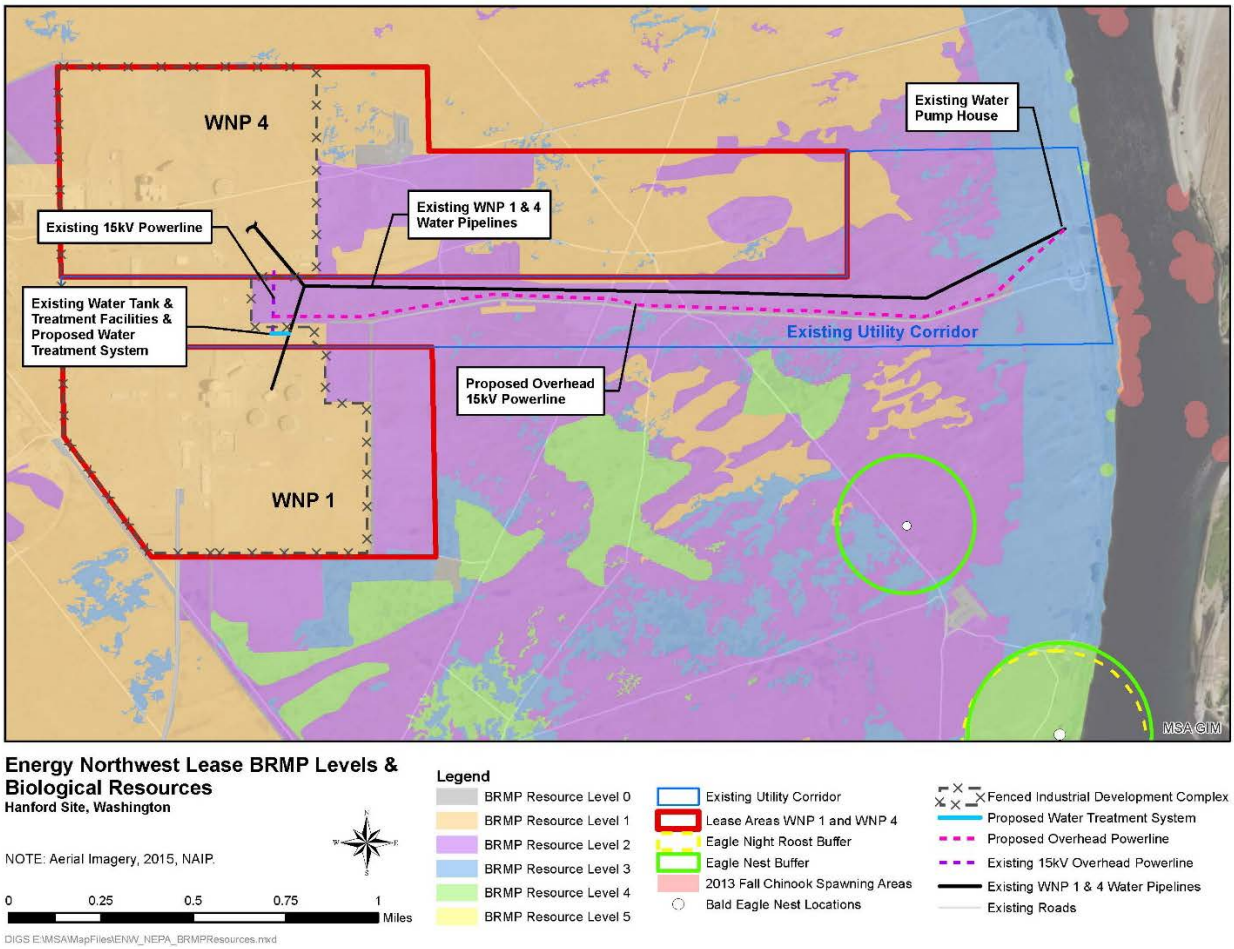

Figure 3-13. Biological Resources in the Study Area and Adjacent Areas

3.2.2.2 Environmental Consequences

Under the No Action Alternative, the impacts of the Proposed Action would not take place and would not change the environmental baseline for terrestrial biological resources described in Section 3.2.2.1. Impacts from construction would not occur along the access road where the powerline was proposed to be installed, nor would construction take place within the IDC where underground piping and a water treatment system were proposed to be installed. Ongoing EN activities not related to the Proposed Action would continue.

Proposed Action

<u>Powerline Installation</u>

Powerline poles would be installed within 10 feet on the north side of the existing access road between the IDC and the pump house. The proximity of the proposed line to the road minimizes the need for vehicles to drive across vegetation. As discussed above, this area is Level 2

resource and contains species that have been assigned a relatively low priority due to their widespread distribution.

Installation of each pole would be in a small area occupied by and surrounding the pole. Assuming this area is nominally 12 square feet for each pole and that there will be about 100 poles (assumes 100 feet between poles along the roughly 2 mile length), the total area affected would be 1,200 square feet or less than .03 acre.

Installation of poles would remove a small amount of vegetation around each pole. The effect of this disturbance would be temporary because no permanently cleared area would be maintained around the poles, and areas where vegetation has been removed would be reseeded using local native plant seed.

Noise associated with construction of the powerline also has the potential to disrupt wildlife in the area, including nesting bald eagles during the period from late winter through early summer. In May 2007, the USFWS published the *National Bald Eagle Management Guidelines* to publicize the provisions of the *Bald and Golden Eagle Act*; advise landowners, land managers, and the public of the potential for eagle disturbance; and encourage land-management practices that benefit Bald Eagles (USFWS 2007). Within these guidelines, the term *disturb* was defined as: "To agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." Although eagle tolerances of disruptions are acknowledged by the USFWS as varying widely, the USFWS includes off-road vehicle traffic, construction, and equipment installation as potential disruptors. Loud and disruptive activities are generally discouraged during the nesting season.

During the early springs of 2014, 2015, and 2016, Bald Eagle monitoring of the pair nesting near the Study Area was done during the testing of emergency sirens at the CGS. During the testing, there was little to no reaction to the siren by the eagle pair, and there did not appear to be any negative impact on their nesting behavior. Nearby Red-tailed Hawks seemed similarly unaffected. Although the siren noise was quite different and of much shorter duration than the noise expected from construction the results attained in the *Columbia Generating Station Emergency Management Sirens Wildlife Impact Review* (MSA 2016b) may indicate that noise is unlikely to affect local raptors.

Trucks and other construction equipment could temporarily reduce the value of the habitat for wildlife in the Study Area. Incidental mortality from these activities would be avoided for most wildlife species, because the species are typically highly mobile and would quickly flee if startled by construction equipment and because the total area affected is less than 0.2 acres. Incidents of wildlife mortality are expected to be negligible and would not result in local or regional population level impacts.

Ground nesting birds protected under the *Migratory Bird Treaty Act* could be displaced inadvertently if construction occurs during the nesting season between March and late July.

Construction within the IDC

Installation of pipes and placement of a skid-mounted water treatment system within the IDC would occur in a graded and filled industrial area designated as a Level 1 resource (DOE 2016). This area is already heavily disturbed and the total area that would be affected by construction of pipe trenches and installation of the pad for the skid-mounted water treatment system is approximately 6200 square feet or .14 acre.

Removal of existing vegetation in any part of the Study Area could increase the potential for the introduction and spread of noxious weeds. Bare, disturbed, and compacted soils are vulnerable to weed invasion through natural dispersal or through dispersal by vehicles and machinery moving from site to site.

3.2.2.3 Mitigation Measures

Mitigation of impacts on biological resources include the following practices that would further reduce the already minor impacts of the Proposed Action to a negligible level.

- Perform land clearing to the extent practicable during the non-nesting season for migratory birds. Ground nest surveys would be completed prior to the start of any construction activities that occur during nesting season.

- Use the existing access roads during line installation to the extent practicable in order to minimize the impact on vegetation.

- Control noxious weeds[2] in construction work areas manually, mechanically, and/or chemically as recommended for each species, prior to construction, if needed, with a focus on species with small, contained infestations to reduce the potential for widespread establishment and the need for long-term management.

- Wash the under carriage and tires of vehicles when leaving areas with known infestations of noxious plant species.

- Comply with Hanford Fire Marshal restrictions and guidelines for driving off road and operation of machinery in vegetated areas during times with elevated fire danger (MSA 2016).

- Cut or crush vegetation rather than blading or clearing areas that would remain vegetated.

[2] A noxious weed is defined in Washington State regulations "as a plant that when established is highly destructive, competitive, or difficult to control by cultural or chemical practices" (RCW 17.10.010). The Washington State Noxious Weed Control Board determines which species are considered noxious weeds in the state and what level of control is required for each species. DOE has established Memoranda of Understanding with the neighboring counties noxious weed control boards for ongoing control of noxious weeds on the Hanford Site (1997).

- Reseed disturbed areas after construction activities are complete, at the appropriate time period for germination, using a native seed mix based. See the *Hanford Site Revegetation Manual* for guidance, if needed (DOE 2103b).

- Observe Bald Eagle buffer zone restrictions and schedule construction of the new powerline outside of the nesting season. Seasonal buffer zones are established around nighttime roosts and nests on an annual basis to minimize potential disturbances (DOE 2013a). The buffer zones are posted in the field and are indicated on the Natural Resources Protective Buffer Map for Bald Eagles.

3.2.2.4 Unavoidable Adverse Impacts

No unavoidable adverse impacts would be expected to result from the Proposed Action.

3.2.2.5 Cumulative Effects

The Proposed Action would not result in any incremental impact on terrestrial resources that would be added to past or present actions. There are no other known reasonably foreseeable future actions in the Study Area.

3.3 Cultural Resources

The Hanford Site has documented cultural resources that stretch back over 11,000 years, containing evidence of nearly continuous occupation, especially near the banks of the Columbia River. More than 40 years of research has shown that the greatest number of pre-contact archaeological sites and the most complex cultural resources are found in close proximity to the Columbia River.

The EN *Cultural Resource Protection Program* (EN 2013) contains a comprehensive review of the nature and types of cultural resources that have been documented within EN leased lands. This program specifies how EN will:

- Assess and consider impacts to cultural resources when planning and performing work activities;
- Protect cultural resources and culturally sensitive areas; and,
- Address discovery or inadvertent disturbance of cultural resources, including
    - Stop work,
    - Protection of remains or finds,
    - Notification and communication with DOE, Washington Department of Archaeology and Historic Preservation, Tribes, Benton County Sheriff and Coroner
    - Disposition of discovered archaeological materials.

3.3.1 Affected Environment

A Section 106 of the National Historic Preservation Act (NHPA) review of this project was conducted within the defined Area of Potential Effect (Sexton et al. 2016). The Area of Potential

Effect used for the Section 106 review is the same as the terrestrial resources Study Area in this EA. A field survey of the Study Area was conducted August 24, 2016, to identify cultural resources. A qualified archaeologist led the survey with members of the Confederated Tribes of the Umatilla Indian Reservation, Nez Perce Tribe, and Yakama Nation participating. The participating tribal members did not express any concerns about the project or any effects to cultural resources during the survey.

Pre-field literature reviews of the Study Area indicated the potential presence of four cultural resources, but only one was identified, the historic BPA Midway-Benton #1 Transmission Line. This historic line is a part of the *Master Grid Discontiguous Historic District*, which is eligible for listing in the National Register of Historic Places.

The other resources originally were recorded near the river and pump house, but could not be located due to the high level of disturbance from previous construction activities. These previously recorded cultural resources include a road recorded from Bureau of Land Management General Land Office maps (but never surface verified), a pre-contact camp site, and a pre-contact accumulation of fire-cracked rock.

The pedestrian survey found a high level of modern surface disturbance within the Study Area. The areas around the pipe trench, water treatment system, and existing water distribution system in particular were entirely bladed and leveled with evidence of imported fill material that has completely buried the natural ground surface. The area along the powerline was highly disturbed from construction of the access road, other buried utility lines, and the river pump house. The area around the river pump house was also bladed and leveled, and signs of imported fill material were evident. These previous ground-disturbing activities obscured or buried the original ground surface, which explains the lack of cultural resources found in the Study Area. Intact cultural resources are unlikely to be found on the surface of the Study Area

3.3.2 Environmental Consequences

Under the No Action Alternative, impacts from the Proposed Action to the environmental baseline for cultural resources, as described in the preceding section, would not take place because ground disturbing activities from construction of the powerline, and trenching to install pipes at the IDC would not take place.

Under the Proposed Action, the only cultural resource identified within the Study Area is the historic Bonneville Power Administration Midway-Benton #1 Transmission Line. No effects to this resource from the Proposed Action are expected because the construction of a smaller powerline that crosses the historic transmission line is consistent with the overall theme of utility lines that defines the cultural resource.

The results of the pedestrian survey were documented within a written cultural resources report with a finding of *No Adverse Effect* to historic properties under NHPA Section 106 (Sexton et al. 2016). This report was submitted to the Washington State Department of Archaeology and Historic Preservation, and the area Tribes, including the Confederated Tribes of the Umatilla Reservation, Nez Perce, Yakama Nation, and Wanapum people. The Washington State Department of Archaeology and Historic Preservation concurred with the finding of *No Adverse*

Effect to historic properties in a letter dated October 12, 2016 (Appendix A). A Yakama Nation staff member did not concur with the finding in an e-mail communication dated November 4, 2016 and consultation with the Yakama Nation staff is ongoing

3.3.3 Mitigation Measures

No surface indications exist to document the presence of cultural resources within the Study Area. However, the probability of finding archaeological materials that have been buried exists within the study area. This potential effect to buried archaeological materials can be mitigated through the use of qualified archaeological monitors to observe the construction of the powerline. The archaeologist would observe during the operation of the auger and would examine the spoil piles after it is clear.

Any discovery of new cultural materials would be handled in accordance with the EN *Cultural Resource Protection Program* (EN 2013).

3.3.4 Unavoidable Adverse Impacts

The only unavoidable consequences would be the potential to disturb buried cultural resources during the operation of the auger during installation of power poles. Potentially buried cultural resources discovered in such a manner would be evidence of the possibility of further buried cultural resources; however, such unavoidable consequences would be mitigated through archaeological monitoring and following the EN *Cultural Resource Protection Program* for all discoveries (EN 2013).

3.3.5 Cumulative Effects

The cumulative effects to cultural resources are negligible due to the lack of cultural resources within the Study Area.

3.4 Summary of Environmental Consequences

The table below provides a summary of the environmental consequences that would result from the No Action and Proposed Action alternatives for biological and cultural resource, as other issues evaluated (see Section 3.1) were determined to have a little or no effect on the environment.

Resource Area	No Action Alternative	Proposed Action
Aquatic Biological Resources	No water would be withdrawn from the Columbia River; therefore, no impacts from the Proposed Action to aquatic resources would occur.	Water withdrawal through the existing intake structure may affect aquatic organisms, including fish listed under the ESA, but is unlikely to cause adverse effects. This determination is based on Energy Northwest demonstrating the efficacy of the intake screen and completion of Informal Consultation with NMFS and USFWS under Section 7 of the ESA.
Terrestrial Biological Resources	Plant or animal individuals, populations, or habitats would not be affected by construction of the powerline, trenching to install pipes, or water treatment system pad at the IDC.	Construction and installation of the powerline, underground pipes and water treatment system would remove a small amount (less than 0.2 acres) of vegetation, primarily in previous disturbed, Level 0, 1, and 2 resource areas. Construction activities and machinery use could temporarily reduce the value of the habitat for wildlife. Noise associated with construction has the potential to disrupt wildlife in the area. Ground nesting birds protected under the *Migratory Bird Treaty Act* could be displaced if construction occurs during the nesting season between March and late July Removal of existing vegetation could increase the potential for the introduction and spread of noxious weeds.
Cultural Resources	Potentially buried cultural resources would not be disturbed from construction of the powerline and trenching to install pipes at the IDC.	The historic Bonneville Power Administration Midway-Benton #1 Transmission Line (the only cultural resource identified in the Study Area); would not be affected by the Proposed Action. Monitoring will take place in the unlikely event a buried cultural resource is discovered. No other cultural resources were documented during the site survey, and a finding of *No Adverse Effect* to historic properties under NHPA Section 106 was reached.

4 Agencies and Persons Consulted

Leah Sue Aleck, Yakama Nation, Union Gap, WA.

Allyson Brooks, State Historic Preservation Officer / Director, Washington Department of Archeology and Historic Preservation, Olympia, WA.

Alyssa Buck, Wanapum Band, Mattawa, WA.

Rex Buck, Wanapum Band, Mattawa, WA.

Diana Driscoll, Fisheries Biologist, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Columbia Basin Branch, Ellensburg, WA.

Mike Elsen, Realty Officer, Richland Operations Office, Department of Energy, Richland, WA.

Rose Ferri, Yakama Nation, Union Gap, WA.

Boyd Hathaway, Manager, Site Stewardship Division, Richland Operations Office, Department of Energy, Richland, WA.

Russell Jim, Yakama Nation, Union Gap, WA.

Jack Kerr, Industrial Development Complex Supervisor, Energy Northwest, Richland, WA

Shannon Khounnala, Environmental and Regulatory Programs Specialist, Energy Northwest, Richland, WA.

So Yon Ki, Site Stewardship Division, Richland Operations Office, Department of Energy, Richland, WA.

Diori Kreske, Hanford NEPA Compliance Officer, Department of Energy, Richland, WA.

Jeff Krupka, Supervisory Fish and Wildlife Biologist, U. S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, WA.

Kevin Leary, Site Stewardship Division, Richland Operations Office, Department of Energy, Richland, WA.

Julie Longnecker, Confederated Tribes of the Umatilla Indian Reservation, Pendleton, OR.

Marla Marvin, Office of Chief Council, Richland Operations Office, Department of Energy, Richland, WA.

Josiah Pinkham, Nez Perce Tribe, Lapwai, ID.

Annabelle Rodriguez, Site Stewardship Division, Richland Operations Office, Department of Energy, Richland, WA.

Bambi Rodriguez, Confederated Tribes of the Umatilla Indian Reservation, Pendleton, OR.

Lucy Samuels, Nez Perce Tribe, Lapwai, ID.

Rob Whitlam, State Archeologist, Washington Department of Archeology and Historic Preservation, Olympia, WA.

Lekisha Williamson, Nez Perce Tribe, Lapwai, ID.

Mona Wright, Cultural Resources Program Manager, Richland Operations Office, Department of Energy, Richland, WA.

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Appendix A

Concurrence Letter

Washington State Department of Archaeology and Historic Preservation

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

October 12, 2016

Ms. Mona Wright
Cultural and Historic Resources Program
Richland Operations Office
PO Box 550
Richland, WA 99352

RE: Lease Renewal of Energy NW Project
HCRC # 2016-600-014
Log No.: 2016-08-05607-DOE

Dear Ms. Wright;

Thank you for contacting our Department. We have reviewed the professional cultural resources survey report for proposed Lease Renewal of Energy NW Washington Nuclear (#1 & 4) Project at the Hanford Site, Benton County, Washington.

We concur with your Determination of No Adverse Effect.

We would also request receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribes and this department notified.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4.).

Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment.

Sincerely,

Robert G. Whitlam, Ph.D.
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