Wallula Power Project and
Wallula - McNary Transmission Line Project
Final Environmental Impact Statement

DOE/EIS-0330

Lead Agencies
Bonneville Power Administration
Washington State Energy Facility Site Evaluation Council

Cooperating Agencies
Bureau of Land Management
U.S. Fish and Wildlife Service

August 2002

EFSEC

Washington State Energy Facility Site Evaluation Council

BONNEVILLE POWER ADMINISTRATION

August 2002

Dear Reader:

Enclosed for your reference is the abbreviated form Final Environmental Impact Statement (FEIS) for the proposed Wallula Power Project and Wallula-McNary Transmission Line Project. This document is designed to supplement or correct information provided in the Draft Environmental Impact Statement (DEIS). The proponent, Wallula Generation, LLC, has requested to build a 1,300-megawatt, gas-fired combined cycle power plant in Wallula, WA. The Bonneville Power Administration (Bonneville) investigated the construction and operation of 33 miles of new 500 kilovolt (kV) transmission line and a switchyard to connect and distribute the new power generation into the transmission grid.

Bonneville and the Washington State Energy Facility Site Evaluation Council (EFSEC or Council) have completed this FEIS under contract with Jones & Stokes. The analysis was undertaken to meet the direction of the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA) and other relevant laws and regulations as they pertain to power plant requests and associated transmission lines.

A DEIS was issued for public comment on February 22, 2002. The public comment period closed on April 11, 2002. Public comment hearings were held on March 13, 2002, in Burbank, WA, and on March 14, in McNary, OR. EFSEC and Bonneville received 23 comment letters and oral comments from four individuals.

The FEIS was prepared from information received from agencies, organizations, and individuals who submitted written and oral comments on the DEIS, and from testimony presented in the adjudicative hearings before EFSEC. Comments on the DEIS have resulted in changes to text and illustrations where appropriate. Chapter 1 of this FEIS contains an updated summary and project description. Chapter 2 includes copies of written comments and public hearing testimony concerning the DEIS, as well as responses prepared by the FEIS authors to the written comments and testimony. Chapter 3 contains the text revisions to the DEIS.

For further information regarding this proposal, you may contact Donald Rose at (503) 230-3796 or Irina Makarow at (360) 956-2047. For copies of the DEIS, please contact Irina Makarow at (360) 956-2047 or you may access it on the Internet at www.efsec.wa.gov.

Allen Fiksdal
Energy Facility Site Evaluation Council

Robert Beraud
Bonneville Power Administration

Wallula Power Project and Wallula-McNary Transmission Line Project Final Environmental Impact Statement (EIS) (DOE/EIS-0330)

Responsible agencies: U.S. Department of Energy (DOE), Bonneville Power Administration (Bonneville); Washington State Energy Facility Site Evaluation Council (EFSEC)

Cooperating agencies: Bureau of Land Management; U.S. Department of Interior, U.S. Fish and Wildlife Service

Title: Wallula Power Project and Wallula-McNary Transmission Line Project

States involved: Washington (power plant and transmission line) and Oregon (transmission line)

Abstract: Wallula Generation, LLC proposes to construct a 1,300-megawatt (MW) natural gas-fired combined-cycle combustion gas turbine facility (the Wallula Power Project). The project would be located in the northwestern portion of Walla Walla County, Washington, approximately 8 miles south of the City of Pasco, 2 miles north of the unincorporated community of Wallula, and 7 miles southeast of the unincorporated community of Burbank. The purpose of the proposed power project is to provide energy to meet the needs of the Northwest and other interconnected electric transmission areas where electrical energy is needed. Firm transmission of the power generated by the Wallula Power Project would require construction of a new 500-kilovolt (kV) transmission line and construction of a new switchyard near Smiths Harbor. Approximately 5.1 miles of new transmission line from the proposed generation plant to the new switchyard would be completed. An additional 28 miles of new transmission line from the Smiths Harbor Switchyard to the McNary Substation would be constructed adjacent to the existing Lower Monumental-McNary transmission line and upgrades completed to the existing McNary Substation if loads are exceeded on the existing line. Wallula Generation, LLC, would construct and operate the generation plant and associated facilities, including the makeup water supply line. Bonneville would design, construct, and operate the two 500 kV transmission line segments and switchyard. To supply natural gas to the plant site, a 5.9-mile pipeline interconnection would be engineered, constructed, owned, and operated by PG&E Gas Transmission-Northwest (GTN).

This EIS evaluates the environmental impacts of the proposed action, which includes the proposed power plant and 33-mile transmission line. It also evaluates an alternative using taller towers and longer spans between towers along part of the transmission line, and the use of an alternative approach for the transmission line where it would enter the McNary Substation. The No Action Alternative is also addressed.

Proposal's sponsor: Wallula Generation, LLC

Date of implementation: Construction activities for the power plant are expected to last approximately 24 months. The construction schedule would be based on the date EFSEC approves the Application for Site Certification. The expected time to begin transmission system construction is October 2003. The transmission line would need to be completed and tested by summer of 2004. Construction of the natural gas pipeline would likely begin in July 2003 and finish in October 2003.

List of possible permits, approvals, and licenses: The table in the EIS entitled "Overview of Permit, Approval, and Consultation Requirements for Wallula Power Project" presents a list of federal and state requirements, permits, and approvals required for the proposed action and alternatives, and identifies the agencies that administer them. The EFSEC Site Certification Agreement would provide construction and operational requirements and all other relevant Washington state permits and approvals for the power plant. No other Washington state or local permit is required for the power plant. For convenience, the information referenced above lists the major Washington state and local permit requirements preempted by EFSEC for the power plant.

Authors and principal contributors to EIS: Jones & Stokes is the principal author. A list of contributors is included in the EIS.

Subsequent environmental review:
None anticipated.

Date of final lead agency action: After EFSEC deliberates the facts, testimony, and EIS contents, a recommendation will be sent to the governor of Washington to approve or deny the project (expected in summer 2002). The governor has 60 days to accept or reject the recommendation or to remand the recommendation to the Council for further investigation (expected in late summer or early fall 2002).

For additional information on the Final EIS, or to request additional copies, please contact:

Irina Makarow
Siting Manager
Energy Facility Site Evaluation Council
P.O. Box 43172
Olympia, WA 98504-3172
(360) 956-2047
efsec@ep.cted.wa.gov

Donald L. Rose
Environmental Lead
Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208
(503) 230-3796
dlrose@bpa.gov

Call 1-800-622-4520 for additional copies. Please ask for the project by name.

Location of background information: You may access the Final EIS and find more information about the project and the responsible agencies on the Bonneville web site at www.efw.bpa.gov and the EFSEC web site at www.efsec.wa.gov. Copies of the Wallula Power Project Application for Site Certification, EFSEC No. 2001-01, and this Final EIS are also available for public review at the following locations:

Washington State Energy Facility Site Evaluation Council
925 Plum Street SE, Bldg. 4
Olympia, WA 98504-3172
(360) 956-2121

Washington State Library
Joel M. Pritchard Library
6880 Capitol Blvd. South
Olympia, WA
98504-5513
(360) 704-5200

Umatilla City Library
911 Seventh Street
Umatilla, OR
97882-0820
(541) 922-5704

Burbank Library
875 Lake Road
Burbank, WA
Mon, Fri, Sat: 11 a.m. to 4 p.m.
Tues, Wed, Thur: noon to 8 p.m.
(509) 545-6549

Touchet Community Library
179 Hansen Road
Touchet, WA 99360
Mon, Fri: 1 to 5 p.m.
Wed: 1 to 5 p.m. and 6 to 8 p.m.
(509) 394-2329

Walla Walla Public Library
238 E. Alder Street
Walla Walla, WA 99362
Mon, Tues: noon to 8 p.m.
Wed: 10 a.m. to 8 p.m.
Thurs, Fri, Sat: 10 a.m. to 5 p.m.
(509) 527-4550

Cost of copy to the public: There will be no cost for the Final EIS.

For information on Department of Energy (DOE) NEPA activities, please contact Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance, EH-25, U.S. Department of Energy, 1000 Independence Avenue SW, Washington, DC 20585; by telephone at 1-800-472-2756; or visit the DOE website at www.eh.doe.gov/nepa.

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Chapter 1 Updated Summary and Project Description

1.1 Introduction

Wallula Generation, LLC (the applicant) is proposing to build and operate a 1,300-megawatt (MW), natural gas-fired, combustion turbine power plant and associated facilities in Walla Walla County, Washington. The applicant proposes to construct the plant on approximately 64 acres of a 175-acre site located about 8 miles south of the City of Pasco, in southeastern Washington. Figure 1-1 presents the project site location.

The Wallula Power Project would be designed to provide electric energy to meet the growing needs of the Pacific Northwest and other interconnected electric transmission areas where electrical energy is needed. No customers for the power have been identified to date. The Washington State Energy Facility Site Evaluation Council (EFSEC) has jurisdiction over the evaluation of major energy facilities such as the Wallula Power Project in the State of Washington and makes recommendations to the Governor regarding approval or denial of facility siting.

Proposed facilities for the Wallula Power Project include a 4.6-mile makeup water supply pipeline from 10 existing Boise Cascade Corporation wells; a 5.9-mile natural gas pipeline interconnection to be engineered, constructed, owned, and operated by PG&E Gas Transmission-Northwest (GTN); and a permanent county access road linking the project site to Dodd Road. In addition, Bonneville Power Administration (Bonneville) has determined that reliable distribution of electricity generated by the Wallula Power Project would require construction of a new switchyard and 5.1 miles of new transmission line from the plant to the switchyard. An additional 28 miles of transmission line may be constructed from the new switchyard to the McNary Substation in the future (see Figure 1-2).

The Draft Environmental Impact Statement (EIS) for the Wallula Power Project and Wallula-McNary Transmission Line Project was issued on February 22, 2002. The comment period for the Draft EIS ended on April 11, 2002. Public comment hearings were held on March 13, 2002, in Burbank, Washington, and on March 14, 2002, in McNary, Oregon. Another public hearing was held on the project in Walla Walla on July 16, 2002.

During the comment period, EFSEC and Bonneville received comments from agencies, citizens, and interest groups. Comments were submitted in letters, orally at the public comment meetings, and via email. The comments and responses are presented in Chapter 2 of this Final EIS.

1.2 Overview of Project Changes Since Draft EIS

This Final EIS is an abbreviated document in that it presents updates to the information that was presented in the Draft EIS. Chapter 3 of this document describes in detail the updates to the Draft EIS text, tables, and figures.

Refinements to the project design that have occurred since publication of the Draft EIS are summarized below.

- Changes in the status of other proposed generation facilities in the region have altered the projected load on the existing Lower Monumental-McNary transmission line. The proposed 28-mile Smiths Harbor-McNary segment of transmission line may not need to be constructed at this time.
- The northern segment of the 5.1-mile transmission line between the proposed power plant and the Smiths Harbor Switchyard has been relocated. Instead of going due east from the power plant, this portion of the line would now run southeast from the plant toward the poplar plantation on current Boise Cascade property. The Smiths Harbor Switchyard location has not changed. There is no change to the type of vegetation or habitat that would be disturbed by the realignment.
- Settlement Agreements addressing mitigation for a number of resources (wildlife, greenhouse gas, and others) have been reached between the applicant and various agencies and organizations that were granted intervenor status before EFSEC. Information regarding mitigation from the agreements is described in Chapter 3 and Appendix A of this Final EIS. (The agreements are available for review from EFSEC.)
- One stormwater detention pond is proposed instead of two. Stormwater is no longer proposed for reuse in power plant operations.
- The applicant has reduced the footprint of the power plant facilities from 97 acres to 64 acres with as much as 89 acres potentially restored with native grasses and shrubs.
- The applicant and Washington State Department of Transportation (WSDOT) have come to an agreement to access the power plant site from Highway 12 using Dodd Road during both construction and operation.

1.3 Purpose and Need for the Project

The applicant and Bonneville have separate needs that they are proposing to meet with the proposed power plant and transmission line, respectively.

1.3.1 Power Plant Purpose and Need

Prior to the wholesale restructuring of the power industry, public authorities needed to undertake detailed energy planning to ensure the availability of adequate power supply, and to avoid construction of unnecessary energy facilities. However, in recent years, industry restructuring has resulted in the development of a market-based wholesale power market in the western United States and Canada. This market is expected to encourage the development of efficient power generation facilities to satisfy increasing power demands and to discourage the development of inefficient and unnecessary facilities. In this market, project developers are expected to move forward with construction of projects only when convinced that a demand exists for the power that the facilities would produce. Project financing, likewise, depends on a demonstration of demand and economic benefit.

[INSERT FIGURE 1-1]

[INSERT FIGURE 1-2]

Recent national and regional forecasts project increasing consumption of electrical energy to continue into the foreseeable future, requiring development of new generation resources to satisfy the increasing demand.

The Western Systems Coordinating Council (WSCC) forecasts a 2.1% per year increase in peak power demand between 1999 and 2009 for the Northwest Power Pool (the states of Washington, Oregon, Idaho, and Utah; the Canadian provinces of British Columbia and Alberta; and portions of Montana, Wyoming, Nevada, and California). The Northwest Power Planning Council predicts a 24% probability of one or more "generation insufficiency events" in the Northwest by 2003. This suggests a probability of service interruption approximately five times the currently accepted standard, and it suggests a shortfall in projected energy supply versus demand in the Northwest of between 3,000 and 6,000 MW. The Northwest Power Planning Council also concluded that some part of the needed new resources would be supplied by new generation developed in response to market forces.

In early 2001, the Governor of the State of Washington issued an emergency proclamation stating that the threat to statewide energy supply could jeopardize the public health, safety, and general welfare. The Governor issued an energy supply alert that directed state and local governmental agencies to minimize the injurious economic, social, and environmental consequences of the energy supply crisis. (After two additional extensions to the order through October 22, 2001, the Governor issued no further extensions to the proclamation.) Finally, the reliance of the Northwest region on hydroelectric power generation makes it vulnerable to variations in generation capacity due to weather.

The purpose of Wallula Generation's project is to construct and operate a new generation resource that will meet a portion of existing and future energy loads in the Pacific Northwest.

1.3.2 Transmission Line Purpose and Need

Generation resources typically require interconnection with a high-voltage electrical transmission system for delivery to purchasing retail utilities. Bonneville owns and operates the Federal Columbia River Transmission System (FCRTS), comprising more than three-fourths of the high-voltage (greater than 230 kV) transmission grid in the Pacific Northwest. Bonneville operates the FCRTS, in part, to integrate and transmit "electric power from existing or additional federal or non-federal generating units."[1] Interconnection with the FCRTS is essential to deliver power from many generation facilities to loads both within and outside the Pacific Northwest.

The FCRTS, as a whole, is nearing the limit of how much electricity it can carry. The system has experienced a rapid increase in use with an annual load growth rate of 4.7% over the past five years. At the same time, there has been very little investment in expansion of the transmission line system. Many transmission paths require significant reinforcement or additional capacity through the construction of new transmission lines to accommodate new power generation.

Bonneville intends to base its comparison of alternatives and final decision on the following objectives or purposes:

- provide an adequate, economical, efficient, and reliable transmission system for the Pacific Northwest;

[1] 16 U.S.C. 838b.

- follow Bonneville's Open Access Transmission Tariff;
- comply with federal environmental and energy laws and policies;
- achieve cost and administrative efficiency; and
- minimize impacts to the natural and human environment through site selection and transmission line design.

1.4 Decisions to be Made

This document is a joint State Environmental Policy Act (SEPA)/National Environmental Policy Act (NEPA) abbreviated FEIS that will address the needs of both EFSEC and Bonneville.

EFSEC has jurisdiction over all of the evaluation and licensing steps for siting major energy facilities in the State of Washington. Once approved by the Governor of the state of Washington, EFSEC's Site Certification Agreement acts as an "umbrella" authorization that incorporates the requirements of all state and local laws and regulations. Through its review, EFSEC coordinates the comments and interests of state and local agencies that participate in the EFSEC review process. EFSEC and Bonneville are jointly issuing this EIS, and EFSEC will ultimately make a recommendation to the Governor to approve or deny the Wallula Power Project.

Bonneville will utilize the Final EIS to meet NEPA requirements and will prepare a Record of Decision. If the Governor of Washington approves the Wallula Power Project for construction, then Bonneville needs to decide whether and how to provide transmission service for the power project. Wallula Generation has requested (1) to integrate power from its proposed Wallula Power Project into the FCRTS at a point on the Lower Monumental McNary transmission line in Township 7 North, Range 32 East, and (2) firm point-to-point transmission service from the Wallula Power Project to the John Day and Big Eddy substations[2].

The original proposed action in the Draft EIS consisted of the power plant and associated facilities and a transmission line (the Wallula-McNary transmission line) running from the power plant site approximately 33 miles to the McNary Substation. Recent changes in load forecasts and distribution as a result of changing generating facility schedules have resulted in a reassessment of the need for the entire McNary line. However, the entire line and its impacts are still included in this EIS. Should the Smiths Harbor-McNary segment of the line be proposed for construction in the future, a decision on the NEPA process that would be required to move forward would be made at that time.

[2] Bonneville has adopted the Federal Energy Regulatory Commission's (FERC) *pro forma* open access tariff as incorporated into Bonneville's Open Access Transmission Tariff. Bonneville offers transmission services, including interconnection of generation projects, in accordance with this tariff to all eligible customers on a first-come, first-served basis. Although Bonneville is not subject to FERC's jurisdiction, Bonneville follows its tariff as a matter of national policy. This course of action demonstrates Bonneville's commitment to non-discriminatory access to its transmission system and ensures that Bonneville will receive non-discriminatory access to the transmission systems of public utilities, which are subject to FERC's jurisdiction. Although Bonneville's interconnection of a generator is subject to NEPA review, Bonneville otherwise will not deny interconnection to any eligible customer that complies with Bonneville's financial and technical requirements.

The Federal Energy Regulatory Commission (FERC) would need to decide whether GTN would construct and connect a new 5.9-mile pipeline lateral to an existing gas pipeline located southeast of the project site.

1.5 Description of the Proposed Action

1.5.1 Project Location

The proposed Wallula Power Project would be located in the northwestern portion of Walla Walla County, Washington, approximately 8 miles south of the City of Pasco, 2 miles north of the unincorporated community of Wallula, and 7 miles southeast of the unincorporated community of Burbank. The project site is within the southern half of Section 34, Township 8 North, Range 31 East, and is bordered on the west by U.S. Highway 12 and on the east by the Union Pacific Railroad. Lake Wallula (the Columbia River behind McNary Dam) is located approximately 800 feet west of the generation plant site. The project area is zoned for heavy industrial development and is surrounded by a variety of industrial businesses. The project site generally slopes westward toward the Columbia River and is characterized by gently rolling topography.

The proposed transmission line would originate at the generation plant and generally traverse southeast and then south, where it would connect with the proposed Smiths Harbor Switchyard. From the switchyard, the transmission line route would run southwest along the southern bank of the Columbia River to the McNary Substation. Much of the approximately 33.1-mile transmission line would follow existing transmission line corridors, traversing industrial land, agricultural croplands, undeveloped grass and shrub-steppe habitat, and federally managed lands and wildlife areas.

1.5.1.1 Wallula Power Project and Related Facilities

The Wallula Power Project would consist of the following components (many of which are described in more detail throughout this chapter):

- two independent 650 MW power generation blocks, each consisting of two 167 MW combustion gas turbine-generators, two heat recovery steam generators (HRSGs) each with steel exhaust stacks that are 175 feet high and 20 feet in diameter, and one single reheat condensing steam turbine-generator;
- two wet mechanical-draft cooling towers;
- two circulating water supply systems including condensers;
- one emergency diesel generator, diesel-fired fire pump, and aboveground 5,600-gallon diesel fuel tank;
- two aboveground 500-gallon fuel tanks (for diesel oil and gasoline);
- a new 1,200 gallon per minute (gpm) capacity deep groundwater supply well, well connections, and water storage tanks;
- one 5.14-million-gallon raw water tank;
- one 1.173-million-gallon raw water tank;

- two 15,000-gallon aboveground aqueous ammonia storage tanks;
- two 225,000-gallon demineralized water storage tanks;
- one 372,300-gallon service water storage tank;
- one brine concentrator;
- two 11-acre lined evaporation ponds;
- one stormwater detention pond;
- six step-up and auxiliary transformers;
- one 45,000 pound per hour auxiliary boiler and building; and
- a turbine building, water treatment building, warehouse, gas metering building, and administrative building.

Project ancillary facilities would include

- a permanent county access road linking the project site to Dodd Road;
- a 4.6-mile makeup water supply pipeline to interconnect the proposed project with the existing 10 Boise Cascade Corporation fiber farm water wells;
- an approximately 33.1-mile, 500-kilovolt (kV) electrical transmission line and switchyard interconnection; and
- a 5.9-mile natural gas pipeline interconnection.

The Port of Walla Walla currently owns the project site. The applicant has a real estate option on the property and will exercise that option contingent upon financing and obtaining the Site Certification Agreement and other approvals.

Bonneville has determined that reliable distribution of electricity generated by the Wallula Power Project would require construction of a new 500 kV transmission line, construction of a new switchyard, and upgrades to the existing McNary Substation. The new line would comprise an initial segment (Wallula-Smiths Harbor segment) that would be approximately 5.1 miles long and would interconnect with a new switchyard (Smiths Harbor Switchyard). A second approximately 28-mile segment (Smiths Harbor-McNary segment) would extend to the McNary Substation.

In addition, the project would need a supply of natural gas. If the project were approved, a 5.9-mile pipeline interconnection would be engineered, constructed, owned, and operated by PG&E Gas Transmission-Northwest (GTN) to provide natural gas to the project site.

Generation Plant Facilities and Process

The proposed generation plant is comprised of a 1,300 MW, natural gas-fired, combined-cycle combustion gas turbine system consisting of two independent 650 MW power “blocks” with backup systems (including a direct current [DC] battery backup power system and an emergency diesel oil-fired generator) to maintain overall plant reliability and availability (see Figure 1-3).

[INSERT FIGURE 1-3]

In this type of electrical generation process, natural gas would be burned to fuel a gas turbine engine that would drive a generator to produce electrical energy. Hot exhaust gas produced by the combustion turbine would be used to boil water in a heat recovery steam generator (HRSG). Steam produced by the HRSG would turn another turbine generator to produce additional electrical energy. Each HRSG would be provided with a 175-foot-tall steel exhaust stack, 20 feet in diameter. The stacks would include continuous emissions monitoring systems and sampling ports, exterior ladders and platforms, lighting, and grounding systems.

Cooling System

Steam leaving the steam turbine would enter the condenser. The water-cooled condenser would use circulating water to condense the exhaust steam to "condensate" (water). Condensate would be pumped from the condenser back to the HRSG feedwater system. The water from the circulating water-cooling system would be pumped to the wet mechanical-draft cooling tower, where the heat would be emitted to the atmosphere. The wet mechanical-draft cooling tower would produce cool water in the closed loop circulating water system by spraying hot circulating water over a large surface, or "fill," and using a fan to pull air through the fill and falling water. As part of this cooling process, a portion of the circulating water would evaporate and need to be replaced.

Heat transfer through water evaporation occurs at lower temperatures than heat transfer through dry cooling. This temperature difference leads to more efficient heat rejection from the cooling water.

Approximately 168,000 gpm of circulating water would be required to pass through the tube side of each condenser to condense the exhaust steam at maximum plant load. An additional closed loop cooling system would use 4,000 gpm of the circulating water to remove heat that would be produced by the closed cooling water system for each unit.

A sidestream water treatment system would be used to control levels of silica and calcium in each cooling tower basin. A portion of the treated water would be recycled back into the circulating water system, reducing the amount of raw water needed as makeup to the cooling towers. The softened/filtered water would then be directed to either the cooling tower forebay or the demineralized water makeup systems.

Sludge generated by the sidestream treatment system would be removed using waste sludge forwarding pumps. The sludge would be transferred to a single softener sludge filter press for removal of most of the water. A polymer injection skid with a feed tote and feed pumps would feed polymer into the waste sludge stream prior to the filter press. The removed water would be returned to the softener; the sludge would be stored in sludge storage bins prior to shipment to a licensed offsite landfill.

Power Plant Cycle Chemical Feed and Blowdown System

Each HRSG would be supplied with continuous blowdown tanks where the quality of power plant cycle water would be maintained by "blowing down" a portion of the power plant cycle water. The quenched blowdown water would be routed to the cooling tower basin.

Power plant cycle water quality would be maintained using several chemical feed systems.

- Oxygen scavenger and amine would be fed to the condensate system for oxygen scavenging and pH control. Both chemicals would be injected into the condensate pump discharge piping.
- The phosphate boiler treatment would be fed to the boiler drums of the HRSG to maintain desired boiler water pH and phosphate residual.
- Oxygen scavenger and amine also may be fed during wet lay-up of the cycle, when the cycle is filled with condensate-quality water from the demineralized water storage and supply system.

Brine Concentrator (Evaporator) System

Concentrated brine (wastewater) from the evaporator would be transferred directly to two 11-acre evaporation ponds. The evaporation ponds would include a 60-mil HDPE liner over a geosynthetic clay liner. A leakage detection system, consisting of a pipe collection system located under the upper two liners, would be provided to collect any leakage into a sump. Existing observation wells and the sump provide the assurance that all leakages are either collected or identified. A final 30-mil liner would be installed under the collection pipe system. Facility personnel would monitor the leakage detection system to ensure the integrity of the evaporation pond liners. The sludge collected in the evaporation ponds would be removed and disposed in a licensed landfill periodically.

Wastewater and Stormwater Collection, Treatment, and Discharge

HRSG blowdown, oil/water separator effluent, and equipment drains each would be pumped to the cooling tower forebay from their individual sources. Evaporator (brine concentrator) distillate would be directed to the clearwell, and chemical spills would be contained in bulk storage areas. Laboratory and water treatment building drains would be drained to the chemical lab chemical waste sump. When the sump is full, the waste would be pumped to the recovered water equalization tank.

Wastewater collected from areas where the potential for oil contamination exists would be routed through oil/water separators. These wastewaters include runoff from the turbine area drains, facility services drains, and building drains (including stormwater from developed areas). Miscellaneous drainage from the water treatment area would be collected by floor drains, pipes, trenches, and sumps and routed to the oil/water separators for processing.

The oil/water separators would remove oil contamination by media adsorption. The oil-soaked media would be retained for eventual removal and disposal off-site by a licensed contractor. Water discharge from the oil/water separators would be routed to the unlined stormwater detention pond

The stormwater detention pond would also receive stormwater from the undeveloped facility area. The water collected in this pond would entirely infiltrate into the ground and/or evaporate.

Sanitary Waste Stream (Sewage)

All sanitary wastes would be collected and directed to an on-site sanitary waste system. Treated liquid effluent from the system would flow to a leaching field. Collected solids in the holding tank would be periodically removed by a sanitary waste hauler and disposed of at a local

wastewater treatment facility or publicly owned treatment works that is licensed to handle these sanitary wastes. No power plant drains would be connected to the sanitary waste system, eliminating the potential for contamination of the leaching field.

Power Plant Electrical Supply

During normal power plant operation, auxiliary alternating current (AC) power systems would be supplied from the low side of each auxiliary transformer for service to each power block via two 18 kV to 4.16 kV oil-filled station service transformers. Each station service transformer would supply power to two separate 4.16 kV bus systems. The 4.16 kV supply system would provide power to equipment such as the large motors, with the load center transformers rated at 4.16 kV to 480-volt distribution. If located indoors, the load center transformers would be dry transformers. If located outdoors, the transformers would be oil-filled.

The power plant would be supplied with a direct current (DC) battery backup power system for use under abnormal or emergency conditions or when the AC power supply system was unavailable. An emergency diesel oil-fired generator would be supplied to provide power to key lighting loads, AC lube oil systems, and AC turbine gear systems for large shaft equipment in case of a complete plant electrical failure (blackout). No full power plant "black start" (startup with no external power available) capacity would be supplied. The emergency diesel generator would be located in the auxiliary boiler building.

Diesel and Gasoline Fuel Storage

A diesel fuel oil system would be located on-site for supplying diesel oil to the emergency diesel generator and the diesel fire protection pump. The diesel system fuel would be supplied from a 5,600-gallon aboveground diesel fuel tank located adjacent to the auxiliary boiler building. In addition, the facility would have a single 500-gallon aboveground diesel fuel tank and a single 500-gallon aboveground gasoline tank to service facility vehicles.

Water Use and Water Rights

It is estimated that the maximum project water usage would be 4,087 gpm, with water usage averaging 3,171 gpm on a yearly basis. Water supply for the plant would be acquired from various sources.

First, the applicant has entered into a purchase option agreement with Boise Cascade Corporation under which it would purchase a portion of a hybrid cottonwood fiber farm and its associated shallow groundwater rights. This groundwater is produced from 10 existing shallow wells with completion depths ranging from 100 to 150 feet below the surface. The shallow aquifer tapped by these wells discharges to the Columbia River. A water supply pipeline would be constructed from these wells to the Wallula Power Project. The distance from the Wallula Power Project to the most remote fiber farm well would be approximately 4.6 miles (Figure 1-4). Pursuant to the associated water rights certificates and water rights requirements of the Washington Department of Ecology (Ecology), the existing Boise Cascade Corporation fiber farm wells would deliver to the Wallula Power Project a total allowable instantaneous pumping rate of 9,485 gpm up to an anticipated volume limited to 5,024 acre-feet per year.

Second, the applicant has entered into a purchase option and lease option agreement with the J.R. Simplot Company that would allow the purchase of conservation easements and associated water rights, and, if needed, the lease of additional agricultural lands and associated water rights. J.R. Simplot Company owns farmlands used to produce feed for the 40,000 head of cattle located at the feedlot adjacent to the proposed power plant. These water right purchase options are expected to be for an instantaneous pumping rate of 3,285 gpm up to a maximum of 1,425 acre-feet per year after Ecology transfer requirements are satisfied. The point of withdrawal for these water rights would shift from the current Legrow Irrigation District McNary Pool surface withdrawals, to the Boise Cascade Corporation shallow groundwater well withdrawals.

Third, additional water supply would also be provided by on-site deep groundwater wells. The applicant would purchase the on-site well groundwater rights from the Port of Walla Walla. One deep well currently exists at the project site and a second deep well would be installed to provide a backup system. The water right provides for an instantaneous pumping rate of 1,200 gpm up to a total of 1,800 acre-feet per year. Thus, the total water right available is an instantaneous pump rate of 13,970 gpm and a total annual water use of up to 8,429 acre-feet per year.

Various water tanks would be built for the project. In addition to the main supplies described above, a raw water tank would be located on-site to store 5.14 million gallons of water to provide 20-hour emergency backup water supply. No pretreatment would be required from the wells to the raw water storage tank. A service water storage tank with a capacity of 372,300 gallons would be used to store makeup water for the demineralized water treatment system, the plant potable water supply, and the plant service water system. In addition, water stored in the service water storage tank would be used for fire suppression. Two on-site 225,000-gallon tanks would store treated water from the demineralization system and would supply water for boiler water makeup, the closed cooling water system makeup, and the other demineralized water use systems.

Project Site Access

The applicant has met with state and county transportation officials to discuss project site ingress and egress and roadway modifications and additions. The Washington State Department of Transportation (WSDOT) is engaged in the early design stages of the proposed widening and realignment of U.S. Highway 12 to four lanes from south of the Snake River Bridge to Depot (Attalia) Road, and eventually to Wallula Junction. The applicant would continue to work closely with Walla Walla County, the Port of Walla Walla, and WSDOT staff to determine the best alternatives to meet current and future state and county access road needs.

In earlier stages of project planning, the applicant proposed the building of a temporary at-grade construction access road with an intersection at U.S. Highway 12 just south of the project site. However, WSDOT was opposed to this alternative and suggested the continued use of Dodd Road as the primary access route as an alternative to this plan. The applicant has since accepted the WSDOT proposal to build a single access road from Dodd Road for both construction and operation.

The new access road would extend between the project site and Dodd Road, designed to county collector or arterial standards. This road would be the primary project site access for construction and operation, as well as a northern link to a future county collector roadway. The applicant has also requested installation of temporary traffic signals at the Dodd Road/U.S. Highway 12 intersection for the construction period. The traffic signals would slow traffic in the vicinity of the project site and allow turning movements in and out of the project site.

[insert Figure 1-4]

1.5.1.2 GTN Natural Gas Pipeline Lateral

GTN would engineer, construct, own, and operate an estimated 5.9-mile natural gas pipeline to interconnect with existing natural gas pipelines (also owned by GTN) located southeast of the proposed generation plant (see Figure 1-4). Interconnection would provide firm delivery of up to 175,000 dectherms per day (Dth/day) of natural gas from Alberta, Canada, to the project site. FERC would be responsible for siting the 5.9-mile natural gas pipeline. Environmental impacts associated with the proposed natural gas pipeline would be assessed under a separate NEPA document.

1.5.1.3 Bonneville Electrical Transmission Line and Substation

Bonneville proposes to design, construct, own, and operate a 500 kV transmission system from the proposed 1,300 MW Wallula Power Project to Bonneville's existing McNary Substation in Umatilla County, Oregon. The system would consist of an approximately 5.1-mile-long transmission line from the proposed generation plant to a new switchyard near Smiths Harbor (Wallula-Smiths Harbor segment) and a new approximately 28-mile-long transmission line from the Smiths Harbor Switchyard to the McNary Substation (Smiths Harbor-McNary segment).

The facilities, equipment, and features to be constructed in the transmission line project include

- steel lattice transmission tower structures, averaging 145 feet high (1,150-foot span), to support conductors, insulators, fiber optic cable, and ground wire;
- counterpoise for lightning protection (buried around the tower structure);
- right-of-way purchases for transmission line corridor segments and access roads;
- 70 to 80 new spur roads, each approximately 250 feet long;
- 11 miles of new access roads;
- 5 culverts;
- 28 new gates;
- installation at the McNary Substation (and at the Wallula Substation by the applicant) of equipment including a power circuit breaker, a disconnect switch, bus tubing and pedestals, and a substation "dead end structure;"
- a transmission "dead end structure" at both substations; and
- a switchyard at the Smiths Harbor site, including all equipment listed above, plus a switchyard fence and crushed rock surfacing.

Two basic types of 500 kV steel lattice structures would be used: tangent, or light-angle, structures, and dead end structures. Approximately 23 structures would be required along the Wallula-Smiths Harbor segment, and approximately 140 structures would be required along the Smiths Harbor-McNary segment. Configurations for the proposed new line in relationship to existing lines are illustrated in Figure 1-5.

Wallula-Smiths Harbor Segment

The Wallula-Smiths Harbor segment is needed to connect the Wallula Power Project to the existing Federal Columbia River Transmission System Grid. There are no existing high voltage transmission lines owned or operated by Bonneville or other utilities along this route. Much of this segment would be on land with rights either owned or optioned by Wallula Generation, LLC.

Approximately 25 structures would be erected on the Wallula-Smiths Harbor segment. Most of these structures would be the delta design averaging 145 feet in height. The average span distance between structures would be approximately 1,150 feet. Five dead end structures would be needed for connecting to the substation and switchyard and at locations where the transmission line turns at sharp angles.

Smiths Harbor-McNary Segment

The Smiths Harbor-McNary segment would be constructed to the west and north of an existing 500 kV Bonneville transmission line. Approximately 140 structures would be needed for the Smiths Harbor-McNary segment. Approximately 123 of these would be delta design tangent and light-angle structures, one would be a flat configuration structure; two would be heavy dead-end flat configuration structures where the line crosses the Walla Walla River, and 14 would be heavy dead-end structures of the delta design. The average span distance between structures would be approximately 1,150 feet. The average structure height would be approximately 145 feet for the delta design and approximately 100 feet for the flat configuration.

Smiths Harbor Switchyard

The Smiths Harbor Switchyard would be a new facility in the transmission system (see Figure 1-2 for switchyard location). A switchyard serves the same functions as a substation except that it does not regulate voltage fluctuations. In addition to the equipment listed for the substation, a chain-link fence with barbed wire on top would provide security and safety, and a 3-inch layer of crushed rock selected for its insulating properties would be placed on the ground within the switchyard to protect operation and maintenance personnel from electrical danger during switchyard electrical failures.

Right-of-Way

Bonneville would acquire any additional easements for right-of-way needed for the transmission lines or access roads from the landowners. The easements would give Bonneville the rights to construct, operate, and maintain the line and access roads in perpetuity. A right-of-way of at least 150 feet wide would be purchased for the 5.1-mile Wallula-Smiths Harbor segment. Additional right-of-way for the Smiths Harbor-McNary segment would range from 140 feet to 200 feet in width. Approximately 19 miles of this segment would parallel the existing Bonneville 500 kV transmission line, requiring the acquisition of additional right-of-way 200 feet in width. Nine miles of this segment would parallel an existing PacifiCorp 230 kV transmission line, which would require the acquisition of 140 feet of additional right-of-way.

The rights-of-way, usually easements, for 14 new access roads would need to be acquired from property owners. Fifty feet of right-of-way would be acquired for new road access and 20 feet of additional right-of-way would be acquired for existing access roads.

[INSERT FIGURE 1-5, page 1]

[INSERT FIGURE 1-5, page 2]

[INSERT FIGURE 1-5, page 3]

[INSERT FIGURE 1-5, page 4]

[INSERT FIGURE 1-5, page 5]

Access Roads

The project would use about 60% of the existing Bonneville Lower Monumental–Wallula transmission line road access system with minimal improvements. Approximately 16 miles of these roads would require reconditioning, minor rock surfacing, and widening. Minor reconstruction and rock surfacing of five existing roads, totaling approximately 3 miles, would be needed for access to the new Smiths Harbor Switchyard site and Wallula-Smiths Harbor segment of transmission line.

Construction of 70 to 80 spur roads (less than 250 feet long) on existing right-of-way would be needed for access to new structure sites. Construction of about 11 miles of new roads within the right-of-way would be needed to support construction of the new structures. Approximately 28 new gates would also need to be installed, most of which would replace existing barbed wire gates.

Culverts

Overall, placement of about five culverts would be required. Four culverts would be installed for seasonal runoff control and the fifth culvert would replace an existing culvert that crosses an irrigation ditch. One of the four culverts for seasonal runoff control is a 60-inch-diameter culvert that would be placed in a small stream just east of Highway 207. This culvert placement would require approximately 50 tons of fill material to allow placement of the roadbed across the stream. Drain dips and water bars would not be required except in a few instances in areas that may carry seasonal runoff.

1.5.2 Schedule and Workforce

The schedule and workforce required to build and operate the Wallula Power Project is estimated as described below.

Construction of the **generation plant** is expected to last approximately 24 months and would employ up to a peak of 520 workers in a monthly period. The construction schedule would depend upon the date the Governor approves the Application for Site Certification and upon the date all required federal permit approvals are obtained. Operation of the generation plant would employ approximately 32 personnel (the generation plant would be staffed 24 hours per day, 7 days per week). A temporary workforce with appropriate skills would also be used during major maintenance or other nonroutine operational work.

Construction of the **makeup water supply pipeline** would require a workforce of approximately 28 workers over a period of 2 months, and would occur at the end of the first year of plant construction. The applicant would operate and maintain makeup water supply wells and the makeup water supply pipeline.

Construction of the **transmission line, switchyard,** and associated facilities would need to begin in the fall of 2002 to accommodate the anticipated commercial startup of the Wallula Power Project in the fall of 2004. The 5.1-mile Wallula-Smiths Harbor segment of transmission line would take 2 months to construct during the summer of 2003. The Smiths Harbor Switchyard would require 18 months to construct. Construction would need to begin in the fall of 2002 to meet the projected energization date of March 2004. For the Smiths Harbor-McNary segment of

transmission line and upgrades to McNary Substation, construction would need to occur in a compressed time frame. For example, two crews could complete two separate 10- to 15-mile segments in a period of approximately 6 months with as many as 120 workers involved. Bonneville's inspection and maintenance staff would check towers, switchyard, and activities in the right-of-way.

The **natural gas pipeline** would take approximately 4 months to complete and would be expected to add an average of 37 additional workers per month. Construction would likely begin in July 2003 and finish in October 2003. GTN would provide regular surveillance and maintenance of the natural gas supply line in compliance with applicable U.S. Department of Transportation and Washington Utilities and Transportation Commission regulations and permit conditions.

1.5.3 Costs

Construction costs of the Wallula Power Project (not including the transmission line and associated facilities) are estimated to be $731.9 million. The total estimated engineering, design, construction, and startup cost for the transmission line project is $56 million (approximately $21 million for the Wallula-Smiths Harbor segment and the new Smiths Harbor Switchyard, and $35 million for the Smiths Harbor-McNary segment).

Operating costs of the Wallula Power Project would vary depending upon the fluctuating prices of items such as fuel, raw water, and other consumables and services. Fixed costs would include items such as direct labor, insurance, property taxes, capital improvements, and others.

The estimated annual operation and maintenance costs electrical transmission lines are $13,300 per year for the Wallula-Smiths Harbor segment and $42,390 per year for the Smiths Harbor-McNary Segment, totaling $55,690 per year for the transmission line project. The estimated annual cost for maintenance of the Smiths Harbor Switchyard would be $95,310, and maintenance of additional equipment at McNary Substation would cost $31,770. Total annual maintenance cost for the transmission line and substation facilities is estimated at $182,770.

1.6 Project Alternatives

1.6.1 No Action Alternative

The No Action Alternative would result in no construction or operation of a 1,300 MW electric generation plant at the project site. It also would preclude the construction and operation of other related projects, including the Bonneville electrical transmission line and substation, the Smiths Harbor Switchyard, the water pipeline, and the gas lateral.

The No Action Alternative would avoid environmental impacts resulting from construction and operation of the generation plant. However, because the site is already zoned industrial, future industrial development could occur at the site. Finally, the No Action Alternative would eliminate the local benefits to Walla Walla County and nearby local communities in the form of tax revenues, opportunities for employment, and mitigation funding provided by the applicant to various organizations.

1.6.2 Alternatives Considered

Two alternatives to the proposed action are evaluated in this document.

- **Alternative Tower Height and Longer Span Design.** Bonneville is considering increasing the height of the standard transmission towers proposed along a portion of the route. This alternative design segment would potentially run from just south of Wallula Junction to a point approximately parallel to milepost 195 on U.S. Highway 730. This would allow for greater distances between towers, and would potentially reduce the number of structures needed, the area of land disturbed, the amount of steel used, and overall construction costs. (See Figure 1-2 for an illustration of the area where longer spans are being considered.)
- **Alternative Alignment near McNary Substation.** Due to extensive development occurring in the approach to the McNary Substation, a slightly different alignment is being considered to reduce potential route congestion issues. (See Figures 1-6 and 1-7.)

Consideration was also given to the following alternatives, which were rejected for various reasons:

- selecting an alternative generation plant location,
- building a larger or smaller generation plant,
- utilizing alternative power generation technologies (including alternative turbine-generator technologies, fuel cells and magnetohydrodynamics, coal, and nuclear, hydroelectric, geothermal, solar, and wind power),
- selecting a different cooling system design,
- selecting a different makeup water supply alternative,
- selecting alternative transmission line routes,
- selecting different site access alternatives, and
- selecting different alternative natural gas pipeline routes.

Please see Section 2.3, Alternatives, in the Draft EIS for a more detailed discussion of the project alternatives listed above.

1.7 Public and Agency Meetings and Opportunities for Involvement

When siting a new energy facility, EFSEC is required to hold a public information meeting in the county in which the project would be located. EFSEC and Bonneville hosted public open houses in Burbank and Walla Walla on the evenings of October 18 and 19, 2000, respectively. The intent of this round of meetings was to record community members' concerns, questions, and comments regarding the Wallula Power Project in a preapplication review process. Similarly, a meeting was held in Pasco, Washington, on the morning of October 19, 2000, to provide agencies the opportunity to offer comments. Bonneville also hosted a public meeting jointly with EFSEC in Umatilla, Oregon on June 7, 2001.

EFSEC and Bonneville co-hosted a second round of agency and public EIS scoping meetings on October 2, 2001. The agency meeting was held in Pasco and the public scoping meeting was held in Burbank.

Two public meetings were held following the release of the Draft EIS to collect comments on the document. The first meeting was in Burbank on March 13, 2002 and the second in Umatilla on March 14, 2002.

At public scoping and agency meetings, the applicant presented a description of the project, reasons why the proposed site or location was selected, and a short summary of anticipated environmental, social, and economic impacts. EFSEC staff then described the state's siting process. At the two October 2001 meetings, the Counsel for the Environment, a Washington State Assistant Attorney General who represents the citizens of Washington State before EFSEC, also made a brief presentation.

Project documents are available to the public through EFSEC and Bonneville websites and in local and state libraries. Adjudicative hearings were held by EFSEC on July 16 through 19, 2002. A public meeting was held to receive comments on July 16, 2002 in Walla Walla. A hearing to receive public comments on the draft Notice of Construction and draft Prevention of Significant Deterioration permits for the power generation facility was held on August 8, 2002, in Burbank, Washington.

1.8 Coordination and Consultation with Agencies and Indian Tribes

Agencies and Indian Tribes represented at the above-mentioned meetings included:

- Bonneville;
- EFSEC;
- U.S. Fish and Wildlife Service (USFWS);
- Bureau of Land Management;
- Washington State Department of Transportation (WSDOT);
- Washington Department of Ecology;
- Washington Department of Natural Resources (WDNR);
- Washington Department of Agriculture;
- Washington Department of Fish and Wildlife;
- U.S. Bureau of Reclamation;
- Confederated Tribes of the Umatilla Indian Reservation (CTUIR);
- Walla Walla County Fire District 5; and
- Walla Walla County Sheriff's Department.

The applicant and Bonneville, along with their consultants, have consulted with the National Marine Fisheries Service (NMFS) to identify whether any fish species listed or potentially listed as threatened, endangered, or candidate under the Endangered Species Act occur within the project area. Project site-specific information on federal status species and state priority species and habitats was also requested from the USFWS, the Washington Department of Fish and Wildlife (WDFW), and the WDNR Natural Heritage Program.

[INSERT FIGURE 1-6]

[INSERT FIGURE 1-7]

Bonneville and its consultants have also consulted with local Indian Tribes and other interested parties. Bonneville initiated a number of meetings with the local Indian Tribes during the development of the transmission line proposal. The proposed transmission line also falls within the ceded lands of the CTUIR. Other interested Tribes include the Yakama Nation, the Nez Perce, and the Wanapum Band of the Yakama Nation. Additional Indian Tribes consulted include the Confederated Tribes of the Colville Indian Reservation and the Warm Springs Indians.

Bonneville and its consultants have consulted with both the Washington and Oregon state historical preservation officers (SHPOs), as required under Section 106 of the National Historic Preservation Act. Bonneville has notified the SHPOs that the proposed transmission line is an "undertaking" as defined in 36 CFR 800.16(Y), and that Bonneville is the lead federal agency.

Bonneville has also met with agency representatives from the U.S. Army Corps of Engineers and Bureau of Land Management and will continue to do so throughout project planning and permitting.

1.9 Summary of Potential Impacts and Mitigation Measures

Table 1-1 summarizes potential impacts resulting from the proposed action and alternatives anticipated for each of the resource areas (earth, water, etc.). The table outlines the potential impacts that could occur during construction, operation, and maintenance of the proposed action and the alternatives. See Appendix A for a summary of mitigation measures proposed by the applicant and Bonneville for the Wallula Power Project and transmission line.

Table 1-1. Potential Impacts of the Wallula Power Project

Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives
EARTH		
Construction of the proposed plant facilities, pipelines, and transmission lines would have minor impacts on geology since most excavation and grading activities would involve only near-surface geologic units. Increased potential for runoff and soil erosion.	Potential seismic hazards. (Project design and mitigation would reduce risks.) Slightly increased potential for erosion (erosion impacts would more likely occur during construction). Minimal impacts on geology, soils, topography, unique features.	**Alternative Transmission Structure and Longer Span Design:** Approx. 17 fewer transmission towers would be required and less earthwork would be needed, reducing the potential for erosion and sedimentation. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts. Site could be developed in future for a different industrial project.
AIR QUALITY		
Emissions of fugitive dust (PM10) and exhaust gas from construction equipment and vehicles. Some odors resulting from paint, adhesives, materials.	The plant would release emissions of PM10 in a PM10 nonattainment area. The applicant proposes to offset 110% of the production of 303 tons per year of particulates from the plant through purchasing or leasing up to 640 acres of off-site active farmland (in addition to the 175-acre plant site) and retiring it from agricultural use. With the mitigation proposed, the maximum modeled concentrations of SO2, NO2, and PM10 would be below significant impact levels, as would toxic air pollutants. This project by itself is not expected to contribute significantly to regional haze. Cooling tower plumes would have no significant impact beyond power plant facility boundary. The power plant would emit up to 4.2 million tons per year of greenhouse gases.	**Alternative Transmission Structure and Longer Span Design:** Same as proposed action. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts. Cultivated acreage that is currently contributing to PM10 would not be retired for this project.

Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives
WATER RESOURCES		
Increased runoff and sedimentation impacts on local surface water. Increased siltation potential, especially where culverts are needed for access road crossings of streams. Potential spillage of contaminants into local surface water bodies.	Potential spills or release of contaminants used for plant operation/maintenance. Public water supplies would not be impacted by plant operation. Potential instream flow benefit to Walla Walla and Columbia Rivers because of reduction in actual water withdrawals compared to current levels. Groundwater pumping may exacerbate problems at the Iowa Beef Processors well.	**Alternative Transmission Structure and Longer Span Design:** Constructing approx. 17 fewer towers would result in less soil disturbance, less excess soil placement, and less road construction, thus reducing the potential for surface water degradation by sedimentation. Potential for spills or release of hazardous materials used during construction would be slightly reduced. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts. No net benefit to river flow through water rights withdrawals.
WETLANDS AND VEGETATION		
Generation plant: Permanent conversion of approx. 1 acre of wetland vegetation and 3 acres of irrigation pond to native upland habitat. Permanent conversion of 125 acres of cropland, 20 acres of disturbed shrub-steppe, and abandoned orchard to industrial facilities or grass/shrub. **Plant access roads:** Permanent conversion of 10 acres of existing irrigated cropland and 2 acres of native shrub/grasses for placement of county access road (5 additional acres would be disturbed during construction but returned to cropland or native habitat). **Water/gas pipelines:** Temporary impact on 4.5 acres of disturbed shrub-steppe and 22 acres of poplar stands for water pipeline. Temporary disturbance of 59 acres of shrub-steppe, poplar stands, and existing utility corridor for gas pipeline. **Transmission line:** Approx. 70.2 acres cleared for new or improved access roads. Temporary disturbance of 40.9 acres for tower installation, with 8.3 acres permanently converted. Approx. 17.6 acres temporarily disturbed during conductor placement. Approx. 7 acres of shrub-steppe vegetation permanently removed for Smiths Harbor Switchyard. Line would traverse 35 to 37 acres of potential wetland.	Indirect impacts on wetlands as a result of stopping irrigation on project site. Temporary clearing or trampling of vegetation possible during maintenance.	**Alternative Transmission Structure and Longer Span Design:** Potential reduction of impacts because approx. 17 fewer towers would be constructed. **Alternative Alignment near McNary Substation:** Alternative route east of existing Lower Monumental line could disturb a wetland with one tower location. **No Action Alternative:** No impacts.

Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives
AGRICULTURAL CROPS AND LIVESTOCK		
Generation plant: Permanent conversion of 125 acres of agricultural cropland (currently alfalfa) to industrial facilities and grass/shrub-steppe habitats. This represents a small percentage of available cropland in Walla Walla County. **Water/gas pipelines:** Temporary impact on 24 acres of fiber farm, 3 acres of farmland, and 20 acres of vacant land during water supply pipeline construction. Temporary disturbance to cottonwood plantation and 12 crop circles during construction of natural gas pipeline. **Transmission line:** Temporary disturbance of 6.8 and 4.0 acres of nonirrigated and irrigated crops, respectively, during placement of towers. Permanent disturbance to agricultural land (1.4 acres of nonirrigated and 0.8 acre of irrigated land) for placement of structures. Another 4.5 acres temporarily disturbed at pulling and reeling sites. A maximum of 27.8 acres of agricultural land removed for construction and improvement of access roads.	Approx. 1,700 acres of cottonwood plantation and irrigated cropland would be purchased or leased as part of water rights acquisitions for the plant. Use of this land for irrigated agriculture would be converted to dryland grasses/shrubs, fallow land, or grazing land for the life of the project. 640 acres of land would be purchased and retired from agricultural use for offset of PM10 emissions.	**Alternative Transmission Structure and Longer Span Design:** Slight reduction in acreage of agricultural land permanently impacted because fewer transmission towers would be built. **Alternative Alignment near McNary Substation:** Amount of pasture land disturbed would be similar for both alignments. **No Action Alternative:** No impacts.
WILDLIFE		
Temporary and permanent loss of wildlife habitat and displacement of wildlife species during construction of project facilities. Potential localized impacts on Ord's kangaroo rats during construction. Noise and visual disturbance during construction could impact wildlife. Potential mortality of nestlings if clearing occurs during nesting season.	Potential bird collisions with HRSG stacks and transmission lines. Noise and visual impacts on wildlife during maintenance activities.	**Alternative Transmission Structure and Longer Span Design:** Use of fewer, taller transmission towers would reduce ground-level habitat impacts (less acreage would be impacted). **Alternative Alignment near McNary Substation:** Alternative approach could impact wetland/riparian habitat at one tower location. **No Action Alternative:** No impact. No enhancement of habitats along Walla Walla River through riparian vegetation replanting associated with the project.
FISHERIES		
Permanent dewatering of pond A would remove the pond as fish habitat but reduce future mortality of fish that currently enter through unscreened pump intakes. Installation of large culvert and associated fill would be needed at the unnamed stream east of Highway 207.	Potential instream flow benefit to Walla Walla and Columbia Rivers because of reduction in actual water withdrawals compared to current levels.	**Alternative Transmission Structure and Longer Span Design:** Impacts similar if not slightly less than proposal because of reduced erosion potential. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts.

Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives
ENERGY AND NATURAL RESOURCES		
Materials consumed: Diesel fuel: 520,000 gallons (total) Gasoline: 130,000 gallons (total) Electricity: 14,300 megawatt hours (MWh) per week Water: 5,000 gpd (average); 45,000 gpd (maximum) Aggregate: 14,000 tons (total) No impact on local, regional, or national availability of material expected.	**Materials consumed:** Diesel fuel: 12,000 gallons per year Gasoline: 4,800 gallons per year Water: 4,087 gpm (maximum); 3,171 gpm (average) Natural gas: 157.9 million cf/day (average) No impact on local, regional, or national availability of material expected.	**Alternative Transmission Structure and Longer Span Design:** No difference in impacts compared to proposed action. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No consumption of resources or generation of electricity to meet demand. New energy facilities would likely be built at another location.
NOISE		
Construction activities would temporarily increase noise levels in area (but would seldom exceed ambient background noise levels at the residence nearest the power plant). Potential temporary loud noise during steam cleaning of piping systems. Use of a helicopter and potential daytime blasting to erect transmission towers would create temporary noise impacts at homes and businesses near tower locations.	Sound levels during operation would be audible, but below required nighttime levels.	**Alternative Transmission Structure and Longer Span Design:** No difference in impacts compared to proposed action. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts.
LAND AND SHORELINE USE		
The proposed power plant may conflict with existing residential uses immediately northwest of the project site. Construction noise may be audible at recreation areas. Potential for short-term loss of access at fishing areas at Wallula Habitat Management Unit on Walla Walla River. Project would be consistent with land use plans and policies. Permanent conversion of 125 acres of agricultural land into industrial facilities and grass/shrub-steppe at the plant site. Permanent removal of 55.5 acres of shrub-steppe/grassland and 30.0 acres of agricultural land along transmission line right-of-way as a result of tower placement and construction of access and spur roads.	Project could indirectly increase attractiveness of industrial land in the area for development. Potential for discouragement of recreational use at Wallula Habitat Management Unit and Wanaket Wildlife Area if transmission line towers are needed in these areas. 640 acres of land would be purchased and retired from agricultural use for offset of PM10 emissions.	**Alternative Transmission Structure and Longer Span Design:** Slightly less acreage would be impacted compared to proposal. **Alternative Alignment near McNary Substation:** Alternative would have greater potential to affect future commercial development and traffic improvements. **No Action Alternative:** No impacts.

Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives
VISUAL RESOURCES/LIGHT AND GLARE		
Presence of heavy equipment and construction lighting would temporarily reduce quality of visual environment, resulting in low to moderate overall visual impacts.	Low to moderate visual and light/glare impacts expected, lessening at the generation plant site as landscaping and vegetative screening mature. Periodic visibility of plumes from cooling tower and turbine.	**Alternative Transmission Structure and Longer Span Design:** Visual impacts slightly higher where taller structures would be used. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts.
POPULATION, HOUSING, AND ECONOMICS		
Local construction industry appears large enough to supply all or most of the labor needed for the project. Impacts on housing not expected. Plant construction would generate approx. $40.1 million in sales tax revenues for all jurisdictions over 2 years, with minor increase in service costs to local governments (e.g., law enforcement, fire protection, road maintenance).	Long-term net fiscal surplus would probably result for all jurisdictions receiving tax revenue from the project.	**Alternative Transmission Structure and Longer Span Design:** No difference in impacts compared to proposed action. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts.
PUBLIC SERVICES AND UTILITIES		
Increased pressure on local fire fighting capacity (specifically Walla Walla County Fire Protection District 5). Slight increase in need for law enforcement or emergency medical services.	None.	**Alternative Transmission Structure and Longer Span Design:** No difference in impacts compared to proposed action. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts.
CULTURAL RESOURCES		
Ground-disturbing activities associated with project construction could impact undiscovered cultural resources.	None.	**Alternative Transmission Structure and Longer Span Design:** Potential reduction in impacts by providing flexibility for tower placement (thus avoiding sensitive resources) and because fewer miles of access roads and spurs would be required. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts.

Impacts of Proposed Action (Construction)	Impacts of Proposed Action (Operation/Maintenance)	Impacts of Alternatives
TRANSPORTATION		
Increase in traffic resulting from construction workforce and transfer of project-related materials and equipment.	Possible construction of an off-highway road network would encourage future industrial development.	**Alternative Transmission Structure and Longer Span Design:** No difference in impacts compared to proposed action. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts.
HEALTH AND SAFETY		
Risk of fire or explosion during construction is considered low. Small quantities of biodegradable fuel, oil, or grease may leak from construction equipment. Potential for spill from service or refueling trucks. Chemical cleaning of plant equipment would require use of hazardous materials. Some waste materials such as chemical cleaners and lubricants would be produced. Natural gas pipeline crossing of existing Chevron Products pipeline would present risk of fire or explosion if existing pipe were accidentally damaged.	Potential fire or explosion of natural gas at the plant. Natural gas would not be stored on-site. Regulations and safety procedures would be followed. Potential release of hazardous materials to the environment. Release of ammonia is the most likely chemical release accident with potential for off-site impacts. Aqueous ammonia would be used to reduce potential severity of any accident. Generation of waste materials such as paints and lubricants. Transmission lines would produce electric and magnetic fields (EMF), exposure to which may cause possible health effects. The project would meet Bonneville's electric field strength standards. Potential for brush fires near transmission lines.	**Alternative Transmission Structure and Longer Span Design:** Taller transmission towers could reduce EMF field strengths at ground level. **Alternative Alignment near McNary Substation:** No difference in impacts compared to proposed action. **No Action Alternative:** No impacts.

1.10 Cumulative Impacts

The West Coast has short-term and long-term supply needs for electric power. Recent long-term planning estimates by the Pacific Northwest Electric Power and Conservation Planning Council show the region will need an additional 6,000 MW of electricity over the next 10 years. Other estimates run as high as 8,000 MW. This demand for electric power has led to a number of new generating resources being proposed to meet the regional energy need. More than 24,000 MW of resources have been proposed by a variety of independent power projects. These proposals far exceed the need, which makes it difficult, if not impossible, to determine which specific projects will ultimately be constructed and operated.

Although the environmental impacts of proposed power projects are currently evaluated on an individual basis, the recent abundance of project applications has prompted EFSEC and Bonneville to consider potential cumulative effects of the pending proposals. While the high number of power plant proposals would address regional energy shortage concerns, the cumulative impacts of constructing several energy facilities in the Pacific Northwest must be considered. This concern is magnified when several projects are proposed in proximity to each other and/or with similar schedules (such as the Starbuck, Wallula, and Mercer Ranch projects in southeastern Washington, or the multiple projects existing or proposed in Umatilla County, Oregon).[3]

Following is a summary of the cumulative impacts evaluation included in the Wallula Power Project Draft EIS. For the most part, these impacts are from the proposed power plants themselves and not other activities that might add additional impacts.

1.10.1 Global Warming

Most worldwide greenhouse gas emissions are in the form of CO2, while a smaller fraction of the emissions are in the form of other gases such as methane or nitrous oxide. The total annual greenhouse gas emissions associated with the Wallula Power Project (including fugitive leaks of natural gas from the pipeline system serving the plant) would be 4.8% of the greenhouse gas presently emitted from all sources in Washington State and 15.3% of the amount anticipated to be issued from all proposed future power plants in the Northwest. The greenhouse gas emissions from the Wallula Power Project would be approximately 0.06% of the United States emissions. The actual effect on global warming caused solely by emissions from the Wallula Power Project is unknown.

Although there are no federal or state regulations requiring new power plants to offset greenhouse gas emissions, EFSEC's application review process encourages applicants to develop some form of greenhouse gas mitigation. In June 2002, the applicant entered into a legal Settlement Agreement with the Washington State Counsel for the Environment, committing to a comprehensive environmental enhancement package. The Settlement Agreement acknowledges that greenhouse gas emissions are an important worldwide environmental issue with potential negative implications for Washington State. The Settlement Agreement stipulates that the Site Certification Agreement issued by EFSEC for the Wallula project shall require payments by

[3] As of July 2002, the Mercer Ranch project had been cancelled and the Starbuck project had been suspended.

Wallula Generation to environmental organizations for purposes of reducing greenhouse gas emissions and enhancing wildlife habitat. Payments totaling $5.35 million would be directly related to various organizations for environmental restoration and greenhouse gas mitigation and renewable energy projects, as follows:

- $1.0 million to the Last Mile Energy Cooperative to fund research into renewable energy and greenhouse gas reduction,
- $2.55 million to the Washington State University Energy Program, to be used to issue requests for proposals for greenhouse gas mitigation and renewable energy projects,
- $1.65 million to the Bonneville Energy Foundation for renewable energy projects including the photovoltaic solar project at the Hanford, Washington site, and
- $150,000 to the Blue Mountain Action Council to fund home weatherization projects.

1.10.2 Regional Air Quality

Air quality at many of the region's Class I areas (typically wilderness and national parks) is acknowledged to be currently impaired due to regional population growth and industrial activity. Since the majority of the proposed power projects are combustion turbines that would be operated near Class I areas, there is a regional concern over further degradation of air quality.

BPA conducted a cumulative air quality impact analysis of many of the proposed power plants in the Northwest and the potential impacts should they be built (Bonneville 2001a, 2001b, 2001c). The analysis examined the plants themselves and not air emissions from existing sources. The analysis considered various cumulative emissions and impacts, including air emissions as discussed below.

Cumulative increases in ambient concentrations of sulfur dioxide (SO2), nitrogen oxides (NOx), and particulate matter (PM10) caused solely by new power plants proposed in the Pacific Northwest were modeled to be much lower than the allowable Prevention of Significant Deterioration (PSD) Class I increments, and in nearly all cases were below Significant Impact Levels. Even for the worst-case scenario, new power plants in the region would probably not cause concentrations exceeding regulatory limits at any Class I area.

In most of the Class I areas the existing background acid deposition rates are much higher than impact thresholds established by the U.S. Forest Service and the National Park Service, indicating that existing air quality is already significantly impaired. The modeled worst-case increases caused solely by new power plants would be a small fraction of the existing background values.

Operation of between 15 and 45 new power plants in the region could significantly impact regional haze at many Class I areas. However, it is expected that only a fraction of those power plants would actually be constructed.

1.10.3 Water

Many existing and proposed thermal energy generation facilities in Washington and Oregon consume, or plan to consume, water from the Columbia River (through direct withdrawals or through aquifers that recharge the river). While it is unlikely that all of these plants will be

constructed, the fact that so many have been proposed along the Columbia River indicates that cumulative impacts may occur.

The average daily flow from the Bonneville Dam is 2,609 million gallons per day (mgd). Thus the maximum total daily water consumption of all existing, permitted, and proposed plants above the Bonneville Dam (50.0 mgd) represents approximately 1.9% of the Columbia River's daily flow at that point. This does not take into account localized water supply impacts along specific river reaches, where concentrated water withdrawals could result in more pronounced water resource effects. It also does not consider that maximum consumption is likely to occur during hot weather when river flows may be lower.

1.10.4 Natural Gas Supply

Using conservatively high estimates, the need for natural gas for power plants in the region would be approximately 1.58 billion cubic feet per day (cf/day). This represents approximately 53% of Canada's delivery capacity of 3 billion cf/day. Future natural gas needs would potentially exceed current Canadian supply capacity by approximately 6%, which would suggest that additional supplies would be developed.

The report *Convergence: Natural Gas and Electricity in Washington* (2001) published by the Washington State Office of Trade & Economic Development (CTED) creates a more cautionary picture of future natural gas supply in light of potentially high cumulative demand. Although CTED agrees that enough natural gas reserves and transmission line capacity can be developed to support the predicted expansion of the natural-gas fired electricity generation market in the Pacific Northwest, the report warns that the timing of new plants coming online and the expansion of the region's ability to deliver low-priced gas will significantly impact the stability of the market. Inflated natural gas and electricity prices could also translate into higher residential rates.

The higher than anticipated demand for natural gas in 2000 exceeded the need for transmission facilities predicted by pipeline companies and major shippers. The capacity shortage was exacerbated by the greater dependence on natural gas for energy generation in light of low hydroelectric production.

The two methods that can be used to expand natural gas pipeline capacity are (1) increasing operating pressure (requiring upgrades or adding compressor stations) or (2) increasing cross-section (effectively increasing the diameter of the pipe, such as laying additional parallel pipe). Although the Northwest and GTN pipelines are currently operating at or near their capacity, activities are currently underway to expand the interstate natural gas transmission system. Significant interest during the GTN open season suggests that system expansions could be large enough to accommodate future demand. The pivotal question will be whether this new load will actually materialize, and whether shippers of natural gas will commit to contracting for new pipeline capacities.

Impacts associated with natural gas transmission line routes would be similar (though slightly less intensive) than those associated with transmission line impacts. See the next section for further discussion.

1.10.5 Transmission Lines and Natural Gas Pipelines

Cumulative impacts related to transmission lines could occur where multiple new lines would converge on the same substation. For example, several new lines (including the McNary-John Day Project, new lines from the Umatilla Generation Project and the Wanapa Generation Project, a 230 kV line to Brownlee, and an additional McNary-John Day line on the south side of the Columbia River) are all proposed to interconnect at the McNary Substation. If all projects were to be built, transmission line congestion around the McNary Substation could worsen.

Land uses can be directly affected by the amount of new and existing rights-of-way needed to establish transmission line corridors. Constructing new transmission lines (and widening existing rights-of-way) can affect residential, commercial, agricultural, and forest land because new line segments and access roads intrude on existing land uses and can eliminate some land uses.

Removal of vegetation to create and maintain transmission line rights-of-way could gradually alter the composition of vegetation (particularly in forested areas where tall trees must be removed). Maintenance such as herbicide use and the clearing of tall trees would leave only low-growing vegetation. Reseeding right-of-way construction corridors with native vegetation has met with mixed success.

Creating and maintaining transmission line rights-of-way could also negatively affect wildlife. Construction-related impacts such as noise and vegetation clearing could impact local wildlife species, particularly during breeding, calving, and other critical seasons. Operation impacts could also include bird strikes on towers or other tall structures at night or in foggy weather. Maintaining rights-of-way also increases access for hunters, and could result in habitat fragmentation.

It is impossible to quantify the total length of natural gas pipeline construction projects anticipated in the Pacific Northwest over the next few years, although it is assumed that applicants would consider proximity to natural gas pipelines as an important consideration when selecting a project site, thus limiting the length and cost of natural gas pipeline extensions. Furthermore, applicants would consider natural gas availability on a project-specific basis (i.e., if obtaining the necessary gas supply were not feasible, the project applicant would likely select a different location).

1.10.6 Transportation

If two or more large projects were constructed in proximity and on similar schedules (such as the Wallula and Starbuck Power Projects), construction workers commuting to both project sites could contribute to added congestion on the same local streets and highways. Planned transportation improvement projects could also reduce capacity on local roads, making the burden of additional commuter traffic difficult to absorb.

1.10.7 Population and Housing

The workforce analysis conducted for the Wallula Power Project suggests that there is a sufficient labor supply available to complete both the Wallula and Starbuck Power Projects within the same time frame. If an additional project (or projects) were to be constructed simultaneously (i.e.,

Mercer Ranch, other transmission lines, etc.), the local workforce supply might be strained. This would likely require more workers from outside of the project area to relocate to the project vicinity, thus potentially affecting local population and housing.

1.10.8 Cultural Resources

Constructing power project components such as generation plants, water pipelines, natural gas pipelines, electrical transmission lines, and so forth requires the disturbance of earth to create foundations, trenches, rights-of-way, and staging areas. Every time native soil is disturbed for these activities, the likelihood increases that cultural resources will be uncovered.

Power project operation could also impact cultural resources. Water withdrawal from reservoirs behind dams could reveal sensitive historic tribal areas, and discharge of warm wastewater could threaten the integrity of cultural resources. Cumulative air quality degradation from power plant emissions and other sources could lead to acid deposition, resulting in corrosion of historic structures and resources (e.g., the corrosion of petroglyphs in the Columbia River Gorge).

1.11 Issues to be Resolved

Although most of the issues associated with this proposal have been clearly identified and assessed, or will be addressed in some clearly identified action plan in the future, there are some that have not been totally resolved or that may require further analysis or future decisions. This section summarizes those issues, consistent with NEPA and SEPA.

Water Rights – Although the applicant has a clearly described plan to acquire water rights sufficient to operate the facility, it would involve acquisition and transfer of rights from various sources. These purchases and transfers have not yet occurred, although the Washington Department of Ecology has provided a preliminary examination that indicates that the transfers appear to be acceptable. If they occur and are approved as described within this EIS, this will no longer be an issue. This EIS does not attempt to make an independent legal review of this water rights issue.

Prevention of Significant Deterioration (PSD) Permit and Best Available Control Technology (BACT) – The BACT and LAER controls described in Chapter 3, Section 3.2 of this Final EIS have been proposed by the applicant as part of the PSD and Notice of Construction (NOC) review process. The applicant's proposal was reviewed by EFSEC and EFSEC's PSD permit writer (Washington Department of Ecology), and EFSEC has issued a draft PSD permit and a draft NOC permit for public comment. Should the Council recommend approval of this proposal to the Governor, final PSD and NOC permits would be appended to the proposed Site Certification Agreement forwarded to the Governor. If the Governor approves the project, the NOC permit becomes final, and the PSD permit is considered approved by the state. The PSD permit must then be approved by the U.S. Environmental Protection Agency (EPA) Region 10.

PM10 Offsets – Under the requirement to offset at least 303 tons per year of particulates, the applicant proposes to retire most agricultural operations at the Wake property located on the west side of the Columbia River roughly 7 miles southwest of the power plant site (see Figure 1-1). The current wheat growing operations there would be converted to cultivated dry grass operations or would be retired to shrub-steppe. Current PM10 emissions from the Wake property are estimated at 552 tons per year, and the proposed changes would reduce the emissions to 36 tons

per year, for a reduction of 516 tons per year. The overall PM10 reductions achieved by retiring agricultural operations at the power plant site and the Wake property would be 566 tons per year, which would more than offset the 303 tons per year of emissions from the proposed future power plant operations.

The applicant's offset proposal was reviewed by EFSEC and EFSEC's PSD permit writer as part of the air quality permit process. EFSEC concurred with the proposal, which has been incorporated into the draft NOC permit issued for public comment.

1.12 Regulations and Permits

If a power generation project is approved, EFSEC specifies the conditions of construction and operation, issues a Site Certification Agreement in lieu of any other individual state or local agency authority, and manages the environmental and safety oversight program of project operations. As part of EFSEC's permitting process, Wallula Generation, LLC submitted an Application for Site Certification on August 20, 2001. EFSEC is the sole nonfederal agency authorized to permit the proposed generation plant project. Federal agency approvals are also needed.

For informational purposes, Table 1-2 lists the major state and local permit requirements preempted by EFSEC, as well as federal requirements.

As a federal agency, Bonneville is constitutionally prohibited from complying with the procedural requirements associated with obtaining state and local land use approvals or permits. The agency would, however, strive to meet or exceed the substantive standards and policies of the environmental regulations listed in Table 1-2.

Table 1-2. Overview of Permit, Approval, and Consultation Requirements for Wallula Power Project

Agency	Permit/Authority
Federal Government	
Advisory Council for Historic Preservation	Consultation under Section 106/National Historic Preservation Act. Historic and cultural resources also protected under Archeological Resources Protections Act, American Indian Religious Freedom Act, National Landmarks Program, World Heritage List, and Native American Graves Protection and Repatriation Act
Bonneville Power Administration	Bonneville is co-lead agency with EFSEC for preparation of the EIS, to ensure the compliance of the project with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality regulations for implementing NEPA
	Under Executive Order 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, federal agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations
Bureau of Land Management	BLM manages Baker Resource Management Area under 1989 Resource Management Plan
Federal Aviation Administration	Establishes aviation regulations and lighting. Determines whether a Notice of Proposed Construction or Alteration is required for potential obstruction hazards

Agency	Permit/Authority
Federal Energy Regulatory Commission	FERC would be responsible for siting of the 5.9-mile natural gas pipeline. Environmental impacts associated with the proposed natural gas pipeline would be assessed under a separate NEPA document
National Marine Fisheries Service	Provides consultation for essential fish habitat (EFH) under the Magnuson-Stevens Act, amended by Public Law 104-297, the Sustainable Fisheries Act of 1996
	Provides consultation under the Endangered Species Act for anadromous fish
Natural Resources Conservation Service	Identifies and quantifies adverse impacts of federal programs on farmlands under the Farmland Protection Act
U.S. Army Corps of Engineers	Wallula Habitat Management Unit is owned by the Corps and managed by USFWS; Juniper Canyon Wildlife Management Unit is owned and managed by the Corps. Easements would be required for any pipeline or transmission line crossings of Corps-owned property
	Authorization from the Corps is required in accordance with the provisions of the Clean Water Act, Section 404 when there is a discharge of dredged or fill material into waters of the U.S., including wetlands
	Under Section 10 of the Rivers and Harbors Act, authorization would be required for the transmission line crossing of the Walla Walla River
U.S. Department of Energy	Administers compliance with Floodplains/Wetlands Environmental Review and Executive Orders 11988 and 11990
U.S. Environmental Protection Agency	The Clean Water Act establishes requirements to prevent or contain discharges or threat of discharges into navigable waters or adjoining shorelines and to prepare a spill prevention, control, and containment plan
	The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) establishes reporting requirements for reportable releases of CERCLA-designated hazardous substances
	The Accidental Release Prevention Program specifies required procedures for plant design, operation, and maintenance to reduce potential for accidental spills of ammonia
	Emergency Planning and Community Right to Know requires annual submittal of a Toxic Release Inventory report describing use and discharge of ammonia via air emissions and wastewater discharges
	The Resource Conservation and Recovery Act, as amended, provides a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste, and on owners and operators of treatment, storage, and disposal facilities
	The Federal Insecticide, Fungicide and Rodenticide Act registers and regulates pesticides
U.S. Fish and Wildlife Service	Division of Migratory Bird Management establishes specific lighting guidelines for the siting, construction, operation, and decommissioning of communication towers (which are applicable to tall stacks)
	USFWS would provide a biological opinion if it were determined that wildlife and/or plant species that are federally listed under the Endangered Species Act would be adversely affected by the project
	Migratory Bird Treaty Act, as amended, protects migratory birds against the act of "taking," killing, or possessing. USFWS issues permits for the destruction of nesting birds protected by the Act, but only when related to human health or safety issues
U.S. Department of Transportation, Office of Pipeline Safety	Governs the design, construction, testing, maintenance, and operation of natural gas piping systems. Provides for gas pipeline safety approval

Agency	Permit/Authority
State Government (EFSEC has single permit authority over all Washington state and local permits)	
Washington Energy Facility Site Evaluation Council (EFSEC)	EFSEC is co-lead agency with Bonneville for preparation of the EIS and issues the Site Certification Agreement. EFSEC's responsibilities derive from the Revised Code of Washington (RCW) 80.50. EFSEC has been delegated authority by the U.S. Environmental Protection Agency to issue permits under the federal Water Pollution Control Act and the federal Clean Air Act for facilities under its jurisdiction. EFSEC provides a single permit authorization to all other Washington state and local permits; incorporates equivalent requirement and reviews National Pollutant Discharge Elimination System (NPDES), Hydraulic Project Approval (HPA), 401 Certification, and all other Washington state and local permits and approvals
Washington Department of Ecology	Notice of Construction (NOC) approval
	Prevention of Significant Deterioration (PSD) permit
	Air operating permit
	Acid rain permit
	Water quality certification
	Coastal zone management program consistency certification for Washington (administered through state Shoreline Management Act)
	NPDES and state waste discharge baseline general permit for stormwater discharge associated with construction and industrial activities
	Waste discharge permit for wastewater discharges of more than 14,500 gallons per day to on-site sewer system
	Water rights permitting and review
	Review and approval of design, construction, operation, and maintenance of dams
	Noise standards (173-60 WAC)—daytime construction noise is exempt
Washington Department of Fish and Wildlife Oregon Department of Fish and Wildlife	The Fish and Wildlife Conservation Act of 1980 encourages federal agencies to conserve and promote conservation of nongame fish and wildlife species and their habitats. In addition, the Fish and Wildlife Coordination Act requires federal agencies undertaking projects affecting water resources to coordinate with the USFWS and the state agency responsible for fish and wildlife resources. For the proposed project, the relevant state agencies are the Washington Department of Fish and Wildlife and the Oregon Department of Fish and Wildlife
	The Washington Department of Fish and Wildlife issues state Hydraulic Project Approval permits under the Hydraulic Code (RCW 75.20.100-160) when any construction activity in or near state waters is proposed
Washington Department of Labor and Industries	Ensures compliance of structures with electrical contracting and certification laws, as well as safety of construction workers
Washington State Department of Transportation	WSDOT is required to reasonably accommodate utilities within its right-of-way corridors and issues utility permits and franchises
	WSDOT ensures compliance with roadway design criteria, including limited access standards
Washington Utilities and Transportation Commission	WUTC regulates privately owned utilities offering service to the public, primarily through rate and other economic reviews, but also has some public safety responsibilities for in-state pipelines and railroads. It would provide for natural gas pipeline construction approval
Washington State Department of Health	Waste discharge permit for wastewater discharges of between 3,500 and 14,500 gallons to on-site sewer system

Agency	Permit/Authority
Local Government	
Umatilla County	Umatilla County Comprehensive Plan (1983-2003)
	Umatilla County Comprehensive Plan Amendment
	Umatilla County Code of Ordinances
Walla Walla County	Walla Walla County Comprehensive Plan 2000-2020
	Western Walla Walla County Development Plan (1968-1988, superceded by Walla Walla County Comprehensive Plan 2000-2020)
	Walla Walla County Zoning Regulations (17.12.040-Establishment of districts—Designated—General Purposes)
	Walla Walla County Shoreline Management Master Program (1975)
	Walla Walla County Code 15.04 (Building Codes)
	Walla Walla County Code Titles 8.12 and 8.16 (Sewage Disposal Installation and Design, Septic Tank Cleaning Regulations)
	Walla Walla County Code Title 9.20 (Noise Regulations)
	Walla Walla County Code Title 8.24 (Hazardous Weeds, Rubbish, and Debris)
	Walla Walla County Code Title 18.08 (Wetland Protection)

1.13 Identification of the Agency Preferred Alternative

The preferred alternative is to implement the proposed action with associated mitigation measures described in Appendix A. If the proposal is approved by the Governor of Washington, Wallula Generation would construct, own, and operate the power plant and associated facilities; GTN would construct, own, and operate the natural gas pipeline; and Bonneville would construct, own, and operate the Wallula-Smiths Harbor segment of transmission line and Smiths Harbor Substation to interconnect the power generated at the new plant to the Federal Columbia River Transmission System.

The Smiths Harbor-McNary segment of transmission line would not be constructed at this time. Projected loads on the existing Lower Monumental-McNary line are not as high as predicted and there is available capacity to allow the additional load of the power generated at the plant to be wheeled on the existing line. If a need for the Smiths Harbor-McNary segment of line does arise in the near future due to increasing loads, then a decision on the NEPA process that would be required to move forward would be made at that time.

Chapter 2 Comments on Draft EIS and Responses

2.1 Introduction

The Draft EIS for the Wallula Power Project and Wallula-McNary Transmission Line Project was issued on February 22, 2002. The comment period for the Draft EIS ended on April 11, 2002. Public comment meetings were held on March 13, 2002, in Burbank, Washington, and on March 14, 2002, in McNary, Oregon.

During the comment period, EFSEC and BPA received comments from agencies, citizens, and interest groups. Comments were submitted in letters, orally at the public comment meetings, and via email (together these are called "comment submissions" in this Final EIS). A list of those who commented on the Draft EIS is provided in Table 2-1.

2.2 Organization of this Section

This section contains the comment submissions and corresponding responses to the comments. Each comment submission—whether a letter, meeting transcript, or email—has been assigned a number (see list of comment submissions in Table 2-1). Within each comment submission, comments on specific issues have been designated using a line and a number in the margin. In most cases, a single comment submission contains numerous comments addressing a variety of topics. For example, Comment Submission 1 (public meeting notes submitted via email) contains two comments numbered 1-1 and 1-2.

Following each comment submission are the corresponding responses written by the EIS team. The responses are numbered to match the numbering shown on the comment submissions.

As described in WAC 197-11-560, possible options for responding to comments on a Draft EIS include modifying the alternatives or developing new alternatives, improving or modifying the analysis, making factual corrections, or explaining why the comments do not warrant further agency response. In this regard, for each numbered comment we have provided additional information or elaboration on a topic previously discussed in the Draft EIS; noted how the EIS text has been revised to incorporate new information or factual corrections; referred the reader, when appropriate, to another comment response; explained why the comment does not warrant further response; or simply thanked the commentor when the commentor was stating an opinion.

Table 2-1. List of Draft EIS Commentors and Assigned Comment Submission Numbers

Commentor	Assigned Comment Submission Number
Dave Baker, Umatilla, OR	1
Stuart F. Bonney and Kenneth D. Peterson, Hermiston, OR	2
Various Commentors at March 14, 2002 Public Meeting	3
Various Commentors at Public Meetings	4
Various Commentors at March 13, 2002 Public Meeting	5
Various Commentors at March 14, 2002 Public Meeting	6
Ted Koss, DOE Office of Environmental Policy and Guidance	7
Fred Walasavage, BPA	8
Randy Buchanan, Burbank, WA	9
Robert J. Carson, Whitman College, Walla Walla, WA	10
Don Oliver, State of Washington Department of Health	11
Leslie Hickey, Walla Walla, WA	12
Troy A. Suing, P.E., Regional Planning Engineer	13
Richard B. German, Power Planning Consultant, Walla Walla County Regional Planning	14
REBOUND Comments on DEIS	15
Lisa A. Freedman, U.S. Department of Agriculture, Forest Service	16
Douglas I. Jayne, Washington Department of Ecology Eastern Regional Office	17
Scott A. Noll, Wallula Generation LLC	18
Michael Lufkin, Ronald LaVigne, Michael Dunning, Washington State Counsel for the Environment	19
Paul Shampine, U.S. Army Corps of Engineers, Walla Walla District	20
Rebecca J. Inman, Washington Department of Ecology	21
Curt Leigh, Washington Department of Fish and Wildlife	22
Christopher Howard, Blue Mountain Audubon Society	23
Karen and Bud Yager, Waitsburg, WA	24
Preston A. Sleeger, U.S. Department of the Interior, Office of Environmental Policy and Compliance	25
Flip Chart Comments From Public Hearing at Burbank, WA	26
Judith Leckrone Lee, Geographic Implementation Unit, U.S. Environmental Protection Agency Region 10	27
Mike Healy, Brier, WA	28
Preston A. Sleeger, U.S. Department of the Interior, Office of Environmental Policy and Compliance	29

2.3 References Cited in the Responses to Comments

One document that the EIS team used as an information source in responding to the comments was an attachment provided by the Washington State Counsel for the Environment with their comment submission (number 19). The attachment was a 60-page report entitled *Convergence: Natural Gas and Electricity in Washington—A Survey of the Pacific Northwest Natural Gas Industry on the Eve of a New Era in Electric Generation*, published by the Washington State Office of Trade & Economic Development in May 2001. To conserve resources, the report has not been reprinted in this Final EIS; those interested in obtaining a copy can call (360) 956-2096, or download it from the internet at http://www.energy.cted.wa.gov/Papers/Convergence.htm.

The Settlement Agreements reached between the applicant and various agencies and organizations that ware granted intervenor status before EFSEC were also used as sources of updated information, especially in regard to mitigation. The Settlement Agreements are listed in Chapter 4, References, and are available for review from EFSEC.

Other references used in preparing this Final EIS are cited in the responses to comments and listed in Chapter 4.

2.4 Index to Wallula Draft EIS Comments by Topic

Table 2-2 provides a cross reference index showing which comments on the Draft EIS (and which corresponding responses in this Final EIS) address various topics of interest. The numbers in the right-hand column correspond to the individually numbered comments shown in the margin of each comment submission (letter, hearing transcript, or email).

Table 2-2. Index to Wallula Draft EIS Comments by Topic

Topic	Comments on Draft EIS that Address this Topic
Access to project site	13-1, 18-1, 18-2
Air quality	
Agricultural and industrial emissions	15-6, 15-7, 15-8, 15-9, 15-21
Ammonia	15-10, 16-10, 19-16
Crops (effects on)	5-1, 5-2, 5-3, 5-4, 5-9, 5-10, 9-2, 9-3, 9-4, 9-6, 9-7, 19-19
Emission modeling	18-5, 18-6, 23-3, 23-18
General	10-8, 10-10, 12-2, 16-17
Greenhouse gas	10-6, 19-5, 19-6, 19-20, 19-21, 19-22, 19-23, 19-36, 19-37, 19-38, 23-1, 23-5, 23-6, 24-4
Particulates, dust	10-1, 10-2, 10-3, 15-1, 15-5, 15-12, 15-13, 15-14, 15-15, 15-16, 15-18, 15-20, 15-22, 16-1, 16-4, 16-11, 17-6, 19-3, 19-12, 19-18, 23-2, 23-9, 24-1, 25-12
Plumes, vapor, fog, temperature inversions	9-1, 10-5, 12-1, 12-3, 16-9, 24-3
Regulations, permitting	7-1, 15-17, 16-7, 17-5, 19-7, 19-14, 19-15, 19-17, 19-24, 27-29, 27-30, 27-37
Sulfur, nitrogen, acid deposition	16-5, 16-15, 29-5
Toxic or hazardous pollutants	10-4, 15-11, 18-4, 19-13, 23-7, 24-2
Visibility, regional haze, effects on scenic areas	16-2, 16-3, 16-6, 16-8, 16-12, 16-13, 16-14, 16-16, 16-19, 16-21, 23-4, 23-8, 27-36, 27-38, 29-1, 29-2, 29-3, 29-4, 29-6, 29-7
Alternatives	19-10, 19-11, 23-12, 25-8, 27-9, 27-10, 27-11, 27-12, 28-1, 28-2, 28-3, 28-4
Backup systems	19-2
Construction schedule	18-3
Cultural resources	16-18
Cumulative impacts (general) *Note: Cumulative impacts related to specific topics are listed under those topics (e.g., greenhouse gas)*	11-1, 16-20, 19-35, 25-35, 27-31, 27-32, 27-33, 27-34, 27-35, 28-8
Easements	2-1, 2-2, 2-4, 2-5, 2-7, 2-8, 2-9, 4-4, 6-1, 6-2
FERC	27-1, 27-2
Fisheries	22-7

Topic	Comments on Draft EIS that Address this Topic
Labor	4-3
Local costs and revenues	5-5, 10-9, 14-1
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2.5 Comment Submissions and Responses to Comments

The rest of this chapter presents the comment submissions on the Draft EIS and responses to the comments. Each comment submission appears first, followed by corresponding responses.

Chapter 3 Revisions to Draft EIS

This chapter presents new information about existing conditions, impacts, and mitigation that has become available since publication of the Draft EIS. Some of the commentors provided additional information in their comments on the Draft EIS (which appear in Chapter 2). New information has also resulted from ongoing refinements to the project design and additional studies.

The following list summarizes the main types of revisions made to the Draft EIS to incorporate new information. Following this summary list, updates to each section of the Draft EIS are described.

The reader is asked to note that excerpts from the Draft EIS that are being updated in this chapter are enclosed in boxes (as this paragraph has been) to distinguish them from other explanatory text.

- The northern segment of the 5.1-mile transmission line interconnect between the proposed power plant and the Smiths Harbor Switchyard has been relocated (see Figure 1-2 in Chapter 1). Instead of going due east from the power plant, this portion of the line would now go southeast toward the northeast corner of the poplar plantation on current Boise Cascade property. The Smiths Harbor Switchyard location has not changed. Entrix, Inc. surveyed the realignment in spring 2002. There is no change to the type of vegetation or habitat that would be disturbed by the realignment. Information from the spring 2002 surveys is summarized in this chapter.
- The air quality analysis (Section 3.2) has been revised and expanded based on updated information and modeling data from the applicant and information added in response to comments on the Draft EIS. Information from the draft Prevention of Significant Deterioration (PSD) permit and draft Notice of Construction (NOC) permit issued for public comment by EFSEC is also described.
- Settlement Agreements addressing mitigation for a number of resources (wildlife, greenhouse gas, and others) have been reached between the applicant and various agencies and organizations. Information from the agreements is described and/or referenced in Appendix A of this EIS. (Copies of the Settlement Agreements are available from EFSEC.)
- The applicant has made minor revisions to the project design since publication of the Draft EIS. For example, one stormwater detention pond is proposed instead of two. The applicant has also reduced the footprint of the power plant facilities to 64 acres with as much as 89 acres potentially restored with native grasses and shrubs. These revisions are described in Chapter 1 and summarized below where they have a bearing on specific environmental resources.
- Since the time the Draft EIS was issued, the applicant and WSDOT have come to an agreement that access to the power plant site will be from Highway 12 using Dodd Road, thus eliminating the proposed temporary access road discussed in the Draft EIS.
- Reports of Examination from the Washington Department of Ecology are now available which describe the detail of proposed water rights transfers. These reports are appended to this Final EIS (Appendix C) and discussed under water resources (Section 3.3) below.

- Changes to the Draft EIS Section 3.11 include the incorporation of the recently constructed Florida Power and Light Energy wind farm in both text and visual simulations. The creation and revision of several visual simulations better reflects project impacts.
- A more detailed discussion of future cumulative gas supply issues has been added to Section 3.17.

3.1 Earth

Additional Information on Geology, Topography, Soils, and Erosion

Additional detail about earth resources (geology, topography, soils, and erosion) was obtained during the spring 2002 surveys by Entrix and is summarized as follows. This information does not substantially change the conclusions about impacts from the Draft EIS.

Based on the U.S. Geological Survey 1:100,000 Walla Walla Geologic Map, the northernmost approximately 0.5 mile of the 5.1-mile interconnect line is underlain by Pleistocene gravels that were deposited by outburst floods of Lake Missoula. The remaining approximately 4.6 miles of the interconnect and switchyard area is underlain by Holocene dune sand deposits.

The northernmost approximately 1.8 miles of the 5.1-mile interconnect is relatively flat to gently rolling terrain that slopes west toward the Columbia River. The remaining 3.3 miles of the interconnect is gently rolling to rolling, with a steeper slope to the south and southwest.

Agricultural activities and irrigation have stabilized or partially stabilized much of the terrain near the plant site, pipeline laterals, interconnect, switchyard, and the northern half of the transmission line right-of-way. However, much of the terrain southward from Juniper Canyon to the Potholes area is not under cultivation and is relatively sensitive to wind erosion. Access roads along the southern portion of the interconnect and in the vicinity of the proposed switchyard area also appear to be sensitive to erosion. Erosion is evident in silty, sandy road cuts along existing access roads in this area. Much of the land along the 5.1-mile interconnect and transmission right-of-way is cultivated, although wind erosion is pervasive along existing project area access roads where there is no vegetation.

The erosion factors (K-values) for most soils along the 5.1-mile interconnect, the transmission line right-of-way, associated access roads, and in the vicinity of the switchyard range between 0.15 and 0.32 (USDA 1964, 1984). These values indicate that there is a moderate to high potential for water-caused soil erosion. Most soils found in these areas are also highly to very highly susceptible to wind erosion when protective vegetation is lacking or disturbed. Similarly, bare or sparsely vegetated ground would be susceptible to erosion by surface runoff during intense precipitation (summer cloudbursts) or rapid snowmelt. An updated description of the wind groups and K values for each soil type in the project area is provided in Appendix B of this Final EIS.

In conclusion, the construction, operation, and maintenance of the transmission line structures would unavoidably impact soil by removing land from production. However, because the limited area required for these structures would be spread over the entire corridor, the impact is not considered to be significant. As stated in the Draft EIS, the proposed project includes numerous elements to mitigate environmental impacts to geology, soils, topography, and erosion during

construction and operation of the facility, pipelines, interconnect, switchyard, and transmission lines. See the updated list of mitigation measures in Appendix A of this Final EIS.

Revised Stormwater Detention Pond Design

The applicant has determined that one stormwater detention pond would be constructed instead of two ponds (see updated site plan, Figure 1-3 in Chapter 1). The unlined stormwater detention pond constructed for power plant operations would be sized to contain the 100-year rainfall event of 1.8 inches in a 24-hour period. The stormwater detention pond would cover approximately 2.2 acres. Water from the power plant proper would be collected and diverted through oil/water separators and then to the pond where it would evaporate or percolate into the site soils. Stormwater from the area external to the power plant proper would be collected and routed directly to the pond for evaporation and percolation to groundwater. The applicant is no longer proposing to reuse stormwater for plant operations.

Additional Information on Transmission Line Access Roads

The designation of non-essential roads will primarily be in the Wanaket Wildlife Area. Bonneville personnel and Wanaket managers will work together to identify sections of system roads that will not be necessary to retain. These roads will be scarified and reseeded with plants that are recommended by the Wanaket management.

Vegetative buffers will be maximized to reduce impacts on waterways. Transmission towers for this project would typically be set back a minimum of 100 feet from streamside settings. Roads would access towers on the far side of the towers away from the streamside settings whenever possible. Existing roads and crossings would be used in settings near streams whenever possible. Only one new culvert would need to be installed in a drainage crossing. This crossing is a seasonal summer crossing caused by irrigation of nearby pasture land. If a new spur road is needed near a pond or stream setting, a 30-foot minimum distance from high water mark will be maintained.

3.2 Air Quality

The air quality section from the Draft EIS has been reprinted here in its entirety. It contains changes based on updated air quality information and modeling data from the applicant, as well as new information incorporated in response to comments on the Draft EIS.

3.2.1 Existing Conditions

3.2.1.1 Climate

The project site is located in a semiarid region of southeastern Washington, within the southeastern part of the Columbia Basin. The Columbia Basin is bounded on the south by the high country of central Oregon, on the north by the mountains of western Canada, on the west by the Cascade Range, and on the east by the Blue Mountains and the North Idaho Plateau. Two predominant mountain ranges, the Cascade Mountain Range to the west and the Bitterroot Mountain Range to the east, influence the climate of the project area.

The temperatures in the area are generally hot in the summer and cold in the winter. The mean maximum and minimum temperatures at the Pasco Municipal Airport during the month of July are 92°F and 59°F, respectively, and the mean maximum and minimum temperatures recorded during the month of January are 39°F and 24°F, respectively. The mean monthly relative humidity varies from a low of 30% in the month of July to a high of 83% in the month of December. The annual average relative humidity is 56%.

Prevailing winds from the south-southwest occur about 22.4% of the time. During the spring and the summer the frequency of south-southwesterly winds is the greatest. The annual average wind speed is 9.8 miles per hour (mph). Winds are lowest during the fall, averaging 8.0 to 8.9 mph, and highest in the summer, averaging 9.4 to 11.7 mph. Wind speeds that are well above average are usually associated with southwesterly winds.

3.2.1.2 Odor

The project area includes three existing industrial facilities that occasionally generate various types of odors: the Boise Cascade Corporation Wallula Mill; the Iowa Beef Processors slaughterhouse; and the J.R. Simplot Company cattle feedlots. Odors include methyl mercaptan odors from the mill, digesting offal wastes in fields from the slaughterhouse, and manure odors from more than 50,000 cattle in the feedlots.

3.2.1.3 Air Quality Standards

Ambient Air Quality Standards

The Clean Air Act of 1970 empowered the U.S. Environmental Protection Agency (EPA) to promulgate air quality standards for six common air pollutants: ozone, carbon monoxide (CO), lead, nitrogen dioxide (NO2), particulates and sulfur dioxide (SO2). These standards include primary standards designed to protect health and secondary standards (primarily visibility) to protect public welfare. These National Ambient Air Quality Standards (NAAQS) reflect the relationship between pollutant concentrations and health and welfare effects. The Washington Department of Ecology adopted standards similar to the NAAQS and included standards for total suspended particulate matter.

Table 3.2-1 summarizes the federal and state primary and secondary standards for the six pollutants, and the averaging time for determining compliance with the standards. It also presents the increments under the EPA's Prevention of Significant Deterioration (PSD) program and the EPA PSD Class II significance levels for air quality that are applicable to the proposed project.

State and Local Emission Limits

As part of the PSD process, EFSEC is reviewing the applicant's evaluation of alternative emission control technologies. The determination of which control technology best protects ambient air quality is made by the regulatory agency on a case-by-case basis and considers the associated economic, energy, and environmental costs. The analysis for Best Available Control Technology (BACT) identifies pollutant-specific alternatives for emission control, and the costs and benefits of each alternative technology. BACT would be used to reduce emissions of toxic air pollutants, along with criteria pollutants. For example, natural gas is BACT for fuel because of its lower emissions of criteria and toxic air pollutants over other fuels, such as fuel oil or coal.

Combustion controls also reduce criteria pollutants by optimizing combustion and reducing pollutants emitted in the exhaust stream.

The determination of BACT at the time of the final air emissions permit review would define the emission limits for the project. BACT for nitrogen oxides (NOx) typically consists of dry low-NOx technology, or selective catalytic reduction (SCR), which is a post-combustion control that uses ammonia and a catalyst to reduce NOx emissions. However, any unreacted ammonia is emitted as a toxic air pollutant and is regulated by Washington state.

Prevention of Significant Deterioration

PSD review regulations apply to proposed new or modified sources located in an attainment area that have the potential to emit criteria pollutants in excess of predetermined de minimus values (Code of Federal Regulations, 40 CFR Part 51). For new generation facilities, these values are 100 tons per year of criteria pollutants for 28 specific source categories, including power generating facilities; and 250 tons per year for all others. The Wallula Power Project would be a PSD source because it would emit in excess of 100 tons per year of NOx, CO, PM10, and VOC. The PSD review process evaluates existing ambient air quality, the potential impacts of the proposed source on ambient air quality, whether the source would contribute to a violation of the NAAQS, and a review of the BACT. PSD restricts the degree of ambient air quality deterioration that would be allowed. Increments for criteria pollutants are based on the PSD classification of the area. Class I areas are assigned to federally protected wilderness areas, such as national parks, and allow the lowest increment of permissible deterioration. This essentially precludes development near these areas. Class II areas are designed to allow for moderate, controlled growth, and Class III areas allow for heavy industrial use.

The Class I area nearest the project site is the Eagle Cap Wilderness located about 115 kilometers (71.5 miles) southeast of the proposed project. The area around the proposed project is designated Class II where less stringent PSD increments apply. Class I and Class II increments are shown with the ambient standards in Table 3.2-1.

Nonattainment Area Requirements for PM10

New Source Review (NSR) permitting is required for major emission sources locating or expanding in nonattainment areas. Emission levels associated with designating a facility as major for NSR depend on the nonattainment area classification. The only nonattainment designation applicable to the proposed project is for PM10, because the proposed location for the project is in a serious PM10 nonattainment area. (PM10 refers to particulate matter less than 10 microns in diameter.)

As part of the Notice of Construction (NOC) permit application process, the requirements of Chapter 173-400-112 WAC for permitting new or modified sources located in a nonattainment area specify the conditions that must be met for a new source to receive approval to construct and operate. These requirements include the use of Lowest Achievable Emission Reduction (LAER) for the nonattainment pollutant (PM10), emission offsets for the nonattainment pollutant (i.e., the applicant must find a way to reduce PM10 emissions in the area enough to offset at least 100% of the project's emissions and to provide a net air quality benefit), and demonstration that the new source would not cause or create any new exceedance of the ambient air quality standard and that it would not violate the requirements for reasonable further progress established by the state implementation plan.

Table 3.2-1. Ambient Air Quality Standards

	Increments								
	National Primary[a]	National Secondary[a]		State of Washington[a]		Class I PSD	Class II PSD	EPA Class II Significance Levels	
	Pollutant Concentrations								
	ppm	µg/m³	Ppm	µg/m³	ppm	µg/m³	µg/m³	µg/m³	µg/m³
Total Particulate Matter (TSP)									
Annual Geometric Mean	-	-	-	-	-	60	-	-	-
24-hour Average	-	-	-	-	-	150	-	-	-
Particulate Matter (PM10)									
Annual Arithmetic Mean	-	50	-	50	-	50	4	17	1
24-hour Average	-	150	-	150	-	150	8	30	5
Inhalable Particulate Matter (PM2.5)									
Annual Arithmetic Mean	-	15	-	15	-	-	-	-	-
24-hour Average	-	65	-	65	-	-	-	-	-
Sulfur Dioxide (SO2)									
Annual Average	0.03	80	-	-	0.02	52[b]	2	20	1
24-hour Average	0.14	365	-	-	0.10	262[b]	5	91	5
3-hour Average	0.14	-	0.5	1300	-	-	25	512	25
1-hour Average	-	-	-	-	0.40 [c]	1050[b]	-	-	-
Carbon Monoxide (CO)									
8-hour Average	9	10,000	-	-	9	10,000[b]	-	-	500
1-hour Average	35	40,000	-	-	35	40,000[b]	-	-	2,000
Ozone (O3)[d]									
1-hour Average	0.12	235	0.12	235	0.12	235[b]	-	-	-
8-hour Average	0.08	176	0.08	176	-	-	-	-	-
Nitrogen Dioxide (NO2)									
Annual Average	0.053	100	0.053	100	0.05	100	2.5	25	1
Lead (Pb)									
Quarterly Average	-	1.5	-	1.5	-	-	-	-	-

µg/m³ = micrograms per cubic meter; ppm = parts per million by volume, dry basis

[a] Annual standards never to be exceeded; short-term standards not to be exceeded more than once per year unless otherwise noted.

[b] Values are calculated equivalent to regulated value.

[c] Then 0.40 ppm standard is not to be exceeded more than once per year, additionally, the 0.25 ppm standard is not to be exceeded more than twice in 7 days.

[d] The ozone 1-hour standard applies only to areas that were designated nonattainment when the ozone 8-hour standard was proposed in July 1997. This provision would allow a smooth, legal, and practical transition to the 8-hour standard. Currently, the 1-hour standard applies while the 8-hour standard is in litigation. The ozone 8-hour standard is included for information only. A 1999 federal court ruling blocked implementation of the standards, and EPA has asked the U.S. Supreme Court to reconsider that decision.

Source: Wallula Generation (2001).

Hazardous Air Pollutant Regulations

The Clean Air Act Amendments of 1990, under revisions to Section 112, required the EPA to list and promulgate National Emission Standards for Hazardous Air Pollutants (NESHAPS) in order to control, reduce, or otherwise limit the emissions of hazardous air pollutants from categories of major and area sources. As these standards are promulgated they are published in Title 40 of the Code of Federal Regulations, Part 63 (40 CFR 63). Stationary combustion gas turbines are on the list of 174 categories of major and area sources that would be henceforth subject to emission standards. The project combustion gas turbines may therefore be subject to 40 CFR Part 63, which would require the Maximum Achievable Control Technology (MACT). Standards for stationary combustion gas turbines were scheduled for promulgation by November 15, 2000, but have not yet been proposed. MACT standards are intended to reduce emissions of air toxics through the installation of control equipment rather than through risk-based emission limits.

Most of the MACT regulations apply only to "major hazardous air pollutant sources" defined as those emitting at least 10 tons of any single federally regulated hazardous air pollutant or 25 tons of aggregate hazardous air pollutants. The Wallula plant's emissions of federally regulated hazardous air pollutants would be less than those thresholds, so the Wallula plant would not be a "major hazardous air pollutant source." Therefore, the upcoming MACT requirements would not apply to the Wallula project.

General Conformity Requirements

The air quality conformity regulations were developed by EPA as part of the 1990 Clean Air Act amendments to ensure that non-stationary projects (which previously had not required any air quality approvals) took appropriate steps to minimize air quality impacts. The federal General Conformity regulations are specified in 40 CFR Part 93, Subpart B. These requirements apply to federally-funded projects in nonattainment areas, if the project is not already covered by other air quality permits. Portions of Bonneville's transmission line would be constructed inside the Wallula PM10 nonattainment area, so those portions of the project are subject to the General Conformity regulations. Bonneville must complete the following steps under the regulation:

- Estimate maximum annual emissions of PM10 during construction and/or operation of the portions of the project inside the nonattainment area. Compare the estimated annual emission rate to the applicability thresholds. For a serious nonattainment area the PM10 threshold is 70 tons per year for both construction and operation.
- If the annual PM10 emissions are below the 70 tons per year applicability threshold, describe the finding as part of the NEPA environmental documentation. No further action is required beyond that.
- If the annual PM10 emissions exceed the 70 tons per year threshold, conduct air quality modeling to determine if the project would increase PM10 concentrations within the nonattainment area. If modeling shows the project would increase PM10 concentrations, then develop emission estimates and/or offsets to reduce the project's impacts.

Permitting for PM2.5 Emissions

EPA requires state regulatory agencies to complete ambient monitoring for PM2.5 to define nonattainment area status, and then to establish air quality permitting requirements for sources emitting PM2.5. The Department of Ecology has not yet completed the process of specifying

permit requirements for PM2.5 (e.g., PSD increments, Significant Impact Levels, etc.), and the applicant was not required to model PM2.5 concentrations as part of the PSD application. Therefore, this Final EIS does not attempt to assess compliance with pending PM2.5 regulations.

3.2.1.4 Existing Air Quality

PM10 and PM2.5

Because of the rural nature of Walla Walla County and the lack of large industrial sources of pollutants, Walla Walla County has been classified by EPA and Ecology as an attainment area for all criteria pollutants except particulate matter (PM10). There are no monitoring stations in southeastern Washington for those criteria pollutants that are in attainment, and therefore there is no local source available that characterizes existing concentrations of these pollutants. Such information is normally not required for an impact analysis when the concentrations of criteria pollutants that are generated by a new major source do not exceed EPA's significant impact levels.

EPA made a finding that the Wallula area did not meet the 24-hour national air quality standard for PM10 by December 31, 1997 as required by the federal Clean Air Act. As a result of that finding, the Wallula area has been reclassified from a moderate to a serious PM10 nonattainment area.

The Washington Department of Ecology maintains a network of air quality monitoring stations throughout the Eastern Regional Office territory. There are currently two PM10 monitoring stations in Walla Walla, Washington (Monitor I.D. 530710005-1) and the site located at Nedrow Farm, Wallula Junction, Walla Walla County, Washington (Monitor I.D. 530711001-2). The Nedrow Farm site is located closest to the Wallula Power Project. During the most recent 5 years for which data are available from the EPA, the Nedrow Farm site has recorded two maximum readings, one in 1997 and one in 2000, that were in excess of the 24-hour PM10 standard of 150 micrograms per cubic meter ($\mu g/m^3$). Both the maximum 24-hour average and the annual average readings taken at the Nedrow Farm monitoring station are presented in Table 3.2-2.

Table 3.2-2. Maximum 24-Hour and Annual Average PM10 Concentrations, Wallula PM10 Monitoring Station (Nedrow Farms Station)

	NAAQS ($\mu g/m^3$)	Year				
		1996	1997	1998	1999	2000
Maximum 24 Hour Average ($\mu g/m^3$)	150	148	210	136	90	211
Annual Average ($\mu g/m^3$)	50	32.7	35.5	39.7	35.0	32.6

Source: Wallula Generation (2001).

Reclassification of Wallula from moderate to serious requires the Washington Department of Ecology to begin an 18-month planning process to develop a plan to improve air quality to meet the standard. The additional actions and control measures needed to bring the Wallula area into attainment of the 24-hour PM10 standard would depend on what is learned during the planning process.

EPA directed state and local agencies to collect monitoring data for ambient PM2.5 concentrations and to propose PM2.5 nonattainment areas. The Department of Ecology has

operated PM2.5 monitoring stations throughout the state since 1999. The PM2.5 monitoring stations nearest the Wallula site are at Kennewick and Walla Walla. As described below, neither station has measured PM2.5 concentrations approaching EPA's ambient standard:

- At Kennewick the highest measured 24-hour values for the years 2001, 2000 and 1999 were 22 $\mu g/m^3$, 36 $\mu g/m^3$ and 22 $\mu g/m^3$, respectively. All of the maximum values were well below the NAAQS of 65 $\mu g/m^3$.
- At Walla Walla the maximum 24-hour value for the year 2001 was 22 $\mu g/m^3$, which is well below the NAAQS of 65 $\mu g/m^3$.

Secondary Ammonium Nitrate Particulate Matter

Atmospheric ammonium nitrate particles are secondary aerosol formed in the atmosphere by reaction with ammonia gas, nitrogen oxides, and nitric acid. Ammonium nitrate formation generally occurs only during winter months. Ammonium nitrate is a potential issue for the Wallula project because the power plant would emit large amounts of ammonia gas. If the ammonia emission reacted in the downwind plume to form ammonium nitrate particles, then it is conceivable the ammonium nitrate could exacerbate the region's existing air pollution problems. In agricultural regions of California where PM2.5 concentrations exceed the NAAQS, ammonium nitrate is the dominant chemical component of PM2.5 during the winter months and is therefore of concern. The California regulatory agencies are considering requiring emission controls for ammonia sources.

The only ambient air quality monitoring station currently measuring ammonium nitrate concentrations is the Interagency Monitoring of Protected Visual Environments (IMPROVE) Wishram site at the eastern end of the Columbia River Gorge National Scenic Area (CRGNSA). Historical data from that site for the period 1993 - 1997 were evaluated and showed the following trends:

- Measured PM10 and PM2.5 were well below the respective NAAQS limits. The highest measured PM10 and PM2.5 concentrations were 53 $\mu g/m^3$ and 23 $\mu g/m^3$, respectively. There was no clear seasonal trend in the measured concentrations.
- Particulate nitrate concentrations showed a clear seasonal trend, with the highest values occurring in the winter months. The highest measured wintertime ammonium nitrate concentration was 12 $\mu g/m^3$. During the winter ammonium nitrate accounted for up to 45% of the total PM10 concentration.

The Wishram data indicate it is unlikely that secondary ammonium nitrate contributes to PM10 or PM2.5 concentrations exceeding the NAAQS limits near the Wallula site. However, it appears likely that ammonium nitrate is a significant contributor to existing wintertime regional haze at the CRGNSA.

Existing Ecosystem Impacts Along Eastern Side of Cascade Range

The U.S. Forest Service is the federal land manager tracking existing air quality impacts to the CRGNSA and wilderness areas along the east side of the Cascade mountains. The agency has documented the following existing ecosystem impacts caused by current air pollutant concentrations.

Regional Visibility Degradation. The agency has documented that existing regional visibility at the Wishram IMPROVE site is impacted compared to natural background conditions. These findings were formally provided to EPA Region 10 (U.S. Forest Service 2002). Regional visibility impacts are quantified by the light extinction coefficient (b_{ext}, with units of inverse megameters or Mm^{-1}), which indicates how particles in the atmosphere obscure regional vistas. The natural background b_{ext} at Wishram is estimated to be 20 Mm^{-1}. Extinction values higher than natural background indicate some level of degraded visibility. U.S. Forest Service data from Wishram indicate frequent visibility degradation, as follows:

- Natural background ($b_{ext} < 20$) occurs less than 5% of the time.
- Visibility is "noticeably impaired" ($20 < b_{ext} < 40$) 54% of the time.
- Visibility is "moderately degraded" ($41 < b_{ext} < 70$) 26% of the time.
- Visibility is "severely degraded" ($b_{ext} > 70$) 15% of the time.

Impacts to Sensitive Lichen Species. Since 1993 the U.S. Forest Service has conducted biomonitoring for air quality impacts to lichen species along the east side of the Cascade mountains (Geiser and Bachman 2002). Because lichens are sensitive to air quality, they can be used as an early warning signal to indicate where air pollution is beginning to affect the forest. The surveys showed that the region's most common lichen species were absent (or present in minimal amounts) in areas where wet deposition of air pollutants (primarily sulfur and nitrogen) was unusually high, despite available habitat for those lichen species. Conversely, certain species of pollutant-tolerant lichens were found to be overabundant in areas with high air pollutant concentrations. These surveys indicate that existing levels of sulfur and nitrogen deposition have affected the ecosystem of forests on the east side of the Cascades in the vicinity of the Columbia Gorge and Mt. Hood.

3.2.2 Impacts of the Proposed Action

3.2.2.1 Construction

Generation Plant

Emissions during the approximately 24-month construction process would consist of fugitive dust and combustion exhaust emissions from construction equipment and vehicles. Fugitive dust emissions would result from dust entrained during project site preparation, on-site travel on paved and unpaved surfaces, and aggregate and soil loading and unloading operations. Wind erosion of disturbed areas would also contribute to fugitive dust.

Combustion emissions would result from diesel construction equipment, various diesel-fueled trucks, diesel-powered equipment (welding machines, electric generators, air compressors, water pumps, etc.), locomotives delivering equipment, and vehicle emissions from workers commuting to the construction site. The applicant evaluated on-site emissions during construction on a monthly basis over the 24-month construction schedule for both fugitive dust and construction equipment emissions. Table 3.2-3 shows the estimated average annual heavy equipment exhaust and fugitive dust emissions for on-site construction activities over the 24-month construction schedule.

Table 3.2-3. Annual Emissions During On-Site Construction (Tons Per Year)

	PM10	NOx	CO	VOC	SOx
Construction Equipment	1.4	20.2	7.0	1.64	0.66
Fugitive Dust	39.6				
Total Emissions	41.0	20.2	7.0	1.64	0.66
Source: Wallula Generation (2001).					

Water Supply Pipeline, Natural Gas Pipeline, and Transmission Line

The construction of the pipelines and transmission line would generate short-term emissions including fugitive dust and construction equipment exhaust emissions. Fugitive dust would be controlled by conventional construction practices (e.g., road watering, covering of dust piles, etc.) to comply with state regulations. The draft NOC permit issued for public comment also addressed fugitive dust control through the requirement of a dust control plan prior to the beginning of construction.

Transmission Line Construction Inside PM10 Nonattainment Area

The portions of the transmission line and the Smiths Harbor Switchyard inside the Wallula PM10 nonattainment area are subject to the federal General Conformity regulation. A full conformity analysis would be required only if PM10 emissions generated inside the nonattainment area exceed 70 tons per year. As shown below, the estimated PM10 emissions during construction are well below 70 tons per year, so the transmission line project would comply with the conformity requirements.

As a rough approximation for purposes of estimating emissions during construction, it is assumed the following items would be constructed inside the nonattainment area:

- 37 transmission towers, each disturbing 0.25 acres (9 total acres),
- 6 miles of new access roads (22 total acres), and
- Smiths Harbor Switchyard (7 acres).

A total of 38 acres of construction would be required inside the nonattainment area. As a rough approximation it was assumed that construction at each site would require 2 months to complete. A PM10 emission factor of 0.11 tons/acre-month is appropriate for general construction activities, assuming routine dust control measures such as roadway watering are conducted at the site (California EPA 1997). Based on the estimated construction acreage and the assumed emission factor, the maximum annual PM10 emissions during construction would be 8.4 tons (38 acres x 0.11 tons/acre-month x 2 months = 8.4 tons).

Because the estimated annual PM10 emissions are much lower than the 70 tons per year applicability threshold for General Conformity, no further action is required to comply with the regulation. Bonneville would mitigate for dust during construction and follow all necessary local or federal requirements.

3.2.2.2 Operation and Maintenance

Generation Plant

Emission Sources and Emission Controls

The principal sources of emissions from the Wallula Power Project during startup and operation would occur from four General Electric (GE) Model 7241 FA combustion gas turbines rated at 167 MW and fired by natural gas, and four HRSGs. Each HRSG would be equipped with low-NOx duct burners rated at 640 million British thermal units per hour (MM Btu/hr), and with SCR and oxidation catalyst systems for the removal of NOx and CO, respectively.

Additional plant equipment would include two nine-cell cooling tower units equipped with special mist eliminators to reduce cooling tower drift emissions; one auxiliary boiler rated at 45,000 pounds/hour (lb/hr) of steam; one 300-horsepower diesel fire pump; and one 910-kilowatt (kW) emergency diesel generator.

The four combustion gas turbines would be equipped with dry low NOx combustors that minimize the formation of NOx and CO. GE would guarantee exhaust concentrations from the combustion gas turbine of 9 parts per million (ppm) for both NOx and CO. The four HRSGs would be equipped with low-NOx duct burners, designed to minimize NOx formation. To further reduce combustion gas turbine and duct burner NOx and CO, SCR and oxidation catalyst control systems would be provided. It is expected that the equipment suppliers would guarantee NOx emissions of 3.0 ppm and CO emissions of 3.5 ppm. Aqueous ammonia would be used in the SCR control system and some unreacted ammonia would exit the plant stack as ammonia "slip." Ammonia slip would be 5 ppm or less.

The Wallula Power Project would have a 45,000 lb/hr auxiliary boiler that is gas fired and provides steam for cold plant startups. The steam would also be used for "soaking" or "heating" of the HRSGs and catalyst during short periods of unit downtime. This would maintain heat and facilitate a quick plant startup. There would also be an emergency diesel generator and a diesel fire pump that would typically be test run for about an hour each month.

A cooling water system would condense the steam coming from the steam turbine. Cooling water would itself be cooled within two 9-cell mechanical-draft cooling towers (one for each power block) each with a circulating water flow rate of 168,000 gpm. The cooling towers would be designed with a drift elimination system to minimize the formation of PM10. In mechanical-draft cooling towers there is always a certain amount of water in the form of mist ("drift") containing dissolved solids that would exit through the cooling tower stacks. As the drift evaporates, the dissolved solids would form particulates, thereby adding to the PM10 emissions. Typically cooling towers are designed to maintain drift at 0.008% of the amount of circulating water flow. The Wallula Power Project incorporates drift elimination devices in the cooling towers, which would maintain drift at a level of 0.0005% of the amount of circulating water flow.

Cooling tower PM10 emissions were calculated based on the total dissolved solids in the circulating water and drift rate. EPA's AP-42 emission factors (EPA-CHIEF) as provided by the EPA Clearinghouse for Inventory and Emission Factors were used for developing a particulate emission factor for wet cooling towers. These guidelines state that "*a conservatively high* PM10 emission factor can be obtained by (a) multiplying the total liquid drift factor by the TDS fraction

in the circulating water, and (b) assuming that once the water evaporates, all remaining solid particulates are within the PM10 range." (Italics per EPA).

The features listed below, which are incorporated into the Wallula Power Project, represent the applicant's proposed BACT:

- combined cycle technology that provides energy conversion from natural gas to electricity with efficiencies that exceed 50%;
- dry low NOx combustion technology on the combustion gas turbines which limits NOx and CO emissions from the combustion gas turbines to 9.0 ppm;
- SCR technology incorporated into the HRSGs that further reduces total NOx emissions to a 2.5 parts per million volume dry (ppmvd) basis with ammonia slip of 5 ppm;
- oxidation catalyst controls incorporated into the HRSGs that reduce CO emissions to 2.0 ppmvd and volatile organic compounds (VOCs) to 5 ppmvd; and
- use of low-NOx burners for the auxiliary boiler.

With respect to PM10, the Wallula Power Project has adopted proposed LAER controls, as follows:

- natural gas firing of the combustion gas turbines and duct burners;
- combustion technology on the combustion gas turbines that limits particulate emissions to 20.8 lb/hr per turbine/HRSG set; and
- a drift elimination design on the cooling towers that reduces drift to 0.0005% of the amount of the circulating water flow, and use of a treatment system to reduce the dissolved solids in the cooling tower recirculation flow.

With respect to SO2, the applicant proposed BACT consisting of restricting fuel usage to natural gas supplied from a commercial pipeline. The SO2 emissions would be directly related to the sulfur content of the natural gas fuel. Based on sulfur measurements conducted by the Canadian natural gas suppliers, the applicant accounted for anticipated variations in sulfur content of the fuel. The modeled annual average sulfur content was 0.478 grains per 100 cubic feet, while the modeled short-term sulfur content was increased to 1.0 grains per 100 cubic feet to account for possible upsets at the upstream gas supply system in Canada.

The above BACT and LAER controls have been incorporated into the draft PSD and NOC permits that have been issued for public comment as part of the PSD/NOC review process, except for ammonia slip, which has been reduced to 5 ppm. Should the facility be approved by the Governor, the NOC permit appended to the Site Certification Agreement approved by the Governor would become final. The PSD permit would also require EPA approval.

Emission Rates

Emissions of Criteria Pollutants. The annual emissions for the combustion gas turbines were calculated based on a capacity factor of 100%, with 420 hours in startup mode. For some pollutants, turbine emissions vary based on ambient temperatures. Annual emissions have been calculated assuming an average ambient temperature of 54^{o}F. Combustion gas turbine operation without duct firing was assumed to occur for 3,960 hours per year, and combustion turbine operation with duct firing was assumed to occur for 4,380 hours per year. The auxiliary boiler

was assumed to operate for a maximum of 4,000 hours per year. The emergency diesel generator and diesel fire pump were assumed to operate for a maximum of 200 and 100 hours per year, respectively. Cooling tower emissions were calculated from maximum total dissolved solids level and assuming 8,760 hours of operation per year. The proposed annual and hourly emissions for the Wallula Power Project are shown in Table 3.2-4. Note that the emission rates listed in Table 3.2-4 are based on emission limits specified in EFSEC's draft PSD permit. These emission limits are subject to change based on the public review process for the PSD permit.

Table 3.2-4. Wallula Power Project – Facility Criteria Pollutant Emissions Summary

Maximum Hourly Emissions (lb/hr)[a]	**NOx**	**CO**	**PM10**	**SO2**	**VOC**
Turbines and Duct Burners	92.9	45.2	83.2	17.9	64.6
Cooling Towers	-	-	3.7	-	-
Auxiliary Boiler	2.0	4.5	0.4	0.1	0.3
Emergency Diesel Generator[b]	12.7	7.4	0.6	0.4	0.8
Diesel Fire Pump[b]	-	-	-	-	-
Total Project (lb/hr)	107.6	57.1	87.9	18.4	65.7
Annual Emissions (ton/yr)[c]	**NOx**	**CO**	**PM10**	**SO2**	**VOC**
Turbines and Duct Burners	424.1	388.5	285.9	21.4	266.9
Cooling Towers	-	-	13.9	-	-
Auxiliary Boiler	3.1	7.0	0.6	0.3	0.5
Emergency Diesel Generator	3.2	0.7	0.1	0.1	0.08
Diesel Fire Pump	0.2	0.1	0	0	0.02
Total Project (ton/yr)	430.6	396.3	300.5	21.8	267.5

[a] Excludes startup emissions and assumes an ambient temperature of 11°C (52°F).
[b] Emergency diesel generator and diesel fire pump will not be tested on the same day.
[c] Includes startup emissions
Source: Wallula Generation (2001), PSD Fact Sheet (EFSEC 2002).

Toxic Air Pollutant Emission Rates. This section presents the emission factors and emission rates used in the analysis of toxic air pollutants. The Wallula Power Project has the potential to emit toxic air pollutants regulated by the Washington Department of Ecology. Formaldehyde, benzene, and other organic compounds associated with the combustion of fossil fuels would be released. In addition, post-combustion control with SCR results in ammonia emissions or "slip" that passes through the process unreacted. Ammonia is not a federal hazardous air pollutant, but it is identified as a Washington State Toxic Air Pollutant.

Emissions of toxic air pollutants would result from the combustion of natural gas in the combustion gas turbines, HRSG duct burners, and auxiliary boiler, as well as from the use of the emergency diesel generator and diesel fire pump. Toxic air pollutant emission rates from these sources were estimated using EPA AP-42 emission factors. Emissions were computed on both a short-term and annual average basis. For short-term emission rates, the hourly fuel use or heat input was used to estimate emissions on a pounds per hour basis. For the annual average emission rates (tons per year), total annual fuel use or heat inputs were computed and used with the emission factors in estimating the emissions. With the exception of ammonia and sulfuric acid mist, the toxic air pollutant emission factors are based on AP-42 data.

Ammonia emissions are based on a 5 ppmvd (at 15% oxygen) slip associated with the use of SCR for NOx control. Sulfuric acid mist emissions depend on the amount of sulfur in the fuel and amount of sulfur dioxide converted to sulfur trioxide. Based on engineering estimates, up to 5%

of the total sulfur in the fuel may be converted to sulfuric acid from the combustion gas turbine and HRSG duct burners.

The toxic air pollutants and their pollutant class, emission factors, and emission rates for the gas turbines, HRSG duct burners, the auxiliary boiler, the emergency diesel generator, and the diesel fire pump are listed in Table 3.2-5. The toxic air pollutant classes refer to Type A, for annual-averaged risk-based carcinogens; and Type B for noncarcinogens.

The Wallula Power Project would adopt BACT for toxics (T-BACT) for controlling toxic emissions pursuant to Chapter 173-460-040 WAC, including

- combustion gas turbine technology that is over 50% efficient that would minimize the amount of toxics formed relative to less efficient technologies;
- use of natural gas as the only fuel for the combustion gas turbines and HRSG duct burners which helps minimize formation of toxics; and
- use of oxidation catalyst unit on each HRSG duct burner that would reduce the emissions of certain volatile organic toxic compounds (e.g., formaldehyde).

Nonattainment Area Emission Offsets

The Wallula Power Project is located in a nonattainment area for one pollutant, PM10. This means that the Wallula Power Project is subject to Chapter 173-400-112 WAC, Requirements for New Sources in Nonattainment Areas; Chapter 173-400 131 WAC, Issuance of Emission Reduction Credits; and Chapter 173-400-136 WAC, The Use of Emission Reduction Credits.

The Wallula Power Project would generate particulates at a number of sources:

- particulates, mostly carbon, are produced when combustion gas turbines are fired;
- the HRSGs create a small amount of carbon particulates when duct firing occurs and a small amount of ammonium sulfate particulates in the SCR unit; and
- the two 9-cell cooling tower units would have some drift (small water droplets exiting the cooling towers) that would evaporate, causing the dissolved solids in the drift to form particulates.

Table 3.2-5 Wallula Power Project Toxic Air Pollutant Emissions Summary

Pollutant	Washington Toxic Air Pollutant Class[a]	Federal Hazardous Air Pollutant?	Total Project Emissions[b]		Chapter 173-460 WAC Small Quantity Emission Rates		Above Small Quantity Emission Rates?
			(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	
1,3-Butadiene	A	Yes	4.41E-03	31	-	0.5	Yes
2-Methylnapthalene	-	Yes	1.31E-06	0.00383	-	-	-
3-Methylchloranthrene	-	Yes	9.84E-08	0.00029	-	-	-
7,12 Dimethylbenz(a)anthracene	-	Yes	8.75E-08	0.00026	-	-	-
Acenaphthene	-	Yes	4.38E-05	0.00872	-	-	-
Acenaphthylene	-	Yes	9.10E-05	0.02	-	-	-
Acetaldehyde	A	Yes	8.24E-02	576	-	50	Yes
Acrolein	B	Yes	6.47E-02	461	0.02	175	Yes
Ammonia	B	No	137.4	764,408	2.0	17,500	Yes
Benzene	A	Yes	1.30E-01	865	-	20	Yes
Butane	B	No	6.56E-08	0.00019	5.0	43,748	No
Dichlorobenzene	A	Yes	6.56E-05	0.19	-	500	No
Ethylbenzene	B	Yes	3.22E-01	2,303	5.0	43,748	No
Fluoranthene	-	Yes	1.69E-04	0.021	-	-	-
Fluorene	-	Yes	1.73E-04	0.03	-	-	-
Formaldehyde	A	Yes	1.44E+00	10,230	-	20	Yes
Hexane	B	Yes	9.84E-02	287	2.6	22,750	No
Naphthalene	B	Yes	1.44E-02	94	2.6	22,750	No
PAHs							
Benzo(a)anthracene	A	Yes	3.59E-05	7.09E-03	-	-	No
Benzo(b)fluoranthene	A	Yes	9.95E-06	2.24E-03	-	-	No
Benzo(k)fluoranthene	A	Yes	2.32E-06	6.99E-04	-	-	No
Benzo(a)pyrene	A	Yes	2.70E-06	6.78E-04	0	0	Yes
Benzo(g,h,i)perylene	A	Yes	5.93E-06	1.26E-03	-	-	No
Chysene	A	Yes	1.41E-05	3.02E-03	-	-	No
Dibenzo(a,h)anthracene	A	Yes	4.30E-06	9.16E-04	-	-	No
Indeno(1,2,3-cd)pyrene	A	Yes	4.49E-06	1.09E-03	-	-	No
Total PAHs	A	Yes	2.22E-02	158	0	0	Yes
Pentane	B	No	1.42E-01	415	5	43,748	No
Propylene Oxide	A	Yes	2.92E-01	2,087	-	50	Yes
Sulfuric Acid	B	Yes	7.64E+00	37,360	0.02	175	Yes
Toluene	B	Yes	1.33E+00	9,357	5	43,748	No
Xylenes	B	Yes	6.47E-01	4,606	5	43,748	No

[a] The toxic air pollutant classes refer to Type A, for annual-averaged risk-based carcinogens; and Type B for noncarcinogens.

[b] Exponent notation is used to show quantities less than 1. For example, 4.41E-03 indicates 4.41×10^{-3} or 0.00441.

Source: Wallula Generation (2001).

Table 3.2-6 shows the total estimated annual emissions for PM10.

Table 3.2-6. Annual PM10 Emissions

Source	Tons/yr
Four Combustion Gas Turbines and Duct Burners	285.9
Cooling Towers	16.2
Other Equipment	0.7
Total	302.8
Source: Wallula Generation (2001).	

Over 95% of the PM10 emissions in the Wallula nonattainment area are from windblown dust due to agricultural operations. Reductions in these emissions are proposed as the source of emission reduction credits (ERCs) that are required by federal and state regulation to offset pollutants from major new sources in nonattainment areas. For PM10 the ratio of actual emissions from the Wallula Power Project (tons per year) to the applicant's proposed ERCs (tons per year) is one to one.

As LAER to offset the production of 303 tons per year of particulates, the applicant originally proposed to purchase or lease up to 1,300 acres of active farmland and convert it to cultivated dryland grasses or dryland grasses and shrubs. Based upon the qualified acreage of active farmland currently available in the market for lease or purchase, the applicant has options on sufficient agricultural land to generate the necessary offsets for PM10.

As part of the air quality impact analysis for short-term (24-hour average) PM10 impacts, the offsetting effects of retiring 175 acres of land at the project site (which is currently subject to particulate emissions from wind erosion during farming activity) was assessed. The current fugitive dust emissions of PM10 from the site are 60.3 tons per year. After the Wallula Power Project goes into commercial operation, the PM10 emissions from this area would be 10.2 tons per year, or a reduction of 50.1 tons per year of PM10. Thus, the total required additional PM10 offsets from off-site sources are 252.7 tons per year to reach the 302.8 tons of offset shown in Table 3.2-6.

The applicant now proposes to retire most agricultural operations at the 645-acre Wake property located on the west side of the Columbia River roughly 7 miles southwest of the power plant site (see Figure 1-1 in Chapter 1). The current wheat growing operations there would be converted to cultivated dry grass operations or would be retired to shrub-steppe. Current PM10 emissions from the Wake property are estimated at 552 tons per year, and the proposed changes would reduce the emissions to 36 tons per year, for a reduction of 516 tons per year. The overall PM10 reductions achieved by retiring agricultural operations at the power plant site and the Wake property would be 566 tons per year, which would more than offset the 303 tons per year of emissions from the proposed future power plant operations. EFSEC has issued preliminary concurrence with this revised proposal through issuance of a draft NOC permit for public comment.

The use of the agricultural offset emission sources would decrease the Wallula Power Project's ambient PM10 impacts to less than the significance levels. Thus, the offsets would ensure that the project would not have any significant impact on the nonattainment area.

Local Air Quality Impact Assessment

The assessment of impacts on local and regional ambient air quality from the proposed facility was conducted using EPA-approved air quality dispersion models. These models are based on fundamental mathematical descriptions of atmospheric processes in which a pollutant source can be related to a receptor area. The assessment of local impacts from the Wallula Power Project covered an area with a radius of approximately 15 kilometers (9.3 miles) from the project site. It evaluated compliance with state and federal ambient air quality standards; significant impact levels; Class II area increments for NO2 and SO2; and PM10 impacts on the Wallula PM10 nonattainment area. The regional impact assessment evaluated potential impacts to Class I areas within about 200 kilometers (124.3 miles) of the project site including impacts on visibility, Class I increments for NO2, SO2, and PM10, and impacts to soil and vegetation from deposition of nitrogen and sulfur compounds.

The Industrial Source Complex Short-Term Model ISCST3 (EPA SCRAM) was used except when assessing impacts in complex terrain to the southwest of the project site. In the latter case, the Complex Terrain Screening Model CTSCREEN (EPA SCRAM) was adopted. Both models are EPA-approved air quality dispersion models.

The modeling analysis revealed that the project PM10 emissions would not result in a significant impact within the PM10 nonattainment area. Therefore, the project would not significantly affect the ambient air quality of the area, nor have a significant effect on the 3-hour or 24-hour SO2 Class II increments or the 24-hour PM10 Class II increment outside the PM10 nonattainment area. Table 3.2-7 compares maximum concentrations to the PSD Significant Impact Level (SIL) and Ambient Air Quality Standards.

Table 3.2-7. Maximum Modeled Short-Term Criteria Pollutant Concentrations

Pollutant	Averaging Period	Ambient Air Quality Standard (µg/m^3)	Significant Impact Level (µg/m^3)	Maximum Concentration (µg/m^3)
PM10	24-Hour	150	5	4.70
SO2	1-Hour	1,050	-	31.1
	3-Hour	1,300	25	7.4
	24-Hour	262	5	1.1
CO	1-Hour	40,000	2000	426
	8-Hour	10,000	500	112

Table 3.2-8 shows the results of the long-term criteria pollutant modeling. The maximum long-term (annual average) ground-level concentrations for criteria pollutants (NO2, SO2, and PM10) were modeled using the ISCST3 model and the CTSCREEN model.

Table 3.2-8. Maximum Modeled Annual Average Criteria Pollutant Concentrations

Pollutant	Averaging Period	Ambient Air Quality Standard (µg/m^3)	Significant Impact Level (µg/m^3)	Maximum Concentration (µg/m^3)
NO2	Annual	100	1	0.79
PM10	Annual	50	1	0.94
SO2	Annual	80	1	0.07

PSD Class II Increment Consumption Analysis. Maximum modeled concentrations of SO2, NO2, and PM10 are below the SILs. Proposed project generation of these pollutants has an insignificant impact on Class II increments, so further analysis is not required. The project would comply with the PSD Class II increment limits.

Toxic Air Pollutant Analysis. Air quality dispersion modeling was used to assess compliance with the State's toxic air pollutant regulations (Chapter 173-460 WAC). Those toxic air pollutants that are emitted in quantities above the "small quantity emission rate" require calculation of potential impacts that are then compared with the Acceptable Source Impact Levels (ASILs) to assess compliance. Ten compounds were identified as being emitted in amounts greater than the small quantity emission rate and required modeling. Depending on the compound, either the 24-hour or annual average concentrations were used for comparison with the ASILs.

The maximum modeled 24-hour and annual average toxic air pollutant concentrations resulting from the Wallula Power Plant emissions are compared to the appropriate ASILs in Table 3.2-9. For all toxic air pollutants evaluated the maximum modeled concentrations are less than the ASILs. Maximum short-term sulfuric acid mist concentrations are also below the 24-hour ASIL. Based on these modeling results, the Wallula Power Project is not expected to create any significant impacts due to its toxic air pollutant emissions.

Secondary Ammonium Nitrate Aerosol Formation. The power plant would emit up to 382 tons per year of ammonia gas, which could theoretically react in the atmosphere to form secondary ammonium nitrate particles many miles downwind of the plant. In theory, 1 ton of ammonia emissions could react to form 4.6 tons of ammonium nitrate particles. However, the chemical fate of ammonia emissions from the plant is not well understood, and it is uncertain what fraction of the ammonia would actually react to form ammonium nitrate. Recent studies in the agricultural regions of California show that a relatively small fraction of ammonia gas emitted from agricultural operations reacts to form ammonium nitrate (Kumar and Pandis 1998). However, the phenomena contributing to ammonium nitrate formation are too complex to allow simple comparison between the California studies and the proposed Wallula project.

Table 3.2-9. Maximum Modeled Toxic Air Pollutant Concentrations

Pollutant	Washington Toxic Air Pollutant Class	Modeled Averaging Period	Modeled[a] Concentration ($\mu g/m^3$)	ASIL ($\mu g/m^3$)	Concentration Less Than ASIL?
1,3-Butadiene	A	Annual	0.00005	0.0036	Yes
Acetaldehyde	A	Annual	0.000085	0.45	Yes
Acrolein	B	24-Hour	0.0071	0.02	Yes
Ammonia	B	24-Hour	15.1[b]	100	Yes
Benzene	A	Annual	0.0013	0.12	Yes
Benzo(a)pyrene	A	Annual	-[c]	0.00048	Yes
Formaldehyde	A	Annual	0.015	0.077	Yes
Total PAHs	A	Annual	0.00023	0.00048	Yes
Propylene Oxide	A	Annual	0.0031	0.27	Yes
Sulfuric Acid	B	24-hour	0.84	3.3	Yes

[a] Concentrations modeled using ISCST3 model.
[b] Ammonia emissions based on 5 ppm slip.
[c] Benzo(a)pyrene concentration is included in the Total PAH modeled concentration.
Source: Wallula Generation (2001).

Regional Air Quality Impact Assessment

PSD regulations require an assessment of the project's impact on Air Quality Related Values (AQRV) in Class I areas. AQRVs include regional visibility or haze; the effects of primary and secondary pollutants on sensitive plants; the effects of pollutant deposition on soils and water bodies; and effects associated with secondary aerosol formation. These requirements provide special protection for Class I areas. The federal land managers for Class I areas include the National Park Service and U.S. Forest Service.

The Eagle Cap Wilderness, the closest Class I area to the project, is 115 kilometers (71.5 miles) southeast of the project site. Additional Class I areas included in the modeling were Mt. Rainier National Park, Glacier Peak Wilderness, Alpine Lakes Wilderness, Goat Rocks Wilderness, Mt. Adams Wilderness, Mt. Hood Wilderness, Strawberry Mountain Wilderness, and the Spokane Indian Reservation. The Columbia River Gorge National Scenic Area was also included to recognize its importance as an environmental, recreational and cultural area, even though it is not afforded special protection under the Clean Air Act. Additional sensitive areas that could be impacted, but were not included in the modeling, are three wilderness study areas administered by the Bureau of Land Management in the Hells Canyon region of northeastern Oregon.

Class I Area Increment Consumption. The EPA-approved CALPUFF modeling system was used for the regional air quality impact assessment. The effect of emissions from the facility on Class I area increment consumption was assessed by comparing predicted pollutant concentrations to Class I modeling significance levels proposed by the EPA (Federal Register, Vol. 61, No. 142, page 38292). Concentration predictions were obtained for SO2, NOx, and PM10 using the CALPUFF modeling system. Predictions were made within the Columbia River Gorge National Scenic Area to provide information to the federal land managers for this Class II area of interest.

Table 3.2-10 lists EPA's proposed SILs for Class I areas. When predicted concentrations are less than the Class I area SILs, it indicates there is little potential that the proposed project could cause ambient concentrations to exceed either the NAAQS or the PSD increments, and a comprehensive Class I increment analysis is not required for a given pollutant. This does not necessarily indicate that the project would not cause any significant air quality impact, because concentrations below the SILs could still cause AQRV impacts related to acid deposition and regional haze. AQRV assessments are described in the next section.

As shown in Table 3.2-10, the modeled CALPUFF ambient concentrations at the CRGNSA and Class I areas are several orders of magnitude less than the EPA's proposed criteria, and also are well below the criteria recommended by the federal land managers. While these are not adopted regulatory criteria, they are used here to provide a measure of assurance that the Wallula Power Project's contributions predicted by the model would not contribute to concentrations exceeding the NAAQS standards or PSD increments.

Table 3.2-10. Results of Class I Increment Analysis

Class I Area	Maximum Concentration Predictions (ì g/m³)					
	NO2 Annual	SO2			PM10	
		Annual	24-hr	3-hr	Annual	24-hr
Mt. Rainier National Park	0.00003	0.00002	0.00047	0.00212	0.00047	0.01310
Goat Rocks Wilderness	0.00005	0.00003	0.00067	0.00236	0.00069	0.02474
Mt Adams Wilderness	0.00008	0.00003	0.00115	0.00365	0.00087	0.03553
Mt Hood Wilderness	0.00020	0.00006	0.00227	0.00683	0.00147	0.05393
Alpine Lakes Wilderness	0.00016	0.00004	0.00133	0.00635	0.00078	0.02828
Glacier Peak Wilderness	0.00007	0.00002	0.00053	0.00273	0.00042	0.01242
Eagle Cap Wilderness	0.00043	0.00008	0.00445	0.01044	0.00158	0.07251
Hells Canyon Wilderness	0.00034	0.00008	0.00147	0.00636	0.00136	0.01929
Strawberry Mtn. Wilderness	0.00003	0.00002	0.00071	0.00361	0.00041	0.01614
Spokane Indian Reservation	0.00132	0.00021	0.00435	0.01655	0.00351	0.05574
EPA Proposed Class I SIL	0.10	0.10	0.20	1.00	0.20	0.30
FLM Proposed Class I SIL	0.03	0.03	0.07	0.48	0.08	0.27
Class II Area of Interest						
CRGNSA	0.00051	0.00012	0.00433	0.01356	0.00287	0.11185
EPA Class II Significance Level	1.0	1.0	5.0	25.0	1.0	5.0

Notes:
All NOx conservatively assumed to be converted to NO2.
PM10 concentrations include sulfates and nitrates.
Emissions based on continuous operation with supplemental duct firing and auxiliary boiler.
EPA and FLM proposed Class I area Significant Impact Levels from the Federal Register, Vol. 61, No. 142, page 38292.

Pollutant Concentrations Effects on Plants. The federal land managers have the responsibility of ensuring AQRVs in the Class I areas are not adversely affected, regardless of whether the Class I increments are maintained. In order to protect plant species, the U.S. Forest Service recommends that maximum SO2 concentrations not exceed 40 to 50 parts per billion (ppb) (105 to 130 µg/m^3), and annual SO2 concentrations should not exceed 8 to 12 ppb (21 to 31 µg/m^3). Lichens and bryophytes are found in the subalpine and alpine regions of several of the Class I areas. Some of these species may be sensitive to SO2 concentrations in the range of 5 to 15 ppb (13 to 39 µg/m^3). The Forest Service also indicates that no significant injury to plant species in the Pacific Northwest is expected for annual NO2 concentrations less than 15 ppb (28 µg/m^3).

The 24-hour maximum and annual results displayed in Table 3.2-10 are several orders of magnitude less than Forest Service criteria established to protect vegetation in Pacific Northwest Class I areas. While the cumulative effects of other existing sources were not considered in this analysis, the magnitude of the predictions from the Wallula Power Project are insignificant and are not expected to cause or contribute to the injury of plant species within the Class I areas.

Nitrogen and Sulfur Deposition at Class I Areas. The CALPUFF modeling system was used to estimate the Wallula Power Project's potential contribution to total nitrogen and sulfur deposition in the Class I areas. Soils, vegetation, and aquatic resources in Class I areas are

potentially influenced by nitrogen and sulfur deposition. For several Pacific Northwest Class I areas, the background deposition of nitrogen and sulfur is already above federal land manager levels of concern.

Maximum annual deposition fluxes predicted by the CALPUFF modeling system are presented in Table 3.2-11. The highest predicted deposition fluxes are in the Spokane Indian Reservation and the Eagle Cap and Hells Canyon Wilderness Areas. However, the deposition fluxes predicted are more than a thousand times lower than the Forest Service criteria and many times less than estimated existing deposition fluxes. For PSD review of proposed power plants within Washington, the Washington Department of Ecology suggests 0.01 kilogram per hectare per year (kg/ha/yr) and 0.006 kg/ha/yr as significance criteria for nitrogen and sulfur deposition, respectively. Predicted deposition fluxes are much lower than Ecology's suggested criteria for all areas of interest in the study.

Note however, the assessment of additional acid deposition must consider recent studies confirming existing ecological impacts related to sulfur and nitrogen deposition along the eastern Cascade range, particularly in the Columbia Gorge west of Hood River (Geiser and Bachman 2002). As described in Section 3.2.1 studies have revealed measurable shifts in the distribution of sensitive lichen species, presumably related to current levels of acid deposition caused by existing air pollutant sources east of the Cascades. In that context, it is uncertain whether relatively small increases in acid deposition caused by the Wallula plant's emissions could exacerbate the existing adverse impacts.

Table 3.2-11. CALPUFF Annual Deposition Analysis Results (Total Annual Wet Plus Dry Deposition)

	Nitrogen Deposition (kg/ha/yr)				Sulfur Deposition (kg/ha/yr)			
Class I Area	**Project**	**Back ground**	**Total**	**Change**	**Project**	**Back ground**	**Total**	**Change**
Mt. Rainier National Park	0.00009	2.4	2.40009	0.0036 %	0.00003	3.1	3.10003	0.0008 %
Goat Rocks Wilderness	0.00011	9.0	9.00011	0.0012 %	0.00003	11.8	11.80003	0.0003 %
Mt. Adams Wilderness	0.00014	9.0	9.00014	0.0015 %	0.00004	10.8	10.80004	0.0004 %
Mt. Hood Wilderness	0.00023	5.4	5.40023	0.0043 %	0.00007	8.6	8.60007	0.0009 %
Alpine Lakes Wilderness	0.00032	5.2	5.20032	0.0062 %	0.00009	7.2	7.20009	0.0012 %
Glacier Peak Wilderness	0.00020	5.8	5.80020	0.0034 %	0.00005	8.0	8.00005	0.0007 %
Eagle Cap Wilderness	0.00042	1.6	1.60042	0.0260 %	0.00012	1.6	1.60012	0.0078 %
Hells Canyon Wilderness	0.00042	1.2	1.20042	0.0351 %	0.00013	1.4	1.40004	0.0093 %
Strawberry Mtn. Wilderness	0.00010	1.2	1.20010	0.0085 %	0.00004	1.4	1.40002	0.0026 %
Spokane Indian Reservation	0.00108	10.0	10.00108	0.0108 %	0.00034	12.0	12.00034	0.0029 %
USFS Level of Concern			5.0				3.0	
Ecology Significance Level	0.01000				0.06000			
Class II Area of Interest								
CRGNSA	0.00037	10.0	10.00037	0.0037 %	0.00012	12.0	12.00012	0.0010 %

Notes:
Emissions are based on continuous 100 % load operation with supplemental duct firing and auxiliary boiler.
Nitrogen deposition includes ammonium ion.

Regional Haze Assessment. PSD regulations require the applicant to model the increase in the light extinction coefficient (b_{ext} [a measure of visibility]) at Class I areas and other areas designated as sensitive by the federal land managers. The applicant modeled the impacts at nine Class I areas, the Columbia River Gorge National Scenic Area, and the Spokane Indian Reservation. The CALPUFF regional haze analysis results calculate the maximum predicted change in 24-hour extinction coefficient. Changes to extinction are based on seasonal background data for good visibility days and are adjusted with hourly humidity. The extinction budgets for the higher episodes in most Class I areas are influenced by nitrates, PM10, and sulfates (to a lesser extent).

Regional haze is usually quantified using two related indicators. The "visual range" is the distance at which a dark mountain is just perceptible against the sky. The visual range decreases if the air is polluted. The "light extinction coefficient" (b_{ext}) has units of Mm^{-1} and is another indicator to quantify how pollutants in the atmosphere reduce visual range. Increased b_{ext} results in reduced visual range. For example b_{ext} coefficients of 18.1 Mm^{-1} and 20 Mm^{-1} correspond to visual ranges of 216 km and 196 km, respectively. If the background b_{ext} is 18.1 Mm^{-1}, then an increase of 1.9 Mm^{-1} (caused by emissions from a new source) would decrease the visual range by about 10%.

Criteria for defining a significant impact to regional visibility resulting from emissions from new air pollutant sources are described in recent federal guidelines published by the Federal Land Managers' Air Quality Related Values Workgroup (FLAG) in its Phase One Report, published by the U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service in December 2001. According to the federal land mangers (FLMs) responsible for protecting air quality in the Class I areas, a 5% change in extinction can be used to indicate a "just perceptible" change to a landscape and a 10% change in extinction coefficient from the "natural" background is considered a significant incremental impact. Restoration of "natural background" visibility is the long-range goal of existing federal regulations (EPA's Regional Haze Rule) as well as the FLMs. "Natural background" b_{ext} coefficients for each Class I area in the Pacific Northwest are listed in the FLAG guidance document.

A more stringent definition of a significant cumulative visibility impact applies in cases where a new air pollutant source would impact an area that already experiences significant visibility impairment (i.e., existing manmade extinction coefficients already more than 10% higher than natural background values). In that case, the new source would be determined to cause a significant visibility impact if the new source (by itself) caused an increase in extinction more than 0.4% compared to natural background. The FLAG guidance does not clearly specify what level of documentation is required to indicate existing visibility is already impacted. As described in Section 3.2.1 the Forest Service recently submitted reports citing monitoring data indicating regional visibility near the Wallula site is already impacted (U.S. Forest Service 2002; Geiser and Bachman 2002).

However, a recent ruling by EPA Region 10 regarding the proposed Wanapa Energy Center project in Oregon clarified that, for regulatory purposes to comply with PSD permitting requirements, the 0.4% criterion applies only in a narrow context (EPA 2002). EPA ruled that it should be applied only in cases where regional-scale modeling of all "increment consuming sources" has been conducted to demonstrate that the existing extinction exceeds 10% above natural background. As described in Section 3.17, Bonneville recently conducted regional visibility modeling accounting for some of the region's emissions (Bonneville 2001a, 2001b,

2001c). Those studies concluded that cumulative visibility at regional Class I areas would likely be impacted by more than 10% above background under some meteorological conditions. However, in the case of the Wanapa Energy Center project EPA ruled that Bonneville's regional modeling study did not satisfy the definition of an adequate cumulative impact assessment, and therefore the "0.4% above background" visibility impact criterion is not currently applicable to future projects undergoing PSD review. Based on EPA's ruling it is assumed that the "0.4% above background" is not applicable for the Wallula project.

Assumed Year 2001 background b_{ext} values represent visibility on the clearest 5% of the days in the Class I/Scenic/Wilderness Areas and the best 20% of days in the CRGNSA and the Spokane Indian Reservation. These Year 2001 background values were based on measured data provided by the U.S. Forest Service. The assumed background coefficients are similar to, and in some cases lower than, the natural background b_{ext} values published by the FLMs (FLAG 2000). Therefore, the regional haze modeling provided a reasonably conservative assessment in accordance with the FLAG guidance. Background ozone and ammonia concentrations, nitrogen deposition, and sulfur deposition data were based on generally conservative assumptions.

Table 3.2-12 lists the modeling results for the sensitive areas that were modeled to experience the highest increase in b_{ext}. The modeled changes to extinction are less than the 5% criterion suggested by the federal land managers and Washington Department of Ecology for all seasons and Class I areas. According to this criterion, changes to visual conditions in the Class I areas would not be perceptible even when the Wallula Power Project's combustion gas turbines, HRSG duct-burners, and auxiliary boiler are emitting at their short-term peak rates.

Table 3.2-12. Modeled Regional Haze Impacts

Protected Area	Extinction Coefficient B_{ext} (1/Mm)			Highest 24-hour Increase in b_{ext}
	Project	Background	Total	
Columbia River Gorge National Scenic Area (Class II)	1.37	41.8	43.2	3.27%
Mt. Hood Wilderness (Class I)	0.77	23.7	24.4	3.25%
Mt. Rainier National Park	0.107	16.83	16.64	0.63%

Notes:
Emissions based on continuous operation with supplemental duct firing and auxiliary boiler.
Background extinction coefficients derived from aerosol data on days with best visibility: top 20th percentile at Columbia River Gorge National Scenic Area, and top 5th percentile for Class I areas.
Significant impact is defined as a 5% increase in the modeled $b_{ext.}$
Mm = megameters
Source: Wallula Generation (2001).

Odors

The project would be located in an area where several sources of odor already exist (e.g., Iowa Beef Processors slaughterhouse, J.R. Simplot Company cattle feedlot, Ponderosa Fibers deinking plant, and Wallula Mill). The project would not contribute to these odors during normal operation. Natural gas delivered to the Wallula Power Project may be odorized, but it would be contained within the natural gas pipeline and power plant piping system up to the point of use in the combustion gas turbines, HRSGs, and the auxiliary boiler where it would be combusted. There would be a gas metering building that would contain equipment for natural gas pressure reduction. This enclosed structure would contain natural gas detection systems to identify leaks.

Other detection equipment would be located in other areas of the plant where natural gas leaks can collect so the power plant operators can contain and vent the gas.

Ammonia used in the SCR system for NOx control is the only other potential source of odor. Trace amounts of ammonia emitted from the combustion turbine stacks would disperse to well below odor thresholds before the plume reached the ground. Otherwise, ammonia odor would not be detected unless it was spilled.

Cooling Tower Plumes

Downwind impacts caused by water vapor and water droplets emitted from the cooling towers were modeled by the applicant using the Seasonal/Annual Cooling Tower Impact Program (SACTIP) computer model. SACTIP calculated the occurrence of elevated visible plumes water and salt deposition, ground-level fogging, and icing. The model simulated downwind dispersion of the steam plumes based on wind data from the local meteorological station and relative humidity data from Pasco, Washington.

The key issue associated with the cooling tower plumes is their potential impact on local climate at the nearest agricultural parcels directly north and northeast of the plant site. Those two parcels are used to grow alfalfa, hay, and fruit orchards. There is concern that the cooling tower plumes could shade those parcels or increase relative humidity enough to retard growth of the crop or drying of the crop after it is harvested. However, as described in the following sections, the SACTIP model indicated that the cooling tower plumes would have no significant impact beyond the power plant facility boundary.

Emissions of Water Droplets and Water Vapor. The power plant would emit water vapor and water droplets from the cooling system, combustion turbine exhaust, and wastewater operations. The applicant estimated water emissions to the atmosphere as follows:

- Water vapor from cooling towers — 4.4 mgd (3,055 gpm)
- Water vapor from combustion turbine stacks — 2.4 mgd (1,666 gpm)
- Water vapor from wastewater evaporation ponds — 0.1 mgd (69 gpm)
- Water droplets from cooling towers — 0.0005 mgd (3 gpm)

Water vapor emitted in the hot exhaust gas from the tall combustion turbine stacks would rapidly disperse before the plume reached ground several miles from the plant, so water emissions from those stacks would cause no significant impacts. However, the downwind impact caused by 4.4 mgd of water vapor emitted from the cooling towers was evaluated using the SACTIP model.

Cooling Tower Steam Plume Visibility. The potential visibility of a cooling tower plume in the area of the Wallula Power Project was evaluated. A visible overhead plume at the cherry orchards could shade the trees during important growing conditions. After excluding those hours in which the plume would be obscured by darkness and bad weather, a map was developed (Figure 3.2-1). It shows that a visible plume would extend into cherry orchards north of Dodd Road to the north for a period of less than 150 hours per year. Visible plume contours to the west, east, and south are less extended and occur for a shorter period of time.

The SACTIP model indicated that the elevated visible plumes shown in Figure 3.2-1 would seldom occur during daytime during the spring and summer growing season. Visible steam plumes extending beyond the power plant facility boundary would not occur when the relative humidity was less than 70%. The average relative humidity during spring and summer is 41%, and it is unlikely that humidity levels during those seasons would exceed 70% for extended periods other than at night. Therefore, it is unlikely that visible steam plumes would extend over nearby agricultural parcels in daylight hours during the growing season.

Cooling Tower Steam Plume Fogging and Icing. The results of an analysis concerning potential fogging are summarized in Figure 3.2-2, which presents contours lines on a map showing the extent and number of hours in which fogging may be a potential impact to the local area. Based upon the contours it can generally be concluded that

- plume induced ground level fog would occur for less than 1 hour per year on U.S. Highway 12 and the county access road running through the project site; and
- plume induced ground level fog would occur infrequently (for approximately 4 to 5 hours per year) on Dodd Road.

In cold weather, a cooling tower plume would typically persist until the air exiting the cooling tower sufficiently mixes with the surrounding cooler, drier air. If the plume returns to ground level prior to dissipating, it can cause localized fogging or icing of downwind structures and roadways. In order for roadway icing to occur, the cooling tower plume needs to touch down on the road surface, the plume must become condensed, and the temperature of the road surface must be below freezing. The SACTIP model was used to assess icing of the area surrounding the project site, including local roadways (U.S. Highway 12, the county access road running through the project site, and Dodd Road) due to the project's cooling tower plumes. Three years of local meteorological data from the Boise Cascade Corporation Wallula Mill meteorological monitoring station and City of Pasco Airport were used with the SACTIP model for this analysis. For the 3-year period analyzed, icing was not projected to occur.

While the conditions for icing did not occur during the 3-year period evaluated with the cooling tower plume model, the potential for icing on the local roads still exists. Under meteorological conditions of moderate to high winds in the direction of the roadways, low dew-point depression, and low temperatures (below freezing) icing could occur. However, due to the infrequent occurrence of these conditions, if icing were to occur it would be of short duration.

Cooling Tower Plume Droplet Deposition. Local farmers have expressed concern that water droplets emitted from the cooling towers could settle onto nearby agricultural land and possibly retard drying of harvested alfalfa. The SACTIP model indicated this is unlikely to occur. The model predicted that the average monthly deposition of water droplets onto the nearest agricultural parcels within 0.25 mile of the plant boundary would be equivalent to only 0.0005 inch per month of rainfall. This additional water deposition would be insignificant compared to the normal rainfall during the summer and autumn months (0.5 to 1.0 inch per month).

Increase in Relative Humidity. Local farmers have expressed concern that water vapor emitted by the cooling towers could increase local humidity during the late growing season and retard drying of harvested alfalfa and hay at nearby agricultural parcels. This is unlikely because the amount of water vapor emitted by the cooling towers is only a small fraction of the naturally occurring water vapor that blows past the plant site. The cooling towers would emit 4.4 mgd of water vapor. However, on an average summertime day, an estimated 96 mgd of naturally

occurring water vapor blows past the site (based on an average summertime relative humidity of 36%, average temperature of 56°, and average wind speed of 9.8 miles per hour). The cooling towers would add approximately 5% of the naturally occurring humidity, so it is unlikely that the additional water vapor would increase regional humidity. The minor increase in humidity would be unlikely to affect growing and drying of hay and alfalfa.

Cooling Tower Steam Plume Salt Deposition. As the droplets of moisture in the plume evaporate, particulates form which would be deposited on areas adjacent to the Wallula Power Project. These particulates represent salts that naturally occur in the groundwater that would be used to make up the cooling tower's water circulating system.

In general, the quantity of the total dissolved solids, rather than specific chemical composition, determines the impact from deposition onto plants. Field studies of agricultural crops in a dry climate have shown that when cooling tower salts are applied at deposition rates of 3 to 4 kilograms per hectare per month (kg/ha/mo) to sensitive species such as corn, significant (10%) reduction in yield may occur. However, natural vegetation is generally more resistant than crop plants to damage from salt deposition.

Figure 3.2-3 shows the rate at which the particulates from the cooling tower would be deposited in the local area. Over 99% of the particulates would be deposited within 100 meters of the cooling towers. The cooling towers would be located adjacent to the J.R. Simplot Company feedlot where the prevailing winds would carry the drift if it extends off-site. Drift falling on the bare feedlot ground would not impact plant life.

Deposition rates modeled for the proposed cooling towers projected a maximum total salt deposition of 1,427 kg/ha/mo at a distance of 50 meters from the wet mechanical-draft cooling towers. This places the maximum deposition within the facility boundaries and approximately 180 meters inside the closest property fence line. Deposition rapidly falls off at distances of 100 meters or more from the cooling towers.

The modeling showed that salt deposition rates at the agricultural parcels south of Dodd Road would be less than the impact thresholds. The modeled salt deposition rate at the nearest alfalfa field due north of the plant (300 to 1,200 meters from the cooling towers) averaged 0.5 kg/ha/mo. The modeled salt deposition rate at cherry orchards north and northwest of the plant (500 to 1,500 meters from the cooling towers) averaged between 0.05 and 0.15 kg/ha/mo. These modeled deposition rates are less than the threshold rates of 3 to 4 kg/ha/mo believed to affect agricultural plants (including cherry orchards), and it is concluded that the cooling towers would not adversely affect the nearest agricultural parcels.

The modeled salt deposition rates at the nearest alfalfa field and orchard north of Dodd Road (1,200 to 2,000 meters from the cooling towers) averaged less than 0.05 kg/ha/mo. These modeled deposition rates are less than the threshold rates of 3 to 4 kg/ha/mo known to affect agricultural plants.

Deposition rates along the adjacent J.R. Simplot Company feedlot property line would range from 1.15 to 0.5 kg/ha/mo. Deposition rates within the J.R. Simplot Company feedlot area would decrease rapidly from these levels and are not expected to be significant (see Figure 3.2-3).

Analysis of Potential Impacts to Local Cherry Orchards

The applicant conducted additional analyses to investigate the potential impacts to the Dodd Road cherry orchards resulting from changes in temperature, moisture, and shadowing from the power plant plumes (Wallula Generation 2002). The results of these additional analyses indicate that the potential impacts from the Wallula Power Project are insignificant and would not adversely impact the cherry orchard operations. The locations of the cherry orchards discussed below can be found on Figures 3.2-1, 3.2-2, and 3.2-3.

Potential Temperature Effects on Cherry Orchards. The Wallula Power Project would emit warm gases from the HRSG stacks and warm moist air from the cooling tower stacks during its normal operation. An analysis was performed to determine if these sources would have any significant impact on ambient temperatures, which in turn could affect the budding season of the cherry orchards near the project site. The cherry orchards are located about 1,200 meters to 1,800 meters north by northeast from the center of the cooling tower stacks.

The heat emitted by the power plant stacks and the cooling towers would have little effect on ambient air temperature during the critical cherry budding season from January through April. To calculate the impact on budding, potential effects on the maximum daily temperatures which determine the number of Heat Units were calculated. Heat Units is a term used by the Tree Fruit Research & Extension Center of Washington State University. Heat Units for cherry growing are defined as the equivalent to the number of degrees Fahrenheit by which the actual maximum temperature exceeds 43^{o}F in any one day. The study concluded that there were 10 days over a 4-month period (January 1 through April 30, 1999) when the maximum daily temperature exceeded 43^{o}F by more than 0.01^{o}F.

The projected cumulative seasonal Heat Units caused by the power plant emissions (i.e., the sum of the individual daily Heat Units) would be less than 1.9 over the cherry budding period from January through April. Cherry orchards near Wallula normally experience between 774 and 1,228 Heat Units during the normal growing season, so the increase of 1.9 Heat Units resulting from the power plant emissions would be insignificant. This potential increase in Heat Units caused by the Wallula Power Project's emissions would not likely advance the budding season by even a single day and therefore there would be no significant impact to the budding conditions at the cherry orchards.

Potential Moisture Effects on Nearby Cherry Orchard. An evaluation was conducted to assess potential moisture effects of the cooling tower plume on the cherry orchards. In order for moisture effects to be significant there has to be free moisture on the fruit over a period of time, on the order of several days. The most sensitive period is during the pink fruit stage, which usually occurs for less than a month and generally in June. The SACTIP cooling tower plume model was run using meteorological data for June 1997, 1998, and 1999. Normal rainfall for the month of June at the Pasco Airport is 0.51 inches. The model predicted an additional 0.0002 inches per month of droplet deposition caused by the cooling tower emissions. The 0.0002 inches per month that was modeled equates to an approximately 0.0392% increase in potential moisture due to the cooling tower operation. This amount of moisture is insignificant and therefore moisture from the Wallula Power Project cooling tower plumes would not cause cracking of the cherries in the nearby cherry orchards.

[insert figure 3.2-1]

[insert figure 3.2-2]

[insert figure 3.2-3]

Potential Plume Shadowing Effects on Nearby Orchard. The SACTIP cooling tower plume model was used to identify how often plume shadowing would occur during the growing season. For this analysis the growing season was assumed to be from May through September, and meteorological data for the years 1997, 1998 and 1999 were modeled. In the vicinity of the Dodd Road cherry orchards the total number of hours of plume shadowing over the 3-year period ranged from 9 hours to 29 hours (or an average of 3 hours to 10 hours per year) during the entire May through September period. This increase in hours of reduced solar radiation due to plume shadowing would not have a significant negative effect on the growth or health of the cherry trees in the nearby cherry orchards.

Greenhouse Gases

Greenhouse gases are described in Section 3.17, Cumulative Impacts.

Water Supply Pipeline, Natural Gas Pipeline, and Transmission Line

There would be no significant air quality impacts anticipated with the operation of the water supply pipeline, transmission line, or gas pipeline. Maintenance vehicles operating on unpaved access roads would generate minor amounts of dust.

3.2.3 Impacts of Alternatives

3.2.3.1 Alternative Tower Height and Longer Span Design

This alternative would not substantially change the air quality impacts compared to the proposed alternative.

3.2.3.2 Alternative Alignment near McNary Substation

This alternative would not substantially change the air quality impacts compared to the proposed alternative.

3.2.3.3 No Action Alternative

Under the No Action Alternative, the proposed project would not be built. No air quality impacts associated with the proposed project would occur. No acreage currently in cultivation and contributing to PM10 serious nonattainment in the project area would be converted to an alternate usage.

3.2.4 Mitigation Measures

3.2.4.1 Construction

No mitigation measures other than those included as part of the project design are warranted to comply with state regulations for reduction of fugitive dust.

3.2.4.2 Operation and Maintenance

Greenhouse Gas Emissions

Currently, there are no international, national, state, or local regulations that set numerical limits on greenhouse gas emissions. However, the Washington State rule relating to siting energy facilities (WAC 463-42-225, Proposal – emission control) requires the applicant to demonstrate that highest and best practicable treatment for control of emissions is used for a number of air pollutants including CO2. The Washington regulation does not specify how to quantify "highest and best practicable treatment" for CO2. To provide perspective on this issue, greenhouse gas offset programs within the Pacific Northwest were evaluated. The greenhouse gas elimination targets for other existing programs were discussed in the Draft EIS, including those in Oregon, Seattle, Vancouver Island, Chehalis, and Sumas. In May 2002, EFSEC accepted the Sumas Energy Generation Facility proposal to pay greenhouse gas emission fees of $0.57 per ton of CO2 emissions. This proposal is currently before the Governor for final consideration.

Since issuance of the Draft EIS, the applicant entered into a Settlement Agreement with the Washington State Counsel for the Environment to implement an environmental enhancement package. The Settlement Agreement acknowledges that greenhouse gas emissions are an important worldwide environmental issue with potential negative implications for Washington state. The Settlement Agreement stipulates that the Site Certification Agreement issued by EFSEC for the Wallula project shall require payments by Wallula Generation to environmental organizations for purposes of reducing greenhouse gas emissions and enhancing wildlife habitat. Payments totaling $5.35 million would be directly related to greenhouse gas mitigation and renewable energy projects, as follows:

- $1.0 million to the Last Mile Energy Cooperative to fund research into renewable energy and greenhouse gas reduction,
- $2.55 million to the Washington State University Energy Program, to be used to issue requests for proposals for greenhouse gas mitigation and renewable energy projects,
- $1.65 million to the Bonneville Energy Foundation for renewable energy projects including the photovoltaic solar project at the Hanford, Washington site, and
- $150,000 to the Blue Mountain Action Council to fund home weatherization projects.

The environmental enhancement package would include additional payments to other organizations to fund wildlife habitat protection, water resources management, and educational programs.

Criteria Pollutants (BACT and LAER)

The emission rates and PM10 emission offsets described in Section 3.2 are based on the applicant's proposed emission controls for BACT, LAER, and ERCs. EFSEC has issued draft PSD and NOC permits for public comment. It is possible that EFSEC or EPA could stipulate more stringent emission controls than are described in this document.

3.2.5 Significant Unavoidable Adverse Impacts

Controlled emissions from the Wallula Power Project could combine with emissions from other existing and proposed industrial facilities and contribute to cumulative air quality impacts along the eastern Cascade Mountains. Cumulative impacts are evaluated in Section 3.17.

3.3 Water Resources

Additional Information on Surface Waters and Flooding in the Project Area

Additional detail about surface waters and flooding in the project area is presented below. This information does not substantially change the conclusions about impacts presented in the Draft EIS.

The 5.1-mile interconnect would not cross any water bodies, nor are there any water bodies in the vicinity of the switchyard. The transmission line right-of-way would span the Walla Walla River, Juniper Canyon Creek, and numerous ravines and drainage areas where the presence of surface water is intermittent. The drainages that would be spanned by the proposed transmission lines drain westward or northward to the Columbia River.

Other water bodies near the right-of-way corridor include Smiths Harbor (a moderate-sized lake formed along the Walla Walla River), Juniper Canyon Creek, an ephemeral stream in Spring Gulch Canyon, Cold Springs Creek irrigation stream (a channelized stream), various ephemeral drainage ditches, and various wetland areas. In one of these ephemeral drainage ditches (within Section 23, Township 5 North, Range 28 East of the Hat Rock Quadrangle) a second culvert would be installed for the construction of an access road. The wetland areas include the potholes and ponds in the McNary Potholes Area and the wetlands on either side of U.S. Highway 395, approximately 0.25 mile south of U.S. Highway 730. The McNary Potholes is a portion of the 2,817-acre Wanaket Wildlife Area, an artificial wetland area created through a flood irrigation system from Columbia River water (operating from March 1 to October 31).

In terms of flooding, a catastrophic failure of a major impoundment dam upstream of the generation plant site would result in a considerably larger flood than the probable maximum flood (PMF) and could threaten the lower lying parts of the generation plant site, although such an event is considered unlikely. A failure of the Grand Coulee Dam represents the highest potential for inundation at the plant site. For this scenario, the highest probable water level is 378 feet MSL in Lake Wallula. Therefore, under this catastrophic flood scenario, some inundation could occur along the lower, western portion of the project site.

The pipeline alignments would all be located entirely above the 100-year floodplain and the PMF elevation of 356.5 feet MSL. With the exception of a short section of the combined pipeline alignment across the unnamed dry wash about 0.75 mile south of the project site, the pipeline laterals would also be well above the catastrophic flood that could occur in the event of a rapid breach of the Grand Coulee Dam. As described above for the plant site, the Grand Coulee Dam failure scenario represents the highest potential for inundation in the area. For this scenario, the highest probable water level in Lake Wallula is 378 feet MSL, compared to an elevation of approximately 370 feet MSL where the proposed pipelines would cross the dry wash south of the plant site.

The interconnect, transmission lines, access roads, and switchyard would be located at elevations well above the 100-year flood, PMF, and potential catastrophic flood that could occur in the event of an upstream dam failure along the Columbia River.

Additional Information on Groundwater Quality

The following excerpt updates Section 3.3.1.4 (Groundwater) from the Draft EIS. It presents updated information on the chemical makeup of supply water for the plant.

Groundwater Quality

Information on regional groundwater quality comes from previous regional and local studies and from samples collected by the applicant for this project. Most of the previous data focused on nitrate concentrations because shallow groundwater in much of the Pasco Basin has been contaminated by agricultural activities and nitrate levels are commonly high. For this project, a wider analytical array was obtained to evaluate the quality of the water that would be used for makeup cooling water for the generation plant.

Spalding et al. (1982) found that the primary source of groundwater nitrate in the project vicinity was leaching of agricultural fertilizers, with contribution from septic drainfields in the residential neighborhoods of the community of Burbank, and animal waste leaching in an alfalfa field irrigated with water from a cattle wastewater lagoon. The maximum nitrate concentration measured was 51 milligrams per liter (mg/L) nitrate, from a well downgradient of the wastewater spray field in the Wallula area. Two-thirds of the nitrate concentrations measured in that study fell in the range 6 to 14 mg/L.

Limited groundwater quality information from public water supplies was obtained from the Walla Walla County Health Department. They provided records of eight public water supplies that use 14 wells for industrial and public water supplies. The water quality data from these wells indicate that groundwater supplies near the proposed power plant meet most, but commonly not all, chemical requirements for untreated drinking water (maximum contaminant levels or MCLs). In particular, nitrate and fluoride consistently exceed drinking water MCLs at these sources. Local public water supplies with sources that contain nitrate concentrations above 10 mg/L treat drinking water to reduce nitrate concentrations. Agricultural and industrial water uses have less stringent water quality criteria than those for drinking water, and the exceedance of MCLs does not necessarily indicate problems for agricultural and industrial use.

Three of the public supply wells identified produce from the unconfined gravel aquifer, at depths ranging from 14 to 100 feet. Nitrate concentrations in these wells vary from 0.6 to 15.1 mg/L, compared to the primary MCL of 10 mg/L. Nine of the public supply wells produce from the Saddle Mountain Basalt aquifers. The shallow basalt wells (132 and 175 feet deep) are high in nitrate (15.9 and 35.7 mg/L) whereas all the deeper basalt sources contain nitrate concentrations of less than 2 mg/L. The public supply wells near the plant site have higher nitrate concentrations than wells to the north or south. The water quality data also indicate that fluoride concentrations exceed the secondary MCL of 2 mg/L in four of the local public water sources; however, none of those sources exceeded the primary MCL of 4 mg/L for fluoride.

Barr Engineering (1997) performed a detailed analysis for Boise Cascade Corporation of local groundwater quality in the unconfined gravel aquifer. They found that major ion chemistry of the

shallow groundwater near the Columbia River has low total dissolved solids (TDS) (less than 250 mg/L), is of the calcium-chloride type, and changes upgradient (north and northeast) to the sodium-bicarbonate type with increased TDS (greater than 1,500 mg/L). Concentrations of sodium, potassium, calcium, iron, manganese, chloride, sulfate, ammonia, nitrate, bicarbonate, color, tannins and lignins, TDS, and specific conductance are high in upgradient areas and low in downgradient areas near the Boise Cascade Corporation Wallula Mill and irrigation wells. Water pumped from the irrigation wells is presumed to be a mixture of upgradient groundwater and infiltrated Columbia River water.

Water quality data from the new J.R. Simplot shop well just east of the project site and from and the 10 Boise Cascade Corporation Fiber Farm wells are summarized in Table 3.3-1. The J.R. Simplot well draws water from the lower Saddle Mountain Basalt aquifer, the same aquifer used by the Port of Walla Walla well.

Table 3.3-1. Chemical Analyses of Supply Water (mg/L)

Parameter (as ion, unless noted)	Boise Cascade Corporation Fiber Farm Wells (Gravel Aquifer)[a]	J.R. Simplot Shop Well (Basalt Aquifer)	Combined Water Supply to the Raw Water Storage Tank[b]
Barium	0.021 to 0.183	0.01	0.015
Calcium	23 .9 to 122.0	1.77	15.5
Iron	<0.02 to 0.05	ND	0.07
Lead	<0.001	ND	0
Magnesium	6.99 to 42.0	0.10	4.5
Manganese	<0.001	ND	0
Potassium	3.4 to 12.5	8.6	6.27
Silica	12.5 to 20.8	43.6	36.1
Sodium	12.2 to 113	70.2	39.2
Strontium	0.129 to 0.753	ND	0.06
pH	7.29 to 8.09	9.16	8.30
Conductivity (µmho/cm)	220 to 1500	331	275
Alkalinity, total as CaCO3	100 to 280	129	113
Bicarbonate alkalinity, as CaCO3	100 to 280	77	27.1
BOD (5-day)	< 1.0	12	5.53
Chloride	7.0 to 240	20.1	9.81
Fluoride	0.3 to 0.8	3.5	1.48
Nitrate (as nitrogen)	0.26 to 30.0	0.10	0.17
Phosphorus, total	0.035 to 0.072	0.03	0.04
TDS	160 to 1300	283	192
TSS	< 1.1 to 1.4	ND	1.68
Sulfate	17.0 to 260.0	0.8	6.17
Carbon, total organic (TOC)	< 1.5 to 3.4	ND	0.74
Turbidity (NTU)	< 0.05	0.5	0.63

[a] Data reflect a range of analytical values from 10 Boise Cascade wells, sampled in July 2001.
[b] Data are based on analyses available at the time the Application for Site Certification was prepared.
ND = no data

Analyses were performed for a wide range of chemical parameters to evaluate the suitability of the water for power plant uses. The chemistry of the source water samples was generally found to be consistent with the origins and ages of the waters. The Boise Cascade fiber farm wells draw

upgradient groundwater mixed with river water that has infiltrated the Pasco Gravel aquifer. The analytical results from the 10 Boise Cascade fiber farm wells vary considerably, apparently reflecting the sources of water from which they draw. Those wells situated farthest from the Columbia River tended to have the highest levels of total dissolved solids (TDS), silica, nitrate, chloride, and alkalinity, all of which are suggestive of an upgradient source; in contrast those wells nearer the river tended to have lower concentrations of these parameters, closer to those typical of the river water.

Groundwater from the J.R. Simplot shop well is derived from the lower Saddle Mountain Basalt aquifer. This water is older, with attendant increases in TDS (283 mg/L), silica (43.6 mg/L), chloride (20.1 mg/L) and sodium (70.2 mg/L) and a decrease in calcium (1.77 mg/L) relative to water from the unconfined aquifer. The pH is strongly alkaline (9.16) and alkalinity is higher than most other samples (129 mg/L as CaCO3). The biological oxygen demand (BOD) was detectable (12 mg/L) whereas iron and manganese were not detected. Water quality from the new Port of Walla Walla well is likely similar based on its proximity to and comparable depth as the J.R. Simplot well.

Updated Water Supply and Water Rights Information

Since publication of the Draft EIS, the applicant has decided not to propose reusing stormwater for plant operations. This section updates the discussion of water supply for the proposed project that was provided in Section 3.3.1.5 of the Draft EIS. This section also provides additional information about the water rights transfer process and the Reports of Examination prepared by the Washington Department of Ecology.

The proposed project would consume a large quantity of groundwater, primarily as cooling water for the operation of the generation plant. The following discussion focuses on public and private water supplies that could be affected by that use.

Incidental use of this same source of water would be required during construction and for hydrostatic testing of the pipeline. Although there would be minor use of water associated with the construction, operation, and maintenance of the transmission lines, the amount of water used would be negligible relative to the overall water use from any likely public water supplier. Therefore, the transmission right-of-way is not discussed further with respect to public and private water supplies.

Water Rights Procurement and Water Production Plan

Cooling water for the power plant would come from three sources.

- Purchase of groundwater rights of a maximum flow of 1,200 gallons per minute (gpm) (limited to a volume of 1,800 acre-feet per year) from a deep on-site well owned by the Port of Walla Walla.
- Purchase and transfer of the water rights as part of the purchase of a portion of the Boise Cascade Corporation fiber farm agricultural land, for an instantaneous pumping rate of 9,485 gpm and a volume limited to 5,024 acre-feet per year.
- Purchase and transfer of the water rights as part of a purchase of conservation easements from the J.R. Simplot Company for a maximum instantaneous flow of 3,285 gpm (limited to 1,425 acre-feet per year).

The water purchased from the Boise Cascade Corporation and J.R. Simplot Company would all be pumped from 10 existing, relatively shallow wells located on the Boise Cascade Corporation fiber farm south of the plant site. These wells draw from the unconfined gravel aquifer. The on-site water would be drawn from the existing Port of Walla Walla well and a new backup well that would be installed on-site as part of this project. These deep wells would draw from the lower Saddle Mountain aquifer.

The total amount of water that can be delivered to the Wallula Power Project under these rights would be an instantaneous peak rate of 13,970 gpm, and limited to 8,249 acre-feet per year. This is considerably more than would actually be used. The estimated maximum water demand is 6,243 gpm, with an estimated instantaneous peak load of 7,901 gpm. The maximum expected annual water usage is estimated to average 4,087 gpm and the actual annual consumption is expected to be 5,218 acre-feet.

The applicant has secured purchase and lease options for land and associated water rights, as summarized in Table 3.3-2. A summary of the optioned water rights and amounts expected to be available to the project for industrial use after the change and transfer request process with the state of Washington Department of Ecology (Ecology) is shown in Table 3.3-3. The combined options would provide significantly more water rights than would be required by the Wallula Power Project. The exact rights to be acquired would be finalized once the water rights change protocol is completed with EFSEC and Ecology. The applicant would exercise only those options that are necessary for the project.

Table 3.3-2. Land and Water Rights Purchase Options

Ref.	Optionor	Optionee	Purchase Or Lease	Acres			Acre-Feet Per Year
				Irrigated	Dry	Total	
1a	Port of Walla Walla	Applicant	Purchase	130	45	175	
1b	Port of Walla Walla	Applicant	Purchase	Industrial Water Rights			1,800
2a	Boise Cascade Corporation	Applicant	Purchase	790	454	1,244	3,673
2b	Boise Cascade Corporation	Applicant	Purchase	453	27	480	2,153
3a	J.R. Simplot Company	Applicant	Purchase[1]	475		475	1,900
3b	J.R. Simplot Company	Applicant	Lease	1,200	400	1,600	4,800

[1] Purchase of conservation easements and proportionate allocation of water permit, not the underlying land. A new point of withdrawal has been request for the consolidated Boise Cascade Corporation fiber farm water rights.

Table 3.3-3. Optioned Water Rights Versus Maximum Expected Water Demand

Water Source and Use	Under Option		After Purchase, Change and Transfer		
	Instantaneous gpm	Acre-Feet Per Year	Average gpm	Instantaneous gpm	Acre-Feet Per Year
Port of Walla Walla	1,200	1,800	1,115	1,200	1,800
Boise Cascade Corporation	11,000[1]	5,826	2,700	9,485	5,024
J.R. Simplot Company	4,381	1,900	883	3,285	1,425
Total	16,581	9,526	4,698	13,970	8,249
Maximum Expected Water Demand			4,087	7,901	6,591
Optioned Water Supply Margin			611	6,069	1,658

[1] This would be 11,000 gpm from March 1 to November 30 and 3,500 gpm from December 1 to February 28.

Water Rights Options

The applicant would execute two separate options to purchase land and associated water rights from the Boise Cascade Corporation. Boise Cascade Corporation currently uses the agricultural land as a fiber farm to grow hybrid cottonwood, which it either sells to third parties or uses in its own pulp and paper mills. Boise Cascade Corporation has other fiber farms in the region that are newer and more efficient and intends to focus its fiber farm activities in those areas. The Wallula North and Wallula South fiber farm options entitle the applicant to purchase a total of 1,704 acres from Boise Cascade Corporation. Water rights associated with this property allow the irrigation of 1,243 acres, as shown in Table 3.3-4. Boise Cascade Corporation's current water rights certificates allow a total withdrawal of 5,826 acre-feet per year for agricultural purposes, with a permitted instantaneous withdrawal rate of 11,000 gpm from March 1 to November 30 and 3,500 gpm from December 1 to February 28.

The applicant would execute an option to purchase conservation easements and lease agricultural land and associated water rights from the J.R. Simplot Company (see Table 3.3-5). Currently, J.R. Simplot Company uses the agricultural land as part of its Grandview Farms operation with irrigation provided through the LeGrow Irrigation District. Water is withdrawn from the Wallula Pool in the McNary Reach of the Columbia River through nine pumps located at a riverside pumping station. Irrigation water is withdrawn between March 1 and November 30 and is distributed to approximately 18,000 acres under center-pivot irrigation through an extensive pumping and piping system.

The J.R. Simplot Company option entitles the applicant to purchase conservation easements on 475 irrigated acres and to receive a proportional water right entitlement based upon 4 acre-feet per year per acre. It also entitles the applicant to lease up to an additional 1,200 irrigated acres in quarter-section (160-acre) increments (each of these quarter sections has 120 to 130 central-pivot-irrigated acres) and to receive a proportional water right entitlement based upon 4 acre-feet per year for as long as the project remains as a viable commercial enterprise.

Table 3.3-4. Wallula North and South Fiber Farm Purchase Options Water Rights

Fiber Farm Location	Certificate Number	Family Farm Certificate	Reference Well Number	Priority Date	Allowable Irrigated Acres	Acre-Feet Per Year Per Acre	Acre-Feet Per Year	Gallons Per Minute	Time of Use Restrictions
North Farm	G3-28146C	Yes	43, 44, 45, 46, 47 (BCC 1, 2, 3, 4, 5)	1986	600	4.65	2,790	5,000	3/1 to 11/30
North Farm	G3-28683C	Yes	43, 44, 45, 46, 47 (BCC 1, 2, 3, 4, 5)	1989	190	4.65	883	2,500	3/1 to 11/30
South Farm	G3-21038C	No	35 (BCC 6)	1978	60	4.65	279	560	None
South Farm	G3-24791C	No	40 (BCC 7)	1976	901	5.1671	4651	3101	None
South Farm	G3-21037C	No	42 (BCC 8)	1973	80	4.65	372	800	None
South Farm	G3-21039C	No	39 (BCC 9)	1973	160	4.65	744	1,300	None
South Farm	G3-21936C	No	41 (BCC 10)	1973	63	4.65	293	530	None

1. A portion of G3-24791C is supplemental, or secondary, to G3-21037C. The supplemental portion is 340 gpm, 158 acre-feet per year, for the irrigation of 34 acres. These quantities were subtracted from G3-24791C to avoid double counting.
2. The applicant has requested consolidation of the existing points of withdrawal to utilize more fully and more efficiently the higher capacity wells.
3. The water rights for the North Farm wells are subject to the minimum flows set forth in the Columbia River Instream protection Program (WAC 173-663-040 and WAC 13-563-050.

Table 3.3-5. J.R. Simplot Company Water Rights Purchase and Lease Options

Certificate Number	Family Farm Certificate	Priority Date	Purchase Or Lease	Optioned Irrigated Acres	Acre-Feet Per Year Per Acre	Acre-Feet Per Year	Gallons Per Minute	Time of Use Restrictions
S3-2470P	No	11/13/75	Purchase	475	4.00	1,900	3,920	3/1 to 11/30
S3-2470P	No	11/13/75	Lease	≤ 1,200	4.00	≤4,800	≤11,070	3/1 to 11/30

Protocol for Water Rights Transfer Requests

Background

The applicant has worked with Ecology to define an appropriate protocol for the review, negotiation, and approval recommendation process for applicant's requested changes to the above-mentioned optioned water rights. The applicant has requested to participate in an environmental mitigation and enhancement program as described below. The applicant also has entered into a contract with Ecology to pay $344,200 for the purchase of water rights on the lower Walla Walla River. This purchase will complete a contract that Ecology had entered into earlier with a private landowner to purchase water rights appurtenant to 659 acres located on the lower reach of the Walla Walla River. The applicant's portion of this purchase will result in instream flow augmentation to the Walla Walla River in the amount of 2.8 cubic feet per second from April 1 to July 1. As part of this contract, Ecology agreed to provide a tentative determination as to the extent of water available for the proposed transfer. Because Ecology considered this purchase to be a significant environmental benefit, they also agreed to provide that determination on an expedited basis. An application may be processed prior to competing applications if "the change or transfer if approved would substantially enhance the quality of the natural environment" (Chapter 173-152-050(3) WAC). The Reports of Examination for each water right that would be transferred are included in Appendix C of this Final EIS.

Ecology and the applicant intend to negotiate the transfer and change process early in the EFSEC application review process. Once finalized, the applicant would request that EFSEC authorize the withdrawal of water as requested by the applicant for use at the facility. The EFSEC authorization of water use would be contingent upon issuance and governor approval of a Site Certification Agreement. The net effect of the water rights transaction and change approval process would be the creation of an in-stream flow benefit to the Walla Walla River because of the water right purchase described above, and an instream benefit to the Columbia River due to reduction from current levels of actual water withdrawals from the Boise Cascade fiber farm wells.

The specific transfer requests are designed to:

(a) Make all water withdrawals (except the Port of Walla Walla deep basalt well[s]) from Boise Cascade Corporation's fiber farm wells 1 through 10. This would eliminate the need to develop a new well field.

(b) Transfer Boise Cascade Corporation's water rights, including the Family Farm Certificates, directly to the applicant through an ownership change once the applicant exercises the options.

(c) Change the type of use from agricultural to industrial.

(d) Change the place of use from the agricultural lands where the water currently is being used to the Wallula Power Project.

(e) Expand the time of use for the seasonal water rights to year round.

Water Rights Discounting Procedure

Only water rights that have been in demonstrated use over the previous 5 years may be transferred. For irrigation water rights, the quantity "used" is defined as the quantity consumed by plants. The Boise Cascade Corporation fiber farm water rights that would be changed to an industrial use are based upon a crop demand of 4.25 acre-feet of water per irrigated acre. The J.R. Simplot Company water rights that would be changed from agricultural to industrial use are based upon a crop demand of 3.50 acre-feet of water per irrigated acre.

Expedited Processing

Currently, the Walla Walla River habitat is stressed during low flows because of elevated water temperatures and reduced dissolved oxygen. The applicant has consulted with Ecology on measures it could take to improve in-stream flows in the Walla Walla River as a step to improve the aquatic habitat and thereby meet the requirements of Chapter 173-152 WAC for priority processing of an application for a transfer or change of water rights.

To meet Ecology's requirement for expedited processing, the applicant has contributed to the purchase of water rights on the Walla Walla River previously negotiated under a purchase option agreement between Ecology and the landowners in question. A financial contribution of $344,200 by the applicant would allow Ecology to complete the purchase of the final 573.66 acre-feet per year contemplated by the option agreement. Assuming the full 702 acre-feet per year represents an in-stream flow benefit, the voluntary contribution by the applicant represents 12% of the Wallula Power Project's maximum expected annual water usage of 5,826 acre-feet from shallow groundwater.

The tentative determination as to the extent of water available for the proposed water rights transfer is described in Ecology's Reports of Examination, which are provided in Appendix C of this Final EIS. Those reports tentatively determined that the implementation of the proposed transfer and change in use of the Boise Cascade fiber farm water rights would not impair existing water rights, provided flow provisions for the Columbia River are carried over and adhered to. They also determined that the proposed changes would not prove detrimental to the public welfare/interest, nor would they result in enhancement of the original water right.

Additional Information on Handling of Plant Wastewater

The following text updates Section 3.3.2.2 of the Draft EIS. It provides additional information on how wastewater from the power plant would be handled.

No plant wastewater would be discharged to the surface or groundwater environment. Blowdown water would be drawn from the cooling water stream at a rate between 160 gpm and 310 gpm, then be sent to the wastewater storage tank. Under normal operation conditions, the wastewater would be cycled directly from the tank to a brine concentrator. The wastewater would be heated, vaporized, and a clean water distillate would be drawn off for future use so as to reduce volume of raw water required for cooling tower makeup water.

The clean distilled water would be sent to the inlet of the power plant mobile polishing units or to the service water tank for reuse in the power plant water systems. The concentrated brine fluid produced in the process would be sent to one of two 100% capacity decant basins to settle out a

majority of solids before overflowing to one of two lined evaporation ponds that together cover a 22-acre area. Evaporation to the atmosphere would remove the remaining liquid.

Because there would be no discharge of industrial wastewater to surface or groundwater, no off-site water quality impacts would result from operation of the plant. In order to prevent the concentrated brine from reaching either the surface water or groundwater, the evaporation ponds would be lined with a series of protective layers. The uppermost layer would consist of soil or sand to protect a 60-mil HDPE liner. This membrane would, in turn, be underlain by geosynthetic clay liner. A leakage detection system, consisting of a pipe collection system, would be placed under the clay liner to collect any leakage into a sump. Underlying the piping and sump system would be a 30-mil liner. The leakage detection system would be monitored by facility personnel to ensure the integrity of the evaporation pond liners.

Additional Clarifications to Groundwater Text

The following updated text is provided for clarification and in response to comments on the Draft EIS regarding groundwater use and monitoring. The section below originally appeared on pages 3.3-29 through 3.3-32 of the Draft EIS.

Groundwater

Plant Site

Substantial groundwater would be required to operate the Wallula Power Project. The estimated peak full load hourly water demand, at an air temperature of 98°F, is 7,901 gpm. The maximum expected annual usage is estimated at 4,087 gpm, which is equivalent to 6,591 acre-feet per year, whereas the estimated annual water usage is 3,235 gpm, or 5,218 acre-feet.

The water requirements for operating the generation plant would be met by groundwater extraction from a series of wells at the Boise Cascade fiber farm, which draw water from the shallow gravel aquifer, and deep on-site wells that draw water from the lower Saddle Mountain Basalt aquifer. Potable water would be provided by the Boise Cascade wells. These water uses would all be offset by termination of current uses through the transfer and purchase of existing water rights.

The project would include the following design elements to conserve groundwater.

- The cooling tower water chemistry is designed to accommodate 20 cycles of concentration, thus reducing the volume of raw water makeup required to make up for evaporation and cooling tower blowdown.
- The mechanical draft cooling tower would include high efficiency drift eliminators that would reduce drift water losses to 0.0005% of circulating water flow. The average annual loss from blowdown and drift loss is estimated at 161 gpm, with as much as 311 gpm during the peak month of operation.
- The plant design includes a zero discharge system to process wastewater to produce a clean distillate for reuse.

The expected impacts of the groundwater extractions for plant operation are described in the following subsections. Two aquifer systems would be affected, the shallow unconfined gravel aquifer, and the deep lower Saddle Mountain Basalt aquifer.

Effects on the Gravel Aquifer. Proposed withdrawal rates from the Boise Cascade Corporation's fiber farm wells would differ from the historical irrigation use. The maximum annual raw-water demand from these wells for the power plant is estimated at 4,793 acre-feet, compared to the 5,024 acre-feet transferable from the Boise Cascade Corporation fiber farm water rights. A comparison of monthly irrigation demand at the Boise Cascade Corporation fiber farm to raw-water demand at the power plant (described below) indicates that the latter would be lower during the maximum evapotranspiration season (May through September), but greater during the remainder of the year.

The effects of pumping under both current and expected future conditions were analyzed using a simplified MODFLOW model of the gravel aquifer in the vicinity of the Boise Cascade Corporation's fiber farm wells. The results of the analysis indicate that existing wells would not be impaired by the change in the pattern of pumping at the Boise Cascade Corporation fiber farm wells because future water level fluctuations would be less than current fluctuations. Also, maximum water use by irrigators and domestic users occurs during the summer when water levels under future conditions would be higher than historical values because the pumping rates would be reduced.

The current water use estimates for the fiber farm wells are based on the following information provided by Boise Cascade Corporation:

- well testing data;
- the rate each well pumps when it is turned on ("operational use rate");
- the number of acres planted in hybrid cottonwood trees of varying age;
- the water demands by mature hybrid cottonwood trees; and
- the typical length of an irrigation season (6 months).

Seven water rights for Boise Cascade Corporation's fiber farm wells permit irrigation of up to 1,243 acres, whereas 1,182 acres are planted at this time. The water rights allow annual applications of 4.65 to 5.167 acre-feet of water per acre.

One acre of tree seedlings at the Boise Cascade Corporation fiber farm has consumed about 1.25 feet of irrigation per acre per year, whereas mature cottonwood trees (4 to 7 years old) have consumed about 4.5 feet of irrigation water per acre. Thus, each water right is periodically used to a maximum extent of about 4.5 feet of water per year. The water consumption figures are based on Boise Cascade Corporation fiber farm water application volumes and Boise Cascade Corporation's knowledge that little of the applied water goes unused. Boise Cascade Corporation knows that little water goes unused because they use soil moisture monitoring devices to prevent over-irrigation. The Boise Cascade Corporation value of 4.5 feet of annual water consumption by hybrid cottonwoods is on the low end of values documented in studies (U.S. Environmental Protection Agency 1988 as cited in Wallula Generation 2001). The average monthly actual evapotranspiration (AET) was estimated by approximation of the seasonal rates of "Reference Evapotranspiration" for the nearest Public Agricultural Weather System at Sunnyside, Washington (54 miles west-northwest of Wallula). To estimate monthly AET at the project site, the sum of monthly AETs was scaled to equal the estimated irrigation demand of 4.25 feet (51

inches) at the Boise Cascade Corporation fiber farm. The 6-month irrigation season was assumed to encompass mid-April to mid-October.

The resulting maximum monthly irrigation demand is 1,005 acre-feet in July, which equals an average withdrawal rate over all hours of 7,335 gpm. No irrigation demand occurs from mid-October through mid-April. The monthly total irrigation demand was allocated among all wells according to their respective percent of total production capacity. This approach assumes that all wells were pumped simultaneously for the same length of time and each at its "operational use rate."

The monthly raw-water demands at the power plant were estimated for comparison to the irrigation demand estimates. The raw-water demand estimates differ slightly from the power plant requirements by an amount of uncertainty referred to as "design contingency." Consistent with the allocation of Boise Cascade Corporation water use, the applicant assumed that the total monthly demand would be met by withdrawals from existing wells according to the percent of total production capacity currently provided by each well.

Currently the plant site is irrigated farmland. Elimination of seasonal irrigation of the site would result in a reduction of recharge to the shallow aquifer. This could lower the water table locally, and result in a reduction of groundwater discharge to the Columbia River. However, since the irrigation water currently used on the site is obtained by withdrawals directly from the Columbia River, there would be no net loss to the river; rather there could be a beneficial impact of slightly increased streamflow because evapotranspiration losses would be eliminated. Since the shallow groundwater is not in direct connection with any other surface water bodies at or near the site, this reduction in recharge would not impact other surface water bodies.

Effects on the Lower Saddle Mountain Basalt Aquifer. Drawdown of the potentiometric surface within the lower Saddle Mountain Basalt aquifer would occur as a result of pumping from the new on-site well and the Port of Walla Walla supply well. If the currently permitted pumping rate of 1,200 gpm is extracted from a single well, the pumping water level in that well would be expected to draw down from slightly less than 160 feet below ground surface after 60 minutes of pumping to somewhat more than 160 feet below ground surface after 10,000 days (27 years) of pumping. Similar water levels would be expected to occur in the pumping wells if the two on-site wells are interchanged periodically. If both wells were used simultaneously to produce a total of 1,200 gpm, the resulting pumping water level in each well would be shallower (less drawdown) than if a single well were used at any given time.

Using an incremental interference method to evaluate drawdown impacts to other wells in the vicinity, Pacific Groundwater (2001) determined that the maximum drawdown impact from the effect of long-term pumping of the Port of Walla Walla well at 1,200 gpm would be to lower the static well water level by approximately 11 to 37 feet in the J.R. Simplot Company and the Iowa Beef Processors wells, and in the general vicinity of the pumping well. The Port of Walla Walla well is at the south boundary of the plant site. The J.R. Simplot well is approximately 3,000 feet northeast of the Port of Walla Walla well, and the Iowa Beef Processors wells 8 and 10 are located about 4,000 feet northeast of the Port of Walla Walla well.

The normal pumping rate in the J.R. Simplot Company well is approximately 1,200 gpm, with an attendant pumping water level of approximately 320 feet below the top of the casing. The pump is reported to be set at either 650 or 500 feet below the wellhead. Therefore, interference drawdown caused by pumping 1,200 gpm from the Port of Walla Walla wells would not prevent

the J.R. Simplot Company well from extracting their accustomed quantities of water from the new shop well because the pumping water level would remain far above their pump intake.

The normal pumping rate in the Iowa Beef Processors well is 450 gpm. The pumping water level is not known, however, the pump was lowered recently to maintain well yield (personal communication between Gerome Dyba, Iowa Beef Processors and Charles Ellingson, Pacific Groundwater Group, as cited in Pacific Groundwater Group 2001). The decreased yield in the Iowa Beef Processors well could be related to plugging of the well intakes, or to lower aquifer water levels. Based on this limited information, it is possible that pumping 1,200 gpm from the Port of Walla Walla wells could exacerbate problems at the Iowa Beef Processors well. Routine groundwater level monitoring would be performed to allow timely response to remediate any unexpected and adverse conditions that could result from pumping at the power plant.

Other wells in the area are generally screened in shallower aquifers that would either not be affected by the groundwater extractions required to meet the project's water requirements from the Port of Walla Walla well, or the effects would be minor compared with those potentially affecting the wells described above.

Revisions to Water Resources Mitigation Measures

Following is an updated list of mitigation measures for water resources.

Mitigation measures included within the project description and design to protect groundwater quality are as follows.

- The only wastewater that would be discharged to the ground would be domestic sanitary wastewater. It would be discharged to a septic system and drainfield designed and operated in accordance with local regulations and industry standards.
- The stormwater runoff from within the bermed area surrounding the power plant would be directed to oil/water separators and then to an unlined pond for evaporation and infiltration. Stormwater from plant site areas outside the bermed power plant facility would be routed directly to the unlined pond for evaporation and infiltration.
- The project design would employ a zero liquid discharge system, including the use of brine concentrators and evaporation ponds. This would eliminate potential water contamination from wastewater discharges.
- The evaporation ponds would be lined with a 2-foot-thick clay liner, on top of which would be a high-density polyethylene (HDPE) liner, which, in turn would be covered with a layer of soil or sand to protect it from damage. A leakage detection system consisting of a filter sand and a network of collection pipes and sumps would be installed under the evaporation ponds to detect and collect any leakage that might occur through the pond liners. A 30-mil liner would underlie this collection system. This leakage detection system would be monitored by plant personnel to ensure the integrity of the pond liners.
- The limited quantities of hazardous materials required for water treatment would be handled within containment in accordance with regulations.
- Shallow groundwater quality would be monitored routinely in monitoring wells installed for this project.

With implementation of these measures, impacts to groundwater quality during project operation and maintenance are not expected to be significant. As discussed earlier with respect to groundwater quantity, the impacts from groundwater extraction on the shallow aquifer are not expected to be significant. Local lowering of the potentiometric surface in the lower Saddle Mountain Basalt aquifer may have some impact on nearby wells that draw water from the same aquifer. The deep nearby wells that could potentially be adversely affected would be monitored to detect any detrimental effects so that a timely remedy could be provided. Impacts to nearby wells that are screened in overlying aquifers are expected to be insignificant.

3.4 Wetlands and Vegetation

Entrix conducted a botanical survey along the proposed transmission line and access road rights-of-way in May 2002 to identify special-status species that would likely bloom during the survey period. Special-status species were those that could be present based on habitat requirements and historical records of special-status plant species in the project area. The findings of the spring 2002 surveys and other updates to the text of Section 3.4 are presented in the following section.

Removal of Temporary Access Road from Proposed Project

Chapter 1 of this Final EIS has been updated to indicate that the temporary access road to the power plant is no longer proposed. Impacts to disturbed shrub-steppe habitat that would have occurred during construction of the temporary access road will no longer occur.

Revised Buffers

Buffers around wetlands at the plant site would be 50 to 100 feet, not 100 feet as stated in Section 3.4.2.1 of the Draft EIS.

Updated Vegetation Acreages for Transmission Line

Entrix provided the following updated information about acreages of vegetation types along the transmission line. This information originally appeared in the Draft EIS, Section 3.4.1.2 Vegetation.

Transmission Line and Associated Facilities

The right-of-way would cross a varied topography, including stream valleys and floodplains with center-pivot irrigation circles and riparian and wetland vegetation; undulating hills with grain fields, other agriculture, grasslands; and a plateau with native shrublands, pothole wetlands, and urban development. Total acreages of plant community types located in the area of the right-of-way are listed in Table 3.4-1.

Table 3.4-1 Vegetation Types along Transmission Line Right-of-Way

Vegetation Type	Acres[1]
Agricultural	124
Burned shrubland	49
Freshwater marsh	4-6[2]
Grassland	129
Pasture	56-58
Riparian	25
Russian olive	21
Big sagebrush-bitterbrush steppe	32
Sagebrush steppe	212
Sagebrush steppe/grassland	7
Open water	6
Grand Total	665-669

[1] Estimated acres of vegetation types conservatively assume a 200-foot right-of-way near the existing PacifiCorp transmission line.

[2] Acre range for freshwater marsh and pastureland consider two alternate routes for the right-of-way entering the McNary Substation.

The Wallula-Smiths Harbor segment would traverse approximately 5.1 miles of disturbed shrub-steppe habitat, grassland habitat, fallow farmland, and the Boise Cascade Corporation fiber farm (including poplar stands). The new Smiths Harbor-McNary segment would parallel an existing 500 kV Bonneville transmission line beginning in the Walla Walla River Valley. It then would cross the Walla Walla River and climb through rangeland to the tops of the broad ridges along the Columbia River generally planted with wheat. Slopes are typically steep from the ridgetops into the interspersed drainages. Most of the drainages in the project vicinity are dry nearly all year long and the valley bottoms, as well as the slopes, usually are vegetated by cheatgrass-dominated grassland. However, Juniper Canyon has a perennial stream bordered by a narrow band of freshwater marsh vegetation. A few of the uncultivated rangeland ridgetops just south of the Walla Walla River are vegetated by sagebrush-steppe and grassland with scattered big sagebrush and other small shrubs among the cheatgrass. These sagebrush and grass vegetation communities are referred to as shrub-steppe habitat. Shrub-steppe habitat is present throughout the transmission line right-of-way as small, fragmented parcels of disturbed habitat.

West of Juniper Canyon, vegetation along the project route consists of an intermingling of sagebrush-steppe dominated by big sagebrush and rabbitbrush, and big sagebrush-bitterbrush shrubland dominated by bitterbrush and big sagebrush. Grasses, including cheatgrass, and other herbaceous plants grow between the shrubs. The area west of Juniper Canyon had burned shortly before the vegetation study was conducted, and part of the project route passes through this burned area.

Before reaching Umatilla, the transmission line route would cross an area of pothole wetlands interspersed with sagebrush-steppe/grasslands. The sagebrush-steppe/grassland areas are dominated by big sagebrush and cheatgrass. The route would continue across pastures and developed areas, and cross a freshwater marsh just before the McNary Substation in Umatilla.

There are 70.7 acres of existing access roads along the transmission line right-of-way. Existing access roads occur mostly along disturbed sagebrush-steppe and grassland habitat (see Table 3.4-1). All existing roads are approximately 20 feet wide.

Results of Spring 2002 Survey for Special-Status Plants

Since the Draft EIS was issued, Entrix conducted a botanical field survey and prepared a biological assessment (BA) for the 5.1-mile Wallula-Smiths Harbor transmission line interconnect and the Smiths Harbor Switchyard. The BA addresses all areas within a 2-mile radius (action area) of the project area. No federally listed threatened, endangered, or candidate plant species have been identified within the action area. The BA is included as Appendix D of this Final EIS.

The U.S. Fish and Wildlife Service identified one sensitive plant species potentially occurring in the vicinity of the project site. Ute ladies' tresses *(Spiranthes diluvialis)* is listed at both state and federal levels as a threatened species. The blooming season for this species is in late summer. Ute ladies' tresses is a perennial orchid. It generally occurs in moist soils in mesic or wet meadows and riparian zones near springs, lakes, or perennial streams. No such habitat was found during field surveys conducted by Entrix in May 2002. Because no suitable habitat is present, Ute ladies' tresses is not expected to occur within the power plant site nor along the transmission line interconnect. However, a "may affect, but not likely to affect" determination was concluded in the BA because field surveys were conducted at a time other than the blooming season for this species.

During the May 2002 survey two potential special-status plant species were observed within the transmission line right-of-way. A small population of cryptantha was tentatively identified as beaked cryptantha (*Cryptantha rostellata*), a state sensitive plant. A positive identification to distinguish this plant from *C. flaccida*, a non-TES species with similar appearance and habitat, was not made because mature nutlets were not present on the plant at the time of field identification. A small population of lupine was tentatively identified as a subspecies of prairie lupine (*Lupinus cusickii*), a state sensitive plant. The lupine was found in a sandy area of the right-of-way just north of the Walla Walla River. These two plant species were the only potential special-status species observed during the botanical surveys. No other special-status plant species were observed within the areas that would potentially be disturbed.

Given the relatively small confined area where the plants identified as potentially having special status were found, standard precautions including demarcation and avoidance would minimize disturbance or impact to the plants during operation and maintenance activities associated with the transmission line. If the areas containing these populations cannot be avoided during construction, a positive identification of these species would be needed prior to ground disturbance to determine whether the plants have special status and to determine appropriate mitigation for impacts.

Refinement of Construction Impacts for Power Plant Site

The project is designed to avoid *construction* impacts on wetlands at the plant site. No project features located at the plant site (buildings, pipelines, transmission lines, access roads) would be constructed within wetlands or wetland buffers. The applicant does not propose any additional activities that would involve disturbance, dredging, or filling of wetlands.

Refinement of Construction Impacts for Transmission Line

The following text is provided to clarify and update the Draft EIS discussion of construction impacts to wetlands and vegetation for the transmission line.

Transmission Line and Associated Facilities

There would be minimal clearing of vegetation within the right-of-way. Potential impacts to vegetation include removal or trampling and soil compaction from construction activity at tower locations and along new access roads. Compaction of soils can inhibit infiltration of water into the soil and inhibit the germination of seeds; it favors development of bare-soil species, including noxious weeds.

The transmission line right-of-way would require access roads along the majority of the 33-mile corridor. Access roads associated with the existing transmission line and public access roads could be utilized for the proposed transmission line. Approximately 70.2 acres of land would be cleared for new access roads and for improvements to existing access roads. A strip approximately 25 feet wide would be cleared of vegetation for construction of new access roads. Improvements to existing access roads would clear up to 4 feet of vegetation to widen the road, the width varying due to current condition of the roads. Improvements to approximately 70.7 acres of existing roads would result in up to 14.3 acres of permanent impact to disturbed shrub-steppe and grassland habitat. An additional 45.1 to 55.9 acres of vegetation, primarily disturbed sagebrush-steppe, grassland, and agricultural habitat, would be cleared to construct new access roads for maintenance of the proposed transmission line (Table 3.4-2). The estimated impact for access road construction and improvement is based on a conservative estimate of a 25-foot road width. The width of access roads would vary from 16 to 30 feet (averaging 20 feet). All existing roads are approximately 20 feet wide but may require up to a 4-foot widening and compaction of the road surface.

There would be approximately 0.25 acre of temporary impact to vegetation and approximately 0.05 acre of permanent impact to vegetation at each tower location. Installation of the tower structures would temporarily disturb a total of approximately 40.9 acres and permanently disturb a total of approximately 8.3 acres of vegetation along the right-of-way (Table 3.4-3). Approximately 17.6 additional acres would be temporarily disturbed during placement of the conductors.

The area around the Smiths Harbor Switchyard is in disturbed shrub-steppe habitat. Approximately 7 acres of shrub-steppe vegetation would be permanently removed for the installation of the switchyard and associated fencing.

Table 3.4-2. Vegetation Impacts Due to Access Road Construction and Improvements to Existing Access Roads

Access Road	Habitat Type	Acres	Total Acres	Potentially Disturbed Acres
Access Roads off Right-of-Way to be Acquired	Burned sagebrush	0.2	14.2	0 - 2.9
	Agriculture	0.9		
	Grassland	3.0		
	Residential/Industrial	4.8		
	Sagebrush-steppe	5.2		
Existing BPA access roads	Burned sagebrush	0.4	35.1	0 - 7.1
	Pasture	2.9		
	Sagebrush-steppe	7.6		
	Grassland	8.3		
	Agriculture	15.8		
New Access Road Construction	Residential/Industrial	0.4	55.9	45.1 - 55.9
	Russian olive	0.5		
	Big sagebrush-bitterbrush	2.3		
	Pasture	3.3		
	Burned sagebrush	6.4		
	Agriculture	9.1		
	Grassland	14.8		
	Sagebrush-steppe	19.1		
Existing Access Road on Right-of-Way	Grassland	1.7	21.4	0 - 4.3
	Agriculture	2.0		
	Big sagebrush-bitterbrush	2.3		
	Burned sagebrush	3.0		
	Sagebrush-steppe	12.4		

Table 3.4-3 Estimated Vegetation Impacts from Tower and Conductor Construction

	Proposed Action Standard Towers (1,150-foot average span)			Alternative using Standard Towers + Alternate Towers[1] (1,500-foot average span)				Pulling and Reeling Sites[2]
		Acres Disturbed		# Towers		Acres Disturbed		Acres Disturbed
Vegetation Types	**# Towers**	**Temporary**	**Permanent**	**Standard**	**Alternate**	**Temporary**	**Permanent**	**Temporary**
Grassland	33	8.3	1.7	21	10	7.8	1.6	3.6
Agriculture (nonirrigated)	27	6.8	1.4	0	21	5.3	1.1	2.9
Agriculture (irrigated)	16	4.0	0.8	16	0	4.0	0.8	1.7
Sagebrush-steppe	50	12.5	2.5	25	19	11.0	2.2	5.4
Burned shrubland	10	2.5	0.5	0	8	2.0	0.4	1.1
Big sagebrush	4	1.0	0.2	0	3	0.8	0.2	0.4
Russian olive	5	1.3	0.3	5	0	1.3	0.3	0.5
Pasture	14	3.5	0.7	14	0	3.5	0.7	1.5
Residential/industrial	4	1.0	0.2	4	0	1.0	0.2	0.4
Riparian	0	0.0	0.0	0	0	0.0	0.0	0.1
Totals	**163**	**40.9**	**8.3**	**85**	**61**	**36.7**	**7.5**	**17.6**

Temporary impact = 0.25 acre/tower
Permanent impact = 0.05 acre/tower
Pulling and reeling temporary disturbance = 1 acre/2 miles of transmission line (acreage estimates are prorated based upon abundance of vegetation type).

[1] Longer conductor spans for alternative (acreage estimates for long span segment are prorated based upon abundance of vegetation type).

[2] Temporary acres disturbed by pulling and reeling would be the same for the proposed action or the alternative.

Updated Mitigation Measures for Power Plant

Since publication of the Draft EIS, the applicant has reached an agreement with the Washington Department of Fish and Wildlife (WDFW). The applicant will monitor and protect wetland hydrology for the wetland complex located along the western portion of the project site (designated Habitat Reserve Area by the applicant). The applicant will install a staff gage in the deepest portion of the wetland complex and monitor water level changes in the wetland. The applicant will attempt to secure use of the South Columbia Irrigation District or adjacent domestic water well in order to provide a minimal seasonal water level in the wetland complex. If dewatering of the wetlands occurs, the applicant will investigate alternative mitigation options.

In the same agreement with WDFW, the applicant will mitigate for project impacts to vegetation for habitat loss by taking the following actions:

- provide 74 acres of dryland cultivated native grass habitat with a component of native shrubs and forbs;
- place approximately 640 acres aside as a perpetual conservation easement, planted in native dryland grass with a component of native shrubs and forbs with restricted cattle grazing;
- support through funding the WDFW acquisition of native shrub habitat;
- provide funding ($50,000) to USFWS for wetland and riparian enhancement activities under USFWS Wallula Wetlands and Riparian Project, Phase II, located along the Walla Walla River at the McNary National Wildlife Refuge; and
- provide funding ($25,000) to research biological control agents for weed control on the project site and surrounding properties.

Since the writing of the Draft EIS, the applicant has reduced the footprint of the power plant facilities to 64 acres with as much as 89 acres potentially restored with native grasses and shrubs. The settlement with WDFW is based on approximately 76 acres of habitat area at the site after construction.

The applicant will monitor revegetation success and provide documentation to EFSEC and WDFW on monitoring and meeting performance standards.

Revisions to Significant Unavoidable Adverse Impacts

The following updates to Section 3.4.5 Significant Unavoidable Adverse Impacts have been made in response to comments on the Draft EIS and to incorporate information from Settlement Agreements.

No significant unavoidable adverse impacts have been identified. It is anticipated that wetlands lying immediately to the west and southwest of the project site could cease to exist due to cessation of irrigation practices at the project site. However, potential loss of wetland habitat value related to project construction and operation is being mitigated by the applicant's provision of funding as stipulated in an agreement with Ecology for the proposed enhancement of riparian habitats along the lower reach of the Walla Walla River via purchase and transfer of water rights and the planting of approximately 145 acres of land with native trees. As a result, the overall impact to habitat value is not considered significant.

3.5 Agricultural Crops and Livestock

Please see Section 3.2 of this Final EIS for an updated discussion of potential impacts on cherry orchards resulting from power plant plumes.

The Entrix spring 2002 surveys indicated the 5.1-mile segment of the transmission line would cross 1.2 miles of irrigated agricultural land (poplar farm). The 5.1-mile transmission line segment would not cross livestock lands. The access roads would cross less than 0.5 mile of grassland used for livestock pasture.

Approximately 6.8 and 4.0 acres of nonirrigated and irrigated crops, respectively, would be temporarily disturbed by placement of structures within the transmission line right-of-way and 5.1-mile segment. Permanent disturbance to agricultural land would be 1.4 acres of nonirrigated and 0.8 acre of irrigated land. An additional 4.5 acres would be temporarily disturbed as a result of the pulling and reeling sites along the transmission line. Most of the agricultural land that would be impacted along the transmission line corridor is currently used for dryland agriculture. According to 2000 data, this acreage of permanent disturbance represents a fraction of 1% of total wheat grown in both counties. A maximum of 27.8 acres of agricultural land would be removed for construction of access roads.

3.6 Wildlife

Spring 2002 Wildlife Surveys

Entrix conducted additional wildlife surveys of the transmission line and access roads in spring 2002. The BA in Appendix D of this Final EIS provides detailed information about wildlife species observed during those surveys.

Revised Acreages for Habitat Types Affected by Transmission Line

Entrix reported a reduction in the amount of shrub-steppe habitat along the updated transmission line right-of-way (41% or 300 acres of the 734-acre transmission line right-of-way mapped as shrub-steppe in spring 2002, compared to 316 acres or 49% reported in the Draft EIS).

Grassland and agriculture habitats in the right-of-way consist of wheat fields, irrigated pasture, the Boise Cascade Corporation fiber farm (including poplar stands), invasive cheatgrass, and grasslands in the palustrine area. The 5.1-mile interconnect transmission line alignment is composed primarily of grassland, fallow farmland, and poplar stands. Approximately 309 to 311 acres, or 42% of the potential right-of-way, were documented as grassland and pasture in spring 2002 (compared to 293 to 295 acres or 40% reported in the Draft EIS). See Table 3.6-1 for updated habitat impact acreages.

Table 3.6-1. Impacts to Wildlife Habitats Resulting from Tower and Conductor Construction

Wildlife Habitats	Standard Towers (1,150-foot average span)			Alternative using Standard Towers + Alternate Towers (1,500-foot average span)				Pulling and Reeling Sites
	Number of Towers	Acres Disturbed		Number of Towers		Acres Disturbed		Acres Disturbed
		Temporary	Permanent	Standard	Alternate	Temporary	Permanent	Temporary
Grassland and agriculture	90	22.5	4.5	51	31	20.5	4.1	9.8
Sagebrush-steppe	64	16.0	3.2	25	30	13.8	2.8	7.0
Palustrine	5	1.3	0.3	5	0	1.3	0.3	0.5
Riparian	0	0.0	0.0	0	0	0.0	0.0	0.1
Subtotal	159*	39.8	8.0	81*	61	35.6	7.2	17.4

Temporary impact = 0.25 acres/tower
Permanent impact = 0.05 acres/tower
Pulling and reeling temporary disturbance = approximately 1 acre for every 2 miles along the transmission line
*Number does not include residential/industrial estimates for tower placement

Updated Special-Status Species Information

The BA prepared by Entrix for the 5.1-mile transmission line segment and Smiths Harbor Switchyard concluded that the project may affect bald eagles. However, since no critical habitat will be affected for the bald eagle and no direct take will occur, the effect is not likely to be adverse (see Appendix D).

Ord's kangaroo rat, listed as a state monitor species, was positively identified within the northeast section of the switchyard. Clearing shrub-steppe habitat during construction of the switchyard could impact the potential population of this species. Impacts to Ord's kangaroo rats resulting from construction of the temporary access road to the plant site would not occur because the temporary road is no longer proposed.

Two additional species that could be affected by habitat loss from clearing sage-steppe and grassland vegetation for construction of the transmission line are the golden eagle and the black-tailed jackrabbit.

Additional Information on Prevention of Bird Strikes

In response to comments on the Draft EIS, the following clarifies and expands on the discussion of measures that will be used to avoid bird strikes at the power plant and along the transmission line.

The Wallula Power Project would include four HRSG exhaust towers, each 175 feet tall, 25 feet lower than the 200-foot height limit recommended by the USFWS (USFWS 2000a). These smaller exhaust towers do not require guy wires for support. Guy wires are often cited as a cause of avian mortality, and their exclusion will help to minimize risk of collision (Manville 2000, Avery 1977).

The existing transmission line creates a level of risk. Areas of highest concern are where transmission lines cross bird flight paths or areas of high bird activity. These areas of concern are located at the Walla Walla River crossing, the span across Spring Gulch, the span across Juniper Canyon, the spans across the Wanaket Wildlife Area, and the palustrine area. Bird diverters would be installed in these areas, as described in Appendix A, in order to decrease the risk of bird collisions in this area. The bird diverters would be spaced at the optimal spacing prescribed by the manufacturer or per Bonneville's standard design, which depends on span length.

Because the new Smiths Harbor-McNary transmission line segment would be placed in an area already containing the same potential risk, the impact would be less than if a new line were placed where there is no existing transmission line. The new towers and conductors will be matched as closely as possible to the height of the existing line to lessen the risk of bird collisions. Risks and associated mortality would increase to some degree relative to the existing conditions. Bonneville is currently funding research to develop improved technology for monitoring bird strikes.

Other Factual Corrections

On page 3.6-10 of the Draft EIS, under "Transmission Line and Associated Facilities," the rutting season for deer and elk is revised as follows:

Resident deer and elk could be disturbed by construction noise and activity during sensitive times of the year, such as the rutting season ~~(September 15 – October 31)~~ (August through November) and calving/fawning season (May 1 through July 15).

3.7 Fisheries

The BA prepared by Entrix for the Wallula-Smiths Harbor transmission line segment and the Smiths Harbor Switchyard concluded that the proposed actions are not likely to have any direct, indirect, or cumulative adverse effects on listed fish species or their critical habitats (sockeye salmon, chinook salmon, steelhead trout, and bull trout). See Appendix D of this Final EIS for details.

Recent surveys determined that only Pond A at the plant site actively receives irrigation water and entrained fish. Recent snorkel surveys verified the presence of fish in Pond A and the absence of fish in the remaining ponds at the project site (Smayda pers. comm.).

Pond A would be cleared and leveled, irrigation pumps would be disconnected and removed, and the pond would be permanently dewatered. Impacts to fish and fish habitat would be similar to the normal seasonal dewatering of the pond. Fish populations are not self sustaining due to predation, dewatering, and desiccation as the pond dries up once irrigation water has ceased. The pond does not support listed fish species. Any fish that reach the pond are entrained and pumped into the ponds due to the lack of screening at the pump intakes.

In the longer term, fish mortality would be reduced by eliminating entrainment in the pond and subsequent dewatering of the pond. The statement on pages 3.7-10 and 3.7-11 of the Draft EIS that construction of the project would eliminate entrainment of fish into the Casey Slough irrigation system was incorrect. The Draft EIS did not consider that there were other irrigators using water pumped from Casey Slough and therefore the pump would continue to operate.

3.8 Energy and Natural Resources

As stated in the Draft EIS (page 3.8-4), the applicant has contracted for new natural gas pipeline capacity. Sufficient natural gas pipeline capacity additions have been identified to supply all anticipated natural gas demands over the economic life of the project. However, the potentially large cumulative demand for natural gas in light of the many energy facilities proposed in the Pacific Northwest may limit the ample supply predicted. Please see Section 3.17, Cumulative Impacts, for a more detailed discussion of future cumulative gas supply issues.

3.9 Noise

Walla Walla County's environmental noise ordinance essentially applies the same criteria as the state of Washington Regulations on Environmental Noise Levels (Chapter 173-60 WAC). For sound sources located within the County of Walla Walla, the allowable maximum permissible sound levels per Walla Walla County Noise Code 9.20 are presented in Table 3.9-1.

These sound levels are maximum levels that can only be exceeded for certain periods of time: 5 dBA for no more than 15 minutes in any hour; 10 dBA for no more than 5 minutes of any hour; or 15 dBA for no more than 1.5 minutes.

Sound level reductions of 10 dBA must be achieved between the hours of 10 p.m. and 5 a.m. during weekdays, and between 10 p.m. and 9 a.m. on weekends, where the receiving property lies within a residential district of the county. Periodic sounds, those with a pure tone component, or impulsive and not measured with an impulse-level meter must be reduced by 5 dBA.

Construction activities during daytime hours are exempt from noise regulations between 5 a.m. and 10 p.m. on weekdays and between the hours of 5 a.m. and 11 p.m. on weekends. Exemptions also apply to sounds created by safety and protective devices, such as relief valves, where noise suppression would defeat the safety release intent of the device. Traffic on public roads, aircraft, and railroad traffic are exempt from the applicable environmental noise limits.

The modeled noise levels for the proposed project are lower than the allowable limits specified by the County noise ordinance.

Table 3.9-1. Maximum Permissible Sound Levels in Walla Walla County per County Code 9.20 (dBA)

District of Sound Source	District of Receiving Property Within the County of Walla Walla			
	Rural	**Residential**	**Commercial**	**Industrial**
Rural	49	52	55	57
Residential	52	57	57	60
Commercial	55	57	60	65
Industrial	57	60	65	70

3.10 Land Use

Zoning Update

A zoning correction for the project area was recently approved by the Walla Walla County Commissioners. The area is now considered Heavy Industrial (IH) as per Ordinance No. 274 "Regarding a Technical Nonsubstantive Correction to the County Comprehensive Plan Land Use Map(s), Zoning Map(s) and Development Regulations" dated June 5, 2002. As per Ordinance 274, the area where the generation plant would be sited has been zoned for heavy industrial uses.

Refinement of Transmission Line Acreage Impacts

This section provides updated information about the acreage of impacts within the 5.1-mile transmission line, transmission line access roads, and the switchyard.

New right-of-way required for the Smiths Harbor-McNary segment would be 200 feet wide when it parallels north of the existing Bonneville transmission line and 140 feet wide when it parallels north of the existing PacifiCorp transmission line. The distance from centerline to centerline of the segments paralleling the Bonneville transmission line is 200 feet and the segments paralleling the PacifiCorp transmission line is 125 feet. The new transmission line route would require approximately 1 square mile or 610 acres of new right-of-way. The right-of-way for the 5.1-mile interconnect would be 150 feet wide and would require approximately 93 acres of new right-of-way.

Construction of the 500 kV transmission line would take a total of 12 months (summer 2003 through summer 2004). Use of staging areas may temporarily disturb 41 acres of land. It is unknown at this time what these lands would be used for, and for how long they would be out of production. Tower construction within the 5.1-mile interconnect would temporarily impact approximately 6.0 acres and permanently impact approximately 1.2 acres of grasslands, agricultural areas, and shrubland. An additional 2.6 acres would be temporarily disturbed for pulling and reeling sites during tower installment.

Access for construction would generally use existing roads. In some instances, new temporary access roads would be needed in areas without existing roads. A right-of-way of 50 feet would be acquired for new access roads outside of the present right-of-way. However, an area about 25 feet wide would be the area disturbed. The estimated impact for access road construction and improvement is based on a conservative assumption of 25-foot road width. The widths necessary

for access road development vary between 16 and 30 feet and are predominantly around 20 feet. All existing roads are approximately 20 feet wide but may require up to a 4-foot widening and compaction of the road surface. For existing access roads outside of the right-of-way where Bonneville does not have an existing easement, an easement for 20 feet of right-of-way would be secured. Construction of 70 to 80 spur roads (less than 250 feet long) on existing right-of-way would be needed to access new structure sites. Total potential impact for construction of new access roads, spur roads, and improvements to existing access roads would range between 45.1 and 70.2 acres (see Table 3.4-2 in Section 3.4 of this Final EIS).

Any disruption to farming activities would be limited to one growing season. Therefore, land use impacts of temporary access roads are considered low.

Each tower structure would take from 1 to 3 days to erect. An area of approximately 0.25 acre would be disturbed during the assembly and erection process. The structures would normally be assembled in sections at a structure site and lifted into place by a large crane (30- to 100-ton capacity). Occasionally, the structures would be assembled at a remote staging area and placed on the footings by large sky-crane helicopters.

Approximately 7 acres of shrub-steppe would be permanently removed for construction, operations, and maintenance of the Smiths Harbor Switchyard.

Table 3.10-1 below provides updated impact acreages for the entire transmission line.

Table 3.10-1. Impacts to Land Use Types from Tower and Conductor Construction

	Standard Towers (1,150 ft average span)			Standard Towers + Alternate Towers (1,500 ft average span)				Pulling and Reeling Sites
		Acres Disturbed		No. Towers		Acres Disturbed		Acres Disturbed
Land Uses	No. Towers	Temporary	Permanent	Standard	Alternate	Temporary	Permanent	Temporary
Small Grains	27	6.8	1.4	0	21	5.3	1.1	2.9
Shrubland/ Grassland/ Herbaceous	97	24.3	4.9	53	40	23.3	4.7	10.6
Pasture/Hay/ Row Crops/ Fallow	30	7.5	1.5	26	0	6.5	1.3	3.3
Low Intensity Residential	2	0.5	0.1	2	0	0.5	0.1	0.2
Commercial/ Industrial/ Transportation	2	0.5	0.1	2	0	0.5	0.1	0.2
Emergent Herbaceous Wetlands	5	1.3	0.3	2	0	0.5	0.1	0.2
Total	**163**	**40.9**	**8.2**	**85**	**61**	**36.6**	**7.4**	**17.4**

Notes:
Temporary impact = 0.25 acre/tower
Permanent impact = 0.05 acre/tower
Pulling and reeling temporary disturbance = 1 acre/2 miles along the transmission line (acreage estimated by prorating abundance of each land use within the transmission line right-of-way).

Clarification of Requirements for Crossing McNary National Wildlife Refuge

The following excerpts from the Cooperative Agreement between the Department of the Army and the U.S. Department of the Interior, Fish and Wildlife Service (January 13, 2000) clarify the working relationship between the Corps and USFWS if easements were required to construct the transmission lines or natural gas pipeline through the McNary National Wildlife Refuge. This information is provided in response to comments on the Draft EIS.

> This Cooperative Agreement shall be subject to the provisions and conditions of the General Plan and the following conditions:
>
> 4. That the use of the Premises for wildlife conservation, management and recreation shall be subject at all times to occupation and use by the Department [of the Army] for all purposes of the project. The District Engineer shall give 120 days notice to the Service [USFWS] prior to conducting any activities on the premises covered by this Cooperative Agreement which may substantially affect the wildlife conservation, management or recreation programs.
>
> 8. The Department [of the Army] reserves unto itself the right to grant easements, leases and licenses for any purpose whatsoever. Any application for easements, leases or licenses received by the Service [USFWS] shall be referred with recommendations to the District Engineer for processing. Applications for easements, leases and licenses received by the Department [of the Army] will be coordinated with the Service [USFWS] for its recommendations. The Department [of the Army] will give full consideration to any adverse effect that any proposed grant may have upon the wildlife conservation, management or recreation programs prior to the execution of any such easement, lease or license.

3.11 Visual Resources/Light and Glare

Updates to the Draft EIS Section 3.11 include the incorporation of the recently constructed Florida Power and Light Energy (FPL) wind farm in both text and visual simulations and the creation and revision of several visual simulations to better reflect impacts of the proposed transmission line. Overall, the analysis indicates that the new transmission line would have a low level of impact in all visual assessment areas, with the exception of Area 5, which has a medium rating.

One visual feature that the Draft EIS did not consider was the recently constructed FPL wind farm, which crosses the transmission line corridor at the north end of Visual Assessment Area 3 and can be seen in the background in Visual Assessment Areas 1 and 2. (See Figure 3.11-10 of this Final EIS for Visual Assessment Area locations. As in the Draft EIS, graphics in this section illustrating the transmission line are numbered beginning with Figure 3.11-10.) The wind farm has been included in new simulations (presented in the following pages) and is considered to have a low visual impact. Because the wind farm and existing transmission line corridors have previously impacted the visual resources in the area, it is unlikely that the addition of the Wallula Power Project and associated transmission line would attract much attention or create significant visual impacts.

Another revision is that reference to the "McNary State Wildlife Recreation Area" has been changed to the "Wallula Habitat Management Unit (HMU)". The U.S. Army Corps of Engineers owns the Wallula HMU, but the property is managed, operated, and maintained by the U.S. Fish and Wildlife Service.

Bonneville also revised and created additional visual simulations to more accurately portray the impacts of the proposed transmission line. Figures that appeared in the Draft EIS that have changed (in figure number, title, and/or content) include:

- Figure 3.11-11: Existing View: Wallula Power Project View
- Figure 3.11-12: Existing View: Ft. Walla Walla View
- Figure 3.11-13: Existing View: McNary State Wildlife Recreation Area View
- Figure 3.11-14a: Existing View: Plateau View North
- Figure 3.11-14b: Plateau View North with a Simulated Transmission Line View
- Figure 3.11-15: Existing View: Hat Rock State Park View
- Figure 3.11-16a: Existing View: Highway 730 Roadside Southwest Viewpoint
- Figure 3.11-16b: Highway 730 Roadside Southwest Viewpoint with a Simulated Transmission Line View
- Figure 3.11-17: Existing View: McNary Lock and Dam View

New and revised figures (presented in the following pages) are listed and briefly described below.

- **Figure 3.11-11a (existing) and 3.11-11b (proposed): Project Beginning View (Assessment Area 1).** Figure 3.11-11a shows the beginning view from Highway 12, and Figure 3.11.11b shows the same view with the proposed transmission line in place.
- **Figure 3.11-12a (existing) and 3.11-12b (proposed): Boise Cascade Tree Farm Southwest (Assessment Area 1).** Figure 3.11-12a depicts a view from near the Boise Cascade Tree Farm looking southwest, and Figure 3.11-12b shows the same view with the proposed transmission line in place.
- **Figure 3.11-13a (existing) and 3.11-13b (proposed): Access Road (Assessment Area 1).** Figure 3.11-13a depicts a view near an access road in assessment area 1 looking southeast, and Figure 3.11-13b shows the same view with the proposed transmission line in place.
- **Figure 3.11-14a (existing) and 3.11-14b (proposed): Smiths Harbor Switchyard (Assessment Area 1).** Figure 3.11-14a depicts the existing transmission line looking southeast from an access road located approximately 1.25 miles east of the community of Wallula. Figure 3.11-14b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-15a (existing): Fort Walla Walla (Assessment Area 1).** This figure depicts the view looking south from Fort Walla Walla Historical Monument located just off of Highway 12.

- **Figure 3.11-16a (existing) and 3.11-16b (proposed): Wallula Habitat Management Unit (Assessment Area 2).** Figure 3.11-16a is a view from the Wallula HMU lookout facing east to the proposed transmission line. Figure 3.11-16b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-17a (existing) and 3.11-17b (proposed): Plateau View (Assessment Area 3).** Figure 3.11-17a depicts a typical view from Hatch Grade Road (elevation 1,070 feet) looking northeast at the transmission line corridor above the Columbia River valley. Figure 3.11-17b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-18a (existing): Hat Rock State Park (Assessment Area 4).** Figure 3.11-18a depicts low rolling hills, looking south across U.S. Highway 730 to the existing Lower Monumental–McNary transmission line and the proposed project corridor.

- **Figure 3.11-19a (existing) and 3.11-19b (proposed): Highway 730 (Assessment Area 5).** Figure 3.11-19a represents a view looking south from Highway 730 and includes views of the roadway, the existing Lower Monumental–McNary transmission line, and the vegetated field beyond. Figure 3.11-19b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-20a (existing) and 3.11-20b (proposed): Option 1 into McNary (Assessment Area 6).** Figure 3.11-20a depicts the current view of the proposed alignment, and Figure 3.11-20b depicts this same view with the proposed transmission line in place.

- **Figure 3.11-21a (existing) and 3.11-21b (proposed): Option 2 Into McNary (Assessment Area 6).** Figure 3.11-21a depicts the current view of the proposed alignment, and Figure 3.11-21b depicts this same view with the proposed transmission line in place.

Following is a discussion of the images shown in the new and revised figures:

- Figures 3.11-11, 3.11-12, and 3.11-13 have a Scenic Quality Rating C (view fairly common to the physiographic region). Some variety in vegetation, subtle color variation, and adjacent scenery (e.g., the Columbia River) moderately enhance overall visual quality in this area. The visual impacts from the perspective of the highway and within the corridor are expected to be low.

- Figure 3.11-14 also has a Scenic Quality Rating C. The viewscape is characterized by subtle color variation, little variety or contrast in vegetation, and is not influenced by adjacent scenery in terms of overall visual quality. Because the area is sparsely populated, the sensitivity level in the area is assessed as low to medium. Typical viewers include agricultural workers who may not be highly sensitive to visual change.

  The area is categorized in Visual Resource Management Class IV (an area with features more common to the physiographic area that has either low viewer sensitivity or is

viewed only as a background or is seldom seen). There is no contrast rating on Highway 12, but the contrast rating is strong within the project corridor. This level of contrast is consistent with the Class IV visual resource rating given to this view (visual changes associated with the project may dominate the view and be the major focus of viewer attention within the corridor). Overall visual impacts within the corridor are expected to be low, and no impacts are expected on Highway 12.

- Figure 3.11-15 depicts an area with a weak contrast rating on Highway 12, and a moderate contrast rating in the corridor. Overall impacts from this perspective are considered low, and the level of contrast is acceptable for the visual resource Class III.

- The Wallula HMU view is located between U.S. Highway 12 and the proposed transmission corridor (Figure 3.11-16). Because of the distance of U.S. Highway 12 from the proposed project (about 1 mile), short duration of the view, the location of new structures adjacent to existing ones, and the recent addition of the FPL wind farm, the new structures would be seen but would not likely attract attention. The impact level would be low.

- The proposed transmission line would attract attention because of its scale in relation to the fields of grassland above the Columbia plateau (Figure 3.11-17b). However, the number of casual observers is low and the area is already impacted by the wind farm and existing transmission lines. The corridor may be visible from higher locations above the river. Adding a second set of structures and conductors might increase reflected light in late evening hours from the transmission line to these locations.

- Visual impacts from the Hat Rock State Park View would be low as described in the Draft EIS. The existing view is shown in Figure 3.11-18.

- In assessment area 5, the proposed structures would present an obvious contrast from the existing structures to viewers on U.S. Highway 395 and U.S. Highway 730 (see Figure 3.11-19). The impact level of the proposal would be medium.

- There is not expected to be a noticeable difference in visual impacts between the two options for approaching the McNary Substation (Figures 3.11-20 and 3.11-21). Both options are in an area with numerous transmission towers and lines. Visual impact would be low because the proposal would not stand out from similar elements in the view.

[insert figure 3.11-10]

[insert figure 3.11-11]

[insert figure 3.11-12]

[insert figure 3.11-13]

[insert figure 3.11-14]

[insert figure 3.11-15]

[insert figure 3.11-16]

[insert figure 3.11-17]

[insert figure 3.11-18]

[insert figure 3.11-19]

[insert figure 3.11-20]

[insert figure 3.11-21]

3.12 Population, Housing, and Economics

There were no changes to the Draft EIS text for this section.

3.13 Public Services and Utilities

The applicant has executed a Local Project Mitigation Agreement with Walla Walla County that would address and provide for local infrastructure impacts. Wallula Generation will pay Walla Walla County $1.2 million in permit fees and socioeconomic impact fees and will fund a $50,000 interest-bearing suspense account for unanticipated, extraordinary expenses related to the project.

3.14 Cultural Resources

Additional Historic Resources

In May 2002, Entrix surveyed the new 5.1-mile interconnect and new access road locations for the transmission line. Previous field investigations resulted in the identification of three archaeological sites, identified as temporary field numbers Wallula Site No. 1, Wallula Site No. 2, and Wallula Site No. 3. These were described in the Draft EIS. In 2002, Entrix also identified two segments of irrigation canals associated with the Bureau of Reclamation Service's Umatilla Project.

For each newly discovered archaeological site, field staff recorded specific information describing the location, site type, and associated features or artifacts on the relevant Washington or Oregon Archaeological Site Inventory Forms. Photographs and site maps were prepared to accompany the site forms submitted to the relevant state archaeologist. Entrix recorded the Umatilla Project irrigation canal segments identified during the survey on an Oregon Historic Property Form.

Two of the four archaeological sites identified during the surveys conducted by Lithic Analysts and Entrix have been formally evaluated for eligibility to the National Register of Historic Places (NRHP) as defined in 36 CFR 60.4. Wallula Site No. 1 and Wallula Site No. 2 have been determined eligible for the NRHP under Criterion d by the Washington State Archaeologist. A final determination of NRHP eligibility on the other two sites will be obtained from the Oregon State Archaeologist. The Historic Property Inventory Form for the Umatilla Project will be submitted to the Oregon State Historic Preservation Officer for review. Previous studies of different portions of the Umatilla Project suggest that it is eligible for the NRHP as part of a historic district (Deleon 2002).

The construction of overhead transmission lines would not impact the Umatilla Irrigation Project canals. The construction of transmission line towers and new access roads would avoid the canals.

Text Correction Regarding Tribal Rights

In response to a correction from the Confederated Tribes of the Umatilla Indian Reservation, the following revision is made to the Draft EIS, in the last paragraph on page 3.14-6:

All ~~rights,~~ title ~~, and claim~~ to the CTUIR's aboriginal territory (6,400,000 acres), excepting the reservation lands, ~~were~~ was ceded~~.~~; however, some rights and claims are still recognized.

3.15 Traffic and Transportation

Resolution of Construction Access to Plant Site

The applicant's original proposal included creating a new temporary access on U.S. Highway 12 at approximately milepost 301.9. However, WSDOT opposed the idea due to its inconsistency with limited-access plans for U.S. Highway 12. Since the publication of the Draft EIS, WSDOT and the applicant have reached a Settlement Agreement that eliminates the U.S. Highway 12 access road as an alternative and instead relies upon the Dodd Road access road during both construction and operation.

The applicant has committed to the following activities as per the Settlement Agreement Between Washington State Department of Transportation and Wallula Generation LLC:

1. The Wallula Power Project will access U.S. Highway 12 from Dodd Road for both construction and operation. The access point from the power plant to Dodd Road will meet WSDOT setback requirements from the intersection of Dodd Road and U.S. Highway 12.

2. WSDOT will work with Wallula Generation, LLC to review the traffic volume projections and the construction schedule for the WSDOT U.S. Highway 12 improvement project to support consideration of a temporary traffic signal installation at Dodd Road/ U.S. Highway 12 during construction of the Wallula Power Project.

3. Any such necessary traffic control, including a possible temporary signal, shall be designed, installed and removed at the sole expense of Wallula Generation, LLC.

Additional Detail about Transmission Line Access Roads

Existing county and agricultural roads would provide general access to the new transmission line rights-of-way and switchyard. An access road system currently exists for the Bonneville Lower Monumental–McNary transmission line. Most of these roads parallel the existing transmission line and would be used in many areas to access the new transmission line. Reconstruction or reconditioning of portions of the existing road system would be required. New access roads would also be constructed to service the transmission line between the generation plant and the Wallula switchyard. Bonneville would acquire any additional easements for new roads from the landowners.

The existing Lower Monumental–McNary transmission line is maintained via access roads extending from nearby highways. Six roads originate from U.S. Highway 12 in the vicinity of the

project area and six access roads originate from U.S. Highway 730. Two access roads have State Highway 207 as a starting point. Two existing access points originate from State Highway 37.

General access to the Wallula-Smiths Harbor segment would primarily occur from U.S. Highway 12 and along existing county and agricultural roads. The northern segment of line would be accessed from an existing road in Section 3, Township 7 North, Range 31 East. This system of existing roads crosses the Union Pacific Railroad and the Burlington Northern Railroad. These existing railroad crossings would be utilized to access the new transmission line right-of-way. A new 16-foot-wide access road within the right-of-way paralleling the transmission line would be constructed along the eastern boundary of Sections 2, 11, and 14, Township 7 North, Range 31 East, to the southeast corner of Section 14, Township 7 North, Range 31 East. The access road generally follows an existing agricultural road along the east boundary of Boise Cascade tree farm, but would need extensive reconstruction. An existing 20-foot-wide access road would be utilized from the southeast corner of Section 14, Township 7 North, Range 31 East easterly along the northern boundary of Section 24, Township 7 North, Range 31 East. The access road and right-of-way end at the Smiths Harbor Switchyard location.

3.16 Health and Safety

There were no changes to the Draft EIS text for this section.

3.17 Cumulative Impacts (Impacts of Proposed New Power Projects in the Pacific Northwest)

This section updates information on cumulative air quality and natural gas supply impacts in response to comments on the Draft EIS. It also provides updated information about greenhouse gas mitigation from a Settlement Agreement reached between the applicant and the Washington State Counsel for the Environment.

Corrections to Numbers in Tables

On the second page of Table 3.17-1 in the Draft EIS, in the fourth shaded row labeled "Wallula Power Project," the Annual CO2 Emissions (tons) in the last column is corrected from 5,251,556 to 4,270,000.

Also, the table on page 3.17-8 of the Draft EIS has been updated as follows:

Table 3.17-1. Comparison of Worldwide vs. Local Greenhouse Gas Emissions

Item	Annual Greenhouse Gas Emissions (MMTCE per year)		
	CO2	Compounds Other than CO2	Total
Worldwide emissions (including. U.S.) (1998)	5,660	2,430	8,090
United States emissions (1998)	1,494	340	1,834
Washington State emissions (1995)	21	4	25
Anticipated future gas-fired power plants in Washington and Oregon (15 plants, 7,000 MW)	7	0.8	7.8
Proposed Wallula Plant emissions	1.07	0.12	1.19

MMTCE – million metric tons of carbon equivalent
Sources: IPCC (2001); EPA (2000); CTED (1999); Bonneville (2001a, 2001b, 2001c).

Updated Provisions for Greenhouse Gas Mitigation

Although there are no federal or state regulations requiring new power plants to offset greenhouse gas emissions, EFSEC's application review process encourages applicants to develop some form of greenhouse gas mitigation. In June 2002 the applicant entered into a legal Settlement Agreement with the Washington State Counsel for the Environment, committing to a comprehensive environmental enhancement package. The Settlement Agreement acknowledges that greenhouse gas emissions are an important worldwide environmental issue with potential negative implications for Washington state. The Settlement Agreement stipulates that the Site Certification Agreement issued by EFSEC for the Wallula project shall require payments by Wallula Generation to environmental organizations for purposes of reducing greenhouse gas emissions and enhancing wildlife habitat. Payments totaling $5.35 million would be directly related to greenhouse gas mitigation and renewable energy projects, as follows:

- $1.0 million to the Last Mile Energy Cooperative to fund research into renewable energy and greenhouse gas reduction,
- $2.55 million to the Washington State University Energy Program, to be used to issue requests for proposals for greenhouse gas mitigation and renewable energy projects,
- $1.65 million to the Bonneville Energy Foundation for renewable energy projects including the photovoltaic solar project at the Hanford, Washington site, and
- $150,000 to the Blue Mountain Action Council to fund home weatherization projects.

Acid Deposition and Regional Haze

Section 3.17.2.2 of the Draft EIS is retitled "Impacts of Proposed Power Projects on Regional Class I Areas (Acid Deposition and Regional Haze)" to better reflect the contents of the section.

The discussion of "Descriptors to Quantify Regional Haze" on pages 3.17-9 and 3.17-10 of the Draft EIS has been replaced with the following paragraph:

Impacts to regional haze were evaluated using the methods consistent with the FLAG guidance, as described in Section 3.2.2.2. The modeled light extinction coefficients caused by primary and

secondary aerosols formed from the power plant emissions were compared to natural background extinction. An increase above background exceeding 5% constitutes a level of concern, and an increase above background exceeding 10% constitutes a significant impact to regional haze. Background extinction factors for hygroscopic and non-hygroscopic aerosols were provided by the U.S. Forest Service. The background coefficients were similar to or lower than the reference values specified in the FLAG guidance, which were designed to approximate natural background conditions. Therefore, the regional haze assessment provided an appropriately conservative evaluation comparing the future power plant impacts to natural background conditions.

The discussion of "Background Conditions" on pages 3.17-10 and 3.17-11 of the Draft EIS is updated as follows:

Assumed Year 2001 background b_{ext} values represent visibility on the clearest 5% of the days in the Class I/Scenic/Wilderness Areas and the best 20% of days in the CRGNSA and the Spokane Indian Reservation. Background extinction factors for hygroscopic and non-hygroscopic aerosols were provided by the U.S. Forest Service. The assumed background values are similar to or lower than the reference values for natural background b_{ext} values published by the FLMs (FLAG 2000). Background ozone and ammonia concentrations, nitrogen deposition, and sulfur deposition data were based on generally conservative assumptions.

The discussion of "Increase in Ambient Concentrations of SO2, NOx, and PM10" on pages 3.17-12 and 3.17-13 of the Draft EIS is updated as follows:

The increases in ambient concentrations caused solely by the new power plants were compared to the allowable ambient air quality standards and PSD Class I increments. The modeled concentrations for all three scenarios were much lower than the allowable PSD Class I increments, and in nearly all cases were below the Significant Impact Levels. This indicated that, even for the worst-case scenario, new power plants in the region would probably not cause concentrations exceeding regulatory limits (NAAQS standards or PSD increments) at any Class I area. Note however, modeled concentrations below the SILs do not necessarily indicate the future projects would not cause any significant impacts, because even low concentrations of sulfate and nitrate aerosols could contribute to AQRV impacts (increases in regional haze impacts or acid deposition).

The Bonneville study did not attempt to estimate air pollutant concentrations in Class II areas near each individual power plant. The impacts near each plant are evaluated based on detailed air quality modeling required under each plant's air quality permit application. Each individual permit application is reviewed by the appropriate regulatory agency to ensure that the power plant does not contribute to exceedances of the Ambient Air Quality Standards.

For example, the Wallula Power Project would be located in an existing PM10 nonattainment area. As described in Section 3.2 of this EIS, the Wallula project is required to install LAER emissions controls and to procure off-site emission offsets to ensure the project would not contribute to the existing PM10 exceedances.

The discussion of "Increase in Sulfur and Nitrogen Deposition" on page 3.17-13 of the Draft EIS has been updated as follows:

Increases in acid deposition at the Class I areas caused solely by the new power plants were compared to existing background values and recognized impact thresholds. In most of the Class I

areas the existing background deposition rates are much higher than impact thresholds established by the U.S. Forest Service and the National Park Service, indicating that existing air quality is already significantly impaired. The modeled worst-case increases caused solely by new power plants would be a small fraction of the existing background values.

Note however, the assessment of additional acid deposition must consider recent studies that revealed existing ecological impacts related to sulfur and nitrogen deposition along the eastern Cascade range (Geiser and Bachman 2002). As described in Section 3.2.1 studies have revealed measurable shifts in the distribution of sensitive lichen species, presumably related to current levels of acid deposition caused by existing air pollutant sources east of the Cascades. In that context, it is uncertain whether relatively small increases in acid deposition caused by future power plant emissions could exacerbate the existing adverse impacts.

The table on page 3.17-18 of the Draft EIS has been revised. The two right-hand columns of the table have been deleted. An updated version is shown below.

Table 3.17-2. Contribution of the Wallula Power Project (By Itself) to Regional Haze Firing by Primary Fuel

Area of Interest	Wallula Power Maximum Extinction (1/Mm)	Wallula Power Maximum Change to Year 2001 Background Extinction (%)
CRGNSA	1.48	3.5
Mt. Hood Wilderness	0.83	3.5
Spokane Indian Reservation	0.58	1.8
Three Sisters Wilderness	0.16	1.18
Mt. Adams Wilderness	0.42	2.13
Alpine Lakes Wilderness	0.21	1.40
Diamond Peak Wilderness	0.04	0.25
Eagle Cap Wilderness	0.34	2.21
Glacier Peak Wilderness	0.33	1.82
Goat Rocks Wilderness	0.26	1.31
Hells Canyon Wilderness	0.22	1.21
Mt. Jefferson Wilderness	0.29	1.72
Mt. Baker Wilderness	0.15	0.68
North Cascades National Park	0.15	0.84
Olympic National Park	0.16	0.65
Pasayten Wilderness	0.11	0.57
Mt. Rainier National Park	0.12	0.88
Strawberry Mtn. Wilderness	0.10	0.63

Notes:
For the Wallula Power Project peak 24-hour gas-fired emissions were assumed for all days of the year. Cumulative predictions include emissions from the power projects listed in Table 3.17-8 of the Draft EIS fired by their primary fuel.

Background extinction coefficients are based on aerosol concentrations during days with the top 5% best visibility for all areas except the CRGNSA and the Spokane Indian Reservation. The CRGNSA and Spokane Indian Reservation background extinction is based on the average for the top 20% at the Wishram monitoring site.

The text discussing "Uncertainty Analysis" on pages 3.17-20 and 3.17-21 of the Draft EIS has been updated as follows:

Overprediction

The above analysis probably overpredicts the number of days of regional haze impact caused solely by the modeled emission sources, because it assumes a background condition consisting of exceptionally clear weather for 365 days per year. In reality, several of the modeled worst-case meteorological episodes occurred during the winter with fog, drizzle, and overcast conditions. For example, the modeled 1-day episode affecting the Mt. Hood Wilderness occurred on a day with easterly flow during the winter. Under these conditions the turbine plumes are embedded in cold moist air, promoting the formation of nitrate particles that would exacerbate downwind regional haze if the weather was clear. However, concurrent weather observations at Pasco, Pendleton, and The Dalles indicate fog and poor existing visibility sometimes accompanied these episodes. During such cold air outbreak episodes, high winds occur in the western end of the CRGNSA. Background aerosol concentrations will likely be higher due to the resulting fog, low clouds, precipitation and other obscuring weather. Thus, in some cases the modeled impacts predicted in this analysis would not actually be perceptible.

The modeling of wintertime impacts resulting from use of secondary oil firing probably overpredicts the impacts because it assumes each plant that is permitted to use oil as a backup fuel does so continuously for 90 days during the winter. This is a conservative assumption. For example, the Chehalis Generating Facility is permitted to burn oil for only 30 days per year, so the assumption that the plant uses oil for 90 days during the winter probably results in an overprediction of the number of days that plant would impact Mt. Rainier National Park.

Underprediction

Bonneville's Phase I and Phase II studies did not consider existing impacts caused by emissions from existing sources. As described in Section 3.2.1, monitoring data and field studies indicate existing levels of air pollution have already caused adverse environmental impacts.

Bonneville's Phase I and Phase II studies did not consider future cumulative impacts related to population growth and industrial expansion other than new utility power plants. Given the expected population growth in Washington and Oregon, it is likely that the actual future air quality degradation at the Class I areas could be substantially higher than modeled in Bonneville's limited studies.

Additional Discussion of Natural Gas Supply

In the report *Convergence: Natural Gas and Electricity in Washington* (2001), the Washington State Office of Trade & Economic Development (CTED) creates a more cautionary picture of future natural gas supply in light of potentially high cumulative demand. In response to comments on the Draft EIS, a summary of that report has been added below.

Although CTED agrees that enough natural gas reserves and transmission line capacity can be developed to support the predicted expansion of the natural-gas fired electricity generation market in the Pacific Northwest, the report warns that the timing of new plants coming online and the

expansion of the region's ability to deliver low-priced gas will significantly impact the stability of the market.

As stated in the report, "if all of the necessary events don't occur in the proper sequence, the industry may experience price spikes leading to temporary economic dislocation, long-term upward pressure on gas prices, or both." The report further cautions that "wholesale electricity and natural gas prices are subject to extreme price volatility, and increasing convergence of the electricity and natural gas markets means that extreme events are likely to affect both markets simultaneously."

Inflated natural gas and electricity prices could also translate into higher residential rates, as was seen in 1999 and 2000 when a combination of high electricity prices, reduced natural gas inventories, and a heavy reliance on natural gas for electricity generation forced sizable and sustained natural gas rate increases. Table 3.17-3 provides average natural gas bill information for households in 1999 and 2000, demonstrating the substantial rate increases that occurred due to volatility in the natural gas market. Furthermore, due to the purchasing mechanisms in place in Washington, volatility in the wholesale electricity market is often passed on to retail customers.

Table 3.17-3. Average Monthly Household Natural Gas Bill for Washington Utilities

Provider	Customers	Jan 1999	Jan 2000	Sep 2000	Jan 2001
Puget Sound Energy	591,000	$41	$47	$61	$77
Cascade Natural Gas	145,000	$37	$41	$45	$60
Avista	119,000	$27	$31	$42	$55
Northwest Natural Gas	38,000	$32	$36	$49	$49

Source: CTED 2001.

Regardless of current supply and demand and future predicted market characteristics, the use of gas, its cost, and the potential for new gas reserve development (or alternatives to it) are determined by market forces not evaluated in this EIS.

Additional Discussion of Natural Gas Pipelines

As described in more detail in *Convergence: Natural Gas and Electricity in Washington* (CTED 2001), the higher than anticipated demand for natural gas in 2000 exceeded the need for transmission facilities predicted by pipeline companies and major shippers. The capacity shortage was exacerbated by the greater dependence on natural gas for energy generation in light of low hydroelectric production. The report states,

> The interstate pipeline system showed severe strain, resulting in price volatility and large price differentials at various points on pipelines serving West Coast markets. This demonstrates that even the existing level of gas consumption for electric generation during low hydro years is not sustainable with current infrastructure; meeting new demand will require major investments in pipeline capacity.

As described in the previous section, market volatility and increased natural gas prices (which incorporate the costs of improving or constructing new conveyance facilities) are often borne by residential users in Washington state, resulting in potentially higher household natural gas rates.

The two methods that can be used to expand natural gas pipeline capacity are (1) increasing operating pressure (requiring upgrades or adding compressor stations) or (2) increasing cross-section (effectively increasing the diameter of the pipe, such as laying additional parallel pipe). To increase capacity, a shipper of natural gas can request additional capacity (or turn back unneeded contracted capacity) in what is called an "open market." If sufficient interest in additional capacity is shown during the open season, the pipeline company applies to FERC for a Certificate of Public Convenience and Necessity that authorizes the project to proceed. Firm commitments must be in place with shippers prior to developing new pipeline capacity. (CTED 2001)

Although the Northwest and GTN pipelines are currently operating at or near their capacity, activities are currently underway to expand the interstate natural gas transmission system. Significant interest during the GTN open season suggests that system expansions could be large enough to accommodate future demand. The pivotal question will be whether this new load will actually materialize, and whether shippers of natural gas will commit to contracting for new pipeline capacities.

Impacts associated with natural gas transmission line routes would be similar (though slightly less intensive) than those associated with transmission line impacts. It is impossible to quantify the total length of pipeline construction projects anticipated in the Pacific Northwest over the next few years, although it is assumed that applicants would consider proximity to natural gas pipelines as an important consideration when selecting a project site, thus limiting the length and cost of natural gas pipeline extensions. Furthermore, applicants would consider natural gas availability on a project-specific basis (i.e., if obtaining the necessary gas supply were not feasible, the project applicant would likely select a different location).

3.18 Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

There were no changes to the Draft EIS text for this section.

3.19 Irreversible or Irretrievable Commitments of Resources

There were no changes to the Draft EIS text for this section.

Chapter 4 References

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———. 2002l. Wallula Generation, LLC stipulation and cultural resources agreement with the Confederated Tribes of the Umatilla Indian Reservation for the Wallula Power Project.

Chapter 5 Acronyms

AC	Alternating Current
AET	Average Monthly Actual Evapotranspiration
AQRV	Air Quality Related Values
ASC	Application for Site Certification
ASIL	Acceptable Source Impact Level
BA	Biological Assessment
BACT	Best Available Control Technology
BEF	Bonneville Environmental Foundation
b_{ext}	Light Extinction Coefficient
BLM	U.S. Bureau of Land Management
BMAC	Blue Mountain Action Council
BMP	Best Management Practice
Bonneville	Bonneville Power Administration
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
cf/d	Cubic Feet Per Day
CFE	Counsel for the Environment
CFR	Code of Federal Regulations
cm	Centimeter
CO	Carbon Monoxide
Corps	U.S. Army Corps of Engineers
CRGNSA	Columbia River Gorge National Scenic Area
CRPP	Cultural Resource Protection Program
CTED	Washington State Office of Trade & Economic Development
CTSCREEN	Complex Terrain Screening Model
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
DAP	Deposition Analysis Threshold
dBA	Decibel
DC	Direct Current
DEIS	Draft Environmental Impact Statement
DOE	U.S. Department of Energy
DW	Dangerous Waste
Ecology	Washington State Department of Ecology
EFH	Essential Fish Habitat
EFSEC	Washington State Energy Facility Site Evaluation Council
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Fields
EPA	U.S. Environmental Protection Agency
ERC	Emission Reduction Credits
ESA	Endangered Species Act
FCRTS	Federal Columbia River Transmission System
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FLAG	Federal Land Managers' Air Quality Related Values Workgroup
FLMs	Federal Land Managers
GE	General Electric
GHG	Greenhouse Gas
gpd	Gallons Per Day
gpm	Gallons Per Minute
GTN	Gas Transmission-Northwest
HAP	Hazardous Air Pollutants
HDPE	High-Density Polyethylene
HMU	Habitat Management Unit
HPA	Hydraulic Project Approval
HRSG	Heat Recovery Steam Generator
IH	Heavy Industrial
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPM	Integrated Pest Management
ISCST3	Industrial Source Complex Short-Term Model
kg/ha/mo	Kilogram per Hectare per Month
km	Kilometer
kV	Kilovolt
LAER	Lowest Achievable Emission Rate
LLC	Limited Liability Company
m	Meter
MACT	Maximum Achievable Control Technology
MCL	Maximum Contaminant Level

mg/L	Milligrams Per Liter
mgd	Million Gallons per Day
Mm	Megameters
MSL	Mean Sea Level
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMFS	National Marine Fisheries Service
NOC	Notice of Construction
NOx	Oxide of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NSR	New Source Review
NWPPC	Northwest Power Planning Council
NWR	National Wildlife Refuge
OAHP	Washington State Office of Archaeology and Historic Preservation
PM	Particulate Matter
PMF	Probable Maximum Flood
ppm	Parts Per Million
ppmvd	Parts Per Million Volume Dry
PSD	Prevention of Significant Deterioration
PUD	Public Utility District
RAS	Remedial Action Schemes
RCW	Revised Code of Washington
ROD	Record of Decision
SACTIP	Seasonal/Annual Cooling Tower Impact Program
SCR	Selective Catalytic Reduction
SEPA	State Environmental Policy Act
SHPO	State Historic Preservation Officer
SIL	Significant Impact Levels
SO_2	Sulfur Dioxide
SOx	Oxide of Sulfur
SWPPP	Storm Water Pollution Prevention Plan
T-BACT	Toxics-Best Available Control Technology
TDS	Total Dissolved Solids
TES	Threatened Endangered Sensitive
TMDL	Total Maximum Daily Load
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WSCC	Western Systems Coordinating Council
WSDOT	Washington State Department of Transportation
WUTC	Washington Utilities and Transportation Commission

Chapter 6 List of Preparers

The lead agencies for the Wallula Power Project Final EIS are Bonneville and EFSEC. The Final EIS was written with the technical assistance of Jones & Stokes. Individuals responsible for preparing the EIS are listed below. The consulting firm ENTRIX, Inc. prepared environmental reports for the Wallula Power Project and the Wallula–McNary Transmission System Project that were referenced in preparing this EIS.

Steve Ahern—Biologist. ENTRIX, Inc. Responsible for analysis of aquatics impacts due to transmission line. Education: M.S. Natural Resources (Fisheries). 18 years experience in Fisheries and Biology.

Melody Allen—Sociologist. ENTRIX, Inc. Responsible for analysis of population, housing, economics, and public services sections. Education: B.S. Chemistry and Environmental Science. 18 years experience.

Ravi Aggarwal—Systems Planner. Bonneville Power Administration. Responsible for Technical Transmission System Planning Studies. Education: B.S. Electrical Engineering. Experience in analysis of electrical transmission operations and planning with Bonneville since 1991.

Grant Bailey—Principal, Jones & Stokes. Responsible for EIS management. Thirty years of professional experience, including managing NEPA/SEPA projects and permitting and siting of energy facilities, including coal, nuclear, and gas-fired power plants, oil terminals and pipelines, gas pipelines and compressor stations, and related infrastructures. Education: B.S. Biology.

Sharon Barta—Transportation Engineer. Huitt-Zollars. Responsible for section on traffic in transmission line environmental report. Education: B.S. Civil Engineering. 25 years experience.

Theresa Berry—Transmission Line Design Engineer. Bonneville Power Administration. Responsible for siting of towers and transmission line design. Education: B.S. Civil Engineering. 10 years experience at Bonneville.

Tim Blewett—Forestry and Natural Resources. ENTRIX, Inc. Responsible for section on land use in transmission line environmental report. Education: B.S. Forestry and Natural Resources. 5 years experience.

T. Dan Bracken—Principal, T. Dan Bracken Inc. Primary author of electrical and magnetic effects and public health and safety sections. Education: B.S., M.S., and Ph.D. degrees in physics. Experience: Twenty-seven years experience undertaking research on and characterization of electric and magnetic field effects from transmission lines.

Sarah Brandt—Policy Analyst and Public Involvement Specialist, Jones & Stokes. Responsible for population/housing, public services, land use, visual, and energy/natural resources sections of EIS. Four years of experience in public involvement, regulatory support, NEPA/SEPA, and other regulations. Education: B.A. Environmental Science and Public Policy.

Matthew Butcher—Biologist. ENTRIX, Inc. Responsible for section on aquatics in transmission line environmental report. Education: M.S. Aquatic Ecology. 22 years experience.

Dan Clayton—Engineering Geologist, Shannon & Wilson. Responsible for preparing earth and water sections of EIS. Twenty-seven years of experience in geology, groundwater and surface water hydrology, and water quality. Education: B.A. and M.S. in Geological Sciences.

Jason Cooper—Cultural Resource Specialist, Jones & Stokes. Responsible for cultural resources section of EIS. Ten years of experience in archaeology and cultural resource inventory, with expertise in chipped stone technologies. Education: B.A. History; M.A. Anthropology/Archaeology.

Erin Cunningham—Earth Science. ENTRIX, Inc. Contributor on earth and recreation sections for transmission line and facility environmental reports. Education: B.S. Earth Science. 3 years experience.

Kimberly Demuth—Planning and Cultural Resource Specialist. ENTRIX, Inc. Responsible for cultural resources, visual analysis, population, land use, public services, and traffic analysis. Education: M.S. Historic Preservation of Architecture. 23 years experience.

Zoltan Der—GIS. ENTRIX, Inc. Responsible for GIS maps in transmission line environmental report. Education: B.A. Geography. 7 years experience.

Laurens (Lou) C. Driessen—Project Manager. Bonneville Power Administration. Responsible for project management and engineering of transmission line portion of the project. Education: B.S., Civil Engineering. Experience: Facility siting and project management. With Bonneville since 1969.

Ross Fenton—Senior Engineer, HDR, Inc. Responsible for transportation and health/safety sections. Twenty-eight years of experience in transportation engineering. Education: B.S. Civil Engineering. Licensed Civil Engineer.

Jeff Fisher—Fisheries. ENTRIX, Inc. Contributor to analysis of aquatics in transmission line environmental report. Education: Ph.D. Aquatic Toxicology. 20 years experience.

Alan Fox—Economist. NEA. Contributor to analysis of economics, housing, population, and public services and utilities in transmission line environmental report. Education: Ph.D. Natural Resource Economics. 36 years experience.

Kevin Freeman—Project Manager. ENTRIX, Inc. Responsible for senior review and overall completion of transmission line and facility environmental reports. Education: M.S. Geology. 26 years experience.

Teresa Fung—City and Regional Planning. ENTRIX, Inc. Responsible for analysis of land use, population, housing, economics, public services and utilities, traffic, and inspection in transmission line and facility environmental reports. Education: M.C.R.P. City and Regional Planning. 12 years experience.

Tina Gary—Geologist. ENTRIX, Inc. Contributor to analysis of geology in transmission line environmental report. Education: B.S. Geological Sciences. 11 years experience.

Fred Glick, ASLA—Landscape Architect. Huitt-Zollars. Contributor to analysis of visual impacts of transmission line. Education: M.S. Landscape Architecture. 27 years experience.

Kathi Hann—Sociologist. ENTRIX, Inc. Responsible for analysis of air, health and safety, and noise. Education: B.A. Sociology. 17 years experience.

Marlene Heller—Biologist. ENTRIX, Inc. Responsible for analysis of agriculture, wetlands, vegetation, and fisheries. Education: B.S. Biological Oceanography. 2 years experience.

Richard Heredia—Civil Engineer, Bonneville Power Administration. Responsible for access road planning and design. Education: B.S. Construction Engineering Management. 15 years experience. With Bonneville since 2001.

Judith Hillis—Assistant Project Manager/Natural Resource Specialist, Jones & Stokes. Responsible for preparing wetlands/vegetation and agricultural crops sections of EIS. Experience in plant ecology, restoration design and implementation, field data collection, wetland delineations and inventories. Education: B.S. Botany; B.S. Ecology, Evolution, and Conservation Biology.

Michael Hoffman—Construction Manager/Civil Engineer. Bonneville Power Administration. Contributor to description of transmission line construction techniques. Education: M.S. Civil Engineering. 12 years experience at Bonneville.

Richard Larson—Transportation Engineer. Huitt-Zollars. Contributor to analysis of traffic. Education: B.S. Civil Engineering. 34 years experience.

Jason Lowe—Biologist. ENTRIX, Inc. Contributor to sections on wildlife, vegetation, and wetlands in transmission line environmental report. Education: B.S. Biology. 1 year experience.

Johny Luiz—Substation Project Manager. Bonneville Power Administration. Responsible for design of interconnection and switchyard. Education: B.S. Physics and Electrical Engineering.

Mark Matthies—Environmental Scientist, Jones & Stokes. Provided senior review of wetlands/vegetation section. Thirteen years of experience in wetland biology, wetland delineation and inventory, impact assessment, mitigation and habitat restoration, and vegetation classification and mapping. Education: B.S. Environmental Studies; M.S. Range/Wildland Sciences.

Bob McKusick—Economist. NEA. Contributor to analysis of economics, population, housing, public services, and utilities in transmission line environmental report. Education: Ph.D. Agricultural Economics. 31 years experience.

Michael McNabb—Fisheries Biologist, Jones & Stokes. Responsible for fisheries section of EIS. Eight years of experience in salmonid ecology and water quality, stream characterization, and construction monitoring. Education: B.S. Fisheries.

Judith Montgomery—Judith H. Montgomery Communications. Technical editor for literature search on health effects of EMF. Education: B.A., English Literature. Ph.D., American Literature. 20 years experience in writing, editing, and communications services.

Marcia Montgomery—Historian. ENTRIX, Inc. Contributor to section on cultural resources in transmission line environmental report. Education: M.A. History. 15 years experience.

Janelle Nolan-Summers—Biologist. ENTRIX, Inc. Contributor to wildlife section in transmission line environmental report. Education: B.S. Wildlife and Fisheries Biology. 13 years experience.

Greg Reub—Biologist. ENTRIX, Inc. Responsible for analysis of vegetation, wetlands, agriculture, and fisheries. Education: M.A. Ecology and Systematic Biology. 21 years experience.

Cathy Robinson—Biologist, Jones & Stokes. Responsible for wildlife portion of Final EIS. Education: B.S. Entomology.

Donald Rose—Environmental Coordinator, Bonneville Power Administration. Responsible for EIS coordination and development. Education: B.S. Forest Management. 21 years experience in environmental analysis and natural resource management.

Cathy Smayda—Wildlife Biologist. Smayda Environmental Associates, Inc. Contributor to wildlife, wetlands, and vegetation sections of transmission line and facility environmental reports.

Mike Stimac—Manager, Licensing and Environmental Services, HDR, Inc. Responsible for traffic and health/safety sections of EIS. Over 30 years of experience in energy facility siting and licensing, environmental program design, NEPA/SEPA EIS preparation, and regulatory compliance. Education: B.S. Electrical Engineering; M.S. Fisheries. Licensed Nuclear Engineer.

Carl Stixrood—Landscape Architect. Huitt-Zollars. Responsible for analysis of visual impacts. Education: M.S. Urban Design, Public Affairs. 26 years experience.

Heidi Tate—Wildlife Biologist, Jones & Stokes. Responsible for wildlife and agricultural crops sections of EIS. Ten years of experience in NEPA/SEPA wildlife analysis, threatened and endangered species, and habitat evaluation. Education: B.S. Wildlife Biology.

Michael Taylor—Economist. NEA. Contributor to analysis of economics, housing, population, public service, and utilities in transmission line environmental report. Education: Ph.D. Agricultural and Resource Economics. 16 years experience.

Steve Wilbur—Geologist. ENTRIX, Inc. Responsible for analysis of geology and hydrology sections. Education: Ph.D. Geology/Fluvial and Hillslope Geomorphology. 21 years experience.

James Wilder—Air/Noise Specialist, Jones & Stokes. Responsible for air quality and noise sections of EIS. Twenty-three years of experience in air quality and noise control engineering, facility design, preconstruction permitting, environmental impact assessments, and operational compliance monitoring. Education: B.S. Civil Engineering; M.S. Air Resources Engineering.

Carrie Wills—Anthropologist. ENTRIX, Inc. Responsible for analysis of cultural resources. Education: M.A. Anthropology. 13 years experience.

Marion Wolcott—Realty Specialist. Bonneville Power Administration. Responsible for property value analysis. Education: B.S. Forest Management. Experience: Forestry appraisal and project coordination. With Bonneville as a contractor and employee since 1985.

Nicole Ruhleder Zehntbauer— GIS Professional. Bonneville Power Administration. Education: B.A. Geography. 10 years experience in GIS/8 years at Bonneville.

Chapter 7 EIS Distribution List

7.1 Federal Agencies

Bonneville Power Administration
Bureau of Land Management
Bureau of Reclamation
Federal Energy Regulatory Commission
McNary National Wildlife Refuge
Mid-Columbia River National Wildlife Refuges
National Marine Fisheries Service
National Park Service Air Resources Division
Natural Resources Conservation Service
U.S. Army Corps of Engineers
U.S. Department of Agriculture, Forest Service, Region 6 Natural Resources
U.S. Department of Energy, Office of Environmental Policy and Guidance
U.S. Department of the Interior
U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of the Interior, Office of the Secretary
U.S. Environmental Protection Agency
U.S. Environmental Protection Agency, Region 10

7.2 Tribal Government

Confederated Tribes and Bands, Yakama Nation
Confederated Tribes of the Colville Reservation
Confederated Tribes of the Umatilla Indian Reservation
Nez Perce Indian Tribe
Spokane Tribal Business Council
Wanapum Band of Indians

7.3 State Agencies

Oregon State Department of Energy
Oregon State Department of Fish and Wildlife
Washington State Attorney General Office
Washington State Community, Trade, and Economic Development
Washington State Department of Ecology
Washington State Department of Fish and Wildife
Washington State Department of Health
Washington State Department of Natural Resources
Washington State Department of Transportation
Washington State Energy Facility Site Evaluation Council
Washington State Utilities and Transportation Commission

7.4 Local Government

City of Hermiston
City of Richland
City of Umatilla
City of Walla Walla
City of Yakima
Franklin County
Port of Walla Walla
Umatilla County
Walla Walla County
Walla Walla Fire Protection District No. 5

7.5 Libraries and Educational Institutions

Burbank Library
Central Washington University
Oregon Trail Public Library
Walla Walla College
Washington State Library
Washington State University
Touchet Library
Umatilla Public Library
Walla Walla County Library Service Center
Walla Walla Public Library

7.6 Interest Groups

Association of Washington Business
Big Bend EDC
Blue Mountain Audubon
Bonneville Environmental Foundation
Northwest Economic Associates
PBQD
Pheasants Forever
Rebound
Sierra Club
TIC Northwest Region

7.7 Businesses

A Little Bit Country Realty
Aeropower Services Inc.
Benkendorf Associates Corp.
Black & Veatch
Boise Cascade
BP
Conoco
Continental Energy
Davis Wright Tremaine LLP
Duke Energy
ENTRIX
Gogerty Stark Marriott
Gordon Thomas Honeywell
Green Family Farm
House Technology Telecom & Energy
Huckell Weinman Associates
JDL Enterprises
Jones & Stokes
Jones Cate Ranch LLC
Kennedy Jenks Consultants
NESCO
Newport Generation
Newport Northwest
Northwest Power Enterprises
Northwest Wildlife Consultants
Perkins Coie LLP
Reese Baffney Schrag & Frol
Tri-City Herald
URS
Worden Farms

7.8 Individuals

Carl Arbogast
Dave Baker
Richard Barnette
Stuart Bonney
Randy Bostrum
Randy Buchanan
Marcella Cate
Robert J. Carson
Nancy Eidam
Bud Glaesemann
Michael Healy
Leslie Hickey
Casey Ingels
Joanne Kosmos
Ricky Latham
Leon Leonard
Peter Lewandowski
Nicholas Lewis
Don Locati
Fay Lopez
Chuck Martin
Linda Mautz
Ron Mitchell
Kenneth D. Peterson
Barbara and Larry Pierce
Bill Reeves
Nancy Roeder
Gayle Rothrock
David Schoen
Daniel Seligman
Kathlyn Stearns
Franky Uhling
Darlene Westerling
Staci Woodward
Walter and Cathy Wright
Karen and Bud Yager
Frank Zahner