Public Utility District #1 of Clark County

Vancouver, Washington

FINAL
Environmental Impact Statement

River Road Generating Project

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3.0 NATURAL ENVIRONMENT

3.1 Earth

3.1.1 Regional Geology

The project site is located in southwest Washington in the Columbia River Basin, approximately 60 miles from the Pacific Ocean and within 0.25 mile of the Columbia River. The topography of this part of the basin is nearly flat to gently rolling terraced surfaces.

The Cascade reach of the Columbia River Region experienced abundant volcanic activity in the Tertiary Period. Fissure eruptions flooded the area with basalt. These flows are thought to be up to 14,500 feet thick in some areas of the Columbia Plateau, although individual flows are generally only 30 to 100 feet thick. The flows are interbedded with tuff and lacustrine sediments.

During the Pleistocene Epoch, a great expansion of ice repeatedly advanced and retreated from the north, covering much of Washington, Idaho, and Montana. A tongue of ice from the Cordilleran Ice Sheet extended across the Clark Fork River of western Montana, blocking the major drainage system for the area and impounding Lake Missoula. Each time the ice sheet retreated, it caused huge floods (an estimated 500 cubic miles of water) across Idaho and Washington, carving out vast canyons in a geologically short time period. Most of this water came down the Columbia River, bringing with it huge boulders eroded from as far away as Montana and creating terraces of cobbles and small boulders.

In recent geologic history, the Columbia River has been less dynamic, meandering on its flood plain and depositing sand, silt, and gravel.

3.1.2 Soils

3.1.2.1 Project Site

The U.S. Soil Conservation Service (SCS--now known as the Natural Resources Conservation Service) maps show three soil types on the project site: fill land (Fn); Sauvie silt loam (SmA), 0 to 3 percent slopes; and Pilchuck fine sand (PhB) 0 to 8 percent slopes. Very little, if any, undisturbed soil is present on the property. In some areas, the native soils are near the surface or have been graded from high natural levees to fill low areas. Pilchuck fine sand was deposited on the site during flood events prior to flood control by the Columbia River dam system.

Fill is present in the nearly level areas that were raised artificially with earth, trash, or both, and then smoothed over. Large areas along the Columbia River waterfront have been filled with sand and silt dredgings from the river. These areas do not have any clearly defined soil characteristics.

Sauvie silt loam is found on the broad tops of old natural levees on bottom lands along the Columbia River, and in many of the depressional areas. The surface layer is silt loam and the soil is moderately well drained, although inclusions of poorly drained fine silty clays are common. Surface runoff is very slow and the erosion hazard is slight. Pilchuck fine sand is found on terraces along streams. This soil is somewhat excessively drained and rapidly permeable. The available water capacity is low and surface runoff is very slow. The hazard of erosion is normally slight unless there is flooding, at which time the erosion hazard is severe. According to the SCS maps, the northern portion of the site consists of fill land and Sauvie silt loam and the southern portion contains Pilchuck fine sand.

Subsurface soil investigations were conducted for the previous owner, Alcoa, by Dames & Moore (March 26, 1992) in December 1991 and January 1992. The exploration consisted of five hand auger borings to a depth of 5.5 feet below ground surface (bgs), and three soil borings to a depth of 25 to 30 feet. Eight groundwater monitoring wells were also installed, which included four shallow wells (25 to 35 feet bgs) and four deep wells (85 to 90 feet bgs). Each shallow well was coupled with a deep well.

The subsurface soil consists of two broad soil units: an upper unit of fine-grained sands and silty sands, and a lower unit of well graded clean sand. The upper soil is predominantly poorly graded, fine-grained sands and silty sands with relatively low porosity. This upper unit also contains a thin, discontinuous interbedded silt to silty clayey unit. The interbed tends to trap precipitation creating a "perched" water table. A lower sand unit underlies the silty sands and consists of well-graded, clean sand. This lower sand unit appears to have a greater relative porosity than the upper unit.

3.1.2.2 Ancillary Facilities

Natural Gas Pipeline

According to the soil survey for Clark County, the proposed gas pipelines cross land that has been filled and soils of the Sauvie and Newberg soil series. According to the Clark County Comprehensive Growth Management Plan (CCCGMP), the entire loop pipeline and the first 0.2 mile of the lateral pipeline cross soils mapped as Class I and II prime agricultural soils.

Stormwater will recharge groundwater via the soil infiltration. No stormwater will be discharged off-site. Groundwater will not be adversely affected and there will be no direct or indirect impacts to the Columbia River. Therefore, no significant stormwater impacts are noted.

3.3.4 Mitigation Measures

No mitigation measures are required. The project will operate the wastewater treatment systems in accordance with the pretreatment requirements to be issued by the City of Vancouver.

3.4 Plants and Animals

3.4.1 Vegetation and Wetlands Inventory

3.4.1.1 Project Site

The proposed River Road Generating Project will be on an existing industrial site that currently has approximately 80,000 square feet of impervious surface. All areas are highly disturbed by past land uses. The present on-site vegetation varies in species composition in different parts of the site. The intensity of use, compaction, vegetation clearing, amount of fill, and other disturbances were greater inside the existing fenced area than outside the fence and areas adjacent to the roadway. Plant species composition inside the fenced area is less diverse and has less natural functional value than the vegetation outside the fence. Total vegetation cover and habitat value in both areas are very low. See Figure 3-5, Project Site Vegetation Areas.

The herbaceous species that have become established on-site are primarily non-native annuals that reproduce from seeds each year. Annual species are frequently characteristic of highly disturbed sites. They have adapted survival strategies to cope with disturbances (e.g., producing large numbers of seeds that can survive for several years and germinate when conditions become favorable). Herbaceous species present throughout the site include annual whitlow-wort (*Draba verna*), red fescue (*Festuca rubra*), Queen Anne's lace (*Daucus carota*), annual burnet (*Sanguisorba occidentalis*), and mullein (*Verbascum thapsus*).

In addition, moss (*Ceratodon purpureus*) covers approximately 50 to 80 percent of the vegetated part of the site. A few individuals of two perennial species, Scot's broom (*Cytisus scoparius*) and black cottonwood (*Populus trichocarpa*) have become established within the fenced area. The individual plants are small and provide little total cover on the site.

Between the road and the fenced area, the vegetation is slightly less impacted by past land uses. The species composition and characteristics in this area are common on old river dredge spoils

in the vicinity of the project area. There is a cluster of 22 small black cottonwood trees. These trees are multi-trunked, the result of having been cut in the past and subsequently resprouting. Herbaceous species include annual whitlow-wort, orchard grass (*Dactylis glomerata*), oxeye daisy (*Chrysanthemum leucanthemum*), Canada thistle (*Cirsium arvense*), buckhorn plantain (*Plantago lanceolata*), Queen Anne's lace, annual burnet, and mullein.

A depressed basin north of the former industrial building has received less fill. The soil has a low water holding capacity and a relatively high permeability resulting in the site being very well drained. Moss covers approximately 80 percent of this area. Nearly 250 multi-trunked black cottonwood saplings cover approximately 30 percent of the area. The remaining dominant vegetation is red fescue with about 10 percent coverage.

Off-site, to the north and northeast, in non-impacted areas are wetlands associated with the Vancouver Lake lowlands. These wetlands were separated from the Vancouver Lake lowlands when the roadway for State Road 501 was built. Culverts under the roadway still link the systems hydrologically. The project site is not connected via surface drainage or by culverts to the Vancouver Lake wetlands or the wetlands to the northwest of the site, south of SR 501. The dominant vegetation of the wetlands south of the road is black cottonwood, Columbia River willow (*Salix fluviatilis*), and reed canary grass (*Phalaris arundinacea*).

To the east, west, and south of the site, much of the vegetation is similar to that found on the site, except the cottonwood trees are older and larger and additional species are present, such as poison hemlock (Conium maculatum) and teasel (Dipsacus sylvestris). These species are also indicative of disturbance. The area to the southwest is developed with industrial facilities and has little significant vegetation.

3.4.1.2 Ancillary Facilities

Vegetation on the proposed natural gas pipeline route consists of cultivated crops (1.00 mile, 87.5 percent of the route), open grassland within road rights-of-way (0.18 mile, 10.5 percent of the route), and pasture (0.06 mile, 3.5 percent of the route). The remainder of the pipeline route is within or across roads or within a parking lot. No trees or forested areas will be affected by the project. The Washington Natural Heritage Program has been contacted to determine if any unique or sensitive vegetation communities are known or suspected to occur in the vicinity of the project. A response has not yet been received.

The project will not affect any high quality wetlands or hydric soils as mapped by the Clark County Comprehensive Growth Management Plan (CCCGMP) (Clark County 1994). The loop pipeline will cross two areas mapped as wetlands on National Wetlands Inventory (NWI) maps.

However, the two areas have been significantly altered since the NWI maps were created, and do not now appear to be wetlands. At milepost (MP) 0.5 of the loop pipeline, the NWI map shows an emergent wetland. However, this area is now cultivated field with no evidence of wetland vegetation. At MP 0.75 of the loop pipeline, the NWI map shows a narrow, linear forested and emergent wetland. However, this wetland has been modified by the construction of the Flushing Channel, and the wetland is now a cultivated field at the pipeline crossing location. The lateral pipeline does not cross any NWI-mapped wetlands.

The proposed electrical transmission line will be routed along the south side of Lower River Road. This area is currently being developed as industrial land (Port of Vancouver) and no vegetation or wetland areas will be impacted. Vegetation and wetland impacts related to construction of the electrical transmission line are addressed by reference in the Port of Vancouver MDNS, Development of Gateway Parcels 1a and 1b, February 1994.

Construction of the water and sewer lines will impact already disturbed areas adjacent to the existing access road. Vegetation includes grasses, black cottonwood saplings, and blackberry bushes.

3.4.2 Wildlife

The project site and adjacent areas were assessed during field visits in the spring of 1995 for common and potentially occurring wildlife. Observations included a ground reconnaissance for wildlife and bird species in flight around the site. Although some bird species were observed flying over the general project area, the major movement patterns occur over undeveloped land to the north and west. The project site and adjacent areas to the east are highly impacted by industrial activities, aircraft noise, power lines, and transmission towers. These disturbances tend to discourage avian movement. No migratory birds were seen using the site during spring site visits. The following paragraphs describe on-site habitats.

3.4.2.1 On-Site Observations

Three distinct wildlife habitats occur on the project site. These habitats include a small basin on the northern portion of the site, a cluster of cottonwood trees along the roadside to the southeast, and a fenced industrial area (Figure 3-5). All areas contain fill and are highly disturbed, particularly the fenced area on the southern portion of the site. Each wildlife habitat is described below.

Basin Area

A vacant area located in the northern section of the site lies in a slight depression that slopes gently downward to the northeast. The dominant vegetation includes moss, red fescue, and black cottonwood saplings. Although the site has limited wildlife value, there is evidence of small rodents and amphibians.

The most conspicuous species on-site were small passerine birds such as the song sparrow. These birds were observed foraging in a cluster of blackberry bushes that border the northern edge of the site.

Cottonwoods Along Roadside

A cluster of black cottonwood trees is located on the southeast segment of the site. The largest tree in this group is approximately 8 inches in diameter and 50 feet in height. Other vegetation in this area includes whitlow-wort, orchard grass, oxeye daisy, Canada thistle, and Queen Anne's lace. This area provides minimal food and shelter for wildlife due to its limited size and the disturbed condition of the understory. Birds observed in this area included song sparrow, scrub jay, European starling, and an American kestrel (see Table 3-9, Wildlife Species Observed). During the visit, cormorants and Canadian geese flew over the site, headed northwest in the direction of Vancouver Lake.

Fenced Industrial Area

The remainder of the site consists of a highly disturbed industrial area which surrounds the existing building. Vegetation here is sparse and consists primarily of moss, red fescue, and annual burnet. There were few indications of wildlife on this portion of the site.

3.4.2.2 Ancillary Facilities

Natural Gas Pipelines

Wildlife species expected to occur in the vicinity of the proposed project are identified in Section 3.4.2.1 and are common to agricultural and open lands in the Columbia River Lowlands in southwestern Washington. According to the CCCGMP, the loop pipeline crosses priority habitat as identified by the Washington Department of Fish and Wildlife (WDFW) (Clark County 1994). The WDFW has been contacted to determine if unique or sensitive species or habitats are known or suspected to occur in the vicinity of the project. See Section 3.4.2.4, Threatened and Endangered Species.

TABLE 3-9

Wildlife Species Observed

	On-Site	Off-Site
Birds		
Great Blue Heron *(Ardea herodias)*		•
Canada Goose ** *(Branta canadensis)*	•	•
Song Sparrow *(Melospiza melodia)*	•	•
Scrub Jay *(Aphelocoma coerulescens)*	•	•
European Starling *(Sturnus vulgaris)*	•	•
American Kestrel *(Falco sparverius)*	•	•
Bald Eagle *(Haliaeetus leucocephalus)*		•
Double-crested Cormorant ** *(Phalacrocorax auritus)*	•	•
Tundra Swan *(Cygnus columbianus)*		•
Green-winged Teal *(Anas crecca)*		•
Common Goldeneye *(Bucephala clangula)*		•
Ruddy Duck *(Oxyura jamaicensis)*		•
Solitary Vireo *(Vireo solitarius)*		•
Red-tailed Hawk *(Buteo jamaicensis)*		•
Sandhill Crane *(Grus canadensis)*		•
Herring Gull ** *(Larus argentatus)*	•	•
Mourning Dove *(Zenaida macroura)*		•
Belted Kingfisher *(Ceryle alcyon)*		•

Electrical Transmission Line

Wildlife information related to the construction of the electrical transmission line is presented in the MDNS, Port of Vancouver (February 1994).

Water and Sewer Lines

Water and sewer lines to be constructed from the project site to the City of Vancouver's water and sewer lines will follow the right of way of existing roads. Wildlife observed or expected in this area are the same as described in Section 3.4.2.1.

3.4.2.3 Off-Site Observations

Areas adjacent to the project site were also observed for common and potentially occurring wildlife. The Vancouver Lake lowlands are located to the north of the site across Lower River Road. Vancouver Lake is approximately 1 mile to the west. Wetlands associated with the lowlands are located to the north and northeast. A patch of black cottonwoods sits to the southeast of the site surrounding a small depressional wetland.

Wetland Areas

The dominant vegetation of wetlands occurring in the vicinity of the site is black cottonwood, Columbia River willow, and reed canary grass. These areas provide ample food and shelter for a variety of wildlife. Observed wildlife included: dark-eyed junco, American robin, solitary vireo, song sparrow, European starling, Canada goose, golden-crowned sparrow, mourning dove, varied thrush, and belted kingfisher. Several downed cottonwoods exhibited evidence of recent beaver activity.

Vancouver Lowlands and Vancouver Lake

Vancouver Lake and lowlands provide habitat for birds, mammals, and amphibians. Prominent among these are waterfowl and great blue heron. The area also supports active heron rookeries. Waterfowl inhabit this area year-round, but are particularly abundant during the winter. Wildlife observed during reconnaissance visits included: downy woodpecker, great blue heron, rufous-sided towhee, song sparrow, American robin, northern pintail, Canada goose, double-crested cormorant, ruddy duck, American coot, northern shoveler, common goldeneye, mallard, sandhill crane, redtail hawk, bullfrog, and rabbit.

Vancouver Lake and the lowlands support important, active great blue heron rookeries. The major rookery is located approximately 2.5 miles north of the site and therefore will not be impacted by the construction or operation of the facility. Other nests may be closer to the site, but they are currently subject to existing disturbances.

Black Cottonwoods South of Site

A patch of black cottonwood trees, divided by railroad tracks, is located to the south of the site. This area provides some food and protective cover for wildlife (primarily song birds), but its habitat value is limited given the small size of the wooded area.

3.4.2.4 Threatened and Endangered Species

This section addresses the project site and for additional information on the electrical transmission line please see the Port of Vancouver MDNS (February 1994), incorporated by reference. No federally listed threatened or endangered plant species, including any species proposed for listing, have been identified on the project site. While not observed in the wetlands adjacent to the site, Howellia (*Howellia aquatilis*) an endangered aquatic plant species, has been reported in similar wetland habitats within the Columbia River flood plain in Clark County.

A review of the Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) mapped data identified the presence of bald eagle perch trees at Vancouver Lake. These trees are used regularly throughout the winter months and into early spring. Also identified as a priority habitat are the Ridgefield lowlands to the north, which support wintering waterfowl including Canada geese, sandhill cranes, tundra swans, white-fronted geese, and several species of ducks. The sandhill crane is listed as a State Endangered Species.

The WDFW Nongame Heritage Data Base (HRTG) identifies two significant sites on the southern segment of Vancouver Lake. These include a great blue heron rookery and a great egret. Although the great blue heron is frequently found feeding along shorelines, breeding areas are protected by the State of Washington. The great egret is listed as a State Monitor Species.

A review *of Habitat and Evaluation of the Vancouver Lake/Columbia River Lowlands* (Envirosphere Co. February 1986) confirmed Canada geese and dabbling ducks as the prominent wildlife that inhabit areas adjacent to the project site. Records for four important species were reported. These species include regular, large concentrations of wintering sandhill cranes, breeding areas of the great blue heron, regular individual occurrences of the great egret, and a wintering population of bald eagles.

A single bald eagle was observed perched in a cottonwood tree along Lower River Road, approximately three-quarters of a mile from the site. There is an active bald eagle nest approximately two and three-quarter miles northwest of the site. This nest is located in cottonwood trees along the Columbia River. The bald eagle is listed as a State Threatened Species by the Washington Department of Fish and Wildlife.

Communication with staff at the Washington Department of Fish and Wildlife (Kolb March 3, 1995) identified species of concern that have historically occurred in areas adjacent to the project site. These species include the bald eagle, sandhill crane, dusky Canada goose, and nesting great blue herons.

Staff at the Ridgefield National Wildlife Refuge (Wiseman March 6, 1995) noted several species of concern that occur near the project site. This list includes the dusky Canada goose, Aleutian goose, bald eagle, peregrine falcon, sandhill crane, western pond turtle, red-legged frog, and the nesting great blue herons. For a complete listing of threatened and endangered species that may use habitats near the site see Table 3-10.

Threatened and Endangered Species Occuring in Adjacent Areas

No federally listed threatened or endangered wildlife, no wildlife petitioned for listing, and no wildlife candidates have been identified on the project site. All observations of listed or candidate species have occurred off-site in adjacent areas.

Natural Gas Pipeline

Priority Habitats and a Species and Natural Heritage Wildlife Data maps, dated June 8, 1995, and letter, dated June 9, 1995, from the Washington Department of Fish and Wildlife provided information on sensitive species in the vicinity of the proposed pipeline. Based on these maps, approximately 4,700 feet of the pipeline loop (the segment within agricultural lands north of the flushing channel) is within priority habitat for wintering waterfowl. Also, approximately 1,000 feet of the pipeline loop (south of the flushing channel) is within 200 feet of bald eagle perch trees located along the edge of Vancouver Lake. The perch trees are regularly used during winter and early spring. The perch trees are on the opposite side of Route 501, and will not be directly affected. Because the anticipated construction schedule for the pipeline is May through July, construction would not affect wintering waterfowl and eagles. Because the waterfowl habitat is agricultural land that will be restored to preconstruction conditions within one to two growing seasons, impact to this habitat will be short term.

TABLE 3-10

Threatened and Endangered Species Occurring in Adjacent Areas

Species	Washington Status
Bald Eagle *(Haliaeetus leucocephalus)*	State Threatened
Sandhill Crane *(Grus canadensis)*	State Endangered
Great Egret *(Casmerodius albus)*	State Monitor
Aleutian Canada Goose *(Branta canadensis leucopareia)*	State Endangered
Great Blue Heron-Breeding Areas *(Ardea herodias)*	State Monitor
Peregrine Falcon *Falco peregrinus)*	State Endangered
Western Pond Turtle *(Clemmys mamorata)*	State Endangered

The habitat maps also show two bald eagle nests near the north end of the pipeline loop, one on the Columbia River 2,800 feet northwest of the pipeline, and one 1,800 feet northeast of the pipeline. However, based on site visits, it appears that eagles are using a new site, located on the Columbia River, roughly 2,000 feet southwest of the end of the pipeline.

3.4.3 Potential Impacts

Because of the sparse vegetation cover, low species diversity, and a high percentage of non-native species, the removal of existing vegetation for site development will have no significant environmental impact.

No development impacts to off-site wetland vegetation are anticipated. The wetland to the north of the site is being purchased by Clark and will be preserved without impacts from this development. In addition, stormwater runoff from the proposed industrial development will be routed away from this wetland. Groundwater discharge for maintaining wetland hydrology will not be significantly reduced, as much of the groundwater moves through the sandy soils from east of the site and the on-site stormwater infiltration system will contribute to maintaining the local contribution to groundwater to the greatest extent feasible.

There will be no significant impacts to on-site wildlife due to the proposed project. The project area is currently subject to a multitude of human disturbances such as aircraft, train, vehicular, and industrial noise and past removal of most native vegetation. High-voltage lines cross the site. The site and adjacent areas are zoned industrial and there is extensive development on Port of Vancouver property in neighboring areas to the southwest. These impacts have reduced the on-site habitat to the point where wildlife usage is minimal. The basin area on the northern portion of the site demonstrated the highest amount of wildlife activity: birds feeding and foraging, rodent trails and scat, and amphibians.

During construction and operation of the project, some wildlife species, such as rodents and small birds, may be displaced. Most of these species can easily relocate to adjacent habitats. Impacts from construction and operation of the project will not significantly alter any species populations.

While any loss of open space represents a decrease in available wildlife habitat, the existing disturbances and isolated condition of the site minimize these impacts. Although adjacent areas contain a variety and abundance of wildlife, there will be no significant impacts to off-site species and habitat due to on-site activities. There currently exists notable disturbances from vehicular noise and industrial activities. The area is congested by tall power lines and transmission towers, so the proposed structure will not significantly further impact adjacent wildlife. Impacts will also

be limited due to the roads and highly disturbed industrial areas which effectively isolate the site from existing wildlife habitat areas.

The site is over a quarter mile from the Columbia River high water mark, and there is no surface water channel between the site and the river. There will be no direct discharge of effluent from the facility into the river, and therefore there will be no impacts to critical fish habitat in the Columbia River.

Natural Gas Pipeline

To avoid any possibility of impacting nest sites, work will not begin until August 15. The general recommendation for buffer zones around active nests during the nesting season is 400 meters if the work is out of sight of the nest and 800 meters if the work is within sight of the nest. Roughly the northern-most 1,500 feet of the pipeline loop is within sight of and within 800 meters of the nest. However, the level of existing human activity around the nest is relatively high due to the Columbia River shipping channel immediately to the west, and actively cultivated fields to the north and east. Given the existing level of human activity, it is possible that the Fish and Wildlife Service (FWS) may accept a buffer zone of less than 800 meters.

3.4.4 Mitigation Measures for Plants and Animals

Project Site

Mitigation for the minor impacts of removing existing vegetation will consist of landscaping the setback between the roads and the buildings with native trees and shrubs suitable for the existing soil and moisture conditions. Landscaping will be chosen to enhance wildlife habitat or provide other natural functions.

No significant impact to on-site wildlife has been identified; therefore no specific mitigation measures are required.

An opportunity does exist, however, to enhance on-site wildlife habitat through the placement of native shrubs and trees during site landscaping. Landscaping along the border of the site could encourage the return of those few species that will be displaced and provide additional habitat for other wildlife.

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