EXHIBIT O

WATER USE
OAR 345-021-0010(1)(o)

TABLE OF CONTENTS

O.1 INTRODUCTION O-1

O.2 Water Uses and Sources O-1
O.2.1 Construction O-1
O.2.2 Operation O-2

O.3 Water Losses O-4

O.4 Secondary Use Permit O-5

O.5 Mitigation O-5

APPENDICES

Appendix O-1 – Water Right and Amendments for Irrigation from Carty Reservoir

Appendix O-2 – Application for a Permit to Use Surface Water

Appendix O-3 – Oregon Water Resources Department Letter Regarding Specific to General Industrial Notification

LIST OF TABLES

Table O.2-1 Anticipated Water Use O-3

Table O.3-1 Anticipated Water Losses O-4

LIST OF FIGURES

O-1 Water Mass Balance Average Annual Conditions

O-2 Water Mass Balance Summer Condition

O.1 INTRODUCTION

OAR 345-021-0010(1)(o) *Information about anticipated water use during construction and operation of the proposed facility.*

Response: This exhibit provides details regarding uses of water, the source of water used, and the avenues of water loss and output from the Carty Generating Station. OAR 345-021-0010(1)(o)(D) is satisfied by Figure O-1– Water Mass Balance Average Annual Conditions and Figure O-2 – Water Mass Balance Summer Condition. OAR 345-021-0010(1)(o)(E) applies only if the proposed facility would not need a groundwater permit, a surface water permit, or a water right transfer; since the Carty Generating Station would need a secondary use permit, Subsection E is not applicable. Information regarding the secondary use permit can be found in Section O.5. Mitigation measures for adverse impacts of water use are presented in O.6.

Portland General Electric Company (PGE) anticipates using approximately 10,000,000 gallons of water from Carty Reservoir during construction of each block (total of 20,000,000 gallons of water). During operation the Carty Generating Station, under annual average conditions, would use approximately 2,300 gallons per minute (gpm) from the Carty Reservoir and approximately 1 gpm from an existing well. Water would be withdrawn from Carty Reservoir under a secondary use permit. Potential adverse impacts related to water use would be mitigated by reusing wastewater from the Carty Generating Station internally and by operating Carty Reservoir at a slightly higher elevation during the winter months than current operation, but well under the maximum pool elevation level.

O.2 Water Uses and Sources

OAR 345-021-0010(1)(o)(A) *A description of the use of water during construction and operation of the proposed facility.*

OAR 345-021-0010(1)(o)(B) *A description of each source of water and the applicant's estimate of the amount of water the facility will need during construction and during operation from each source under annual average and worst-case conditions.*

Response:

O.2.1 Construction

During construction, water would be used for dust abatement, washing equipment and vehicles, washing concrete trucks after delivery of concrete loads, fire suppression during construction, and water supply for testing and commissioning. PGE anticipates using approximately 10,000,000 gallons during the construction period for each block (total of 20,000,000 gallons of

water). A majority of the water would be used in the later phases of construction to support commissioning activities.

All non-potable water used for construction activities would be obtained from Carty Reservoir. Temporary pumps and piping may be required to support initial construction activities until the permanent pumps and piping are installed. Carty Reservoir has a maximum surface area of approximately 1,450 acres and contains approximately 38,000 acre feet of water (12 billion gallons) at a maximum pool elevation of 677 feet above mean sea level (MSL). The average pool elevation for the reservoir since 1990 has been approximately 667 to 668 feet above MSL. At this elevation, the reservoir surface area is approximately 1,100 acres and contains approximately 26,000 acre feet of water (8.5 billion gallons). An Oregon Water Resources Department secondary use permit application (for general industrial use) for use of the existing water rights held by PGE (Certificates of Water Right Nos. 86056 and 86057) is included in this ASC as Appendix O-2 – Application for a Permit to Use Surface Water and was directly submitted to the Oregon Water Resources Department. This category allows for use of water for construction purposes. This water right is sufficient for all water needs during construction of the proposed Carty Generating Station.

Potable water would be obtained from a temporary tie in with the Boardman Plant potable water system or hauled in from nearby potable water systems. Boardman Plant potable water is obtained from an existing well located 750 feet northwest of the existing Boardman Plant. Potable water would be required for items such as ice machines, coolers, and sinks for construction facilities to support construction personnel.

O.2.2 Operation

The primary uses of water during operation of the Carty Generating Station would be steam generation and cooling tower makeup water. Water would also be used for demineralized water production, potable water, service water, and fire water tank supply. Figures O-1 and O-2 provide the water mass balance for average annual and summer conditions (worst case). Average annual conditions are the average annual temperature and humidity for the site based on the nearest recording weather station. There are not necessarily a certain numbers of days when this average temperature would occur; rather, the average of the temperatures for the entire year will be equally this temperature. As used in the preliminary Application for Site Certificate, summer conditions, which are the worst case for water use, are the American Society of Heating, Refrigerating and Air-Conditioning Engineers 1% warm season temperature. It is anticipated that worst case conditions would prevail for no more than 1% of the days per year.

Using average annual conditions without duct firing provides for the best estimate of the total water usage. More water than indicated in the average annual case would be used when it is hotter and the unit is at base load or the unit is at base load plus some amount of duct firing. Less water would be used when it is cooler or when the unit is run at less than base load or is off line for routine scheduled maintenance.

The proposed locations of pipelines to transport water to the Carty Generating station are shown on Figure B-5 in Exhibit B. A description of the existing and proposed water supply infrastructure is also provided in Section B.4, subsection Interconnection Water Pipelines. Since existing intake and discharge structures would be used, there would be no construction along the shoreline of Carty Reservoir.

Potable water would be obtained from the existing Boardman potable water system, which obtains its water from an existing well located 750 feet northwest of the existing Boardman Plant. All other operational uses of water would use raw water from Carty Reservoir. Table O.2-1 provides the anticipated amount of water the Carty Generating Station would need during operation from each source under annual average and summer conditions. Anticipated water use and water loss, presented in Tables O.2-1 and O.3-1, were derived from Figures O-1 and O-2. Gallons per minute from Figures O-1 and O-2 are rounded in the tables. The original unrounded numbers from Figures O-1 and O-2 were multiplied by a conversion of 1,440 minutes per day and then rounded to produce the gallons per day values in the tables. Since the gallons per minute and the gallons per day in the table both start with the unrounded numbers from the figures, multiplying the gallons per minute in the table by 1,440 minutes per day will not result in the same gallons per day presented in the table. In any event, the rounding or un-rounding does not have a material impact on the analysis.

The gallon per day usage estimate for potable water and sanitary systems is dependent on the number of permanent staff and will vary from 800 to 1,440 gallons per day.

Table O.2-1 Anticipated Water Use

Use[1]	**Source**	**Annual Average Condition (gpm [gpd])**	**Summer Condition (gpm [gpd])**
Potable Water and Sanitary Systems	Existing Well	approximately 1 [800 to 1,440]	approximately 1 [800 to 1,440]
Cooling Tower Water	Carty Reservoir	2,100 [3,060,000]	3,700 [5,290,000]
De-mineralized Water Production for Steam Generation	Carty Reservoir	90 [128,000]	120 [171,000]
Miscellaneous drains and HRSG blowdown quenching	Carty Reservoir	100 [145,000]	120 [174,000]
Evaporative Cooling of combustion turbine inlet air	Carty Reservoir	0 [0]	95 [135,000]
Totals	**All Sources**	**2,291 [3,334,000]**	**4,036 [5,771,000]**

Note:
[1]Anticipated water use is based on two blocks of combined cycle generation.

Water from Carty Reservoir is also used for irrigation by Three Mile Canyon Farms. Reservoir Permit No. R-6276 includes an addendum to PGE's Reservoir Permit Application No. R-51520, which outlines the planned use of Carty Reservoir for irrigation. The addendum states that the maximum pool elevation allows for a 10-foot drawdown for irrigation, resulting in a storage capacity of approximately 11,000 acre-feet for irrigation. Water is withdrawn from Carty

Reservoir by Three Mile Canyon Farms in accordance with a water right permit issued by the Oregon Water Resources Department (WRD) (Permit No. S-41645). The water right permit, as amended, authorizes use of Carty Reservoir water on up to 6,833.7 acres. The specific acreage/location of use allowed under the water right is specified in a Final Order issued by WRD on February 28, 2001 (Special Order v. 55, p. 212). Copies of the permits and amendments noted above are available in Appendix O-1.

O.3 Water Losses

OAR 345-021-0010(1)(o)(C) *A description of each avenue of water loss or output from the facility site for the uses described in (A), the applicant's estimate of the amount of water in each avenue under annual average and worst-case conditions and the final disposition of all wastewater*

Response: Permanent water losses at the Carty Generating Station would occur primarily as evaporative loss from cooling tower evaporation and drift, combustion turbine evaporative cooling (seasonal), evaporation from the lined evaporation ponds (if they are constructed as a wastewater disposal option), non-recoverable losses from the heat recovery steam generator (HRSG) and discharge of sanitary sewage. Losses attributed to miscellaneous plant drains, combustion turbine evaporative cooler blowdown, cooling tower blowdown, mixed bed spent chemical regenerant, and media filter backwash would be sent back to Carty Reservoir or to on-site lined evaporation ponds. Exhibit V provides additional information regarding process water handling options. Water losses that may be recovered would be reused within the facility as well. These include HRSG blowdown and blowdown quench water and reject water from the reverse osmosis treatment equipment. These losses would be recovered and used as makeup to the cooling tower. Table O.3-1 provides the anticipated amount of water losses at the Carty Generating Station during operation under annual average and summer conditions.

Table O.3-1 Anticipated Water Losses

Source of Loss[1]	Annual Average Condition, gpm [gpd]	Summer Condition, gpm [gpd]
Sanitary Sewage	1 [1,000]	1 [1,000]
Cooling Tower Evaporation and Drift	2,000 [2,920,000]	3,500 [4,990,000]
HRSG Non-recoverable Losses	20 [28,800]	28 [40,300]
De-mineralized Water Production (chemical waste)	7 [10,000]	9 [13,000]
Service Water – Evaporative Cooling	0 [0]	95 [135,000]
Plant and Equipment Drains	50 [72,000]	50 [72,000]
Multi-Media Filtration Backwash	9 [13,000]	17 [24,500]
Cooling Tower Blowdown	180 [262,000]	310 [449,000]
Totals	**2,267 [3,306,800]**	**4,010 [5,724,800]**

[1]Anticipated water loss is based on two blocks of combined cycle generation.

O.4 Secondary Use Permit

OAR 345-021-0010(1)(o)(F) *If the proposed facility would need a groundwater permit, a surface water permit or a water right transfer, information to support a determination by the Council that the Water Resources Department should issue the permit or transfer of a water use, including information in the form required by the Water Resources Department under OAR Chapter 690, Divisions 310 and 380.*

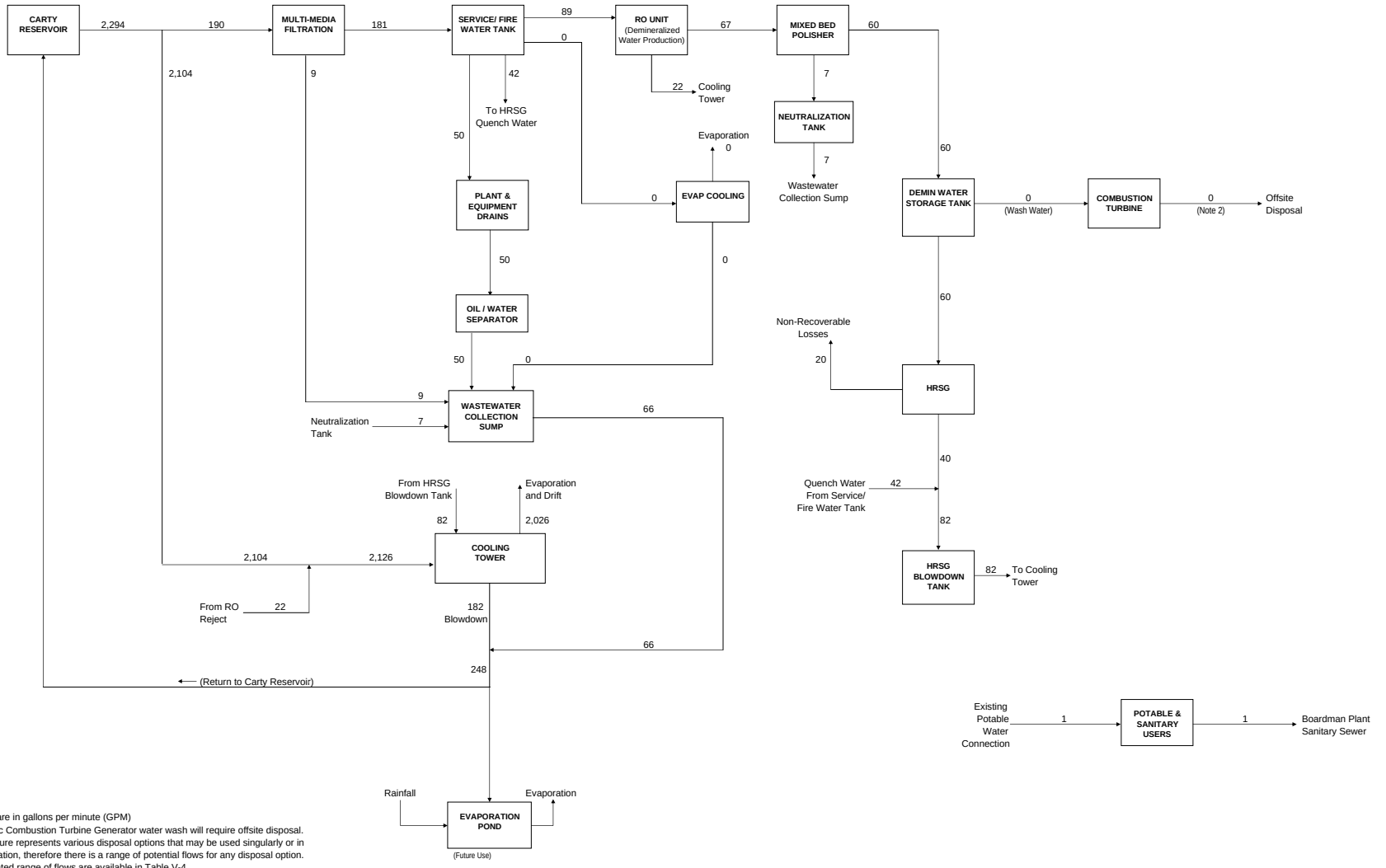
Response: PGE has an existing water use permit for storage in Carty Reservoir. PGE has provided the information necessary to support a determination by the Energy Facility Siting Council that the WRD should issue a secondary water right permit authorizing the use of stored water from Carty Reservoir at the Carty Generating Station in Appendix O-2 – Application for a Permit to Use Surface Water; this application has also been directly submitted, with fees, to the WRD. In addition, PGE has changed the use of water under the existing water right Certificates 86056 and 86057 from the specific industrial use of "thermal power generation facility" to general industrial use. Appendix O-3 contains a letter from the Oregon WRD to Martha Pagel of Schwabe, Williamson & Wyatt regarding the Oregon WRD's acceptance of the change in water use.

O.5 Mitigation

OAR 345-021-0010(1)(o)(G) *A description of proposed actions to mitigate the adverse impacts of water use on affected resources.*

Response: Generally, potential adverse impacts related to water use could include impacts to recreation if the water was taken from a recreational water source or transported across a recreational or environmentally sensitive area; impacts to surrounding domestic or irrigation wells if significant amounts of water were withdrawn from groundwater; and impacts to local service providers to supply water to users. All non-potable water required for Carty Generating Station construction and operation would be supplied from the Carty Reservoir under a WRD secondary use permit and the volume of water required for the Carty Generating Station would not require an increase in the existing permitted reservoir volume. In addition, the Carty Reservoir is not used for recreation and is located immediately adjacent to the Carty Generating Station, so there would be no impacts to recreation or from the transportation of water across recreational areas or environmentally sensitive areas. Water stored within the Carty Reservoir is not used by local service providers and therefore water use would not affect service providers' ability to provide water to their users. Water from the reservoir is also used for irrigation; however, the existing permitted reservoir volume is sufficient to meet the volume requirements of the irrigation, Boardman Plant and Carty Generating Station uses. The Carty Generating Station would also reuse water internally, which would further reduce potential impacts. There are no adverse impacts on affected resources identified; therefore PGE is not proposing any mitigation measures.

Acronyms
RO - Reverse Osmosis
HRSG - Heat Recovery Steam Generator
FGD - Flue Gas Desulfurization



Notes:
1. Flows are in gallons per minute (GPM)
2. Periodic Combustion Turbine Generator water wash will require offsite disposal.
3. This figure represents various disposal options that may be used singularly or in combination, therefore there is a range of potential flows for any disposal option. Anticipated range of flows are available in Table V-4.

COMBINED CYCLE CONFIGURATION	Nominal 900 MW Combined Cycle	COMBUSTION TURBINE FUEL	Natural Gas	CONDENSER COOLING	Wet Cooling Tower
BALANCE CASE	Summer Condition	CT LOAD FACTOR (PERCENT)	100%	CYCLES OF CONCENTRATION	12
DUCT FIRING	OFF	DRY BULB TEMPERATURE (F)	55	CYCLE MAKEUP RATE (PERCENT)	2%
CT EVAPORATIVE COOLERS	OFF	RELATIVE HUMIDITY (PERCENT)	60%	STEAM TURBINE BYPASS	OFF

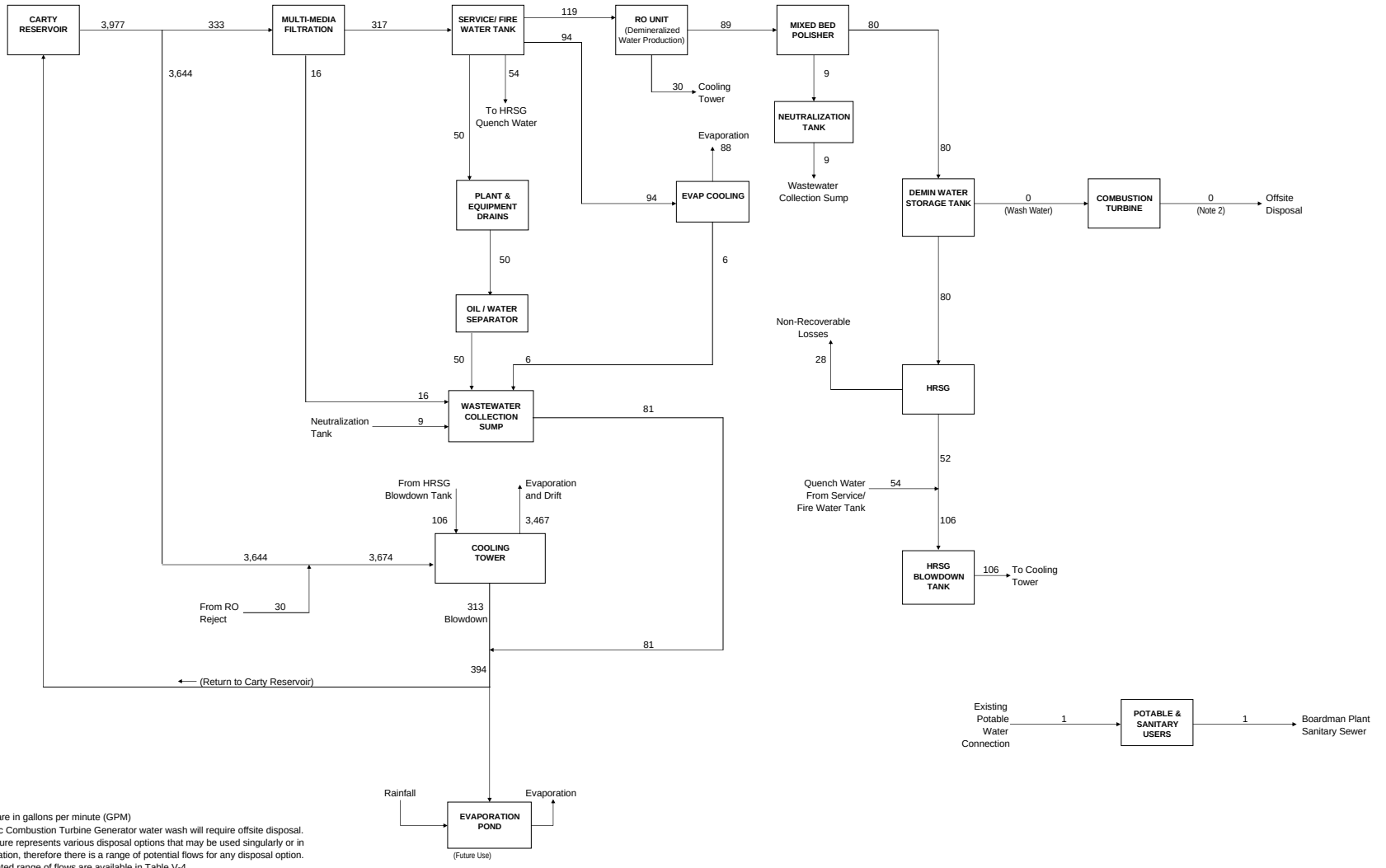
BLACK & VEATCH
Eng: MLM Dwg: MLM
Check: Date: 01/13/11

Portland General Electric Company
Boardman/Carty CC Unit
WATER MASS BALANCE
NOMINAL 900 MW COMBINED CYCLE
ANNUAL AVERAGE

Project 162110 | Drawing WMB-2 | Rev C

Figure O-1 Water Mass Balance Average Annual Conditions

Acronyms
RO - Reverse Osmosis
HRSG - Heat Recovery Steam Generator
FGD - Flue Gas Desulfurization



Notes:
1. Flows are in gallons per minute (GPM)
2. Periodic Combustion Turbine Generator water wash will require offsite disposal.
3. This figure represents various disposal options that may be used singularly or in combination, therefore there is a range of potential flows for any disposal option. Anticipated range of flows are available in Table V-4.

COMBINED CYCLE CONFIGURATION	Nominal 900 MW Combined Cycle	COMBUSTION TURBINE FUEL	Natural Gas	CONDENSER COOLING	Wet Cooling Tower
BALANCE CASE	Summer Condition	CT LOAD FACTOR (PERCENT)	100%	CYCLES OF CONCENTRATION	12
DUCT FIRING	ON	DRY BULB TEMPERATURE (F)	90	CYCLE MAKEUP RATE (PERCENT)	2%
CT EVAPORATIVE COOLERS	ON	RELATIVE HUMIDITY (PERCENT)	29%	STEAM TURBINE BYPASS	OFF

BLACK & VEATCH
Eng: MLM Dwg: MLM
Check: Date: 01/13/11

Portland General Electric Company
Boardman/Carty CC Unit
WATER MASS BALANCE
NOMINAL 900 MW COMBINED CYCLE
SUMMER CONDITION

Project 162110 | Drawing WMB-1 | Rev C

Figure O-2 Water Mass Balance Summer Condition

APPENDIX O-1

Water Right and Amendments for Irrigation from Carty Reservoir

RECEIVED
MAR - 7 1977
WATER RESOURCES DEPT.
SALEM, OREGON

*Reservoir Permit No. R 6605

Application for a Permit to Construct a Reservoir and to Store for Beneficial Use the Unappropriated Waters of the State of Oregon

I, Boeing Agri-Industrial Company
(Name of Applicant)

of P.O. Box 139 (Mailing address), Boardman (City),

State of Oregon, 97818 (Zip Code), do hereby make application for a permit to construct the following described reservoir and to store the unappropriated waters of the State of Oregon, subject to existing rights.

If the applicant is a corporation, give date and place of incorporation January 1, 1974, Oregon

1. The name of the proposed reservoir is Carty Reservoir

2. The name of the stream from which the reservoir is to be filled and the appropriation made is Columbia River

tributary of

3. The amount of water to be stored is 46,000 acre feet.

4. The use to be made of the impounded water is irrigation
(Irrigation, power, domestic supply, etc.)

5. The location of the proposed reservoir will be in Sec. 3,4,8,9 and 10
(Give sections or townships to be submerged)

Tp. 2N, R. 24E, W.M., in the county of Morrow

(a) State whether situated in channel of running stream and give character of material at outlet

N/A

(b) If not in channel of running stream, state how it is to be filled. If through a feed canal, give name and dimensions Water is to be pumped through a 60" pipeline from Columbia River to Carty. (See enclosed map)

6. The dam will be located in SW 1/4 (Smallest legal subdivision), Sec. 33, Tp. 3N, R. 24E, W.M. The maximum height will be 80 feet above stream bed or ground surface on center line of dam. The length on top will be 31,500 feet; length on bottom (PGE Specs.) feet; width on top 30 feet; slope on front or water side 3 to 1 (Feet horizontal to 1 vertical); slope on back 3 to 1 (Feet horizontal to 1 vertical); height of dam above water line when full 10 feet.

*A different form of application should be used for the appropriation of stored water to beneficial use. Such forms can be secured without charge, together with instructions, by addressing the State Engineer, Salem, Oregon 97310.

9-91

R 6605

7. The construction of dam, the material of which it is to be built, and method of protection from waves are as follows: Earth Fill with embankments for wear protection.

8. The location of wasteway with dimensions are as follows: (State whether over or around the dam)
4440 ft. long and 200 ft. wide in Section 34, T3N, R24E

9. The location of outlet from the proposed reservoir, with character of construction and dimensions, are as follows: 48 inch steel pipe.
(All dams across natural stream channels must be provided with an outlet conduit, of such capacity and location to pass the normal flow of the stream at any time)

10. The area submerged by the proposed reservoir, when full, will be 5,600 acres, with a maximum depth of water of 70 feet; and approximate mean depth of water 20 feet.

11. The estimated cost of the proposed work is $.....

12. Construction work will begin on or before Already started.

13. Construction work will be completed on or before October 1, 1978

E. J. Norton
(Signature of applicant)

Vice President - Manager
Boeing Agri-Industrial Co.

STATE OF OREGON, }
County of Marion, } ss.

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for .....

In order to retain its priority, this application must be returned to the State Engineer, with corrections on or before ....., 19.....

WITNESS my hand this ..... day of ....., 19.....

STATE ENGINEER

By .....
ASSISTANT

R 6605

Remarks: Carty Reservoir construction under Permit R6276 by Portland General Electric for power generation facility. Part of storage will be used for irrigation as well as cooling for generation facility.

STATE OF OREGON,
County of Marion, } *ss.*

This is to certify that I have examined the foregoing application and do hereby grant the same, subject to the following limitations and conditions: The right herein granted is limited to the construction of Carty Reservoir and storage of water from Columbia River to be appropriated under applications No. 55438, permit No. 41644, and application No. 55439, permit No. 41645 for irrigation.

The right hereunder shall be limited to the storage of 46,000.0 *acre feet.*

The priority date of this permit is March 7, 1977

Actual construction work shall begin on or before September 14, 1978 *and* Extended to Oct. 1985 Extended to October 1, 1990 / B+C to 10-1-95 *shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 19*79.

WITNESS my hand this 14th *day of* September, *19*77.

James E. Sexson
Water Resources Director

Application No. R-55437

Reservoir Permit No. R 6605

PERMIT

To construct a reservoir and store for beneficial use the unappropriated waters of the State of Oregon.

This instrument was first received in the office of the State Engineer at Salem, Oregon, on the 7 *day of* March, *19*77, *at* 11 *o'clock* A. *M.*

Returned to applicant:

.....

Approved:

.....

Recorded in Book No. ..... *of Reservoirs, on Page* .....

.....
State Engineer

Drainage Basin No. 7 *page* 2E

Fees .....

SP*45693-119

Oregon
Theodore R. Kulongoski, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0900
FAX 503-986-0904

December 2, 2008

Perkins Coie
Attn: Lesa M. Hays
1120 NW Couch Street, Tenth Floor
Portland, Oregon 97209

Reference: Application S-55439, Permit S-41645

The assignment from BAIC, Inc., to Threemile Canyon Farms, LLC has been recorded in the records of the Water Resources Department.

Our records have been changed accordingly and the original request is enclosed. Receipt number 95077 covering the recording fee of $50 is also enclosed.

Sincerely,

Jerry Sauter
Water Rights Program Analyst

Enclosure: Receipt 95077

cc: Watermaster 21
Threemile Canyon Farms, LLC
Data Center, OWRD (Complete Copy of Assignment Request)
Hydrographics
File

Permit Amended
V50 P360
V55 P185
V55 212

5M— **RECEIVED**
MAR - 7 1977
WATER RESOURCES DEPT
SALEM, OREGON

Permit No. 41645

*APPLICATION FOR PERMIT

SIMTAG V

To Appropriate the Public Waters of the State of Oregon

I, Boeing Agri-Industrial Company (Name of applicant)

of P. O. Box 139 (Mailing address), Boardman (City),

State of Oregon, 97818 (Zip Code), do hereby make application for a permit to appropriate the following described public waters of the State of Oregon, SUBJECT TO EXISTING RIGHTS:

If the applicant is a corporation, give date and place of incorporation January 1, 1974 Oregon

1. The source of the proposed appropriation is Carty Reservoir of Columbia River (Name of stream) (PGE built), ~~a tributary of~~ pumped through 60" pipeline from Columbia River.

2. The amount of water which the applicant intends to apply to beneficial use is 224 cubic feet per second 1/40 cfs per acre for 8,957.42 acres. (If water is to be used from more than one source, give quantity from each)

3. The use to which the water is to be applied is irrigation (Irrigation, power, mining, manufacturing, domestic supplies, etc.)

4. The point of diversion is located 0° ft. (N. or S.) 0° and 0° ft. (E. or W.) 0° from the common corner of Sec. 4,5,8 and 9, T2N, R24E, W.M. (Section or subdivision)

(This point of diversion lays on the Southwest side of Carty Reservoir now under construction by Portland General Electric)

(If preferable, give distance and bearing to section corner)

(If there is more than one point of diversion, each must be described. Use separate sheet if necessary)

being within the common corner (Give smallest legal subdivision) of Sec. 4,5,8 & 9, Tp. 2N (N. or S.), R. 24E (E. or W.), W. M., in the county of Morrow

5. The pipeline 48" (Main ditch, canal or pipe line) to be three miles (Miles or feet) in length, terminating in the NE 1/4 NE 1/4 (Smallest legal subdivision) of Sec. 29, Tp. 3N (N. or S.), R. 24E (E. or W.), W. M., the proposed location being shown throughout on the accompanying map.

DESCRIPTION OF WORKS

Diversion Works—

6. (a) Height of dam 80 feet, length on top 31,500 feet, length at bottom PGE feet; material to be used and character of construction PGE Specs - rock, steel, concrete and sand (Loose rock, concrete, masonry, rock and brush, timber crib, etc., wasteway over or around dam)

(b) Description of headgate Intake - timber, steel and concrete (Timber, concrete, etc., number and size of openings)

(c) If water is to be pumped give general description Stationary vertical turbine (Size and type of pump) pumps with electric motor drives (8 - 1250 hp) (Size and type of engine or motor to be used, total head water is to be lifted, etc.)

* A different form of application is provided where storage works are contemplated. Such forms can be secured without charge, together with instructions, by addressing the State Engineer, Salem, Oregon 97310.

T 7691 T-7541 9593

Canal System or Pipe Line—

7. (a) Give dimensions at each point of canal where materially changed in size, stating miles from headgate. At headgate: width on top (at water line) N/A feet; width on bottom -- feet; depth of water -- feet; grade -- feet fall per one thousand feet.

(b) At -- miles from headgate: width on top (at water line) -- feet; width on bottom -- feet; depth of water -- feet; grade -- feet fall per one thousand feet.

(c) Length of pipe, 205,000 ft.; size at intake, 48" in.; size at 15,840 ft. from intake 48" and/smaller in.; size at place of use 10" in.; difference in elevation between intake and place of use, max. 667 / min. 590 ft. Is grade uniform? No Estimated capacity, 224 sec. ft.

8. Location of area to be irrigated, or place of use See map and description enclosed.

Township North or South	Range E. or W. of Willamette Meridian	Section	Forty-acre Tract	Number Acres To Be Irrigated
See description and enclosed map.				

(If more space required, attach separate sheet)

(a) Character of soil Sand, fine sandy loam and loamy sand

(b) Kind of crops raised alfalfa, corn, pasture, potatoes and other suitable crops.

Power or Mining Purposes—

9. (a) Total amount of power to be developed N/A theoretical horsepower.

(b) Quantity of water to be used for power N/A sec. ft.

(c) Total fall to be utilized N/A (Head) feet.

(d) The nature of the works by means of which the power is to be developed N/A

(e) Such works to be located in N/A (Legal subdivision) of Sec. , Tp. (No. N. or S.), R. (No. E. or W.), W. M.

(f) Is water to be returned to any stream? N/A (Yes or No)

(g) If so, name stream and locate point of return N/A , Sec. , Tp. (No. N. or S.), R. (No. E. or W.), W. M.

(h) The use to which power is to be applied is N/A

(i) The nature of the mines to be served N/A

SIMTAG V

ROUTING OF 48" PENSTOCK

The diversion point starts on the Southwest side of Carty Reservoir at the common corner of Sections 4, 5, 8 and 9, thence North on the section line of Section 4 and 5 in T2N, R24E, W.M. Continuing north on the section lines between Section 32 and 33, and Section 28 and 29, ending at the common corner of Sections 20, 21, 29 and 28, all in T3N, R24E, W.M., Morrow County, Oregon

Application No. 55439
Permit No. 41645

DESCRIPTION

SIM-TAG V

TWP.	RANGE	SECTION	DESC. 1/16 SECTION		ACREAGE
3N	24E W.M.	19	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	50.12
"	"	"	SW 1/4	NW 1/4	50.35
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	50.58
"	"	"	SW 1/4	SW 1/4	50.81
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	20	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	21	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40

Application No. 55439
Permit No. 41645

DESCRIPTION

SIM-TAG V

TWP.	RANGE	SECTION	DESC. 1/16 SECTION		ACREAGE
3N	24E W.M.	21	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	22	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	23	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	24	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40

Application No. 55439
Permit No. 41645

DESCRIPTION

TWP.	RANGE	SECTION	DESC. 1/16 SECTION		ACREAGE
3N	24E W.M.	24	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	25	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	27	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	28	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40

Application No. 55439
Permit No. 41645

DESCRIPTION

SIM-TAG V

TWP.	RANGE	SECTION	DESC. 1/16 SECTION		ACREAGE
3N	24E W.M.	28	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	29	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	30	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	51.06
"	"	"	SW 1/4	NW 1/4	51.33
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	51.60
"	"	"	SW 1/4	SW 1/4	51.81
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	31	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	52.11
"	"	"	SW 1/4	NW 1/4	52.33
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40

Application No. 55439
Permit No. 41645

DESCRIPTION

SIM-TAG V

TWP.	RANGE	SECTION	DESC. 1/16 SECTION		ACREAGE
3N	24E W.M.	31	NW 1/4	SW 1/4	52.55
"	"	"	SW 1/4	SW 1/4	52.77
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	32	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	"	SW 1/4	SW 1/4	40
"	"	"	SE 1/4	SW 1/4	40
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
"	"	"	SW 1/4	SE 1/4	40
"	"	"	SE 1/4	SE 1/4	40
"	"	33	NE 1/4	NE 1/4	40
"	"	"	NW 1/4	NE 1/4	40
"	"	"	SW 1/4	NE 1/4	40
"	"	"	SE 1/4	NE 1/4	40
"	"	"	NE 1/4	NW 1/4	40
"	"	"	NW 1/4	NW 1/4	40
"	"	"	SW 1/4	NW 1/4	40
"	"	"	SE 1/4	NW 1/4	40
"	"	"	NE 1/4	SW 1/4	40
"	"	"	NW 1/4	SW 1/4	40
"	"	" NW 1/2	SW 1/4	SW 1/4	20
"	"	"	NE 1/4	SE 1/4	40
"	"	"	NW 1/4	SE 1/4	40
				Total	8,957.42

Application No. 55439
Permit No. **41645**

Municipal or Domestic Supply— **41645**

10. (a) To supply the city of N/A

-- (Name of) County, having a present population of --

and an estimated population of -- in 19.....

(b) If for domestic use state number of families to be supplied N/A

(Answer questions 11, 12, 13, and 14 in all cases)

11. Estimated cost of proposed works, $ 12,000,000.00

12. Construction work will begin on or before January 1, 1980

13. Construction work will be completed on or before January 1, 1982

14. The water will be completely applied to the proposed use on or before Jan. 1, 1983

J. B. Norton V.P.
(Signature of applicant)

Remarks: This application is for Phase V of planned development on Boeing Agri-Industrial Company Boardman Tract and is in conjunction with Appl. #48484 and Permit #35425; Appl. #48683 and Permit #35426; Appl. #51976 and Permit #37346; Appl. #54099 and Permit #40920 and Appl. #54967.

This requested amount of water is based on 8,957.42 acres of potentially irrigable land with 1/40 cfs per acre.

Final design of the distribution system has not been completed due to negotiations with PGE and Utilities for easements and right-of-way. Any changes affecting the scope of this application will be brought to the attention of the State Engineer.

STATE OF OREGON, } ss.
County of Marion, }

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for .....

.....

In order to retain its priority, this application must be returned to the State Engineer, with corrections on or before ....., 19.....

WITNESS my hand this ..... day of ....., 19.....

STATE ENGINEER

By .....
ASSISTANT

T-7541

41645

PERMIT

STATE OF OREGON, } ss.
County of Marion, }

This is to certify that I have examined the foregoing application and do hereby grant the same, SUBJECT TO EXISTING RIGHTS and the following limitations and conditions:

The right herein granted is limited to the amount of water which can be applied to beneficial use and shall not exceed 224.0 cubic feet per second measured at the point of diversion from the stream, or its equivalent in case of rotation with other water users, from Columbia River and Carty Reservoir to be constructed under application No. R 55437, permit No. R 6605

The use to which this water is to be applied is irrigation and supplemental irrigation

If for irrigation, this appropriation shall be limited to 1/40th of one cubic foot per second or its equivalent for each acre irrigated from direct flow and shall be further limited to a diversion of not to exceed 4½ acre feet per acre for each acre irrigated during the irrigation season of each year from direct flow and storage from reservoir to be constructed under permit No. R 6605 , provided further that the right allowed herein shall be limited to any deficiency in the available supply of any prior right existing for the same land and shall not exceed the limitation allowed herein,

and shall be subject to such reasonable rotation system as may be ordered by the proper state officer.

The priority date of this permit is March 7, 1977 for reservoir, September 9, 1977, for Columbia River.

Actual construction work shall begin on or before September 14, 1978 and shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 1979

Extended to Oct. 1, 1982 Extended to Oct. 1985 Extended to October 1, 1990, 10-1-95, 10-1-96

Complete application of the water to the proposed use shall be made on or before October 1, 1980

Extended to Oct. 1, 1982 Extended to Oct. 1986 Extended to October 1, 1990, 10-1-95, 10-1-96

WITNESS my hand this 14th day of September 1977

Jerome E. Stevens
Water Resources Director

Application No. 55437
Permit No. 41645

PERMIT
TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF OREGON

This instrument was first received in the office of the State Engineer at Salem, Oregon, on the 7 day of March, 1977, at 11 o'clock A. M.

Returned to applicant:

Approved:

Recorded in book No. ..... of Permits on page .....

STATE ENGINEER

Drainage Basin No. 7 page 2E

Fees .....

Permit Amended V50 P360

T-7541

STATE OF OREGON

COUNTY OF MORROW

ORDER APPROVING AN ADDITIONAL POINT OF DIVERSION

Pursuant to ORS 537.211, after notice was given and no objections were filed, and finding that no injury to existing water rights would result, this order approves, as conditioned or limited herein, PERMIT AMENDMENTS T-7541, T-7542, and T-7543 submitted by

BOEING AGRI-INDUSTRIAL COMPANY
P.O. BOX 139
BOARDMAN, OREGON 97818.

The first permit to be modified, under Permit Amendment Application T-7541, is Permit 41645 with dates of priority of MARCH 7, 1977 for the Reservoir and SEPTEMBER 9, 1977 for the Columbia River. The permit allows the use of the COLUMBIA RIVER AND CARTY RESERVOIR constructed under Permit R-6605, tributaries of the PACIFIC OCEAN, for IRRIGATION AND SUPPLEMENTAL IRRIGATION. The amount of water to which this permit is entitled is limited to an amount actually beneficially used and shall not exceed 224.0 cubic foot per second, if available at the authorized points of diversion, or its equivalent in case of rotation, measured at the points of diversion from the source.

The second permit to be modified, under Permit Amendment Application T-7542, is Permit 41644 with dates of priority of MARCH 7, 1977 for the Reservoir and SEPTEMBER 9, 1977 for the Columbia River. The permit allows the use of the COLUMBIA RIVER AND CARTY RESERVOIR constructed under Permit R-6605, tributaries of the PACIFIC OCEAN, for IRRIGATION. The amount of water to which this permit is entitled is limited to an amount actually beneficially used and shall not exceed 109.6 cubic foot per second, if available at the authorized points of diversion, or its equivalent in case of rotation, measured at the points of diversion from the source.

The third permit to be modified, under Permit Amendment Application T-7543, is Permit 41314 with a date of priority of NOVEMBER 18, 1976. The permit allow the use of the COLUMBIA RIVER, a tributary of the PACIFIC OCEAN, for IRRIGATION. The amount of water to which the permit is entitled is limit to an amount actually beneficially used and shall not exceed 387.9 cubic feet per second, if available at the authorized points of diversion, or its equivalent in case of rotation, measured at the points of diversion from the source.

The authorized points of diversion for these permits are located as follows:

NW¼ SE¼, SECTION 36, T 4 N, R 22 E, WM; COLUMBIA RIVER - N 50° 56' 22" W, 2522 FEET FROM THE SE CORNER, SECTION 36; CARTY RESERVOIR - AT THE COMMON CORNER FOR SECTIONS 4, 5, 8, AND 9, T 2 N, R 24 E, WM.

The amount of water used for irrigation, together with the amount secured under any other rights existing for the same lands, is limited to ONE-FORTIETH of one cubic foot per second per acre or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 4½ acre-feet for each acre irrigated during the irrigation season of each year.

The use shall conform to any reasonable rotation system ordered by the proper state officer.

The authorized place of use is described in the permits and does not change in this proceeding.

The right to use the water for the above purpose is restricted to beneficial use on the lands or place of use described

The applicant proposes to add an additional point of diversion, to all three permits, for the diversion of water from the Columbia River, located in the NW¼ NW¼, SECTION 17, T 4 N, R 24 E, WM; 300 FEET SOUTH AND 2315 FEET WEST FROM THE N¼, SECTION 17

THIS CHANGE TO EXISTING WATER RIGHT PERMITS MAY BE MADE PROVIDED THE FOLLOWING CONDITIONS ARE MET BY THE PERMIT HOLDER:

1. The quantity of water diverted at the new point of diversion, together with that diverted at the old point of diversion, shall not exceed the quantity of water lawfully available at the original point of diversion.

2. When required by the Department, the water user shall install and maintain a headgate, an in-line flow meter, weir, or other suitable device for measuring and recording the quantity of water diverted. The type and plans of the headgate and measuring device must be approved by the Department prior to beginning construction and shall be installed under the general supervision of the Department.

3. Water shall be acquired from the same surface water source as the original point of diversion.

4. All other terms and conditions of the permits remain the same.

Permits 41645, 41644, and 41314, in the name of Boeing Agri-Industrial Company, are amended as described herein.

WITNESS the signature of the Water Resources Director, affixed July 22, 1996.

for Martha O. Pagel, Director

OREGON WATER RESOURCES DEPARTMENT

In the Matter of the Applications for an Extension of: Permit Number 35425, Water Right Application Number 48484; Permit Number 35426, Water Right Application Number 48683; Permit Number 37346, Water Right Application Number 51976; Permit Number 40920, Water Right Application Number 54099; Permit Number 41314, Water Right Application Number 54967; Permit Number 41645, Water Right Application Number 55439; and Permit Number 48547, Water Right Application Number 68089 (Boeing Agricultural-Industrial Company, et al.)	FINAL ORDER

This Final Order comes after settlement by BAIC Inc. and the Conservation Parties (defined below) of the contested case that was commenced in July, 1999 upon the filing of protests to Proposed Final Orders issued by the Water Resources Department in 1999. Contested Case No. CC46. In issuing this Final Order, the Department incorporates decisions on recent filings by BAIC Inc. as holder of the permits, to certificate five permits, amend two permits, and cancel three permits. Two of these permits, 41644 and 43325, were not the subject of the contested case. This Final Order is issued based on the unique facts in this matter. It does not constitute legal or factual precedent except as to the specific permits at issue.

SUMMARY OF FINAL ORDER

This Final Order applies to Permits 35425, 35426, 37346, 40920, 41314, 41645, 41644, 43325, and 48547.

Based upon the findings and conclusions set forth below, the attachments incorporated herein by reference and upon agreement of the parties, the Department orders:

- Permits 35425, 35426, 37346, 40920, and 41314 are extended for completion of construction of the water system and application of water to beneficial use to January 31, 2001;

- Extended Permit 41314 is amended to change the place of use as provided in Exhibit A and shown on the map attached as Exhibit B;

- Permits 35425, 35426, 37346, 40920, and 41314 as amended shall be issued water right certificates as provided in Exhibit C and shown on the map attached as Exhibit B;

- Permit 41645 is extended for completion of construction of the water system and application of water to beneficial use to October 31, 2005 for all but the Radar Range area of the farm. Permit 41645 is extended for completion of construction and application of water to beneficial use for the Radar Range to five years from the date the Boeing Company vacates and allows BAIC, Inc. and its leaseholders the right to enter the Radar Range area for development, but in any event no later than October 31, 2015.

- Extended Permit 41645 is amended to change the place of use as provided in Exhibit A and shown on the map attached as Exhibit D.

- Permits 41644, 43325, and 48547 are canceled.

- All extensions and certificates are subject to certain conditions as set forth below.

DEFINITIONS

As used in this Final Order, the following terms have the following meanings:

1. "BAIC" means Boeing Agri-Industrial Company. "BAIC Inc." is a separate entity and current holder of the water permits.

2. "Carty Reservoir" means the water storage reservoir as shown on Exhibit B, which was authorized and developed under permit R6605.

3. "Certificate" means a certificate issued by the WRD under ORS 537.250.

4. "Conservation Area" means the areas identified on Exhibit B, and by the legal description attached as Exhibit H.

5. "Conservation Parties" means WaterWatch, Oregon Trout, Oregon Natural Desert Association, Trout Unlimited, NEDC, Idaho Rivers United, and Ted Hallock.

6. "Inland" means Inland Land Company, LLC.

7. "Irrigation Season" means the period from March 1 to October 31.

8. "Listed Fish" means Snake River spring/summer chinook salmon, Snake River fall chinook salmon, Snake River sockeye salmon, Upper Columbia River steelhead, Snake River steelhead, Lower Columbia River steelhead, Upper Willamette River chinook salmon, Upper Columbia River spring run chinook salmon, Middle Columbia River steelhead, and Upper Willamette River steelhead.

9. "ODFW' means Oregon Department of Fish and Wildlife.

10. "Permit Amendment" means a change in the place of use of water under a permit as provided in ORS 537.211.

11. "Permits" includes, as the context requires, water permits 35425, 35426, 37346, 40920, 41314, 41644, 41645, 43325, and 48547.

12. "Permittee" means BAIC Inc.

13. "Property" means those lands leased by BAIC Inc. under the lease from the State of Oregon, dated July 2, 1963.

14. "RDO" means R.D. Offutt Company Northwest.

15. "Radar Range" means the oval area in the northeast portion of the Property as shown on Exhibit B.

16. "Six Mile Canyon" means the blue line shown on Exhibit B extending from the Columbia River to Carty Reservoir.

17. "Threemile" means Threemile Canyon Farms LLC.

18. "Willow Creek Pump Station" means either the RDO Station or the Boeing Station or both shown on Exhibit B

FINDINGS OF FACT

Historical Background

19. On July 2, 1963, the State of Oregon entered into an agreement with the Boeing Company to lease a tract of land to the Boeing Company for a term of 77 years. The tract is known as the Boardman Space Age Industrial Park, and contains approximately 99,000 acres in north central Oregon. On January 1, 1974, the Boeing Company, with the consent of the State of Oregon, assigned all its rights and duties under the July 2, 1963 lease to BAIC, an Oregon corporation and wholly owned subsidiary of The Boeing Company. The Department of Administrative Services ("DAS") administers the lease on behalf of the State of Oregon.

20. In furtherance of its efforts to develop portions of the tract for agricultural use, BAIC applied for and obtained nine state water right Permits as summarized on the attached Exhibit E.

21. Permit 35425 was granted by the Water Resources Department on October 27, 1971. The permit authorizes use of 63.2 cfs of water from the Columbia River for irrigation of 2,527.9 acres in the Columbia River basin. The authorized duty under the permit is 4.5 acre feet per acre. The permit has a priority date of July 23, 1971 for 56.1 cfs and September 14, 1971 for 7.1 cfs. As originally granted, the permit specified that construction shall begin on or before October 27, 1972, and be completed by October 1, 1973, and that the complete application of water to the proposed use be made on or before October 1, 1973.

22. Permit 35426 was granted by the Water Resources Department on October 27, 1971. The permit authorizes use of 287.5 cfs of water from the Columbia River for irrigation of 11,520 acres in the Columbia River basin. The authorized duty under the permit is 4.5 acre feet per acre. The permit has a priority date of September 14, 1971. As originally granted, the permit specified that construction shall begin on or before October 27, 1972, and be completed by October 1, 1973, and that the complete application of water to the proposed use be made on or before October 1, 1974.

23. Permit 37346 was granted by the Water Resources Department on July 12, 1974. The permit authorizes use of 351 cfs of water from the Columbia River for irrigation of 14,040 acres in the Columbia River basin. The authorized duty under the permit is 4.5 acre feet per acre. The permit has a priority date of May 23, 1974. As originally granted, the permit specified that construction shall begin on or before July 12, 1975, and be completed by October 1, 1976, and that the complete application of water to the proposed use be made on or before October 1, 1977.

24. Permit 40920 was granted by the Water Resources Department on December 21, 1976. The permit authorizes use of 130 cfs of water from the Columbia River for irrigation of 5,325.52 acres in the Columbia River basin. The authorized duty under the permit is 4.0 acre feet per acre. The permit has a priority date of August 18, 1976 for 30 cfs and April 2, 1976 for 100 cfs. As originally granted, the permit specified that construction shall begin on or before December 21, 1977, and be completed by October 1, 1978, and that the complete application of water to the proposed use be made on or before October 1, 1979.

25. Permit 41314 was granted by the Water Resources Department on March 21, 1977. The permit authorizes use of 387.9 cfs of water from the Columbia River for irrigation of 15,515.96 acres in the Columbia River basin. The authorized duty under the permit is 4.5 acre feet per acre. The

permit has a priority date of November 18, 1976. As originally granted, the permit specified that construction shall begin on or before March 21, 1978, and be completed by October 1, 1978, and that the complete application of water to the proposed use be made on or before October 1, 1979.

26. Permit 41645, was granted by the Water Resources Department on September 14, 1977. The permit authorizes use of 224.0 cfs of water from the Carty Reservoir and the Columbia River for irrigation of 8,957.42 acres in the Columbia River basin. The permit has a priority date of March 7, 1977 for Carty Reservoir, and September 9, 1977 for the Columbia River. As originally granted, the permit specified that construction shall begin on or before September 14, 1978, and be completed by October 1, 1979, and that the complete application of water to the proposed use be made on or before October 1, 1980.

27. Permit 41644 was granted by the Water Resource Department on September 14, 1977. The permit authorizes use of 109.6 cfs of water from Carty Reservoir and the Columbia River for irrigation of 4,370.85 acres in the Columbia River Basin. The permit has a priority date of March 7, 1977 for Carty Reservoir and September 9, 1977 for the Columbia River.

28. Permit 43325 was granted by the Water Resources Department on September 5, 1978. The permit authorizes use of 16 cfs of water from surface water in Six Mile Canyon for irrigation of 640 acres in the Columbia River Basin. The permit has a priority date of June 20, 1978.

29. Permit 48547, was granted by the Water Resources Department on July 19, 1984. The permit authorizes use of 8 cfs of water from an unnamed west tributary of Six Mile Canyon, a tributary of the Columbia River, for irrigation of 320 acres in the Columbia River basin. The permit has a priority date of May 23, 1984.

30. BAIC previously applied for and obtained extensions of time under all nine Permits to complete construction and application of water to beneficial use. These extensions were granted through October 1, 1995.

31. On March 29, 1995, BAIC sought extensions to complete development for all nine Permits. The Department granted the requests, including the request for Permit 35425, on September 25, 1995. The order granting the requests extended the nine permits to October 1, 1996.

32. On January 5, 1996, the Department accepted a petition by WaterWatch, the Northwest Environmental Defense Center ("NEDC"), the National Wildlife Federation, the Columbia Basin Institute and Oregon Trout for reconsideration of the permit extensions. The petition set forth objections to the Department's decision to grant the permit extensions. On

February 14, 1996, the Department reconfirmed the water right permit extensions. The decision was appealed and ultimately dismissed. *See WaterWatch of Oregon, Inc. v. Boeing Agri-Industrial Company*, 155 Or. App. 381, 963 P.2d 744 (1998).

33. On September 27, 1996, the Department received applications from BAIC for an extension of time to complete construction and to apply water to full beneficial use for the Permits.

34. On October 23, 1996, WaterWatch, Oregon Trout, NEDC, Idaho Rivers United, and Ted Hallock filed protests of the applications, which raised numerous issues including those raised in WaterWatch et al.'s 1995 petition.

35. On July 22, 1996, at the request of BAIC and Inland, the WRD entered an order approving an additional point of diversion for Permits 41314, 41644, and 41645 directly from the Columbia River John Day Pool, in addition to the authorized point of diversion at the Willow Creek Pump Station.

36. On December 3, 1998, Inland began participating in mediated settlement negotiations with the WRD, ODFW, the Governor's Office of the State of Oregon, WaterWatch, and Oregon Trout in an effort to resolve the disputes associated with the permit extension requests. Mediation negotiations continued until February 11, 1998. A final settlement negotiation meeting occurred between the state agencies and Inland on February 18, 1999.

37. On January 15, 1999, NEDC, Defenders of Wildlife, and the Oregon Natural Desert Association filed a petition for emergency listing of the Washington ground squirrel with the Oregon Fish and Wildlife Commission. On January 21, 2000, the Commission listed the Washington ground squirrel as endangered and adopted survival guidelines, effective February 14, 2000.

38. On April 2, 1999, the Department received new applications from BAIC for an extension of time to October 1, 2001 to complete construction and to apply water to full beneficial use for Permits 35425 and 48547, and to October 1, 2003 for Permits 35426, 37346, 40920, 41314, and 41645. On April 8, 1999, Permittee amended its requests for extension on Permits 35426, 37346, 40920, 41384, and 41645 to request an extension until October 1, 2005 to complete construction and apply water to full beneficial use. These applications superseded the applications filed on September 27, 1996.

39. Permits 35425, 35426, 37346, 40920, 41314, and 41645 were proposed to be extended by the WRD in Proposed Final Orders (PFOs) dated April 9, 1999. Conservation Parties filed protests dated May 28, 1999. BAIC also

applied for an extension to complete development under Permit 48547, the PFO for which was issued on April 27, 1999. Conservation Parties filed a protest to this PFO dated June 11, 1999. Thereafter, on July 1, 1999, the WRD issued a Notice of Contested Case Proceeding and commenced contested case proceedings (the "Contested Case").

40. In May 2000, RDO purchased BAIC and renamed the company BAIC Inc. In July 2000, RDO assigned its leasehold interests in the Property to Threemile. In July 2000, BAIC Inc. filed with the WRD final proof surveys requesting certification for water right Permits 35425, 35426, 40920, and 41314. BAIC Inc. also filed applications to extend and permit amendment requests to change the place of use for Permits 41644 and 41645. On September 7, 2000, WaterWatch and NEDC filed comments opposing the amendment to the place of use for Permits 41644 and 41645.

41. On August 30, 2000, BAIC Inc. filed with the Department notice that it was withdrawing all applications for extensions filed in 1999 and earlier, including the extension requests that were the subject of the contested case. On February 28, 2001 BAIC Inc. withdrew it's August 30, 2000 letter to have the matter fully resolved through this Final Order. See Exhibit F.

42. In December 2000, BAIC Inc. and the Conservation Parties entered into a settlement that resolved their issues in the Contested Case. WRD incorporates those terms into this Final Order.

43. On February 28, 2001 BAIC Inc. filed with the Department a letter requesting cancellation of Permits 41644, 43325, and 48547. See Exhibit G.

Start of Construction

44. The record reflects the start of construction for each permit as follows:

a. **Permit 35425**. On the ground construction of the Willow Creek Pumping Station, which is sized to serve the Project and which serves lands appurtenant to Permit 35425, had begun by June 1, 1972. The deadline for beginning of construction on this permit was October 27, 1972.

b. **Permit 35426**. On the ground construction of the Willow Creek Pumping Station, which is sized to serve the Project and which serves lands appurtenant to Permit 35426, had begun by June 1, 1972. The deadline for beginning of construction on this permit was October 27, 1972.

c. **Permit 37346**. On the ground construction of the Willow Creek Pumping Station and distribution system, which is sized to serve

the Project and which serves lands appurtenant to Permit 37346, had begun by June 1, 1972. Additional development work had begun for lands appurtenant to Permit 37346 by June 30, 1975.

d. **Permit 40920**. On the ground construction of the Willow Creek Pumping Station, which is sized to serve the Project and which serves lands appurtenant to Permit 40920, had begun by June 1, 1972. The deadline for beginning of construction on this permit was December 21, 1977.

e. **Permit 41314**. Installation of pipe to serve land appurtenant to the place of use began on January 3, 1978. Permit 41314 required construction to begin on or before March 21, 1978. On the ground construction on the Willow Creek Pump Station, which is sized to serve the land appurtenant to all of the Permits, had begun by June 1, 1972.

f. **Permit 41645**. On the ground construction of the pumping plant on Carty Reservoir began on August 9, 1978. Construction of the 60-inch Carty pipeline, which is intended to serve land appurtenant to the place of use, was begun on September 14, 1977. Permit 41645 required construction to begin on or before September 14, 1978. On the ground construction on the Willow Creek Pump Station, which is sized to serve the land appurtenant to all of the Permits, had begun by June 1, 1972.

Reasonable Diligence

45. Reasonable diligence during the permit period constitutes a continuing test of whether and under what conditions to grant an extension. ORS 537.260, OAR 690-320-010(9). In general, the last extension period provides the most relevant evidence of a permittee's diligence or good faith toward completion of development under a permit. The most recent extension period for the permits commenced in October 1995.

46. The existing system developed for irrigation of the Property, including the place of use, is shown on the attached Exhibit B. In addition to the Willow Creek Pump Station, the system includes approximately 150 miles of underground mainline, booster pump stations, and approximately 275 center pivot sprinklers and storage rights in Carty Reservoir under Permit R6605, which allows storage of water appropriated under Permits 41644 and 41645 for irrigation. Carty Reservoir is owned and operated by Portland General Electric Company in conjunction with its Boardman Coal Plant. The irrigation system is designed and built to allow pumping from Carty Reservoir in addition to the Columbia River. At this time, irrigation storage at Carty Reservoir is limited by contract to 10,000 acre feet.

47. Permits 35425, 35426, 37346, 40920, 41314, and 41645 are the only permits that are extended. The evidence of diligence for the purpose of the extension requests for each of these permits is as follows:

a. **Permit 35425**. As of December 1995, 2,495 acres of land within the place of use had been placed under irrigation under permit 35425. During 1996, additional acreage was placed under irrigation, with related piping and electrical service. During 1997, mortar lining and cathodic protection on pipe were installed, and work was done on the booster pump and pivots. During 1998 and 1999, Permittee worked on pivots, valves and filters, a new six-inch main line for 1,200 feet, a pump, and new pipeline and pumping infrastructure.

b. **Permit 35426**. As of December 1995, 9,393 acres of land within the place of use had been placed under irrigation under permit 35426. During 1996, an additional 220 acres of land were placed under irrigation, with related mortar lining of the pipeline. During 1997, mortar lining, cathodic protection on pipe, and center pivots were installed and work was done on the mortar lining and cathodic protection on pipe, installed center pivots and worked on the drainage system. During 1998 and 1999, new pipeline and pumping infrastructure, center pivots, drain tile, and cement mortar lining for pipe were installed, and work was done on the drainage system. As of August 7, 1997, 9,665 acres had been placed under irrigation on the place of use.

c. **Permit 37346**. As of December 1995, 8,647 acres of land within the place of use had been placed under irrigation under permit 37346. During 1996, an additional 438.8 acres of land were placed under irrigation, with related mortar lining of pipe. During 1997, mortar lining, cathodic protection on pipe, and center pivots were installed, and work was done on the drainage system. During 1998 and 1999, new pipeline, pumping infrastructure, a pump, center pivots, drainage tile, and cement mortar lining for pipe were installed and work was done on the drainage system. As of August 7, 1997, 9,488 acres had been placed under irrigation of the place of use.

d. **Permit 40920**. As of December 1995, 3,020 acres of land within the place of use had been placed under irrigation under permit 40920. During 1996, an additional 95 acres of land were placed under irrigation, with related piping and electrical service. During 1997, mortar lining and cathodic protection on pipe were installed. During 1998 and 1999, new pipeline and pumping infrastructure were installed.

e. **Permit 41314**. As of December 1995, 950 acres of land within the place of use had been placed under irrigation under permit 41314. During 1997, mortar lining and cathodic protection on pipe, as well as a drainage system, were installed on acreage appurtenant to Permit 41314. During 1998, new pipeline and pumping infrastructure, a drainage system, center pivots, and cement mortar lining for pipe were installed, for development of additional acreage appurtenant to permit No. 41314. During 1999, 3,397 total acres were developed.

f. **Permit 41645**. As of December 1995, 1,930 acres of land within the place of use had been placed under irrigation under permit 41645. During 1996, 50 additional acres were placed under irrigation, with related piping and electrical service. During 1997, mortar lining, cathodic protection on pipes, center pivots, and a drainage system were installed. During 1998 and 1999, additional new pipeline, pumping infrastructure, additional center pivots, and mortar lining for pipe were installed and work was done on the drainage system. Total developed acreage under permit 41645 is currently 2,758 acres.

48. Progress in perfecting the permits was delayed by efforts to develop and obtain federal permits for a new point of diversion on the mainstem of the Columbia River, litigation challenging the Department's order approving Permittee's 1995 request for extension, and by changes in the Water Resources Commission's rules regarding permit extensions.

Good Cause

49. Under ORS 537.230(2), the Department shall, for good cause shown, order an extension of time to complete development and perfect a water right. In determining good cause, the Department must consider at least the factors listed in ORS 539.010(5), which include at least the cost of the appropriation and application of the water to a beneficial purpose, the good faith of the appropriator, the market for water or power to be supplied, the present demands therefor, and the income or use that may be required to provide fair and reasonable returns upon the investment. The analysis of good cause may include whether the water would be of greater value for other uses or should remain allocated to the currently permitted purpose.

50. The costs associated with development of individual permits are as follows:

a. **Permit 35425**. As of December 1995, approximately $3,993,395 was spent for development of the place of use for permit 35425. During 1996, an additional $17,158 for development of the place

of use was spent. During 1997, approximately $240,644 for development of the place of use was spent. During 1998, approximately $839,970 was spent. The total cost for development of the place of use to date is approximately $5,091,167.

b. **Permit 35426**. As of December 1995, approximately $7,832,324 was spent for development of the place of use for permit 35426. During 1996, an additional $232,192 was spent for development of the place of use, with an additional $1,484,381 for development of acreage appurtenant to Permit 35426, 37346, 40920, 41645, 43325, and 48547. During 1997, approximately $489,097 was spent for development of the place of use. During 1998 and 1999, approximately $1,331,867 was spent for development of the place of use. Without taking into account the 1996 costs for multiple permits, the total cost for development of the place of use to date is approximately $9,885,480.

c. **Permit 37346**. As of December 1995, approximately $11,504,490 was spent for development of the place of use for permit 37364. During 1996, an additional $1,484,381 was spent for development of acreage appurtenant to Permit 35426, 37346, 40920, 41645, 43325, and 48547. During 1997, approximately $439,967 was spent for development of the place of use. During 1998 and 1999, approximately $1,456,283 was spent for development of the place of use. Without taking into account the 1996 costs for multiple Permits, the total costs for development of the place of use to date is approximately $13,399,740.

d. **Permit 40920**. As of December 1995, approximately $12,605,702 was spent for development of the place of use for permit 40920. During 1996, an additional $1,484,381 was spent for development of acreage appurtenant to Permit 35426, 37346, 40920, 41645, 43325, and 48547. During 1997, approximately $165,564 was spent for development of the place of use. During 1998 and 1999, approximately $767,680 was spent for development of the place of use. Without taking into account the 1996 costs for multiple Permits, the total costs for development of the place of use to date is approximately $13,539,126.

e. **Permit 41314**. As of December 1995, approximately $2,531,661 was spent for development of the place of use for permit 41314. During 1996, an additional $418,708 was spent for development of acreage appurtenant to Permits 41314, 41644, and 41645. During 1997, approximately $353,989 was spent for development of the place of use. Without taking into account the 1996 costs assigned to multiple permits, including Permit 41314, the total cost for development of the place of use up to 1999 was approximately

$20,096,434. Within the past year, approximately 2,310 acres were developed at an approximate cost of $1,633,061.10.

f. **Permit 41645.** As of December 1995, approximately $7,239,346 was spent for development of the place of use for permit 41645. An additional $1,484,381 was spent during 1996 for development of acreage appurtenant to Permits 35426, 37346, 40920, 41645, 43325, and 48547, and an additional $418,708 for development of acreage appurtenant to Permits 41314, 41644, and 41645. During 1997, approximately $452,249 was spent for development of the place of use. During 1998, approximately $3,701,515 was spent for development of the place of use. Without taking into account the 1996 costs that assigned to multiple permits including Permit 41645, the total cost for development of the place of use to 1999 was approximately $11,393,200.

51. Permittee's good faith is demonstrated by its diligent development of the place of use since October 1995.

52. Present farm economics and new farming technologies indicate that agricultural use and irrigation development of the Boeing tract is feasible and economical. Permittee states that the project will provide reasonable returns on investment.

53. With respect to competing demands for the water, the Department has considered habitat needs of Listed Fish, and has conditioned this extension to address those impacts. See Conditions, below.

54. Under the conditions of this Final Order, the acreage authorized for new irrigation after January 31, 2001 is reduced to 6,833.7 acres. The total irrigated acreage of all Permits collectively will not exceed 41,000 acres. The total authorized rate of withdrawal under the Permits is reduced from 1,569.2 cfs to 582 cfs, and the authorized volume of water diverted per irrigation season is reduced from 280,376.7 acre feet to 123,000 acre feet (41,000 acres x 3 af). These conditions directly limit and reduce the amount of water that the Permits originally authorized.

55. Permittee has agreed that as a condition of this Order, it will provide certain mitigation for wildlife, including the Washington ground squirrel. Mitigation for wildlife impacts of development will include protection of wildlife habitat within a Conservation Area as depicted in Exhibit B.

56. Permittee has agreed that as a condition of this Order, it will request cancellation of Permits 41644, 43325 and 48547.

Duration of Extension

57. Construction and application of water to beneficial use can be completed for Permits 35425, 35426, 37346, 40920, and 41314 (as amended) by January 31, 2001. Construction and application of water to beneficial use can be completed for Permit 41645 (as amended) by October 31, 2005, except for the Radar Range. The development of the Radar Range can be completed within five years after the Boeing Company vacates and provides access to the Permittee to develop the land, but in any event not later than October 31, 2015. The length of time requested is reasonable, given the extent of completed development.

Amendments of Permits

58. The requested amendment of the place of use for Permit 41314 is to land that is contiguous to the land to which Permit 41314 is appurtenant.

59. The amendment of Permit 41645 includes, in part, a new place of use on land noncontiguous to land to which the permit is appurtenant. This amendment will move development from land that has been identified as containing suitable habitat for the Washington Ground Squirrel to land on which there is no evidence of squirrel occupation. The squirrel is listed as an endangered species under ORS 496.171 et seq. A permit amendment to noncontiguous land is authorized if it is in furtherance of mitigation or conservation efforts undertaken for the purpose of benefiting endangered species. ORS 537.211(5). The Permittee has agreed to protect squirrel habitat and preserve the ecological values in the Conservation Area shown on the map attached as Exhibit B, as provided in Condition 6 of this order.

60. The Oregon Department of Fish and Wildlife advises that the amendment of Permit 41645 would be in furtherance of mitigation or conservation efforts undertaken for the purpose of benefiting the Washington ground squirrel. The Department concurs in that determination.

Certification of Permits

61. The final proof surveys filed for Permits 35425, 35426, 37364, 40920 and 41314, as amended, provide satisfactory proof of development under the permits as described in the Water Right Certificates attached as Exhibit C.

62. Permittees and Conservation Parties have reviewed proposed certificates for Permits 35425, 35426, 37364, 40920 and 41314 and have submitted letters waiving any rights they may have to a 60 day comment period under OAR 690-330-0010.

CONCLUSIONS OF LAW

63. Permittee's development under Permits 35425, 35426, 37346, 40920, 41314, and 41645 since October 1995 has been undertaken with reasonable diligence.

64. Taking into account the cost of development under the permits, the good faith development under the permits, the feasibility of the development, impacts to Listed Fish and the associated mitigation required under this extension order, good cause exists to extend Permits 35425, 35426, 37364, 40920, 41314, and 41645.

65. Amendment of the place of use for Permits 41314 and 41645 is authorized under ORS 537.211.

66. Issuance of certificates for Permits 35425, 35426, 37364, 40920 and 41314 is authorized under ORS 537.250.

67. Cancellation of Permits 41644, 43325 and 48547 is authorized under ORS 540.621.

ORDER

Based on the foregoing findings of fact and conclusions of law, the Department:

1. Resolves the protests filed in October, 1996, April, 1999 and June, 1999 by the Conservation Parties;

2. Extends the time for completion of construction and application of water to beneficial use under Permits 35425, 35426, 37346, 40920, and 41314 (as amended) to January 31, 2001;

3. Extends the time for completion of construction and application of water to beneficial use under Permit 41645 (as amended) to October 31, 2005, except for the Radar Range in which the time for complete construction and application of water to beneficial use is extended to five years from the date the Boeing Company vacates and allows BAIC Inc. and its leaseholders the right to enter the Radar Range area for development, but in any event no later than October 31, 2015. If BAIC, Inc. files an application to extend the permit for the Radar Range, the Boeing Company's continued occupancy will be considered good cause, along with the Permittee or a sublessee's diligence in development of the remainder of the permit, to extend the permit for additional time for construction and application of water to use in the Radar Range area;

4. Amends Permit 41314 as provided in the Order Approving Change in Place of Use attached as Exhibit A and shown on the map attached as Exhibit B;

5. Amends Permit 41645 as provided in the Order Approving Change in Place of Use attached as Exhibit A and shown on the map attached as Exhibit D;

6. Issues water right certificates for Permits 35425, 35426, 37346, 40920 and 41314, as amended, attached as Exhibit C;

7. Cancels Permits 41644, 43325, and 48547.

Subject to the following CONDITIONS:

1. Limitation on Acreage

Subject to a maximum 41,000 total irrigated acres, the following acreage limitations for irrigation shall not be exceeded under the following permits:

Permit No. 35425:	2,487.6 acres
Permit No. 41645:	6,833.7 acres
Permit No. 41314:	8,996.4 acres
Permit No. 35426:	9,200.0 acres
Permit No. 37346:	9,956.1 acres
Permit No. 40920:	3,526.2 acres

2. Limitation on Rate, Duty, and Use

a. Permit amendments, extensions and certificates, as applicable, for Permits 35425, 35426, 37346, 40920, 41314 and 41645 shall be subject to the following limitations:

(1) **Rate of Diversion.** The authorized rate shall be $1/40^{th}$ cfs per acre provided that the maximum rate for the combined use of water under permits 35425, 35426, 37346, 40920, 41314, and 41645 and the certificates issued in respect thereto will not exceed 582 cfs at any one point in time, and provided further that the maximum rate pending completion of consultation as described in Condition 5(a) of this Final Order shall not exceed 480 cfs;

(2) **Duty of Use.** The authorized duty shall be 4 acre feet per acre provided that the maximum duty for the combined water use under permits 35425, 35426, 37346, 40920, 41314, and 41645 and the certificates issued in respect thereto will not exceed an average duty of 3 acre feet per acre (that is "z" acre feet total during the irrigation season where "z" = 3 acre feet times the total number of acres ultimately permitted and certificated not to exceed 41,000 acres); and

(3) **Place of Use.** The authorized place of use for permits 35425, 35426, 37346, 40920, and 41314 shall be as identified in the System Layout Map accompanying the certificates and attached as Exhibit B. The authorized place of use for permit 41645 shall be as identified in the Order Approving Change in Place of Use attached as Exhibit A and map attached as Exhibit D;

b. Subject to the maximum rate of 582 cfs total for all Permits collectively above, and subject further to the maximum rate of 480 cfs pending completion of the consultation described in Condition 5(a) of this Final Order, the rate of diversion shall not exceed the following limitations on the following permits and subsequent certificates:

Permit No. 35425:	62.2 cfs
Permit No. 41645:	170.8 cfs (as amended)
Permit No. 41314:	224.9 cfs (as amended)
Permit No. 35426:	230 cfs
Permit No. 37346:	248.9 cfs
Permit No. 40920:	88.2 cfs

c. Subject to the maximum annual diversion based on an average of 3 acre feet per acre for all rights collectively, the duty and total annual diversion shall not exceed the following limitations on the following permits and subsequent certificates:

Permit No. 35425:	4 acre feet per acre; total annual diversion 9,950.4 acre feet
Permit No. 41645:	4 acre feet per acre; total annual diversion 27,334.8 acre feet
Permit No. 41314:	4 acre feet per acre; total annual diversion 35,985.6 acre feet
Permit No. 35426:	4 acre feet per acre; total annual diversion 36,800 acre feet
Permit No. 37346:	4 acre feet per acre; total annual diversion 39,824.4 acre feet
Permit No. 40920:	4 acre feet per acre; total annual diversion 14,104.8 acre feet

3. Funding for instream water right acquisition

Permittee, or its sublessees under a separate agreement, shall contribute $1,250,000 to the Oregon Water Trust, to be used for acquisition of instream water rights in tributaries of the Columbia River, on the following schedule:

- Within 30 days after issuance of this final order, $250,000
- April 1, 2001, $300,000
- April 1, 2002, $300,000
- April 1, 2003, $400,000

With regard to payments due April 1 of 2001, 2002 and 2003, if the period for appeal of this Final Order or the certificates has not run and/or appeals or challenges to this Final Order or the certificates are pending on those dates, the Permittee, or its sublessees under a separate agreement, shall pay the sums due to First American Title Company to hold in escrow in an interest-bearing account or accounts until the appeal periods have run and any appeals or challenges to this Final Order or the certificates by any entity have been concluded, and amendments, extensions and certificates are issued consistent with this

order. Upon satisfaction of this condition, the sum and all accrued interest shall be delivered to the Oregon Water Trust.

4. NMFS Consultation Conditions

a. Before completion of consultation between the National Marine Fisheries Service (NMFS) and the Corps of Engineers (Corps) under section 7(a)(2) of the ESA, final agency action by the Corps and conclusion of challenges, if any, arising out of this process, Permittees shall not use the Willow Creek Pump Station to pump or divert water from the Columbia River at a rate greater than 480 cfs.

b. Permittee shall request that the consultation between NMFS (and the United States Fish & Wildlife Service if applicable) and the Corps address issues related to attraction flows from existing and future pumping, screening, ongoing and future dredge operations and effects of Permittee's water withdrawals on Columbia River System target flows.

c. During the NMFS consultation, Permittee shall seek the views of ODFW, provide ODFW with copies of the Biological Assessment that the Corps submits to NMFS, and provide ODFW with copies of any draft Biological Opinion Permittee receives from the Corps or NMFS.

5. Compliance with Corps Permits

Water use under the permits, amendments, and certificates shall be exercised consistent with and subject to the final conditions on water use, including screening, in the Corps permits for construction and maintenance of pump stations resulting from any NMFS consultation following exhaustion of appeals, if any. Permittee shall, within 30 days following exhaustion of appeals, if any, submit to the Salem office of the Water Resources Department and to the office of the applicable Watermaster District a copy of such Corps permits.

6. Conservation Area

The Permittee shall not farm, develop, or perform any activity in the Conservation Area except for activities that are in furtherance of the purpose of the Conservation Area and for activities that are consistent with implementation of any Multi-Species Candidate Conservation Agreement developed by BAIC Inc. and approved by the U.S. Fish and Wildlife Service covering various federally unlisted upland species, including the Washington ground squirrel. In addition, Permittee will not undertake any activity that is inconsistent with survival guidelines adopted pursuant to the state ESA listing process.

7. Measurement and Reporting

a. Permittee shall install, operate and maintain a continuous telemetric measurement and recording device for rate and volume of water use, and shall report monthly volumes of water use to the Department on an annual basis. This information shall be available to the State as a public record at any time. Further, the Director may require the permittee

to report general water use information, including the place and nature of use of water under the permit.

DATED: February 28, 2001.

Paul R. Cleary
Director

V 55 P 229

FEB 28 2001
WATER RESOURCES DEPT
SALEM, OR

LEGAL DESCRIPTION
Conservation Area (revised 02/27/01)

ALL THAT PORTION OF **TOWNSHIP 2 NORTH, RANGE 23 EAST** OF THE WILLAMETTE MERIDIAN IN MORROW COUNTY, STATE OF OREGON, DESCRIBED AS FOLLOWS:

ALL OF SECTIONS 13, 14, 15,16, 21, 22, 23, 24, AND THE SOUTHEAST ¼ OF THE SOUTHEAST ¼ OF SECTION 8 AND THE SOUTH HALF OF THE SOUTHWEST ¼ OF SECTION 9 AND THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9 AND ALL THAT PORTION OF SAID SECTION 9 LYING SOUTHEASTERLY OF AN EXISTING FENCE LINE DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHEAST CORNER OF SECTION 4, TOWNSHIP 2 NORTH, RANGE 23 EAST WITNESSED BY A 2-1/2" G.L.O. BRASS CAP STAMPED '1939'; SAID POINT BEARS N 89°44'33"E, 10,451.11 FEET FROM THE NORTHWEST CORNER OF SECTION 5 OF SAID TOWNSHIP; THENCE S01°02'40"E, 10486.2 FEET ALONG THE EAST LINES OF SECTIONS 4 AND 9, TO AN EXISTING FENCE LINE AND THE **TRUE POINT OF BEGINNING**; SAID POINT BEING HEREINAFTER REFERRED TO A **POINT "A"**; THENCE S 52°06'55"W, ALONG SAID FENCE, 81.5 FEET MORE OR LESS TO THE SOUTH LINE OF SAID SECTION 9 AND THE **TERMINUS OF SAID LINE.**

TOGETHER WITH ALL THOSE PORTIONS OF SECTIONS 10, 11 AND 12 OF SAID TOWNSHIP 2 NORTH, RANGE 23 EAST, LYING SOUTHERLY OF THE FOLLOWING DESCRIBED LINE: BEGINNING AT **POINT"A"**AFOREMENTIONED; THENCE NORTHEASTERLY ALONG AN EXISTING FENCE LINE THE FOLLWING COURSES; N 52°06'55"E, 57.22 FEET; N 56°49'20"E, 741.39 FEET; N 57°40'03"E, 2592.70 FEET; N 58°20'14"E, 377.09 FEET; N 62°41'12"E, 433.05; THENCE LEAVING SAID FENCE N 62°41'12"E, 544.17 FEET; THENCE S 89°57'50"E, 11,592.53 FEET MORE OR LESS TO THE EAST LINE OF SECTION 12 AND **THE TERMINUS OF SAID LINE.** SAID POINT BEING HEREINAFTER REFERED TO AS **POINT"B** AND BEARS N 00°01'07"W, 2526.52 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 12 WITNESSED BY A 3-WAY FENCE INTERSECTION.

EXCEPTING THEREFROM THAT PORTION OF SECTION 16 LYING WESTERLY OF STATE HIGHWAY NO. 74, AS IT IS NOW SITUATED, AND **EXCEPT** THAT PORTION OF SECTION 16 DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE EAST BOUNDARY LINE OF THE RIGHT OF WAY OF STATE HIGHWAY NO. 74 AS IT IS NOW SITUATED, 400 FEET NORTH AND 400 FEET EAST OF THE SOUTHWEST CORNER OF SAID SECTION 16; THENCE EAST 400 FEET; THENCE NORTH 600 FEET; THENCE WEST TO THE EAST BOUNDARY LINE OF SAID HIGHWAY NO. 74; THENCE SOUTHERLY ALONG SAID EASTERLY RIGHT OF WAY TO THE POINT OF BEGINNING.

AND EXCEPT THAT PORTION OF SECTION 21 LYING WESTERLY OF STATE HIGHWAY NO. 74 AS IT IS NOW SITUATED; AND **EXCEPT** THAT PORTION OF SECTION 21 DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE EAST BOUNDARY LINE OF THE RIGHT OF WAY OF STATE HIGHWAY NO. 74 AS IT IS NOW SITUATED, 1200 FEET SOUTH AND 300 FEET EAST OF THE NORTHWEST CORNER OF SAID SECTION 21; THENCE EAST 500 FEET; THENCE SOUTH 500 FEET; THENCE WEST TO THE EAST BOUNDARY LINE OF SAID HIGHWAY NO. 74; THENCE NORTH ALONG SAID EAST BOUNDARY TO THE POINT OF BEGINNING.

ALL THAT PORTION OF **TOWNSHIP 2 NORTH, RANGE 24 EAST** OF THE WILLAMETTE MERIDIAN IN MORROW COUNTY, STATE OF OREGON, DESCRIBED AS FOLLOWS:

ALL OF SECTIONS 1, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 AND 24 AND THE EAST HALF OF SECTION 2, ALL OF SECTION 11 **EXCEPT** THE NORTHWEST QUARTER THEREOF; AND ALL OF SECTION 10 **EXCEPT** THE NORTHEAST QUARTER THEREOF AND TOGETHER WITH THAT PORTION OF SECTION 7 LYING SOUTHERLY OF THE FOLLOWING DESCRIBED LINE:

BEGINNING AT **POINT "B"** AFOREMENTIONED ON THE WEST LINE OF SECTION 7, TOWNSHIP 2 NORTH, RANGE 24 EAST; THENCE S 89°57'50'E, 5686.17 FEET, MORE OR LESS, TO THE EAST LINE OF SAID SECTION 7 AND THE TERMINUS OF SAID LINE, SAID POINT BEING HEREINAFTER REFERED TO AS **POINT "C".**

TOGETHER WITH THAT PORTION OF SECTION 8 LYING SOUTHERLY, WESTERLY AND SOUTHEASTERLY OF THE FOLLOWING DESCRIBED LINE: BEGINNING AT **POINT "C"** AFOREMENTIONED ON THE WEST LINE OF SECTION 8; THENCE S 89°57'50'E, 529.05 FEET; THENCE S 00°11'52"E, 1442.04 FEET; THENCE N 76° 24'58"E, 4874.95 FEET, MORE OR LESS, TO THE EAST LINE OF SAID SECTION AND **THE TERMINUS OF SAID LINE;** SAID POINT BEING HEREINAFTER REFERED TO AS **POINT "D".**

FEB 28 2001

TOGETHER WITH ALL THAT PORTION OF SECTION 9 LYING SOUTHEASTERLY OF THE FOLLOWING DESCRIBED LINE: BEGINNING AT **POINT "D"** AFOREMENTIONED; THENCE N 76° 24'58"E, 2634.32 FEET; THENCE N 19°34'46"E, 2833.66 FEET, MORE OR LESS, TO THE NORTH LINE OF SAID SECTION 9 AND THE **TERMINUS OF SAID LINE.**

THAT PORTION OF **TOWNSHIP 3 NORTH, RANGE 24 EAST** OF THE WILLAMETTE MERIDIAN IN MORROW COUNTY, STATE OF OREGON, DESCRIBED AS FOLLOWS:

ALL OF SECTIONS 22, 23, 24, 25, 27, 36 AND ALL THAT PORTION OF SECTIONS 21 AND 28 LYING EASTERLY OF THE FOLLOWING DESCRIBED LINE:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 28 WITNESSED BY A 2-1/2" G.L.O. BRASS CAP STAMPED '1939'; THENCE S 89°27'03"W, 1488.38 FEET TO THE **TRUE POINT OF BEGINNING;** THENCE N 30°27'45"E, 1296.03 FEET; THENCE N 21°39'44"E, 871.87 FEET; THENCE N 42°32'11"E, 837.85 FEET; THENCE N 15°32'15"E, 480.59 FEET; THENCE N 87°36'58"W, 618.46 FEET; THENCE N 52°55'56"W, 661.48 FEET; THENCE N 39°49'52"E, 602.95 FEET; THENCE N 01°44'14"E, 424.63 FEET; THENCE N 62°07'27"E, 247.58; THENCE N 17°27'44"W, 471.91 FEET; THENCE N 49°36'58"W, 1074.30 FEET; THENCE N 00°50'28"W, 4970.60 FEET, MORE OR LESS , TO THE NORTH LINE OF SECTION 21 AND THE **TERMINUS OF SAID LINE.** SAID POINT BEING HEREINAFTER REFERED TO AS **POINT "E".**

TOGETHER WITH ALL THAT PORTION OF SECTION 16 OF SAID TOWNSHIP 3 NORTH, RANGE 24 EAST LYING SOUTHEASTERLY OF THE FOLLOWING DESCRIBED LINE; **BEGINNING AT POINT "E"** AFOREMENTIONED; THENCE N 62°02'01"E, 2682.38 FEET, MORE OR LESS, TO THE EAST LINE OF SAID SECTION 16 AND **THE TERMINUS OF SAID LINE.**

AND TOGETHER WITH ALL THAT PORTION OF SECTION 15 LYING SOUTHWESTERLY OF THE BOEING RADAR RANGE BOUNDARY AND SOUTHEASTERLY OF THE FOLLOWING DESCRIBED LINE; **BEGINNING AT POINT "E"** AFOREMENTIONED; THENCE N 62°02'01"E, 2682.38 FEET, MORE OR LESS, TO THE WEST LINE OF SAID SECTION 15 AND THE TRUE POINT OF BEGINNING; THENCE CONTINUING N 62°02'01"E, 2879.65 FEET, MORE OR LESS, TO THE BOEING RADAR RANGE BOUNDARY AND **THE TERMINUS OF SAID LINE.**

AND TOGETHER WITH ALL THAT PORTION OF SECTION 13 LYING EASTERLY AND SOUTHEASTERLY OF THE BOEING RADAR RANGE BOUNDARY AND THAT PORTION OF SECTION 14 LYING SOUTHERLY OF SAID BOEING RADAR RANGE BOUNDARY.

THAT PORTION OF **TOWNSHIP 4 NORTH, RANGE 24 EAST** OF THE WILLAMETTE MERIDIAN IN MORROW COUNTY, STATE OF OREGON, DESCRIBED AS FOLLOWS:

THE SOUTH HALF OF SECTION 25 AND THE NORTH HALF OF SECTON 36.

ALL BEING SUBJECT TO ROAD AND RAILROAD RIGHTS OF WAY, EXISTING EASEMENTS, RESTRICTIONS AND RESERVATIONS OF RECORD.

ENTIRE PARCEL CONTAINS 22,642 ACRES MORE OR LESS.

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GBW/gbw
Feb. 27, 2001

STATE OF OREGON

COUNTY OF MORROW

ORDER APPROVING A CHANGE IN PLACE OF USE

Pursuant to ORS 537.211, after notice was given and finding that no injury to existing water rights would result, this order approves, as conditioned or limited herein, PERMIT AMENDMENT 8565 submitted by

BAIC, INC.
75906 THREEMILE ROAD
BOARDMAN, OREGON 97818.

Applicant seeks to change the place of use for Permits 41314 and 41645.

Permit 41314 has a date of priority of NOVEMBER 18, 1976. The permit allows the use of the COLUMBIA RIVER, a tributary of the PACIFIC OCEAN, for IRRIGATION. The amount of water to which this permit is entitled is the amount actually beneficially used, not to exceed 224.9 cubic feet per second, if available at the authorized points of diversion: NW¼ SE¼, SECTION 36, T 4 N, R 22 E, W.M.; COLUMBIA RIVER - 1657 FEET NORTH AND 1997 FEET WEST FROM THE SE CORNER OF SECTION 36, AND 1668 FEET NORTH AND 1997 FEET WEST FROM THE SE CORNER OF SECTION 36; or its equivalent in case of rotation, measured at the point of diversion from the source.

The right is limited to ONE-FORTIETH of one cubic foot per second per acre or its equivalent for each acre irrigated and is further limited to a diversion of not to exceed 4 acre-feet for each acre irrigated during the irrigation season of each year.

A copy of Permit 41314 is attached to this order as Attachment 1.

The requested amendment of the place of use for Permit 41314 is to land that is contiguous to land to which Permit 41314 is appurtenant.

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2).

Pursuant to ORS 536.075 and OAR 137-004-080 and OAR 690-01-005 you may either petition for judicial review or petition the Director for reconsideration of this order.

Permit 41645 has a date of priority of MARCH 7, 1977 FOR RESERVOIR, AND SEPTEMBER 9, 1977 FOR COLUMBIA RIVER. The permit allows the use of the COLUMBIA RIVER, a tributary of the PACIFIC OCEAN, and CARTY RESERVOIR, TO BE CONSTRUCTED UNDER APPLICATION R-55437, PERMIT R-6605, for IRRIGATION AND SUPPLEMENTAL IRRIGATION. The amount of water to which this permit is entitled is the amount actually beneficially used, not to exceed 224.0 cubic feet per second, if available at the authorized points of diversion:
NW¼ SE¼, SECTION 36, T 4 N, R 22 E, W.M.; COLUMBIA RIVER - NORTH 50° 56' 22" WEST 2522 FEET FROM THE SE CORNER OF SECTION 36; CARTY RESERVOIR - AT THE COMMON CORNER OF SECTIONS 4, 5, 8, AND 9, T 2 N, R 24 E, W.M., or its equivalent in case of rotation, measured at the point of diversion from the source.

The right is limited to ONE-FORTIETH of one cubic foot per second per acre or its equivalent for each acre irrigated from direct flow and is further limited to a diversion of not to exceed 4 acre-feet for each acre irrigated during the irrigation season of each year from direct flow and storage from reservoir to be constructed under Permit R-6605, provided further that the right allowed herein shall be limited to any deficiency in the available supply of any prior right existing for the same land and shall not exceed the limitation allowed herein.

A copy of Permit 41645 is attached to this order as Attachment 2.

The amendment of the place of use of Permit 41645 includes, in part, a new place of use on land that is not contiguous to land to which the permit is appurtenant. This amendment will move development from land that has been identified as containing suitable habitat for the Washington Ground Squirrel to land on which there is no evidence of squirrel occupation. The squirrel is listed as an endangered species under ORS 496.171 et seq. A permit amendment to noncontiguous land is authorized if it is in furtherance of mitigation or conservation efforts undertaken for the purpose of benefitting endangered species. ORS 537.211(5). Permittee has agreed to protect squirrel habitat and preserve the ecological values in the Conservation Area shown on the map attached as Exhibit B to the Final Order of February 26, 2001 extending Permit 41645.

The Oregon Department of Fish and Wildlife advises that the amendment of Permit 41645 would be in furtherance of mitigation or conservation efforts undertaken for the purpose of benefitting the Washington ground squirrel. The Department concurs in that determination.

The authorized additional point of diversion for this permit is located:

NW¼ NW¼, SECTION 17, T 4 N, R 24 E, W.M.; 300 FEET SOUTH AND 2315 FEET WEST FROM THE N¼ CORNER OF SECTION 17.

The use shall conform to any reasonable rotation system ordered by the proper state officer.

The current authorized place of use is located as follows:

PERMIT 41314

NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
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SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
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SECTION 25

NE¼ SW¼ 40.00 ACRES
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NE¼ SE¼ 40.00 ACRES
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SECTION 26

NE¼ SW¼ 40.00 ACRES
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SECTION 27

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SECTION 28

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SECTION 29

NE¼ SW¼ 40.00 ACRES
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SE¼ SW¼ 40.00 ACRES
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SECTION 30

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SECTION 31

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SECTION 32

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SECTION 33

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SECTION 34

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SECTION 35

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SECTION 36

TOWNSHIP 4 NORTH, RANGE 24 EAST, W.M.

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NW¼ NE¼ 40.37 ACRES
SW¼ NE¼ 40.00 ACRES
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SECTION 1

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SECTION 13

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SECTION 15

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SE¼ SE¼ 40.00 ACRES
SECTION 16
NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 17

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 49.65 ACRES
SW¼ NW¼ 49.75 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 49.85 ACRES
SW¼ SW¼ 49.95 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 18

TOWNSHIP 3 NORTH, RANGE 24 EAST, W.M.

Total = 15515.96 acres

PERMIT 41645

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 50.12 ACRES
SW¼ NW¼ 50.35 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 50.58 ACRES
SW¼ SW¼ 50.81 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 19

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 20

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 21

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 22

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 23

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 24

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 25

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 27

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 28

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 29

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 51.06 ACRES
SW¼ NW¼ 51.33 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 51.60 ACRES
SW¼ SW¼ 51.81 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 30

NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 52.11 ACRES
SW¼ NW¼ 52.33 ACRES
SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 52.55 ACRES
SW¼ SW¼ 52.77 ACRES
SE¼ SW¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES
SW¼ SE¼ 40.00 ACRES
SE¼ SE¼ 40.00 ACRES
SECTION 31

NE¼ NE¼ 40.00 ACRES	NE¼ NE¼ 40.00 ACRES
NW¼ NE¼ 40.00 ACRES	NW¼ NE¼ 40.00 ACRES
SW¼ NE¼ 40.00 ACRES	SW¼ NE¼ 40.00 ACRES
SE¼ NE¼ 40.00 ACRES	SE¼ NE¼ 40.00 ACRES
NE¼ NW¼ 40.00 ACRES	NE¼ NW¼ 40.00 ACRES
NW¼ NW¼ 40.00 ACRES	NW¼ NW¼ 40.00 ACRES
SW¼ NW¼ 40.00 ACRES	SW¼ NW¼ 40.00 ACRES
SE¼ NW¼ 40.00 ACRES	SE¼ NW¼ 40.00 ACRES
NE¼ SW¼ 40.00 ACRES	NE¼ SW¼ 40.00 ACRES
NW¼ SW¼ 40.00 ACRES	NW¼ SW¼ 40.00 ACRES
SW¼ SW¼ 40.00 ACRES	NW½ SW¼ SW¼ 20.00 ACRES
SE¼ SW¼ 40.00 ACRES	NE¼ SE¼ 40.00 ACRES
NE¼ SE¼ 40.00 ACRES	NW¼ SE¼ 40.00 ACRES
NW¼ SE¼ 40.00 ACRES	SECTION 33
SW¼ SE¼ 40.00 ACRES	
SE¼ SE¼ 40.00 ACRES	
SECTION 32	

TOWNSHIP 3 NORTH, RANGE 24 EAST, W.M.

Total = 8957.42 acres

The amended place of use is as follows:

PERMIT 41314

*NW¼ NE¼ 13.3 ACRES	SW¼ SW¼ 34.1 ACRES
*SW¼ NE¼ 13.4 ACRES	SE¼ SW¼ 38.3 ACRES
*NE¼ NW¼ 37.3 ACRES	NW¼ SE¼ 6.9 ACRES
*NW¼ NW¼ 11.0 ACRES	SW¼ SE¼ 7.0 ACRES
*SW¼ NW¼ 35.0 ACRES	SECTION 27
*SE¼ NW¼ 38.8 ACRES	
NE¼ SW¼ 37.0 ACRES	*NE¼ NE¼ 2.4 ACRES
NW¼ SW¼ 33.9 ACRES	*NW¼ NE¼ 27.6 ACRES

*SW¼ NE¼ 36.1 ACRES
*SE¼ NE¼ 39.8 ACRES
*NE¼ NW¼ 31.6 ACRES
*NW¼ NW¼ 0.3 ACRE
*SW¼ NW¼ 31.7 ACRES
*SE¼ NW¼ 35.6 ACRES
NE¼ SW¼ 36.3 ACRES
NW¼ SW¼ 38.4 ACRES
SW¼ SW¼ 21.5 ACRES
SE¼ SW¼ 38.5 ACRES
NE¼ SE¼ 36.4 ACRES
NW¼ SE¼ 25.1 ACRES
SW¼ SE¼ 34.6 ACRES
SE¼ SE¼ 40.4 ACRES
SECTION 28

*SW¼ NE¼ 0.1 ACRE
*SE¼ NE¼ 28.0 ACRES
*SE¼ NW¼ 0.3 ACRE
NE¼ SW¼ 35.8 ACRES
NW¼ SW¼ 4.3 ACRES
SW¼ SW¼ 18.6 ACRES
SE¼ SW¼ 34.0 ACRES
NE¼ SE¼ 32.3 ACRES
NW¼ SE¼ 24.4 ACRES
SW¼ SE¼ 33.5 ACRES
SE¼ SE¼ 37.4 ACRES
SECTION 29

SW¼ SE¼ 0.2 ACRES
SE¼ SE¼ 22.2 ACRES
SECTION 30

NE¼ NE¼ 39.6 ACRES
*NW¼ NE¼ 2.5 ACRES
SE¼ NE¼ 8.5 ACRES
*NE¼ SE¼ 0.6 ACRE
SECTION 31

NE¼ NE¼ 38.4 ACRES
NW¼ NE¼ 34.5 ACRES
SW¼ NE¼ 31.6 ACRES
SE¼ NE¼ 35.4 ACRES
NE¼ NW¼ 35.9 ACRES
NW¼ NW¼ 36.8 ACRES
SW¼ NW¼ 27.7 ACRES
SE¼ NW¼ 37.5 ACRES
NE¼ SW¼ 28.8 ACRES
NW¼ SW¼ 26.3 ACRES
SW¼ SW¼ 7.0 ACRES
SE¼ SW¼ 40.0 ACRES
NE¼ SE¼ 39.5 ACRES
NW¼ SE¼ 23.8 ACRES
SW¼ SE¼ 35.4 ACRES
SE¼ SE¼ 36.8 ACRES
SECTION 32

NE¼ NE¼ 36.7 ACRES
NW¼ NE¼ 16.6 ACRES
SW¼ NE¼ 32.0 ACRES
SE¼ NE¼ 39.4 ACRES
NE¼ NW¼ 38.5 ACRES
NW¼ NW¼ 34.7 ACRES
SW¼ NW¼ 34.2 ACRES
SE¼ NW¼ 37.9 ACRES
NE¼ SW¼ 39.0 ACRES
NW¼ SW¼ 28.4 ACRES
SW¼ SW¼ 25.1 ACRES
SE¼ SW¼ 37.9 ACRES
NE¼ SE¼ 33.4 ACRES
NW¼ SE¼ 33.5 ACRES
SW¼ SE¼ 30.8 ACRES
SE¼ SE¼ 31.8 ACRES
SECTION 33

NW¼ NE¼ 2.1 ACRES
SW¼ NE¼ 2.1 ACRES
NE¼ NW¼ 35.1 ACRES
NW¼ NW¼ 35.2 ACRES
SW¼ NW¼ 32.0 ACRES
SE¼ NW¼ 36.1 ACRES
NE¼ SW¼ 26.5 ACRES
NW¼ SW¼ 37.5 ACRES
SW¼ SW¼ 37.9 ACRES

SE¼ SW¼ 26.6 ACRES
SECTION 34

NE¼ SE¼ 15.1 ACRES
NW¼ SE¼ 14.7 ACRES
SW¼ SE¼ 38.1 ACRES
SE¼ SE¼ 38.2 ACRES
SECTION 35

NE¼ SW¼ 11.5 ACRES
NW¼ SW¼ 11.1 ACRES
SW¼ SW¼ 37.7 ACRES
SE¼ SW¼ 38.4 ACRES
NE¼ SE¼ 23.9 ACRES
NW¼ SE¼ 24.0 ACRES
SW¼ SE¼ 35.9 ACRES
SE¼ SE¼ 35.8 ACRES
SECTION 36

TOWNSHIP 4 NORTH, RANGE 24 EAST, W.M.

NE¼ NE¼ 28.7 ACRES
NW¼ NE¼ 19.3 ACRES
SW¼ NE¼ 27.5 ACRES
SE¼ NE¼ 15.9 ACRES
NE¼ NW¼ 33.5 ACRES
NW¼ NW¼ 22.7 ACRES
SW¼ NW¼ 35.4 ACRES
SE¼ NW¼ 40.0 ACRES
NE¼ SW¼ 27.3 ACRES
NW¼ SW¼ 36.5 ACRES
SW¼ SW¼ 40.3 ACRES
SE¼ SW¼ 24.4 ACRES
NE¼ SE¼ 16.7 ACRES
NW¼ SE¼ 26.5 ACRES
SW¼ SE¼ 40.3 ACRES
SE¼ SE¼ 38.2 ACRES
SECTION 1

NE¼ NE¼ 34.4 ACRES
NW¼ NE¼ 22.6 ACRES
SW¼ NE¼ 32.9 ACRES
SE¼ NE¼ 39.7 ACRES
NE¼ NW¼ 28.1 ACRES
NW¼ NW¼ 5.8 ACRES
SW¼ NW¼ 14.6 ACRES
SE¼ NW¼ 40.2 ACRES
NE¼ SW¼ 32.9 ACRES
NW¼ SW¼ 39.7 ACRES

SW¼ SW¼ 36.7 ACRES
SE¼ SW¼ 24.0 ACRES
NE¼ SE¼ 32.5 ACRES
NW¼ SE¼ 38.2 ACRES
SW¼ SE¼ 39.2 ACRES
SE¼ SE¼ 27.8 ACRES
SECTION 2

NE¼ NE¼ 2.5 ACRES
NW¼ NE¼ 4.4 ACRES
SW¼ NE¼ 38.6 ACRES
SE¼ NE¼ 31.5 ACRES
NE¼ NW¼ 4.4 ACRES
NW¼ NW¼ 11.9 ACRES
SW¼ NW¼ 35.8 ACRES
SE¼ NW¼ 30.0 ACRES
NE¼ SW¼ 14.9 ACRES
NW¼ SW¼ 30.1 ACRES
SW¼ SW¼ 38.8 ACRES
SE¼ SW¼ 27.2 ACRES
NE¼ SE¼ 32.6 ACRES
NW¼ SE¼ 32.1 ACRES
SW¼ SE¼ 40.1 ACRES
SE¼ SE¼ 35.0 ACRES
SECTION 3

NE¼ NE¼ 40.0 ACRES

NW¼ NE¼ 36.3 ACRES
SW¼ NE¼ 17.4 ACRES
SE¼ NE¼ 17.8 ACRES
NE¼ NW¼ 40.1 ACRES
NW¼ NW¼ 35.5 ACRES
SW¼ NW¼ 33.2 ACRES
SE¼ NW¼ 36.0 ACRES
NE¼ SW¼ 17.7 ACRES

NW¼ SW¼ 29.6 ACRES
SW¼ SW¼ 14.7 ACRES
SE¼ SW¼ 39.3 ACRES
NE¼ SE¼ 37.1 ACRES
NW¼ SE¼ 26.7 ACRES
SW¼ SE¼ 31.1 ACRES
SE¼ SE¼ 33.5 ACRES
SECTION 4

NE¼ NE¼ 40.6 ACRES
NW¼ NE¼ 33.9 ACRES
SW¼ NE¼ 32.9 ACRES
SE¼ NE¼ 29.5 ACRES
NE¼ NW¼ 17.3 ACRES
SE¼ NW¼ 8.5 ACRES
NE¼ SW¼ 16.5 ACRES
SE¼ SW¼ 2.0 ACRES
NE¼ SE¼ 39.5 ACRES
NW¼ SE¼ 35.1 ACRES
SW¼ SE¼ 19.4 ACRES
SE¼ SE¼ 35.7 ACRES
SECTION 5

*SE¼ SE¼ 0.4 ACRE
SECTION 7

NE¼ NE¼ 32.5 ACRES
NW¼ NE¼ 7.0 ACRES
SE¼ NE¼ 4.4 ACRES
SW¼ SW¼ 2.3 ACRES
SECTION 8

NE¼ NE¼ 39.7 ACRES

NW¼ NE¼ 30.9 ACRES
SW¼ NE¼ 32.9 ACRES
SE¼ NE¼ 33.3 ACRES
NE¼ NW¼ 33.3 ACRES
NW¼ NW¼ 23.8 ACRES
SW¼ NW¼ 32.1 ACRES
SE¼ NW¼ 38.7 ACRES
NE¼ SW¼ 6.0 ACRES
NW¼ SW¼ 1.4 ACRES
NE¼ SE¼ 35.3 ACRES
NW¼ SE¼ 38.6 ACRES
SW¼ SE¼ 3.1 ACRES
SE¼ SE¼ 13.7 ACRES
SECTION 9

NE¼ NE¼ 13.7 ACRES
NW¼ NE¼ 29.2 ACRES
NE¼ NW¼ 5.5 ACRES
NW¼ NW¼ 19.2 ACRES
SW¼ NW¼ 40.1 ACRES
SE¼ NW¼ 11.8 ACRES
NE¼ SW¼ 2.2 ACRES
NW¼ SW¼ 31.9 ACRES
SW¼ SW¼ 37.0 ACRES

SE¼ SW¼ 4.5 ACRES

SECTION 10

NW¼ NE¼ 0.3 ACRES

SECTION 11

NE¼ NE¼ 27.3 ACRES
NW¼ NE¼ 21.1 ACRES
SW¼ NE¼ 8.9 ACRES
SE¼ NE¼ 30.2 ACRES
NE¼ NW¼ 0.2 ACRES
NW¼ NW¼ 3.8 ACRES

SECTION 12

NE¼ NW¼ 5.0 ACRES
NW¼ NW¼ 20.1 ACRES
SW¼ NW¼ 40.2 ACRES
SE¼ NW¼ 20.6 ACRES
*NE¼ SW¼ 3.2 ACRES
NW¼ SW¼ 16.1 ACRES

SECTION 15

NE¼ NE¼ 2.9 ACRES
SE¼ NE¼ 15.8 ACRES
*NE¼ SE¼ 1.7 ACRES

SECTION 16

NW¼ NE¼ 0.2 ACRES
SW¼ NE¼ 23.3 ACRES
SE¼ NE¼ 1.8 ACRES
NE¼ NW¼ 3.1 ACRES
NW¼ NW¼ 10.2 ACRES
SW¼ NW¼ 7.3 ACRES
SE¼ NW¼ 39.1 ACRES
NE¼ SW¼ 31.8 ACRES
NW¼ SW¼ 18.0 ACRES
SW¼ SW¼ 39.8 ACRES
SE¼ SW¼ 29.6 ACRES
NE¼ SE¼ 13.1 ACRES
NW¼ SE¼ 40.3 ACRES
SW¼ SE¼ 25.0 ACRES
SE¼ SE¼ 2.1 ACRES

SECTION 17

NE¼ NE¼ 33.0 ACRES
NW¼ NE¼ 15.2 ACRES
SW¼ NE¼ 33.3 ACRES
SE¼ NE¼ 30.9 ACRES
NE¼ NW¼ 4.8 ACRES
NW¼ NW¼ 3.8 ACRES
SW¼ NW¼ 43.1 ACRES
SE¼ NW¼ 35.3 ACRES
NE¼ SW¼ 21.5 ACRES
NW¼ SW¼ 50.0 ACRES
SW¼ SW¼ 23.9 ACRES
SE¼ SW¼ 16.1 ACRES
NE¼ SE¼ 34.3 ACRES
NW¼ SE¼ 31.5 ACRES
SW¼ SE¼ 1.0 ACRES
SE¼ SE¼ 4.7 ACRES

SECTION 18

*SE¼ NE¼ 8.0 ACRES
*NE¼ SE¼ 34.5 ACRES
*NW¼ SE¼ 0.1 ACRE
*SW¼ SE¼ 7.3 ACRES
*SE¼ SE¼ 34.1 ACRES

SECTION 19

*NE¼ NE¼ 18.2 ACRES
*NW¼ NE¼ 39.5 ACRES
*SW¼ NE¼ 36.9 ACRES
*SE¼ NE¼ 7.9 ACRES
*NE¼ NW¼ 22.1 ACRES
*NW¼ NW¼ 17.2 ACRES
*SW¼ NW¼ 39.2 ACRES
*SE¼ NW¼ 35.3 ACRES
*NE¼ SW¼ 32.9 ACRES
*NW¼ SW¼ 32.3 ACRES
*SW¼ SW¼ 39.8 ACRES
*SE¼ SW¼ 36.1 ACRES
*NE¼ SE¼ 18.7 ACRES
*NW¼ SE¼ 40.6 ACRES
*SW¼ SE¼ 36.5 ACRES

*SE¼ SE¼ 8.9 ACRES
SECTION 20

*NE¼ NW¼ 28.1 ACRES
*NW¼ NW¼ 28.0 ACRES
*SW¼ NW¼ 30.2 ACRES
*SE¼ NW¼ 30.0 ACRES
*NE¼ SW¼ 26.5 ACRES
*NW¼ SW¼ 32.4 ACRES
*SW¼ SW¼ 32.6 ACRES
*SE¼ SW¼ 32.1 ACRES
*SW¼ SE¼ 0.1 ACRE
SECTION 21

*NW¼ NE¼ 0.3 ACRE
*NE¼ NW¼ 35.2 ACRES
*NW¼ NW¼ 35.8 ACRES
*SW¼ NW¼ 2.4 ACRES
*SE¼ NW¼ 2.1 ACRES
*SW¼ SW¼ 28.9 ACRES
*SE¼ SW¼ 25.7 ACRES
SECTION 28
*NE¼ NE¼ 20.8 ACRES
*NW¼ NE¼ 39.8 ACRES
*SW¼ NE¼ 35.5 ACRES
*SE¼ NE¼ 7.9 ACRES
*NE¼ NW¼ 33.1 ACRES
*NW¼ NW¼ 30.2 ACRES
*SW¼ NW¼ 39.5 ACRES
*SE¼ NW¼ 35.4 ACRES
*NE¼ SW¼ 33.1 ACRES
*NW¼ SW¼ 29.4 ACRES
*SW¼ SW¼ 39.5 ACRES
*SE¼ SW¼ 36.2 ACRES
*NE¼ SE¼ 20.1 ACRES
*NW¼ SE¼ 39.9 ACRES
*SW¼ SE¼ 35.7 ACRES
*SE¼ SE¼ 8.7 ACRES
SECTION 29

*NE¼ NE¼ 37.7 ACRES
*NW¼ NE¼ 13.1 ACRES
*SW¼ NE¼ 29.7 ACRES
*SE¼ NE¼ 30.3 ACRES
*NE¼ SW¼ 1.3 ACRES
*SW¼ SW¼ 12.7 ACRES
*SE¼ SW¼ 37.0 ACRES
*NE¼ SE¼ 29.5 ACRES
*NW¼ SE¼ 33.6 ACRES
*SW¼ SE¼ 30.5 ACRES
*SE¼ SE¼ 30.4 ACRES
SECTION 30

*NE¼ NE¼ 28.7 ACRES
*NW¼ NE¼ 33.6 ACRES
*SW¼ NE¼ 20.3 ACRES
*SE¼ NE¼ 23.4 ACRES
*NE¼ NW¼ 20.6 ACRES
*NW¼ NW¼ 30.9 ACRES
*SW¼ NW¼ 36.4 ACRES
*SE¼ NW¼ 39.1 ACRES
*NE¼ SW¼ 33.1 ACRES
*NW¼ SW¼ 41.3 ACRES
*SW¼ SW¼ 44.7 ACRES
*SE¼ SW¼ 25.4 ACRES
*NE¼ SE¼ 36.0 ACRES
*NW¼ SE¼ 38.3 ACRES
*SW¼ SE¼ 38.0 ACRES
*SE¼ SE¼ 19.8 ACRES
SECTION 31

*NE¼ NE¼ 21.3 ACRES
*NW¼ NE¼ 40.0 ACRES
*SW¼ NE¼ 19.9 ACRES
*SE¼ NE¼ 5.2 ACRES
*NE¼ NW¼ 33.7 ACRES
*NW¼ NW¼ 29.5 ACRES
*SW¼ NW¼ 27.3 ACRES
*SE¼ NW¼ 31.1 ACRES
*NE¼ SW¼ 10.8 ACRES
*NW¼ SW¼ 40.1 ACRES
*SW¼ SW¼ 16.4 ACRES
*SE¼ SW¼ 1.9 ACRES
*NE¼ SE¼ 0.2 ACRE

*NW¼ SE¼ 0.3 ACRE
*SW¼ SE¼ 33.7 ACRES
*SE¼ SE¼ 9.6 ACRES
SECTION 32

*NE¼ NW¼ 29.1 ACRES

*NW¼ NW¼ 32.3 ACRES
SECTION 33

TOWNSHIP 3 NORTH, RANGE 24 EAST, W.M.

*NE¼ NE¼ 0.7 ACRE
*SE¼ NE¼ 7.3 ACRES
*NE¼ SE¼ 5.2 ACRES
*SE¼ SE¼ 0.3 ACRE
SECTION 13

TOWNSHIP 3 NORTH, RANGE 23 EAST, W.M.

Total = 8996.4 acres

* PLACE OF USE INVOLVED IN THE CHANGE

PERMIT 41645

As shown on the map attached to this Order Approving Change in Place of Use as "Attachment 1."

SE¼ SW¼ 7.0 ACRES
SW¼ SE¼ 8.4 ACRES
SECTION 20

SW¼ SE¼ 4.5 ACRES
SE¼ SE¼ 13.6 ACRES
SECTION 21

SW¼ SW¼ 10.9 ACRES
SW¼ SE¼ 0.8 ACRE
SE¼ SE¼ 4.7 ACRES
SECTION 22

SW¼ NE¼ 0.1 ACRE
SE¼ NE¼ 0.1 ACRE
SW¼ NW¼ 8.5 ACRES
SE¼ NW¼ 4.1 ACRES
NE¼ SW¼ 31.7 ACRES
NW¼ SW¼ 40.4 ACRES
SW¼ SW¼ 28.5 ACRES
SE¼ SW¼ 17.6 ACRES
NE¼ SE¼ 26.9 ACRES
NW¼ SE¼ 34.4 ACRES
SW¼ SE¼ 33.9 ACRES
SE¼ SE¼ 25.5 ACRES
SECTION 26

NE¼ NE¼ 35.2 ACRES
NW¼ NE¼ 15.3 ACRES
SW¼ NE¼ 14.1 ACRES
SE¼ NE¼ 26.8 ACRES
NW¼ NW¼ 13.6 ACRES
NE¼ SE¼ 29.1 ACRES
NW¼ SE¼ 14.7 ACRES
SW¼ SE¼ 29.8 ACRES
SE¼ SE¼ 35.1 ACRES
SECTION 27

NE¼ NE¼ 27.7 ACRES
NW¼ NE¼ 2.8 ACRES
SECTION 28

NE¼ NE¼ 7.6 ACRES
NW¼ NE¼ 36.7 ACRES
SW¼ NE¼ 26.9 ACRES
SE¼ NE¼ 2.6 ACRES
NE¼ NW¼ 35.7 ACRES
NW¼ NW¼ 1.5 ACRES
SW¼ NW¼ 0.2 ACRE
SE¼ NW¼ 21.3 ACRES
SECTION 29

NE¼ NE¼ 20.1 ACRES
NW¼ NE¼ 20.2 ACRES
SW¼ NE¼ 40.1 ACRES
SE¼ NE¼ 34.6 ACRES
SE¼ NW¼ 4.2 ACRES
NE¼ SW¼ 0.5 ACRE
SE¼ SW¼ 2.6 ACRES
NE¼ SE¼ 20.8 ACRES
NW¼ SE¼ 27.8 ACRES
SW¼ SE¼ 38.9 ACRES
SE¼ SE¼ 35.3 ACRES
SECTION 34

TOWNSHIP 4 NORTH, RANGE 24 EAST, W.M.

NE¼ NE¼ 18.0 ACRES
NW¼ NE¼ 21.9 ACRES
SW¼ NE¼ 39.7 ACRES
SE¼ NE¼ 35.6 ACRES
NE¼ NW¼ 28.8 ACRES
NW¼ NW¼ 37.5 ACRES
SW¼ NW¼ 29.3 ACRES
SE¼ NW¼ 22.9 ACRES
NE¼ SW¼ 27.3 ACRES
NW¼ SW¼ 35.6 ACRES
SW¼ SW¼ 33.8 ACRES
SE¼ SW¼ 25.0 ACRES
NE¼ SE¼ 6.2 ACRES
NW¼ SE¼ 8.7 ACRES
SECTION 35

TOWNSHIP 4 NORTH, RANGE 24 EAST, W.M.

SE¼ SW¼ 0.7 ACRE
SECTION 1

SW¼ SW¼ 0.6 ACRE
SE¼ SW¼ 7.8 ACRES
SW¼ SE¼ 0.2 ACRE
SE¼ SE¼ 3.8 ACRES
SECTION 2

NE¼ NE¼ 21.6 ACRES
NW¼ NE¼ 27.3 ACRES
NE¼ NW¼ 0.7 ACRE
SECTION 3

SE¼ SW¼ 0.1 ACRE
SW¼ SE¼ 26.5 ACRES
SE¼ SE¼ 15.5 ACRES
SECTION 9

NW¼ SW¼ 1.9 ACRES
SECTION 15

NE¼ NE¼ 18.9 ACRES
NW¼ NE¼ 30.0 ACRES
SW¼ NE¼ 21.0 ACRES
SE¼ NE¼ 11.0 ACRES
NE¼ NW¼ 11.1 ACRES
NW¼ NW¼ 25.1 ACRES
SW¼ NW¼ 33.6 ACRES
SE¼ NW¼ 16.4 ACRES
NE¼ SE¼ 29.9 ACRES
NW¼ SE¼ 15.4 ACRES
SECTION 16

NE¼ NE¼ 0.8 ACRE
SE¼ NE¼ 1.6 ACRES
SECTION 17

SW¼ SW¼ 7.1 ACRES
SE¼ SW¼ 13.8 ACRES
SW¼ SE¼ 2.2 ACRES
SE¼ SE¼ 20.3 ACRES
SECTION 31

TOWNSHIP 3 NORTH, RANGE 24 EAST, W.M.

NW¼ NW¼ 1.2 ACRES
SW¼ NW¼ 30.7 ACRES
SE¼ NW¼ 5.4 ACRES
NE¼ SW¼ 9.1 ACRES
NW¼ SW¼ 0.4 ACRE
SECTION 1

SW¼ NE¼ 1.6 ACRES
SE¼ NE¼ 0.9 ACRE
NE¼ SW¼ 1.2 ACRES
SE¼ SW¼ 1.2 ACRES
NE¼ SE¼ 8.1 ACRES
NW¼ SE¼ 32.1 ACRES
SW¼ SE¼ 6.6 ACRES
SE¼ SE¼ 0.6 ACRE
SECTION 2

SE¼ SE¼ 0.9 ACRE
SECTION 5

NE¼ SE¼ 2.4 ACRES
SECTION 7

NE¼ NE¼ 26.3 ACRES
NW¼ NE¼ 2.1 ACRES
SW¼ NE¼ 15.7 ACRES
SE¼ NE¼ 1.4 ACRES
NE¼ NW¼ 4.1 ACRES
SW¼ NW¼ 12.4 ACRES
SE¼ NW¼ 13.0 ACRES
NW¼ SW¼ 16.9 ACRES
NW¼ SE¼ 0.4 ACRE
SECTION 8
NW¼ NW¼ 4.5 ACRES
SW¼ NW¼ 0.2 ACRE
SECTION 9
SW¼ NE¼ 1.2 ACRES
SW¼ NW¼ 0.5 ACRE
SE¼ NW¼ 4.2 ACRES
NE¼ SW¼ 24.4 ACRES
NW¼ SW¼ 10.3 ACRES
SE¼ SW¼ 2.0 ACRES
NW¼ SE¼ 10.8 ACRES
SECTION 26

SW¼ NE¼ 0.8 ACRE
SE¼ NE¼ 2.3 ACRES
SW¼ NW¼ 1.0 ACRE
SE¼ NW¼ 2.8 ACRES
NE¼ SW¼ 26.7 ACRES
NW¼ SW¼ 12.9 ACRES
SE¼ SW¼ 3.2 ACRES
NE¼ SE¼ 25.1 ACRES
NW¼ SE¼ 11.4 ACRES
SE¼ SE¼ 2.2 ACRES
SECTION 27

SW¼ NE¼ 2.1 ACRES
SE¼ NE¼ 2.0 ACRES
SW¼ NW¼ 1.9 ACRES
SE¼ NW¼ 1.4 ACRES
NE¼ SW¼ 23.5 ACRES
NW¼ SW¼ 14.8 ACRES
SE¼ SW¼ 2.7 ACRES
NE¼ SE¼ 26.4 ACRES
NW¼ SE¼ 11.9 ACRES
SE¼ SE¼ 9.4 ACRES
SECTION 28

SE¼ NE¼ 0.1 ACRE
NE¼ SE¼ 20.9 ACRES
NW¼ SE¼ 7.9 ACRES
SW¼ SE¼ 0.2 ACRE
SE¼ SE¼ 12.3 ACRES
SECTION 29

NW¼ NE¼ 2.7 ACRES
SW¼ NE¼ 14.2 ACRES
NE¼ NW¼ 9.8 ACRES
SW¼ NW¼ 32.1 ACRES
SE¼ NW¼ 39.5 ACRES
NE¼ SW¼ 31.7 ACRES

NW¼ SW¼ 36.2 ACRES
SW¼ SW¼ 3.2 ACRES
SE¼ SW¼ 1.1 ACRES

NE¼ NE¼ 7.0 ACRES
NW¼ NE¼ 1.7 ACRES
SECTION 32

NE¼ NE¼ 6.9 ACRES
SW¼ SW¼ 2.4 ACRES
SE¼ SW¼ 16.9 ACRES
SW¼ SE¼ 2.4 ACRES
SE¼ SE¼ 17.0 ACRES
SECTION 33

NW¼ NW¼ 0.1 ACRE
SW¼ SW¼ 2.8 ACRES
SE¼ SW¼ 21.7 ACRES
SW¼ SE¼ 3.2 ACRES
SE¼ SE¼ 16.4 ACRES

NW¼ SE¼ 15.9 ACRES
SECTION 30

SECTION 34

SW¼ SW¼ 4.8 ACRES
SE¼ SW¼ 14.8 ACRES
SW¼ SE¼ 7.5 ACRES
SE¼ SE¼ 16.1 ACRES
SECTION 35

NE¼ SW¼ 0.1 ACRE
SW¼ SW¼ 10.1 ACRES
SE¼ SW¼ 16.0 ACRES
SW¼ SE¼ 13.9 ACRES
SE¼ SE¼ 15.3 ACRES
SECTION 36

TOWNSHIP 3 NORTH, RANGE 23 EAST, W.M.

NE¼ NE¼ 28.3 ACRES
NW¼ NE¼ 28.5 ACRES
SW¼ NE¼ 1.0 ACRE
SE¼ NE¼ 1.0 ACRE
NE¼ NW¼ 28.3 ACRES
NW¼ NW¼ 40.7 ACRES
SW¼ NW¼ 2.0 ACRES
SE¼ NW¼ 0.8 ACRE
SECTION 6

TOWNSHIP 2 NORTH, RANGE 24 EAST, W.M.

NE¼ NE¼ 23.8 ACRES
NW¼ NE¼ 34.0 ACRES
SW¼ NE¼ 2.1 ACRES
NE¼ NW¼ 23.3 ACRES
NW¼ NW¼ 34.2 ACRES
SW¼ NW¼ 2.1 ACRES
SECTION 1

NE¼ NE¼ 22.7 ACRES
NW¼ NE¼ 33.9 ACRES
SW¼ NE¼ 1.7 ACRES
NE¼ NW¼ 21.9 ACRES
NW¼ NW¼ 33.7 ACRES
SW¼ NW¼ 1.8 ACRES
SECTION 2

NE¼ NE¼ 23.1 ACRES
NW¼ NE¼ 33.7 ACRES
SW¼ NE¼ 2.2 ACRES
NE¼ NW¼ 23.5 ACRES
NW¼ NW¼ 18.6 ACRES

NE¼ NE¼ 16.8 ACRES
NW¼ NE¼ 21.1 ACRES
NE¼ NW¼ 29.4 ACRES
NW¼ NW¼ 26.2 ACRES
SW¼ NW¼ 0.2 ACRE
SE¼ NW¼ 1.7 ACRES
NW¼ SW¼ 1.0 ACRE
SW¼ SW¼ 34.6 ACRES
SE¼ SW¼ 31.4 ACRES
SW¼ SE¼ 25.8 ACRES
SE¼ SE¼ 23.2 ACRES
SECTION 4

SW¼ SE¼ 28.5 ACRES
SE¼ SE¼ 28.5 ACRES
SECTION 5

NE¼ NE¼ 9.9 ACRES
NW¼ NE¼ 23.9 ACRES
SW¼ NE¼ 21.5 ACRES
SE¼ NE¼ 31.9 ACRES
NE¼ NW¼ 13.2 ACRES
SE¼ NW¼ 3.2 ACRES
NE¼ SE¼ 10.1 ACRES
NW¼ SE¼ 7.2 ACRES
SECTION 8

NE¼ NE¼ 38.2 ACRES
NW¼ NE¼ 31.4 ACRES
SW¼ NE¼ 37.3 ACRES
SE¼ NE¼ 33.0 ACRES
SW¼ SW¼ 18.6 ACRES
SECTION 3

NE¼ NW¼ 37.4 ACRES
NW¼ NW¼ 17.9 ACRES
SW¼ NW¼ 39.1 ACRES
SE¼ NW¼ 32.2 ACRES
NE¼ SW¼ 16.4 ACRES
NW¼ SW¼ 24.4 ACRES
NE¼ SE¼ 33.4 ACRES
NW¼ SE¼ 32.2 ACRES
SE¼ SE¼ 34.8 ACRES
SECTION 9

NE¼ NE¼ 32.7 ACRES
NW¼ NE¼ 14.5 ACRES
SW¼ NE¼ 11.1 ACRES
SE¼ NE¼ 27.6 ACRES
NE¼ NW¼ 12.5 ACRES
NW¼ NW¼ 32.4 ACRES
SW¼ NW¼ 37.4 ACRES
SE¼ NW¼ 24.2 ACRES
NE¼ SW¼ 23.4 ACRES
NW¼ SW¼ 38.5 ACRES
SW¼ SW¼ 12.2 ACRES
SECTION 10

NW¼ NW¼ 7.6 ACRES
SW¼ NW¼ 5.7 ACRES
SECTION 11

NE¼ NE¼ 0.2 ACRES
SECTION 16

TOWNSHIP 2 NORTH, RANGE 23 EAST, W.M.

BOMBING RANGE POTENTIAL DEVELOPMENT

NE¼ NE¼ 15.9 ACRES
SW¼ NE¼ 25.2 ACRES
SE¼ NE¼ 28.3 ACRES
SE¼ NW¼ 6.8 ACRES
NE¼ SW¼ 19.7 ACRES
SE¼ SW¼ 20.0 ACRES
NE¼ SE¼ 37.1 ACRES
NW¼ SE¼ 40.2 ACRES
SW¼ SE¼ 40.2 ACRES
SE¼ SE¼ 40.2 ACRES

SECTION 10

NE¼ NE¼ 40.4 ACRES
NW¼ NE¼ 38.4 ACRES
SW¼ NE¼ 40.2 ACRES
SE¼ NE¼ 40.2 ACRES
NE¼ NW¼ 40.4 ACRES
NW¼ NW¼ 25.9 ACRES
SW¼ NW¼ 40.2 ACRES
SE¼ NW¼ 40.4 ACRES
NE¼ SW¼ 40.2 ACRES
NW¼ SW¼ 40.2 ACRES
SW¼ SW¼ 40.1 ACRES
SE¼ SW¼ 40.1 ACRES
NE¼ SE¼ 40.0 ACRES
NW¼ SE¼ 40.0 ACRES
SW¼ SE¼ 40.1 ACRES
SE¼ SE¼ 40.0 ACRES

SECTION 11

NW¼ NE¼ 6.4 ACRES
SW¼ NE¼ 29.2 ACRES
SE¼ NE¼ 0.4 ACRE
NE¼ NW¼ 39.1 ACRES
NW¼ NW¼ 35.3 ACRES
SW¼ NW¼ 40.5 ACRES
SE¼ NW¼ 40.5 ACRES
NE¼ SW¼ 40.4 ACRES
NW¼ SW¼ 40.4 ACRES
SW¼ SW¼ 40.3 ACRES
SE¼ SW¼ 40.3 ACRES
NE¼ SE¼ 15.3 ACRES
NW¼ SE¼ 40.3 ACRES
SW¼ SE¼ 40.3 ACRES
SE¼ SE¼ 26.2 ACRES

SECTION 12

NE¼ NE¼ 28.8 ACRES
NW¼ NE¼ 41.3 ACRES
SW¼ NE¼ 41.8 ACRES
SE¼ NE¼ 15.9 ACRES
NE¼ NW¼ 40.2 ACRES
NW¼ NW¼ 40.1 ACRES
SW¼ NW¼ 40.2 ACRES
SE¼ NW¼ 40.6 ACRES
NE¼ SW¼ 40.1 ACRES
NW¼ SW¼ 39.5 ACRES
SW¼ SW¼ 37.1 ACRES
SE¼ SW¼ 22.9 ACRES
NE¼ SE¼ 0.6 ACRE
NW¼ SE¼ 32.5 ACRES
SW¼ SE¼ 3.0 ACRES

SECTION 13

NE¼ NE¼ 39.7 ACRES
NW¼ NE¼ 40.0 ACRES
SW¼ NE¼ 40.4 ACRES
SE¼ NE¼ 40.0 ACRES
NE¼ NW¼ 40.0 ACRES
NW¼ NW¼ 39.8 ACRES
SW¼ NW¼ 40.0 ACRES
SE¼ NW¼ 40.5 ACRES
NE¼ SW¼ 40.2 ACRES
NW¼ SW¼ 40.2 ACRES
SW¼ SW¼ 34.5 ACRES
SE¼ SW¼ 39.5 ACRES
NE¼ SE¼ 40.0 ACRES
NW¼ SE¼ 40.0 ACRES

SW¼ SE¼ 40.1 ACRES
SE¼ SE¼ 40.6 ACRES
SECTION 14

NE¼ NE¼ 40.1 ACRES
NW¼ NE¼ 40.1 ACRES
SW¼ NE¼ 40.1 ACRES
SE¼ NE¼ 40.2 ACRES
NE¼ NW¼ 20.1 ACRES
SE¼ NW¼ 9.9 ACRES
NE¼ SE¼ 40.3 ACRES
NW¼ SE¼ 25.7 ACRES
SW¼ SE¼ 0.6 ACRE
SE¼ SE¼ 19.3 ACRES
SECTION 15

TOWNSHIP 3 NORTH, RANGE 24 EAST, W.M.

TOTAL = 6833.7 acres

As shown on the map attached to this Order Approving Change in Place of Use as "Attachment 1."

THIS CHANGE IN PLACE OF USE IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. The former places of use under Permits 41314 and 41645 shall no longer be irrigated under Permits 41314 and 41645, except as otherwise provided in this order.

2. Except as provided in the Department's Final Order dated February 26, 2001 extending Permits 41314 and 41645 with conditions, all other conditions of Permits 41314 and 41645 remain the same.

Permits 41314 and 41645, in the name of BAIC, INC., are amended as described herein.

WITNESS the signature of the Water Resources Director,

affixed 2/28/01.

Paul R Cleary

Paul R. Cleary, Director

APPENDIX O-2

Application for a Permit to Use Surface Water

Application for a Permit to Use

Surface Water

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Water-Use Permit Application Processing

1. **Completeness Determination**

The Department evaluates whether the application and accompanying map contain all of the information required under OAR 690-310-0040 and OAR 690-310-0050 (www.oregon.gov/owrd/law). The Department also determines whether the proposed use is prohibited by statute. If the Department determines that the application is incomplete, all fees have not been paid, or the use is prohibited by statute, the application and all fees submitted are returned to the applicant.

2. Initial Review

The Department reviews the application to determine whether water is available during the period requested, whether the proposed use is restricted or limited by rule or statute, and whether other issues may preclude approval of or restrict the proposed use. An Initial Review (IR) containing preliminary determinations is mailed to the applicant. The applicant has 14 days from the mailing date to withdraw the application from further processing and receive a refund of all fees paid minus $200. The applicant may put the application on hold for up to 180 days and may request additional time if necessary.

3. Public Notice

Within 7 days of the mailing of the initial review, the Department gives public notice of the application in the weekly notice published by the Department at www.oregon.gov/owrd. The public comment period is 30 days from publication in the weekly notice.

4. Proposed Final Order Issued

The Department reviews any comments received, including comments from other state agencies related to the protection of sensitive, threatened or endangered fish species. Within 60 days of completion of the IR, the Department issues a Proposed Final Order (PFO) explaining the proposed decision to deny or approve the application. A PFO proposing approval of an application will include a draft permit, and may request additional information or outstanding fees required prior to permit issuance.

5. Public Notice

Within 7 days of issuing the PFO, the Department gives public notice in the weekly notice. Notice includes information about the application and the PFO. Protest must be received by the Department within 45 days after publication of the PFO in the weekly notice. Anyone may file a protest. The protest filing fee is $300.00 for the applicant and $600.00 for non-applicants. Protests are filed on approximately 10% of Proposed Final Orders. If a protest is filed, the Department will attempt to settle the protest but will schedule a contested case hearing if necessary.

6. Final Order Issued

If no protests are filed, the Department issues a Final consistent with the PFO. If the application is approved, a permit is issued. If the application is approved, a permit is issued that specifies the details of the authorized use and any terms, limitations or conditions that the Department deems appropriate.

Minimum Requirements Checklist

Minimum Requirements (OAR 690-310-0040, OAR 690-310-0050 & ORS 537.140)

Include this checklist with the application

Check that each of the following items is included. The application will be returned if all required items are not included. If you have questions, please call the Water Rights Customer Service Group at (503) 986-0900.

- ☒ SECTION 1: applicant information and signature
- ☒ SECTION 2: property ownership
- ☒ SECTION 3: source of water requested
- ☒ SECTION 4: water use
- ☒ SECTION 5: water management
- ☒ SECTION 6: resource protection
- ☒ SECTION 7: project schedule
- ☒ SECTION 8: remarks

Attachments:

- ☒ Land Use Information Form with approval and signature (*must be an original*) or signed receipt NOTE: This form is not required. Determination will be made by Energy Facility Siting Council, pursuant to ORS 469.378.
- ☒ Provide the legal description of: (1) the property from which the water is to be diverted, (2) any property crossed by the proposed ditch, canal or other work, and (3) any property on which the water is to be used as depicted on the map. See Attachment 1 (1975 Bargain and Sale Deed) and Attachment 2 (Place of Use Legal Description).
- ☒ Fees - Amount enclosed: $ 5,016
  See the Department's Fee Schedule at www.oregon.gov/owrd or call (503) 986-0900.

Provide a map and check that each of the following items is included:

- ☒ Permanent quality and drawn in ink
- ☒ Even map scale not less than 4" = 1 mile (example: 1" = 400 ft, 1" = 1320 ft, etc.)
- ☒ North Directional Symbol
- ☒ Township, Range, Section, Quarter/Quarter, Tax Lots
- ☒ Reference corner on map
- ☒ Location of each well, and/or dam if applicable, by reference to a recognized public land survey corner (distances north/south and east/west)
- ☒ Indicate the area of use by Quarter/Quarter and tax lot clearly identified
- ☒ Number of acres per Quarter/Quarter and hatching to indicate area of use if for primary irrigation, supplemental irrigation, or nursery Not Applicable
- ☒ Location of main canals, ditches, pipelines or flumes (if well is outside of the area of use)
- ☐ Other:

Application for a Permit to Use

Surface Water

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

SECTION 1: APPLICANT INFORMATION AND SIGNATURE

Applicant Information

NAME N/A			PHONE (HM)
PHONE (WK)	CELL		FAX
ADDRESS			
CITY	STATE	ZIP	E-MAIL

Organization Information

NAME PORTLAND GENERAL ELECTRIC COMPANY			PHONE 541-481-1211	FAX
ADDRESS LOREN MAYER GENERAL MANAGER – BOARDMAN PLANT 73334 TOWER ROAD				CELL
CITY BOARDMAN	STATE OR	ZIP 97818	E-MAIL LOREN.MAYER@PGN.COM	

Agent Information – The agent is authorized to represent the applicant in all matters relating to this application.

AGENT / BUSINESS NAME MARTHA O. PAGEL/ SCHWABE, WILLIAMSON & WYATT			PHONE 503-540-4260	FAX 503-796-2900
ADDRESS 530 CENTER STREET NE, SUITE 400				CELL 503-507-7293
CITY SALEM	STATE OR	ZIP 97301	E-MAIL MPAGEL@SCHWABE.COM	

Note: Attach multiple copies as needed

By my signature below I confirm that I understand:

- I am asking to use water specifically as described in this application.
- Evaluation of this application will be based on information provided in the application.
- I cannot use water legally until the Water Resources Department issues a permit.
- Acceptance of this application does not guarantee a permit will be issued.
- If I begin construction prior to the issuance of a permit, I assume all risks associated with my actions.
- If I get a permit, I must not waste water.
- If development of the water use is not according to the terms of the permit, the permit can be cancelled.
- The water use must be compatible with local comprehensive land-use plans.
- Even if the Department issues a permit, I may have to stop using water to allow senior water-right holders to get water to which they are entitled.

I (we) affirm that the information contained in this application is true and accurate.

Applicant Signature	Print Name *and title if applicable*	Date
Ray Hendricks	Ray Hendricks, Environmental Engineer	2/11/2011
Applicant Signature	Print Name *and title if applicable*	Date

Revise

For Department Use
App. No._____ Permit No. _____ Date_____

SECTION 2: PROPERTY OWNERSHIP

Please indicate if you own all the lands associated with the project from which the water is to be diverted, conveyed, and used.

☐ Yes
- ☐ There are no encumbrances.
- ☐ This land is encumbered by easements, rights of way, roads or other encumbrances.

☒ No
- ☒ I have a recorded easement or written authorization permitting access.
  Note: Applicant owns all of Section 34, T3N, R24E, WM and has written authorization for the remaining affected lands in Section 33, T3N, R24E, WM.
- ☐ I do not currently have written authorization or easement permitting access.
- ☐ Written authorization or an easement is not necessary, because the only affected lands I do not own are state-owned submersible lands, and this application is for irrigation and/or domestic use only (ORS 274.040).
- ☐ Water is to be diverted, conveyed, and/or used only on federal lands.

List the names and mailing addresses of all affected landowners (*attach additional sheets if necessary).*

The names and mailing addresses of all affected landowners are included as an attachment to this application. See Attachment 3 (List of Affected Landowners).

SECTION 3: SOURCE OF WATER

A. Proposed Source of Water

Provide the commonly used name of the water body from which water will be diverted, and the name of the stream or lake it flows into. If unnamed, say so:

Source 1: Carty Reservoir	Tributary to: N/A
Source 2: _____	Tributary to: _____
Source 3: _____	Tributary to: _____
Source 4: _____	Tributary to: _____

If any source listed above is stored water that is authorized under a water right permit, certificate, or decree, attach a copy of the document or list the document number (for decrees, list the volume, page and/or decree name).
Certificate 86056 (Storage Right) and Certificate 86057 (Secondary Use). The existing storage rights authorize use of water for a "thermal power generation facility". Pursuant to ORS 540.520(9), the applicant has provided notice to the Water Resources Department of a change in use from specific to general industrial use.

B. Applications to Use Stored Water

Do you, or will you, own the reservoir(s) described in item 3A above?

☒ Yes.

☐ No. (Please enclose a copy of your written notification to the operator of the reservoir of your intent to file this application, which you should have already mailed or delivered to the operator.)

If *all* sources listed in item 3A are stored water, the Department will review your application using the expedited process provided in ORS 537.147, unless you check the box below. Please see the instruction booklet for more information.

☐ By checking this box, you are requesting that the Department process your application under the standard process outlined in ORS 537.150 and 537.153, rather than the expedited process provided by ORS 537.147. To file an application under the standard process, you must enclose the following:

- A copy of a signed non-expired contract or other agreement with the owner of the reservoir (if not you) to impound the volume of water you propose to use in this application.
- A copy of your written agreement with the party (if any) delivering the water from the reservoir to you.

SECTION 4: WATER USE

Provide the amount of water you propose to use from each source, for each use, in cubic feet-per-second (cfs) or gallons-per-minute (gpm). If the proposed use is from storage, provide the amount in acre-feet (af):
(1 cfs equals 448.8 gpm. 1 acre-foot equals 325,851 gallons or 43,560 cubic feet)

SOURCE	USE	PERIOD OF USE	AMOUNT
Carty Reservoir	Industrial	Year round	3736 ☐ cfs ☐ gpm ☒ af
			☐ cfs ☐ gpm ☐ af
			☐ cfs ☐ gpm ☐ af
			☐ cfs ☐ gpm ☐ af

For irrigation use only:
Please indicate the number of primary and supplemental acres to be irrigated.

Primary: _____ Acres Supplemental: _____ Acres

List the Permit or Certificate number of the underlying primary water right(s): _____

Indicate the maximum total number of acre-feet you expect to use in an irrigation season: _____

- If the use is **municipal or quasi-municipal**, attach **Form M**
- If the use is **domestic**, indicate the number of households: _____
- If the use is **mining**, describe what is being mined and the method(s) of extraction:

_____

SECTION 5: WATER MANAGEMENT

A. Diversion and Conveyance

What equipment will you use to pump water from your source?

☒ Pump (give horsepower and type): Vertical – 150 hp

☐ Other means (describe): _____

Provide a description of the proposed means of diversion, construction, and operation of the diversion works and conveyance of water.
The project will use existing intake and discharge structures. Multiple water pipelines associated with the Carty Generating Station will be connected to the existing Boardman Plant facilities. A detailed description of the diversion and conveyance system is included in Section B.4 of the Application for Site Certificate. See Attachment 4 (Section B.4 of Application for Site Certificate).

B. Application Method

What equipment and method of application will be used? (e.g., drip, wheel line, high-pressure sprinkler)
Water will be distributed by pipes and tanks to the place of use.

C. Conservation

Please describe why the amount of water requested is needed and measures you propose to: prevent waste; measure the amount of water diverted; prevent adverse impact to public uses of affected surface waters.
Water use needs and conservation measures are described in Section O of the Carty Generating Station Application for Site Certificate. See Attachment 5 (Section O of Application for Site Certificate). The project includes internal re-use of water and measures to minimize waste of water.

SECTION 6: RESOURCE PROTECTION

In granting permission to use water from a stream or lake, the state encourages, and in some instances requires, careful control of activities that may affect the waterway or streamside area. See instruction guide for a list of possible permit requirements from other agencies. Please indicate any of the practices you plan to undertake to protect water resources.

☒ Diversion will be screened to prevent uptake of fish and other aquatic life.
Describe planned actions: Water will be pumped from the Carty Reservoir to its place of use by vertical turbine pumps. Each pump will be filtered by a screen.

☒ Excavation or clearing of banks will be kept to a minimum to protect riparian or streamside areas.
Describe planned actions: Excavation or clearing will be kept to a minimum at the point of water withdrawal from Carty Reservoir by using Best Management Practices (BMPs) that are consistent with industry standards.

☒ Operating equipment in a water body will be managed and timed to prevent damage to aquatic life.
Describe: Damage to aquatic life will be minimized at the point of water withdrawal from Carty Reservoir by using BMPs that are consistent with industry standards. Hydraulic conditions and approach velocities to the screens will be designed and managed to reduce the impact of operations on aquatic life.

☒ Water quality will be protected by preventing erosion and run-off of waste or chemical products.
Describe: Erosion and run-off of waste or chemical products will be addressed by using BMPs that are consistent with industry standards.

SECTION 7: PROJECT SCHEDULE

Date construction will begin: 2013

Date construction will be completed: 2016

Date beneficial water use will begin: 2013

SECTION 8: REMARKS

Use this space to clarify any information you have provided in the application (*attach additional sheets if necessary).*
Pursuant to ORS 469.378, the land use determination will be made by the Energy Facility Siting Council. The standard Land Use Information Form is not required and therefore is not included with this application.

The existing storage rights under Certificate 86056 (the source of water for this application) authorize use of water for a "thermal power generation facility". Pursuant to ORS 540.520(9), the applicant has provided notice to the Water Resources Department of a change in use of the stored water from specific to general industrial use.

Land Use Information Form

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

NOTE TO APPLICANTS

In order for your application to be processed by the Water Resources Department (WRD), this Land Use Information Form must be completed by a local government planning official in the jurisdiction(s) where your water right will be used and developed. The planning official may choose to complete the form while you wait, or return the receipt stub to you. Applications received by WRD without the Land Use Form or the receipt stub will be returned to you. Please be aware that your application will not be approved without land use approval.

This form is NOT required if:

1) Water is to be diverted, conveyed, and/or used only on federal lands; **OR**
2) The application is for a water right transfer, allocation of conserved water, exchange, permit amendment, or ground water registration modification, and **all** of the following apply:
   a) The existing and proposed water use is located entirely within lands zoned for exclusive farm-use or within an irrigation district;
   b) The application involves a change in place of use only;
   c) The change does not involve the placement or modification of structures, including but not limited to water diversion, impoundment, distribution facilities, water wells and well houses; and
   d) The application involves irrigation water uses only.

NOTE TO LOCAL GOVERNMENTS

The person presenting the attached Land Use Information Form is applying for or modifying a water right. The Water Resources Department (WRD) requires its applicants to obtain land-use information to be sure the water rights do not result in land uses that are incompatible with your comprehensive plan. Please complete the form or detach the receipt stub and return it to the applicant for inclusion in their water right application. You will receive notice once the applicant formally submits his or her request to the WRD. The notice will give more information about WRD's water rights process and provide additional comment opportunities. You will have 30 days from the date of the notice to complete the land-use form and return it to the WRD. If no land-use information is received from you within that 30-day period, the WRD may presume the land use associated with the proposed water right is compatible with your comprehensive plan. Your attention to this request for information is greatly appreciated by the Water Resources Department. If you have any questions concerning this form, please contact the WRD's Customer Serviee Group at 503-986-0801.

Land Use Information Form

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Applicant: NOT APPLICABLE. LAND USE FORM NOT REQUIRED. PURSUANT TO ORS 469.378, LAND USE CONSISTENCY WILL BE DETERMINED BY ENERGY FACILITY SITING COUNCIL.

First _____ Last _____

Mailing Address: _____

City _____ State _____ Zip _____ Daytime Phone: _____

A. Land and Location

Please include the following information for all tax lots where water will be diverted (taken from its source), conveyed (transported), and/or used or developed. Applicants for municipal use, or irrigation uses within irrigation districts may substitute existing and proposed service-area boundaries for the tax-lot information requested below.

Township	Range	Section	¼ ¼	Tax Lot #	Plan Designation (e.g., Rural Residential/RR-5)	Water to be:			Proposed Land Use:
						☐ Diverted	☐ Conveyed	☐ Used	
						☐ Diverted	☐ Conveyed	☐ Used	

List all counties and cities where water is proposed to be diverted, conveyed, and/or used or developed:

B. Description of Proposed Use

Type of application to be filed with the Water Resources Department:

☐ Permit to Use or Store Water ☐ Water Right Transfer ☐ Permit Amendment or Ground Water Registration Modification
☐ Limited Water Use License ☐ Allocation of Conserved Water ☐ Exchange of Water

Source of water: ☐ Reservoir/Pond ☐ Ground Water ☐ Surface Water (name) _____

Estimated quantity of water needed: _____ ☐ cubic feet per second ☐ gallons per minute ☐ acre-feet

Intended use of water: ☐ Irrigation ☐ Commercial ☐ Industrial ☐ Domestic for _____ household(s)
☐ Municipal ☐ Quasi-Municipal ☐ Instream ☐ Other _____

Briefly describe:

Not applicable. Determination will be made through Energy Facility Siting Council.

Note to applicant: If the Land Use Information Form cannot be completed while you wait, please have a local government representative sign the receipt at the bottom of the next page and include it with the application filed with the Water Resources Department.

See bottom of Page 3. →

For Local Government Use Only

The following section must be completed by a planning official from each county and city listed unless the project will be located entirely within the city limits. In that case, only the city planning agency must complete this form. This deals only with the local land-use plan. Do not include approval for activities such as building or grading permits.

Please check the appropriate box below and provide the requested information

☐ Land uses to be served by the proposed water uses (including proposed construction) are allowed outright or are not regulated by your comprehensive plan. Cite applicable ordinance section(s): _____.

☐ Land uses to be served by the proposed water uses (including proposed construction) involve discretionary land-use approvals as listed in the table below. (Please attach documentation of applicable land-use approvals which have already been obtained. Record of Action/land-use decision and accompanying findings are sufficient.) **If approvals have been obtained but all appeal periods have not ended, check "Being pursued."**

Type of Land-Use Approval Needed (e.g., plan amendments, rezones, conditional-use permits, etc.)	Cite Most Significant, Applicable Plan Policies & Ordinance Section References	Land-Use Approval:	
Not applicable		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued
		☐ Obtained ☐ Denied	☐ Being Pursued ☐ Not Being Pursued

Local governments are invited to express special land-use concerns or make recommendations to the Water Resources Department regarding this proposed use of water below, or on a separate sheet.

Not applicable. Determination will be made through Energy Facility Siting Council.

Name: _____ Title: _____

Signature: _____ Phone: _____ Date: _____

Government Entity: _____

Note to local government representative: Please complete this form or sign the receipt below and return it to the applicant. If you sign the receipt, you will have 30 days from the Water Resources Department's notice date to return the completed Land Use Information Form or WRD may presume the land use associated with the proposed use of water is compatible with local comprehensive plans.

Receipt for Request for Land Use Information

Applicant name: _____

City or County: _____ Staff contact: _____

Signature: _____ Phone: _____ Date: _____

Date _____

(For staff use only)

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

WE ARE RETURNING YOUR APPLICATION FOR THE FOLLOWING REASON(S):

- ☐ SECTION 1: _____
- ☐ SECTION 2: _____
- ☐ SECTION 3: _____
- ☐ SECTION 4: _____
- ☐ SECTION 5: _____
- ☐ SECTION 6: _____
- ☐ SECTION 7: _____
- ☐ SECTION 8: _____
- ☐ Land Use Information Form: **NOTE: The land use form is not required for this application. See remarks on the form and in Section 8 of the application.**
- ☐ Provide the legal description of: (1) the property from which the water is to be diverted, (2) any property crossed by the proposed ditch, canal or other work, and (3) any property on which the water is to be used as depicted on the map.
- ☐ Fees _____

MAP

- ☐ Permanent quality and drawn in ink
- ☐ Even map scale not less than 4" = 1 mile (example: 1" = 400 ft, 1" = 1320 ft, etc.)
- ☐ North Directional Symbol
- ☐ Township, Range, Section, Quarter/Quarter, Tax Lots
- ☐ Reference corner on map
- ☐ Location of each well, and/or dam if applicable, by reference to a recognized public land survey corner (distances north/south and east/west)
- ☐ Indicate the area of use by Quarter/Quarter and tax lot clearly identified
- ☐ Number of acres per Quarter/Quarter and hatching to indicate area of use if for primary irrigation, supplemental irrigation, or nursery
- ☐ Location of main canals, ditches, pipelines or flumes (if well is outside of the area of use)
- ☐ Other _____

_____

_____

_____

APPENDIX O-3

Oregon Water Resources Department Letter Regarding Specific to General Industrial Notification

Oregon
John A. Kitzhaber, MD, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0900
FAX 503-986-0904

March 23, 2011

Martha O. Pagel, Attorney
Schwabe, Williamson & Wyatt
530 Center St., NE, Suite 400
Salem, OR 97301

Re: Specific to General Industrial Notification – File No. 068330/128451, Portland General Electric Co.

Dear Ms. Pagel:

We have received your letter of February 22, 2011, notifying the Department that Portland General Electric Company (PGE) is changing the use of water under water right Certificates 86056 and 86057 from the specific industrial use of "thermal power generation facility" to general industrial use.

The general industrial use at the site will include continuing, on-going operations of the existing coal plant facilities (the Boardman plant), as will as possible future decommissioning and reconstruction or new construction of industrial facilities. The existing coal plant will continue to operate until such time as it may be decommissioned. Any new use will continue to occur within the property that was owned by PGE, the holder of the original water rights, at the time the original permits were issued, and the quantity of water used for general industrial purposes will not be greater than the rate and volume allowed in the original water rights for the authorized specific use.

The requirements for making the change are established under ORS 540.520(9) and OAR 690-380-2340. Your letter appears to include all of the information required under the statutes and rules. We will file your notification in our water right records.

Current statutes and rules do not include a process for Department review and approval of notifications of specific to general industrial changes. Any issues associated with eligibility and compliance will be addressed by the watermaster during normal distribution and regulation activities.

Please do not hesitate to contact me at 503-986-0890 or Dorothy.I.Pedersen@wrd.state.or.us if you have any questions.

Sincerely,

Dorothy I. Pedersen
Transfer Program Advisor

cc: Loren Mayer, Portland General Electric Co.
Tony Justus, District 5 Watermaster
Application File R-51520
Application File S-51521

RECEIVED
MAR 24 2011
Schwabe, Williamson & Wyatt

EXHIBIT P

FISH AND WILDLIFE HABITAT
OAR 345-021-0010(1)(p)

TABLE OF CONTENTS

P.1 INTRODUCTION....P-1

P.2 SUMMARY....P-1

P.3 FISH AND WILDLIFE HABITAT MITIGATION RECOMMENDATIONS....P-2

P.4 DESCRIPTION OF BIOLOGICAL AND BOTANICAL SURVEYS PERFORMED....P-4

P.4.1 Survey Methods....P-4

P.5 IDENTIFICATION AND DESCRIPTION OF FISH AND WILDLIFE HABITATS IN THE ANALYSIS AREA....P-7

P.5.1 Category 1 Habitat Description....P-7
P.5.2 Category 2 Habitat Description....P-8
P.5.3 Category 3 Habitat Description....P-12
P.5.4 Category 4 Habitat Description....P-12
P.5.5 Category 5 Habitat Description....P-13
P.5.6 Category 6 Habitat Description....P-13

P.6 MAP OF HABITAT LOCATIONS....P-14

P.7 IDENTIFICATION OF POTENTIAL STATE SENSITIVE SPECIES PRESENT IN THE ANALYSIS AREA AND DISCUSSION OF SITE-SPECIFIC ISSUES....P-15

P.8 DESCRIPTION OF BASELINE SURVEYS OF STATE SENSITIVE SPECIES....P-15

P.9 DESCRIPTION OF POTENTIAL ADVERSE IMPACTS....P-17

P.10 MITIGATION MEASURES....P-21

P.11 MONITORING PROGRAM....P-22

P.12 REFERENCES....P-23

APPENDICES

P-1 2009 Biological Field Survey Report for the Carty Generating Station

P-2 2010 Biological Field Survey Report for the Carty Generating Station

P-3 Carty Generating Station Wildlife and Habitat Monitoring and Mitigation Plan

P-4 Revegetation and Noxious Weed Control Plan

LIST OF TABLES

Table P-1 Habitat Types and ODFW Mitigation Policy Habitat Categories (1-6) Within the Project Analysis Area P-9

Table P-2 Temporary and Permanent Impacts and Mitigation for the Development Action by Habitat Category (acres) P-10

Table P-3 Sensitive Plant and Wildlife Species Known to Occur or Potentially to Occur within the Project Analysis Area P-10

Table P-4 Dominant Vegetation Observed in the Project Analysis Area During 2009 Field Surveys P-14

Table P-5 Wildlife Species Observed in the Project Analysis Area During 2009 and 2010 Field Surveys P-19

FIGURES

P-1 Project Analysis Area

P-2 Habitat and Wildlife Survey Observations (energy facility analysis area)

P-3 Habitat and Wildlife Survey Observations (transmission line analysis area)

P-4 Noxious Weed Survey Observations (energy facility analysis area)

P-5 Noxious Weed Survey Observations (transmission line analysis area)

P-6 Oregon Natural Heritage Information

P.1 INTRODUCTION

OAR 345-021-0010(1)(p) *Information about the fish and wildlife habitat and the fish and wildlife species, other than the species addressed in subsection OAR 345-02100010(1)(q), that could be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0060.*

OAR 345-022-0060 To issue a site certificate, the Council must find that the design, construction, and operation of the facility, taking into account mitigation, are consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025, in effect as of September 1, 2000.

Response: Oregon Department of Fish and Wildlife (ODFW) goals and standards to mitigate impacts to fish and wildlife habitat caused by land and water development actions are incorporated under OAR 635-415-0000 through OAR 635-415-0025. The Energy Facility Siting Council (EFSC) requires compliance with these habitat mitigation rules; this exhibit addresses the requirements of these rules.

This exhibit addresses potentially affected fish and wildlife habitat and species. An associated wildlife and habitat mitigation and restoration plan will be submitted separately.

P.2 SUMMARY

This exhibit identifies eight wildlife habitat types and 13 state sensitive and/or federal species of concern (collectively referred to as "sensitive" species), which are known to occur or potentially occur within the project analysis area. Species identified as federal and/or state listed threatened, endangered, or candidate species are discussed in Exhibit Q. One species without sensitive status, but given special consideration under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, is also identified. The project analysis area for evaluating fish and wildlife habitat included the following area during the 2009 study period: (1) approximately 5,490 acres, consisting of the 4,090-acre 2009 Energy Facility Survey Area, which will encompass the Carty Generating Station, and a 1,400-acre transmission line right-of-way (ROW) located west of the Energy Facility Survey Area and (2) raptor nest surveys were conducted within the Energy Facility Survey Area and an additional 1-mile buffer around the proposed site boundary and the 18-mile long transmission line corridor boundary (Figure P-1). In the context of this analysis, "raptor nest" means any nest site for birds of prey, such as eagles, ospreys, hawks, falcons, and owls. The project analysis area during the 2010 study period included approximately 2,817 acres, consisting of the 1,000-acre 2010 Energy Facility Survey Area, the 1,400 acre Transmission Line Survey Area, and the additional 417 acres of the 2010 Ground Squirrel Survey Area that extended outside the site boundary.

For discussion purposes, this document occasionally distinguishes between the analysis area for the power plant and the analysis area for the transmission line. The power plant analysis area includes the plant footprint (including access roads), laydown area, switchyard, and evaporation ponds, as well as surrounding areas within the Site Boundary that are not within the transmission line corridor and is referred to as the Energy Facility Survey Area. Figure P-1 presents the survey areas. Figure P-2 presents observations within the Energy Facility Survey Area. The analysis area for the proposed transmission line includes the existing power line corridor that extends from the Energy Facility Survey Area to the Slatt substation. Figures P-2 and P-3 present observations within the transmission corridor.

To avoid significant potential impacts of construction, operation, and maintenance on sensitive or otherwise important wildlife species, Portland General Electric Company (PGE) proposes to monitor for potential raptor nest sites within 1 mile of the project (2 miles of the Energy Facility Site) prior to construction and implement avoidance actions as necessary. To minimize significant potential impacts to wildlife habitat, the following mitigation measures are proposed: (1) use of best management practices (BMPs) and erosion and sediment control techniques to minimize impacts to water quality and wetlands; (2) placement of transmission towers outside wetlands to the extent practical; (3) use of existing roads for construction and maintenance of the transmission line to the greatest extent practical; (4) re-seeding areas of unavoidable soil disturbance and implementing a revegetation plan that includes monitoring and established success criteria (details in Appendix P-4); and (5) implementing appropriate actions to prevent spills and waste materials from entering waterways or wetlands.

P.3 FISH AND WILDLIFE HABITAT MITIGATION RECOMMENDATIONS

The fish and wildlife habitat mitigation recommendations described in OAR 635-415-0025 prioritize fish and wildlife habitats. OAR 635-415-0025 defines six habitat categories and establishes mitigation goals and recommendations for each category. The six habitat categories and corresponding mitigation goals and recommendations are described below:

"Habitat Category 1" is irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage. The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality. ODFW recommends or requires avoidance of impacts to Category 1 habitat through alternatives to the proposed development action or no authorization of the proposed development action if impacts cannot be avoided.

"Habitat Category 2" is essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population, or unique assemblage. The mitigation goal, if impacts are unavoidable, is no net loss of either habitat quantity or quality and to provide a net

benefit of habitat quantity or quality. ODFW recommends or requires avoidance of impacts to Category 2 habitat through alternatives to the proposed development action; or mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss of either pre-development habitat quantity or quality. In addition, a net benefit of habitat quantity or quality must be provided. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action. If neither avoidance of impacts nor mitigation can be achieved, ODFW shall recommend against or shall not authorize the proposed development action.

"Habitat Category 3" is essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population. The mitigation goal is no net loss of either habitat quantity or quality. ODFW recommends or requires avoidance of impacts to Category 3 habitat through alternatives to the proposed development action, or mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action. If neither avoidance of impacts nor mitigation can be achieved, ODFW shall recommend against or shall not authorize the proposed development action.

"Habitat Category 4" is important habitat for fish and wildlife species. The mitigation goal is no net loss in either existing habitat quantity or quality. ODFW recommends or requires avoidance of impacts to Category 4 habitat through alternatives to the proposed development action; or mitigation of impacts, if unavoidable, through reliable in-kind or out-of-kind, in-proximity or off-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action. If neither avoidance of impacts nor mitigation can be achieved, ODFW shall recommend against or shall not authorize the proposed development action.

"Habitat Category 5" is habitat for fish and wildlife having high potential to become either essential or important habitat. The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality. ODFW recommends or requires avoidance of impacts to Category 5 habitat through alternatives to the proposed development action, or mitigation of impacts, if unavoidable, through actions that contribute to essential or important habitat. If neither avoidance of impacts nor mitigation can be achieved, ODFW shall recommend against or shall not authorize the proposed development action.

"Habitat Category 6" is habitat that has low potential to become essential or important habitat for fish and wildlife. The mitigation goal is to minimize impacts. ODFW recommends or requires actions that minimize direct habitat loss and avoid impacts to off-site habitat.

P.4 DESCRIPTION OF BIOLOGICAL AND BOTANICAL SURVEYS PERFORMED

OAR 345-21-0010(1)(p)(A) *A description of biological and botanical surveys performed that support the information in this exhibit, including a discussion of the timing and scope of each survey.*

Response: Representatives from the ODFW, U.S. Fish and Wildlife Service (USFWS), Oregon Department of Agriculture (ODA), and the Oregon Department of Natural Heritage Information Center (ORNHIC) were consulted informally by PGE at the outset of the investigation. During consultations, PGE requested data for specific information about important habitats and threatened and endangered and other sensitive species within and in the vicinity of the proposed Energy Facility Site and transmission line ROW. Existing literature and scientific data were also reviewed to determine species range and habitat requirements. Ongoing consultation with ODFW and USFWS has been conducted during the field surveys and preparation of the supporting documents, which are available as appendices to Exhibits P and Q.

P.4.1 Survey Methods

The following is a description of the methods used to survey and map habitat, vegetation, wetlands, and wildlife.

Habitat

Aerial photos, GAP analysis data, and on-site field truthing were used to map habitat within the Energy Facility Survey Area and Transmission Line Survey Area. A habitat classification system (vegetation cover types) was developed for the overall project analysis area using the following procedures. Habitat types within the Energy Facility Survey Area and Transmission Line Survey Area were validated during field surveys conducted in May and June of 2009 and May of 2010. Habitat was surveyed within the project analysis area by walking transects on foot and from a vehicle where accessible. Habitat was characterized according to dominant vegetation and overall condition of the vegetation community, and included consideration of surrounding land uses. Habitat types were then digitized, using aerial photos and field collected data, into a geographic information systems (GIS) database. The GIS database was then used to produce habitat maps and acreage estimates for each habitat type.

Each habitat type was assigned to a specific category based on the ODFW fish and wildlife habitat mitigation goals and standards defined in OAR 635-415-0025. The habitat categories resulting from this investigation are identified in Table P-1.

Vegetation

ORNHIC provided a list of threatened, endangered and candidate plant species that potentially occur within the analysis area (ORNHIC 2009) (Figure P-4). ORNHIC furnished a list of known locations of listed and sensitive plant occurrences within a 5-mile radius of the proposed project. This information and a review of the current habitats within the project analysis area were used to develop a list of target species for field surveys. Sensitive plant surveys were conducted concurrently with Washington ground squirrel (*Spermophilus washingtoni*) transect surveys, wetland and stream surveys, and general habitat characterization in May and June 2009 by experienced botanists familiar with listed and candidate species. Habitat specific sensitive plant species surveys were conducted in areas where suitable conditions existed to support any of the target sensitive plant species. No sensitive plant species were observed in the project analysis area.

Wetlands

See Exhibit J for a complete description of the wetland information review and field survey methodology.

Wildlife

USFWS, ODFW, and ORNHIC provided information on threatened, endangered, and sensitive fish and wildlife species known to occur or potentially to occur in the vicinity of the proposed project (ORNHIC 2009) (Appendices Q-1 and Q-2, Exhibit Q). ORNHIC also identified several other species of importance for this investigation that do not have formal status as threatened, endangered, or sensitive species (Figure P-6).

Field surveys were conducted in the project analysis area by qualified wildlife biologists during the spring and summer of 2009 (May 4–June 26) and spring of 2010 (May 4–May 28). Ground surveys were conducted over the entire analysis area in 2009 for sensitive species, avian species, and raptor nests. Ground surveys in 2010 were conducted in the 2010 Ground Squirrel Survey Area and the 2010 Energy Facility Survey Area (Figure P-1). Surveys were conducted on foot and by vehicle where access was possible. Survey protocols were developed in coordination with ODFW. Field biologists documented all wildlife observed in the analysis area, and recorded all sensitive species and wildlife breeding sites using a Global Positioning System (GPS) unit.

Sensitive Species Surveys

Surveys for sensitive species known to occur or potentially to occur within the analysis area were conducted by qualified wildlife biologists. At the request of ODFW, sensitive species surveys focused on the Washington ground squirrel, which is currently considered a candidate species for listing under the Endangered Species Act (ESA) by the USFWS and is a state-listed endangered species under the Oregon Endangered Species Act of 1987. Visual and aural surveys for the other sensitive species potentially occurring in the analysis area were conducted concurrently

with the Washington ground squirrel surveys. Sensitive species identified during other wildlife surveys also were recorded. Surveys for Washington ground squirrels were conducted on May 4–9 and June 22–26 in 2009 and on May 4–28 in 2010. Further details of the Washington ground squirrel survey results are available in the 2010 Biological Field Survey Report for the Carty Generating Station (Appendix P-2) and in Exhibit Q. At locations where the project analysis area overlapped potential occurrence areas of sensitive species, as identified through review of the ORNHIC database, the boundaries of the 2009 survey area were expanded an additional 1,000 feet from the potential occurrence area. In areas where potential Washington ground squirrel habitat occurred, qualified wildlife biologists walked transects spaced 50 meters apart looking for burrows, fresh scat, or individual Washington ground squirrels and listened for auditory calls. The 2010 surveys for Washington ground squirrels were conducted in locations according to the 2009 survey results (Appendix P-2 contains a detailed discussion of the 2010 survey area, and is the area shown in Figure P-1). Surveys for other sensitive wildlife species outside of Washington ground squirrel habitat were conducted on foot and by vehicle, where access was possible. Appendix P-2 2010 Biological Field Survey Report, Appendix B contains a copy of the work plan used to conducted field surveys.

Avian Species and Raptor Nest Surveys

Ground surveys for avian species and raptor nests occurring within the analysis area were conducted concurrently with Washington ground squirrel surveys on May 5–8 and June 22–25, 2009 and May 4–28 in 2010. The 2009 surveys, focusing on raptors and sensitive species, were conducted within the project area and within an additional 1-mile buffer around the Site Boundary. All bird species seen or observed during the course of the surveys were recorded.

Biologists experienced in bird identification used high-powered optics to perform surveys on foot and in a four-wheel drive vehicle. The biologists examined the entire project area in 2009; however, efforts were intensified in areas where suitable raptor nesting substrates (i.e., trees, rock ledges, cavities, and power line poles) occurred. All raptor nests and individual birds were documented with a GPS unit and standardized data form, noting bird behavior and nest characteristics. Photographs of the nests were taken to help illustrate nest shape, condition, and substrate. Common Raven (*Corvus corax*) nests also were recorded because some raptor species use established nests interchangeably with Common Ravens from year to year. This appears to be the case for the nest located in an existing transmission line tower approximately 0.75 miles east of the Slatt substation. This nest has been documented by ODFW as a historic golden eagle nest and although during 2009 it was occupied by ravens, it may have been used by golden eagles as recent as 2005.

PGE plans to conduct aerial raptor nest surveys by two experienced avian ecologists, along with a pilot experienced in wildlife surveys, encompassing a 2-mile radius of the Energy Facility Site and 1-mile radius of the transmission line ROW between April 15 and June 15, 2011. Aerial nest surveys will be conducted for all raptor nests within 0.5 miles of the Site Boundary. The survey will be extended to areas of suitable Golden Eagle nesting habitat extending 2 miles from the Site Boundary. All raptor nests encountered during surveys of suitable golden eagle habitat

will be documented. Recommendations provided in the Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al. 2010) for aerial surveys will be followed (i.e., minimal hovering no longer than 30 seconds, no closer than 20 meters from a cliff/nest site). The inclusion of aerial surveys in addition to the ground effort will increase the rate of detection that would be achieved by using only one of these methods. Nests recorded in 2009 will be revisited to determine their activity level and species of occupancy. New nests documented during aerial surveys will be recorded in the same manner as nests were documented during ground efforts. A laser rangefinder will allow surveyors to record nest coordinates from a distance, minimizing disturbance. . If a nest's location makes it difficult to confirm species identity, the nest will later be ground-truthed.

P.5 IDENTIFICATION AND DESCRIPTION OF FISH AND WILDLIFE HABITATS IN THE ANALYSIS AREA

OAR 345-21-0010(1)(p)(B) *Identification of all fish and wildlife habitat in the analysis area, classified by the habitat categories as set forth in OAR 635-415-0025 and a description of the characteristics and condition of that habitat in the analysis area.*

Response: The eastern portion of the project area contains shrub-steppe habitat, agriculture cropland, and some riparian areas and wetlands. Approximately one-fifth of this area in the eastern portion, including the Boardman conservation area, was burned by a fire that occurred in 2008. Areas of the shrub-steppe that were not impacted by fire are dominated by big sagebrush (*Artemisia tridentate*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*), cheat grass (*Bromus tectorum*), and rabbit brush (*Chrysothamnus sp.*). The western portion of this area consists of irrigated agriculture crops and a riparian zone with mixed upland and water tolerant plants. Wetland areas are dominated by Russian olive *Elaeagnus angustifolia*, Pacific willow (*Salix lasiandra*), Canada goldenrod (*Solidago Canadensis*) and Amaranth (*Amaranth sp.*). Table P-1 lists ODFW habitat categories associated with habitats found within the project analysis area. Table P-2 lists approximate acreages of each habitat category temporarily or permanently affected. Table P-3 lists sensitive species observed or having the potential to occur within the project analysis area. Figures P-2 and P-3 show habitat types and categories found on site and detailed field observations are provided in Appendices P-1 and P-2, which contain the 2009 and 2010 Biological Survey Reports for the Carty Generating Station.

P.5.1 Category 1 Habitat Description

Upland – Shrub-Steppe (Washington Ground Squirrel)

Category 1 designations are made for habitat that is considered "irreplaceable, essential, and limited" and includes any habitat containing active Washington ground squirrel burrows and active raptor nest sites. By applying a 785-foot buffer to the Washington ground squirrel

observations recorded during 2010 surveys, in addition to data collected by The Nature Conservancy in 2009, an area was designated Category 1 where the Washington ground squirrel occurs. This area consists of approximately 90 acres within the Site Boundary. A modification to the standard 785-foot buffer was made where Tower Road crosses within the buffer at 630 feet from an occupied squirrel burrow. In consultation with ODFW, it was determined that Tower Road presents a significant boundary and therefore limits the southwest extent of the buffer for that burrow to the edge of the road. The Carty Energy Facility Site would not impact Category 1 habitat. This habitat category type was not found in the transmission line survey area.

P.5.2 Category 2 Habitat Description

Upland – Shrub-Steppe (Potential Washington Ground Squirrel)

Category 2 habitats were identified within the project analysis area. The area is defined as habitat adjacent to a Washington ground squirrel colony, but not occupied by any squirrels either for burrowing or foraging, which is of a habitat type and quality similar to the area occupied by the squirrels. A 785-foot buffer was placed around point locations of historically active Washington ground squirrel burrows recorded over the past 8 years. This area has the highest potential to provide habitat for squirrels. Approximately 16 acres of Category 2 habitat is within the Site Boundary. The Carty Energy Generating Project would not impact Category 2 habitat. This habitat category type was not found in the transmission line survey area.

Table P-1 Habitat Types and ODFW Mitigation Policy Habitat Categories (1-6) Within the Project Analysis Area

Basic Type	Habitat Type	Mitigation Policy Habitat Category	
		Category	Comments
Upland	Shrub-steppe	1	Irreplaceable, essential habitat for Washington ground squirrel population. Designated Washington ground squirrel habitat. Located in Energy Facility Survey Area, but outside potential areas of impacts.
		2	Area of potential Washington ground squirrel use. Habitat adjacent to a Washington ground squirrel colony, but not occupied by any squirrels either for burrowing or foraging, which is of similar habitat type and quality to the area occupied.
		3	Essential habitat for wildlife in areas containing silt loam soils
		4	Important habitat for wildlife containing weed dominated and/or grazed shrub-steppe.
Surface water	Perennial stream	3	The Willow watershed, which contains the perennial Willow Creek, is reported habitat for inland Columbia redband trout. This species is listed by ODFW as vulnerable. The transmission line ROW will cross Willow Creek using an existing bridge, therefore impacts will be avoided.
	Intermittent stream	4	Fourmile and Eightmile Canyon creeks are intermittent/ephemeral drainage channels. Eightmile Canyon Creek is heavily impacted by grazing. Fourmile Canyon Creek contains an existing access road at the point of potential crossing.
Wetlands	Palustrine forested	3	May provide important habitat for wildlife
	Palustrine scrub-shrub	3	May provide important habitat for wildlife
	Palustrine emergent	3	May provide important habitat for wildlife
Agricultural	Cropland/pasture	6	Has low potential to become essential or important habitat for wildlife due to current land use

Table P-2 Temporary and Permanent Impacts and Mitigation for the Development Action by Habitat Category (acres)

Habitat Type	Temporary			Mitigation*
	Energy Facility Site	Transmission Line	Total	
Category 4				
Shrub-Steppe	40	115	155	77.5
Category 6				
Agricultural Cropland	0	52	52	0
Total	40	167	207	77.5
Habitat Type	**Permanent**			**Mitigation***
	Energy Facility Site	**Transmission Line**	**Total**	
Category 4				
Shrub-Steppe	90	1	91	91
Category 6				
Agricultural Cropland	0	0	0	0
Total	90	1	91	91
Total Mitigation for both Temporary and Permanent Impacts				**168.5**

*****Temporary impact mitigation is based on a 0.5:1-acre ratio of Category 4. Permanent impact mitigation is based on a 1:1 acre ration of Category 4.

Table P-3 Sensitive Plant and Wildlife Species Known to Occur or Potentially to Occur within the Project Analysis Area

Common Name	Scientific Name	Status		Potential to Occur
		Federal	State	
Birds				
Black-throated Sparrow	*Amphispiza bilineata*		SP	Possible, although no recent observations
Burrowing Owl	*Anthene cunicularia*	SOC	SC	Likely, observed in vicinity and habitat present
Ferruginous Hawk	*Buteo regalis*	SOC	SC	Likely, observed in vicinity and habitat present
Grasshopper Sparrow	*Ammodramus savannarum*		SV	Likely, observed in vicinity and habitat present
Greater Sage-grouse	*Centrocercus urophasianus*	C	SV	Not likely, outside current range
Loggerhead Shrike	*Lanius ludovicianus*		SV	Likely, observed in vicinity and habitat present
Long-billed Curlew	*Numenius americanus*		SV	Likely, observed in vicinity and habitat present
Sage Sparrow	*Amphispiza belli*		SC	Possible, although no recent observations

Table P-3 Sensitive Plant and Wildlife Species Known to Occur or Potentially to Occur within the Project Analysis Area

Common Name	Scientific Name	Status		Potential to Occur
		Federal	State	
Swainson's Hawk	*Buteo swainsoni*		SV	Likely, observed in vicinity and habitat present
Mammals				
Washington ground squirrel	*Spermophilus washingtoni*	C	LE	Likely, observed in vicinity and habitat present
white-tailed jackrabbit	*Lepus townsendii*		SU	Likely, observed in vicinity and habitat present
Plants				
Robinson's Onion	*Allium robinsonii*	SOC		Possible, although no recent observations
Woven-spored lichen	*Texosporium sancti-jacobi*	SOC		Possible, although no recent observations
Reptile				
Northern sagebrush lizard	*Sceloporus graciosus*	SOC	SV	Possible, although no recent observations

Notes:

State and Federal Status Definitions

C – Candidate. Candidate taxa for which National Marine Fisheries Service (NMFS) or USFWS have sufficient information to support a proposal to list under the ESA, or which is a candidate for listing by the Oregon Department of Agriculture (ODA) under the Oregon Endangered Species Act of 1987.

SOC – Species of Concern. Former Category 2 candidates for which additional information is needed in order to propose as threatened or endangered under the Endangered Species Act (ESA); these species are under review for consideration as Candidates for listing under the ESA.

LE – Listed Endangered. Taxa listed by the USFWS or NMFS as Endangered under the ESA, or by the ODA and ODFW of the state of Oregon under the Oregon Endangered Species Act of 1987. Endangered taxa are those that are in danger of becoming extinct within the foreseeable future throughout all or a significant portion of their range.

LT – Listed Threatened. Taxa listed by the above agencies as Threatened; defined as those taxa likely to become endangered within the foreseeable future.

SC – State Sensitive-Critical. Species for which listing is pending; or those for which listing may be appropriate if immediate conservation activities are not taken. Also considered critical are some peripheral species which are at risk throughout their range, and some disjunct populations.

SV – State Sensitive-Vulnerable. Species for which listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring. In some cases the population is sustainable, and protective measures are being implemented; in others, the population may be declining and improved protective measures are needed to maintain sustainable populations over time.

SU – State Sensitive-Undetermined Status. Animals in this category are species whose status is unclear. They may be susceptible to population decline of sufficient magnitude that they could qualify for endangered, threatened, critical or vulnerable status, but scientific study would be required before a judgment can be made.

SP – State Sensitive-Peripheral

P.5.3 Category 3 Habitat Description

Perennial Stream (Willow Creek)

Category 3 perennial/intermittent stream habitat is generally defined as essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population. The Willow watershed is reported habitat for the ODFW listed vulnerable inland Columbia redband trout. Willow Creek is a perennial stream located within this watershed. The proposed transmission line ROW would cross Willow Creek. No poles or equipment would be placed within the creek, and equipment vehicles would cross using an existing bridge. Impacts to Willow Creek and the Columbia redband trout would be avoided.

Wetlands

Three classes of wetlands were observed in the project analysis area: palustrine forested, palustrine scrub-shrub, and palustrine emergent. Four wetlands were located within the Energy Facility Survey Area; 2.2 acres of palustrine forested, 0.5 acres of palustrine scrub-shrub, and 0.2 acre of palustrine emergent. Impacts to wetlands within the Energy Facility Survey Area would be avoided. No sensitive plant or wildlife species were observed in these habitats during field surveys.

The analysis area for the proposed transmission line includes two palustrine emergent wetlands comprising approximately 1.1 acres. Clearing of the ROW and construction of the transmission line is not expected to affect these wetlands. Clearing and construction activities would be conducted along existing roads where possible, new roads would avoid wetlands, and towers for the transmission line would be placed outside the wetlands. Wetlands are addressed in detail in Exhibit J.

P.5.4 Category 4 Habitat Description

Category 4 habitats include a variety of intermittent streams, and developed/disturbed mixed with shrub-steppe and agricultural cropland. Though many of these habitats display evidence of previous disturbance, most are important habitat for a variety of fish and wildlife species. Species observed in these habitats during field surveys include Red-tailed Hawk, coyote, Burrowing Owl, nesting Long-billed Curlew, Golden Eagle nest, Mule deer, western rattlesnake, western fence lizard, and white-tailed jackrabbit.

Shrub-steppe

Category 4 shrub-steppe habitat is composed of existing transmission line and dirt access road with portions of agricultural cropland and weed dominated shrub-steppe, and a paved access road. Areas of this habitat type may be important to some wildlife species, but it is not considered limited. Approximately 884 acres of this habitat type is located in the Transmission Line Survey Area. The Energy Facility Survey Area includes approximately 420 acres of

Category 4 disturbed habitat. Installation of lattice transmission towers and line stringing would temporarily impact approximately 82 acres and permanently impact less than approximately 0.1 acres (3300 square feet) of this habitat type. New access roads would permanently impact approximately 1 acre and temporary impact 32 acres of this habitat type. For the Energy Facility Site, impacts from building structures, evaporation ponds, the Grassland Switchyard, and construction areas total approximately 40 acres of temporary impact, and approximately 90 acres of permanent impact would occur to Category 4 habitat. Mitigation for impacts to Category 4 would be conducted according to ODFW standards; details are included in Appendix P-3.

Intermittent Streams

Category 4 intermittent/ephemeral streams include the Sixmile Canyon and Eightmile Canyon Drainages. Eightmile Canyon Creek is a highly disturbed (due to livestock grazing) ephemeral drainage located along the transmission line ROW and west of Willow Creek. An existing crossing would be used for Eightmile Canyon Creek, and the Rhea Road bridge would be used to cross Willow Creek. Sixmile Canyon drainage is located within the Energy Facility Survey Area. This feature appears to have been artificially altered and is crossed by an existing access road. Equipment would not be installed in these areas, and vehicles would cross during the dry season; therefore, impacts would be avoided. No sensitive plant or wildlife species were observed in these habitats.

P.5.5 Category 5 Habitat Description

No Category 5 habitats were identified within the project analysis area.

P.5.6 Category 6 Habitat Description

There are two types of Category 6 habitat in the project analysis area: agricultural cropland and agriculture/weedy shrub ROW. No sensitive species are known or expected to occur in the Category 6 agriculture cropland. Observations of two raptor species and a raptor nest that was occupied by a Corvid were identified in the Category 6 agriculture/weedy shrub ROW habitat.

Agricultural Cropland and Agriculture/Weedy Shrub ROW

Category 6 agriculture cropland and agriculture/weedy shrub ROW habitat is composed of existing transmission line and dirt access roads, with portions of agricultural cropland and weed dominated shrub-steppe. Areas of this habitat type may be important to some wildlife species, but this habitat is not considered limited. Approximately 444 acres of agriculture cropland habitat is located in the Energy Facility Survey Area. The Transmission Line Survey Area encompasses approximately 429 acres of agricultural/weedy shrub ROW. Construction and operation of the Carty Generating Station are not expected to affect this habitat type, although installation of lattice transmission towers, line stringing, and new access roads would temporarily

impact approximately 52.2 acres and permanently impact less than 0.1 acres of this habitat type. No sensitive species were observed in this habitat type.

P.6 MAP OF HABITAT LOCATIONS

OAR-345-021-0010(1)(p)(C) *A map showing the locations of habitat identified in OAR 345-021-0010(1)(p)(B).*

Response: Figures P-2 and P-3 display the habitat types and categories in the Energy Facility Survey Area and Transmission Line Survey Area, respectively. Table P-4 lists dominant vegetation observed in the Project Analysis Area.

Table P-4 Dominant Vegetation Observed in the Project Analysis Area During 2009 Field Surveys

Common Name	Scientific Name	Energy Facility Survey Area	Transmission Line Survey Area
Alkali swainsonpea	*Sphaerophysa salsula*	X	X
Amaranth	*Amaranth sp.*	X	X
Annual rabbitsfoot grass	*Polypogon monspeliensis*	X	X
Big sagebrush	*Artemisia tridentata*	X	X
Bluebunch wheatgrass	*Pseudoroegneria spicata*	X	X
Canada goldenrod	*Solidago canadensis*	X	X
Cheat grass	*Bromus tectorum*	X	X
Common cattail	*Typha latifolia*	X	X
Common reed	*Phragmites australis*	X	
Desert parsley	*Lomatium sp.*	X	
Douglas brodiaea	*Brodiaea douglasii*	X	X
Fiddle neck	*Amsinckia retrorsa*	X	
Gray rabbitbrush	*Chrysothamnus nauseosus*	X	X
Green rabbitbrush	*Chrysothamnus viscidiflorus*	X	X
Hardstem bulrush	*Scirpus acutus*	X	
Hood's phlox	*Phlox hoodii*	X	X
Idaho fescue	*Festuca Idahoensis*	X	X
Lamb's quarters	*Chenopodium album*	X	X
Low pussytoes	*Antennaria dimorpha*	X	X
Pacific willow	*Salix lasiandra*	X	
Reed-canary grass	*Phalaris arundinacea*	X	X
Rough cocklebur	*Xanthium strumarium L.*	X	X
Russian olive	*Elaeagnus angustifolia*	X	
Russian thistle	*Salsola tragus L.*		X
Storks bill/Filaree	*Erodium cicutarium*	X	X
Strict buckwheat	*Eriogonum strictum*	X	X
Sweetmarsh groundsel	*Senecio foetidus*	X	X
Three-square bulrush	*Scirpus americanus*	X	
Wavy-leaved microseris	*Microseris troximoides*	X	X
Yarrow	*Achillea millefolium*	X	
Yellow star thistle	*Centaurea solstitialis*		X

P.7 IDENTIFICATION OF POTENTIAL STATE SENSITIVE SPECIES PRESENT IN THE ANALYSIS AREA AND DISCUSSION OF SITE-SPECIFIC ISSUES

OAR-345-021-0010(1)(p)(D) *Based on consultation with ODFW and appropriate field study and literature review, identification of all State Sensitive Species that might be present in the analysis area and a discussion of any site-specific issues of concern to ODFW.*

Response: Based on consultations with ODFW, USFWS, and ORNHIC, a Draft Biological Survey Work Plan was prepared and submitted to ODFW in April 2009 to address the potential for threatened, endangered, or sensitive species to occur within the project analysis area. Nineteen threatened, endangered, or sensitive species were identified. Of these 19, 13 are listed as state sensitive or federal species of concern (Table P-3). The six federal and state threatened or endangered species are addressed in Exhibit Q.

P.8 DESCRIPTION OF BASELINE SURVEYS OF STATE SENSITIVE SPECIES

OAR-345-021-0010(1)(p)(E) *A baseline survey of the use of habitat in the analysis area by species identified in OAR-345-021-0010(1)(p)(D) performed according to a protocol approved by the Department and ODFW.*

Response: At the request of ODFW, sensitive species surveys focused on the Washington ground squirrel, which is currently considered a candidate species for listing under the ESA by the USFWS and is a state listed endangered species under the Oregon Endangered Species Act of 1987. Ground surveys for avian species, raptor nests, and other sensitive wildlife species occurring within the analysis area were conducted concurrently with Washington ground squirrel surveys in May and June 2009 and May 2010. Raptor and avian surveys are described in P.4.1 – Survey Methods. Washington ground squirrel surveys are described in Exhibit Q.

Sage-grouse have been extirpated from the area, and there are no active leks within the project analysis area (Schultz 2009a); therefore, site-specific surveys for this species were not conducted. No sage-grouse were observed during 2009 or 2010 surveys.

Raptor Nest Habitat

Two raptor nests were documented on the western side of Carty Reservoir within one-half mile south of the proposed Energy Facility Site. The nests included an active Red-tailed Hawk nest on a transmission tower and an active Great Horned Owl stick nest in a tree (Figure P-2). Four nests were observed in the vicinity of the transmission line ROW. The nests included a Burrowing Owl colony active in 2009, two stick nests in transmission towers that were occupied by Common Raven in 2010, and an inactive stick nest on a rocky ledge. Additionally, an artificial Osprey nesting platform is present on the central western shore of Carty Reservoir. It was not actively being used for nesting during 2009 or 2010. Burrowing Owls are designated as a state sensitive species by ODFW. The Burrowing Owl colony is located approximately one-

quarter mile north of the proposed transmission line (Figure P-3). No evidence of occupation was observed during 2010 surveys, despite several visits. One of the Common Raven nests was located in a transmission tower at the west end of the project area (Figure P-3). This nest has been historically occupied by Golden Eagles (Cherry 2009). Raptor species documented in the project analysis area included the American Kestrel, Golden Eagle, Northern Harrier, Prairie Falcon, Red-tailed Hawk, Osprey, Great Horned Owl, and Swainson's Hawk, a sensitive species, but no evidence of breeding was observed for any of these species, other than the active Great Horned Owl and Red-tailed Hawk nests described above.

The Ferruginous Hawk, a sensitive species, was identified by the ORNHIC as occurring within 5 miles of the proposed transmission line, but was not observed in the analysis area during field surveys.

PGE has performed raptor surveys annually for the past 13 years (1997–2009) in and near the Project area (PGE 2010). These surveys were conducted primarily in the vicinity of the Carty Reservoir and the Boardman Plant. Nineteen species of raptors have been documented, including four sensitive species (Swainson's Hawk, Ferruginous Hawk, Burrowing Owl, and Bald Eagle). PGE has observed several raptor species nesting in or near Carty Reservoir and the Boardman Plant, including Swainson's Hawk, Osprey, Burrowing Owl, Red-tailed Hawk, and Great Horned Owl.

Sensitive Species

Sensitive species observed during 2009 and 2010 field surveys within the transmission line survey area included the Swainson's Hawk, Golden Eagle, Long-billed Curlew, and Burrowing Owl. Several occurrences of Long-Billed Curlews were documented within the analysis area during field surveys concentrated in two specific areas. A breeding pair with at least one fledgling was observed in the area north of the Boardman Plant along the northern edge of the 2009 project survey area in habitat designated Category 1 for the Washington ground squirrel (Figure P-2). The other area was located along the transmission line corridor approximately one mile west of Willow Creek, where observations included a nest and a few individuals (Figure P-3). When discovered on May 6, 2009, the nest contained three eggs. On a follow-up visit on June 23, the adults were not observed and the nest contained only egg shell fragments and two dead chicks, which were early in their post-hatching development. Long-billed Curlews were also identified by the ORNHIC as occurring in the vicinity of the project area; however, all observations were greater than one-half mile from the proposed Carty Generating Station.

The Grasshopper Sparrow was identified by the ORNHIC as occurring greater than two miles east of the proposed Carty Generating Station, and no Grasshopper Sparrows were identified during field surveys.

PGE has identified seven sensitive species in its annual breeding bird and raptor surveys over the past 13 years (1997–2009) in and around the Project area (PGE 2010). These surveys were conducted primarily in the vicinity of the Carty Reservoir and the Boardman Plant. Sensitive

species documented by PGE to occur in the area include Loggerhead Shrike, Long-billed Curlew, Grasshopper Sparrow, Burrowing Owl, Bald Eagle, Ferruginous Hawk, and Swainson's Hawk. Loggerhead Shrike, Long-billed Curlew, Burrowing Owl, and Swainson's Hawk are documented breeders in the project area.

P.9 DESCRIPTION OF POTENTIAL ADVERSE IMPACTS

OAR-345-021-0010(1)(p)(F) *A description of the nature, extent and duration of potential adverse impacts on the habitat identified in OAR-345-021-0010(1)(p)(B) and species identified in OAR-345-021-0010(1)(p)(D) that could result from construction, operation, and retirement of the proposed facility.*

Response: This section contains a description of potential adverse impacts of the proposed facility to habitats and wildlife. The nature, extent, and duration of potential adverse impacts that could result from construction, operation, and retirement of the facility were identified, based on the existing values of each site that would be directly or indirectly impacted by the proposed energy facility and transmission line. Impacts identified include temporary and/or long-term habitat loss or alteration and disturbance from equipment and people during construction.

Raptor Nests

Construction of the Carty Generating Station, which is expected to occur over a three- to five-year period, could cause disturbance to the Red-tailed Hawks over three to five nesting seasons. Operation of the Carty Generating Station would likely continue to be a disturbance factor; however, Red-tailed Hawks are generally tolerant of land development and easily habituate to human activity (Poole et al. 2002). This is evidenced further by the hawks' persistence regardless of the active nest's close proximity to the Boardman Plant. The Great Horned Owl nest could also be disturbed by construction and operation of the Carty Generating Station, although a large stand of trees and a portion of the Carty reservoir provide a buffer that could act to decrease the potential effect of construction and operation of the facility on the nest.

Construction of the transmission line, which is expected to occur over a two-year period, would result in potential disturbance to the two Corvid nests located in the existing transmission towers over two nesting seasons. One of these nests is a historic Golden Eagle Nest, and there is potential for disturbance from construction if it were occupied by a breeding pair during the construction period. Operation of the transmission line would be unlikely to disturb the nests, as the new transmission line would be constructed along an existing corridor, and any habitat disturbance from construction would be temporary.

Construction and operation of the Carty Generating Station and proposed transmission line would likely only have minor impacts to individuals of these species, as they do not appear to

currently breed in the analysis area, or they are currently exposed to disturbance from the existing Boardman Plant.

Sensitive Species

Construction of the transmission line, which is expected to occur over a two-year period, could potentially disturb the Burrowing Owl nesting colony over two nesting seasons; however, the Burrowing Owls' tolerance of human activity, combined with the distance of the colony from the project area would likely only cause minimal disturbance. Additionally, the colony did not appear to be occupied during 2010 surveys. Operation of the transmission line would be unlikely to disturb the nesting colony, as the new transmission line would be constructed along an existing corridor, and any habitat disturbance from construction would be temporary. The inactive raptor nest approximately one-quarter-mile southwest of the proposed transmission line would not be disturbed from construction or operation of the transmission line if it remains inactive. However, if the species that constructed the nest returns to use the same nest or builds a new nest in the immediate vicinity, construction of the transmission line could cause a disturbance. Operation of the transmission line would be unlikely to cause a disturbance ,as the new transmission line would be constructed along an existing corridor, and any habitat disturbance from construction would be temporary.

Long-billed Curlews are somewhat tolerant of human disturbance resulting in minor habitat degradation; however, excessive disturbance can result in nest abandonment and disruption of parental behaviors (Dugger and Dugger 2002). Construction of the Carty Generating Station and transmission line would likely disturb Long-billed Curlews nesting in close proximity and could result in nest abandonment. Future operation of the Generating Station would likely continue to be a disturbance factor for breeding Long-billed Curlews. Operation of the transmission line would likely not cause continued disturbance to nesting curlews

Construction of the Carty Generating Station and transmission line could disturb Swainson's Hawks in the vicinity, although it would not likely result in significant impacts because the raptors could easily avoid the construction area, and any disturbance would be temporary. Operation of the Carty Generating Station and transmission line would not likely disturb Swainson's Hawks.

The white-tailed jackrabbit could potentially be disturbed by construction of the Carty Generating Station and transmission line, although construction impacts would be temporary. Operation is not likely to adversely affect this species because the project would be constructed adjacent to an existing energy generation facility and transmission line which the white-tailed jackrabbit currently persists near.

One Loggerhead Shrike was observed in the transmission line survey area during 2010 surveys. Construction could potentially disturb this species, although it is unlikely because disturbance would be temporary. It is unlikely that operation of the energy generating facility or the

transmission line would adversely affect this species because they are being constructed adjacent to an existing energy generation facility and transmission line.

Construction and operation of the proposed Carty Generating Station and transmission line would likely have no impact on the Grasshopper Sparrow. The Greater Sage-grouse and Sage Sparrow were not identified as occurring in the analysis area through review of the ORNHIC database and were not documented during field surveys; therefore, construction and operation of the proposed Carty Generating Station and transmission line would likely have no impact on these species.

Avian Species

A total of 36 avian species were documented during 2009 and 2010 field surveys of the Energy Facility (20 species) and transmission line (26 species) survey areas (Table P-5). Construction of the Generating Station would result in a permanent loss of habitat for most of the species identified in the project area (see section P-7 for discussions of raptors and sensitive species). Species such as the Barn Swallow (*Hirundo rustica*), that readily nest in human structures (Brown and Brown 1999) may benefit from the construction of structures for the Carty Generating Station. Operation of the Carty Generating Station would also likely cause continued disturbance to avian species in the immediate vicinity of the facility. Avian habitat impacts from construction of the transmission line would likely be short-term, with disturbed areas expected to resemble adjacent undisturbed areas in three to five growing seasons. With the exception of the sensitive species described above, the avian species identified within the analysis area are relatively common and would likely utilize surrounding habitats during the construction phase and repopulate the transmission line corridor as the area revegetates. Operation of the transmission line would likely cause no disturbance to avian species, as the new transmission lines would be adjacent to an existing transmission line.

Table P-5 Wildlife Species Observed in the Project Analysis Area During 2009 and 2010 Field Surveys

Common Name	Scientific Name	Energy Facility Survey Area	Transmission Line Survey Area
Birds			
American Goldfinch	*Carduelis tristis*	x	
American Kestrel	*Falco sparverius*		x
American Robin	*Turdus migratorius*		x
Barn Swallow	*Hirundo rustica*	x	
Black-billed Magpie	*Pica hudsonia*		x
Brewer's Blackbird	*Euphagus cyanocephalus*		x
Burrowing Owl	*Athene cuniculara*		x
California Quail	*Callipepla californica*		x
Canada Goose	*Branta canadensis*	x	
Caspian Tern	*Sterna caspia*	x	
Cliff Swallow	*Petrochelidon pyrrhonota*		x
Common Nighthawk	*Chordeiles minor*		x
Common Raven	*Corvus corax*	x	x
Eastern Kingbird	*Tyrannus tyrannus*	x	
Golden Eagle	*Aquila chrysaetos*		x

Table P-5 Wildlife Species Observed in the Project Analysis Area During 2009 and 2010 Field Surveys

Common Name	Scientific Name	Energy Facility Survey Area	Transmission Line Survey Area
Great Horned Owl	*Bubo virginianus*	x	
Horned Lark	*Eremophila alpestris*	x	x
Killdeer	*Charadrius vociferus*		x
Loggerhead Shrike	*Lanius ludovicianus*		x
Long-billed Curlew	*Numenius americanus*	x	x
Mallard	*Anas platyrhynchos*	x	
Mourning Dove	*Zenaida macroura*		x
Northern Flicker	*Colaptes auratus*		x
Northern Harrier	*Circus cyaneus*	x	x
Osprey	*Pandion haliaetus*	x	x
Prairie Falcon	*Falco mexicanus*		x
Red-tailed Hawk	*Buteo jamaicensis*	x	x
Red-winged Blackbird	*Agelaius phoeniceus*	x	x
Ring-necked Pheasant	*Phasianus colchicus*		x
Savannah Sparrow	*Passerculus sanwichensis*		x
Say's Phoebe	*Sayornis saya*	x	
Swainson's Hawk	*Buteo swainsoni*	x	x
Turkey Vulture	*Cathartes aura*	x	
Western Kingbird	*Tyrannus verticalis*	x	x
Western Meadowlark	*Sturnella neglecta*	x	x
White-crowned Sparrow	*Zonotrichia leucophrys*	x	
Mammals			
Coyote	*Canis latrans*		x
Mule deer	*Odocoileus hemionus*		x
Pronghorn	*Antilocarpa americana*		x
White-tailed jackrabbit	*Lepus californicus*	x	x
Reptiles			
Gopher snake	*Pituophis catenifer*		x
Western rattlesnake	*Crotalus viridis*		x
Western yellow-bellied racer	*Coluber constrictor mormon*	x	x

Transmission Lines and Avian Electrocution

Concerns with power lines and raptors are typically associated with electrocution. Raptors are electrocuted when they contact two energized conductors or an energized conductor and grounded hardware (APLIC 1996). Among avian species, raptors are at greatest risk of electrocution because of their large wingspans and tendency to perch on power poles. Transmission lines generally carry greater than 69 kilovolts (kV) and are designed to transmit large blocks of energy long distances. Electrocution from transmission lines is very rare because the distances between conductors, and between conductors and grounded hardware, are greater than the wingspan of any raptor (APLIC 1996). The 500-kV transmission line proposed in this application does not represent an electrocution risk for raptors. A wildlife and habitat mitigation and restoration plan that includes avian protection measures has been developed in consultation with ODFW and USFWS and includes an Avian Protection Plan. This document is included in Appendix P-3.

P.10 MITIGATION MEASURES

OAR-345-021-0010(1)(p)(G) *A description of any measures proposed by the applicant to avoid, reduce, or mitigate the potential adverse impacts described in OAR-345-021-0010(1)(p)(F) in accordance with the ODFW mitigation goals described in OAR 635-415-0025 and a discussion of how the proposed measures would achieve those goals.*

Response: Avoidance and minimization of significant potential impacts that were employed in the project design include the following: (1) siting the proposed power plant at a site intended for energy generation projects and adjacent to an existing power plant; (2) aligning the proposed transmission line so that it uses an existing ROW; (3) prohibiting equipment from entering perennial and intermittent streams; (4) siting the construction laydown area on an already developed/disturbed site; (5) utilizing existing water intake structures to provide process water for the power plant, rather than constructing a separate new facility. For the impacts that could not be avoided or minimized, mitigation was developed to provide compensation, using reliable methods, and in compliance with the ODFW habitat mitigation goals and standards (OAR 635-415-0025). A wildlife and habitat mitigation and monitoring plan is included in Appendix P-3.

Raptor Nests

If determined necessary in coordination with ODFW, the existing Osprey nest platform located on the western side of the reservoir could be relocated prior to construction. Moving the platform to the southern end of the reservoir would increase the distance from the Carty Generating Station from less than one-half mile to approximately 1 mile. The nest platform would be moved outside of the nesting season (between October 1 and March 30).

Impacts at other raptor nests would be avoided by: (1) conducting pre-construction surveys to determine location of active raptor nests within the project analysis area, and (2) avoiding construction within a species appropriate buffer around raptor nests during the nesting season. PGE will work with ODFW to establish species appropriate buffer distances around raptor nests. If avoidance is not practical, PGE will complete a mitigation project approved by ODFW that meets the requirements of the Habitat Mitigation Policy for "no net loss." Details regarding the buffer distances are available in Appendix P-3.

Sensitive Species

Aside from raptors, the Long-billed Curlew, Loggerhead Shrike, and white-tailed jackrabbit were the only sensitive species identified as occurring in the project analysis area. To avoid impacts, pre-construction surveys for nesting Long-Billed curlews and Loggerhead Shrike will be conducted in appropriate habitat. If nesting of either species is documented, ODFW will be consulted to determine what action, if any, is necessary to avoid adverse impacts. Impacts to Long-billed Curlew habitat, short-grass or mixed-prairie with flat to rolling topography (Dugger and Dugger 2002), through construction of the Carty Generating Station will be avoided through siting of the facility. Unavoidable impacts to Long-billed Curlew habitat at the Carty Generating

Station project area would be mitigated through on-site habitat restoration or creation. Disturbance to long-billed curlew habitat during construction of the transmission line would be avoided, if possible. If habitat disturbance is unavoidable during construction, the area will be seeded and returned to its natural state after the construction is complete. Perching for raptor predatory practices would be discouraged either by custom design of the uppermost horizontal members of the tower or by addition of an anti-perching device, such as the Mini-Zena Perch Preventer or similar equipment, attached to uppermost horizontal members. Perching hindrance devices would also be attached to transmission line towers where they are located within 1000 feet of occupied Washington ground squirrel habitat (Category 1 habitat), although currently no towers are planned within this range.

Avian Species

Impacts to high quality avian habitat would be avoided through siting of the Carty Generating Station. Unavoidable impacts to high quality avian habitat at the Carty Generating Station project area would be mitigated through on-site habitat restoration or creation. Disturbance to high quality avian habitat during construction of the transmission line would be avoided, if possible. If habitat disturbance is unavoidable during construction, the area will be seeded and returned to its natural state after the construction is complete. To minimize impacts on avian species resulting from operation of the transmission line, ROW maintenance (e.g., vegetation removal/herbicide application) would be avoided during the breeding season (late spring/early summer).

P.11 MONITORING PROGRAM

OAR-345-021-0010(1)(p)(H) *A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in OAR-345-021-0010(1)(p)(G).*

Response: Monitoring is described above in section P.8, and would consist of the following:

- Monitoring to identify potential new raptor nest sites prior to construction;
- Monitoring to identify the location of Washington ground squirrel burrows prior to construction;
- Monitoring to quantify the success of revegetation measures; details of the revegetation measures are available in the Revegetation and Noxious Weed Control Plan, which is included in Appendix P-4 ;
- Monitoring to identify the potential establishment or spread of exotic and invasive plant species; and

- Further details regarding the monitoring program are available in the Carty Wildlife and Habitat Mitigation and Monitoring Plan, which is included in Appendix P-3.

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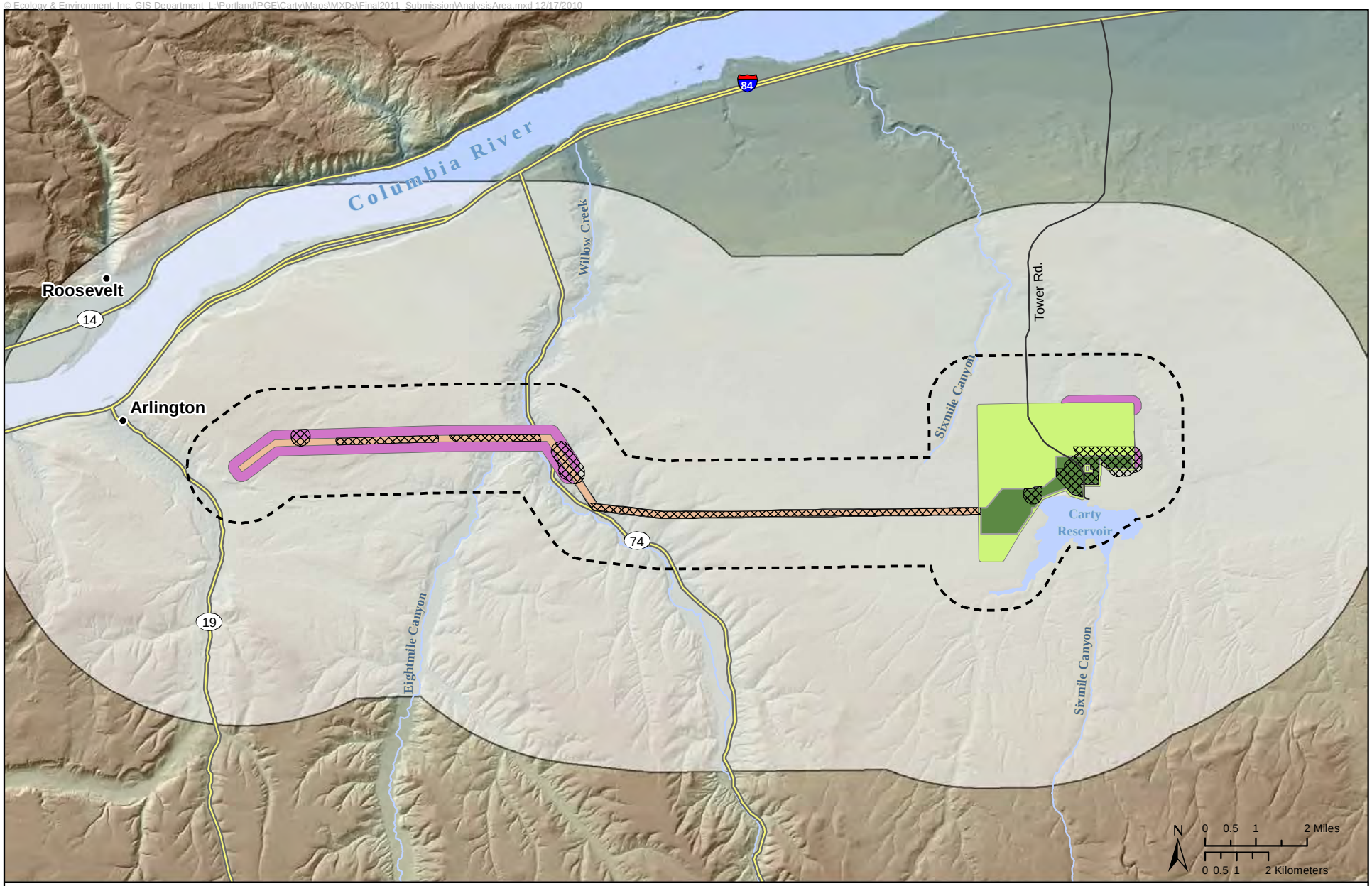

Site Boundary
T&E Data Search (5 Mile Radius)
2010 Energy Facility Survey Area
2010 Ground Squirrel Survey Area
2009 Energy Facility Survey Area
2009 Ground Squirrel Extended Survey Area
Raptor Survey Area (1Mile Radius)
Transmission Line Survey Area

Figure P-1
Project Analysis Area
PGE Carty Generating Station
Application for Site Certificate

Final 2010

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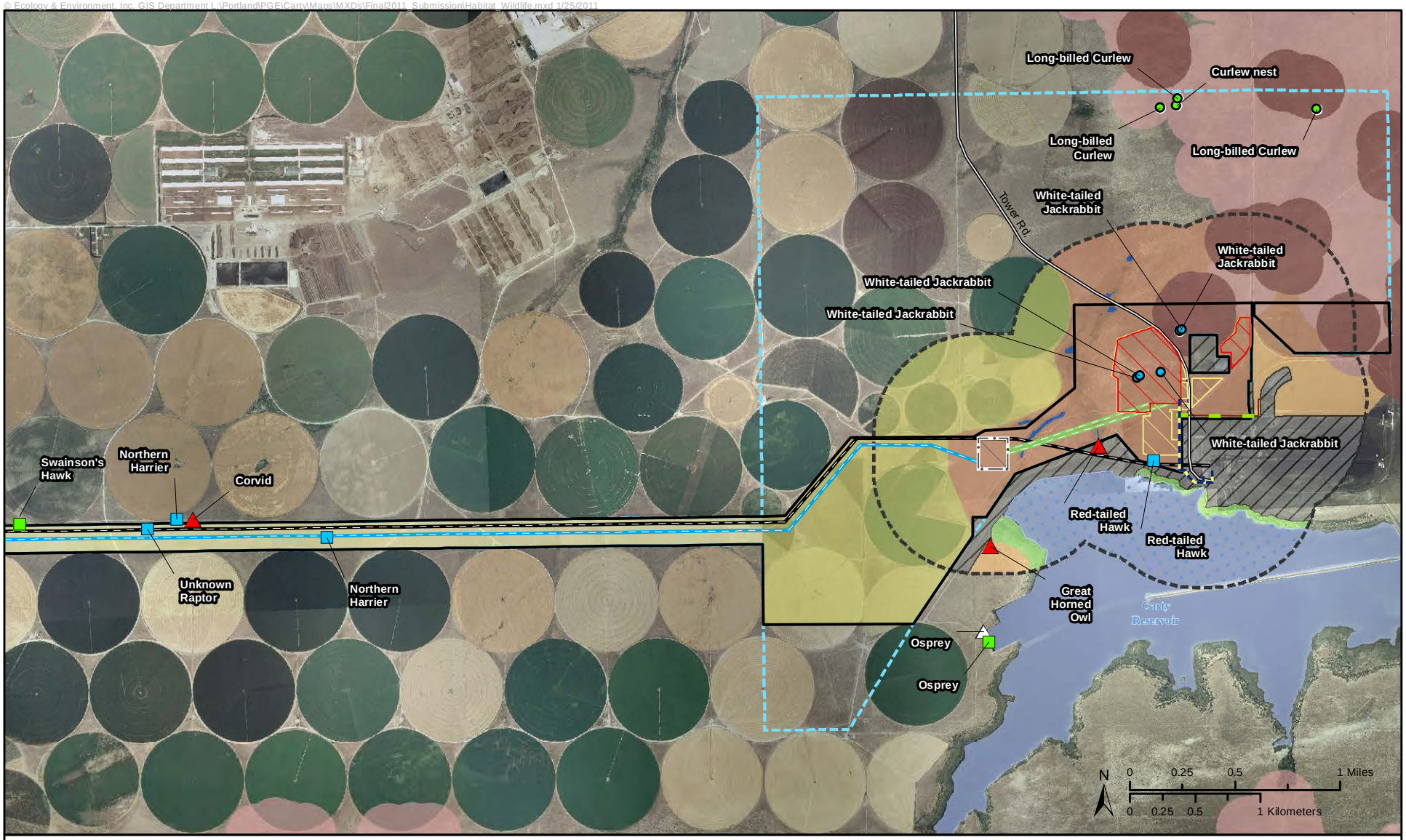

2010 Field Observation
- Sensitive Species Observation
- Raptor Observation

2009 Field Observation
- Sensitive Species Observation
- Raptor Observation

Raptor Nest
- Active Nest
- Inactive Nest
- Unknown Nest

- Site Boundary
- Previous Site Boundary
- Proposed Energy Facility Site
- Temporary Construction Areas
- Proposed Grassland Switchyard
- Utility Interconnect Corridor
- Sewer Line
- 1/2mile Buffer of Energy Facility Site, Utility Interconnect, and Sewer Line
- Water within survey area

Transmission Lines
- Existing Boardman to Slatt Substation 500kV Centerline
- Proposed Line to Slatt Substation
- Proposed Line(s) to Grassland Switchyard

Habitat Category, Habitat Type
- 1, Washington Ground Squirrel 2009-2010 Occupied Range (E&E,PGE, and TNC)
- 2, WGS Reported Range 2000-2008 (TNC and PGE)
- 3, Riparian / Wetlands
- 3, Riparian
- 4, Shrub-Steppe / Grazed-Weedy
- 5, Impacted Shrub-Steppe / Grassland
- 6, Agriculture Cropland
- 6, Developed (Industrial Use)
- 6, Ag/Weedy Shrub ROW

Figure P-2
Habitat and Wildlife Survey Observations
PGE Carty Generating Station
Application for Site Certificate

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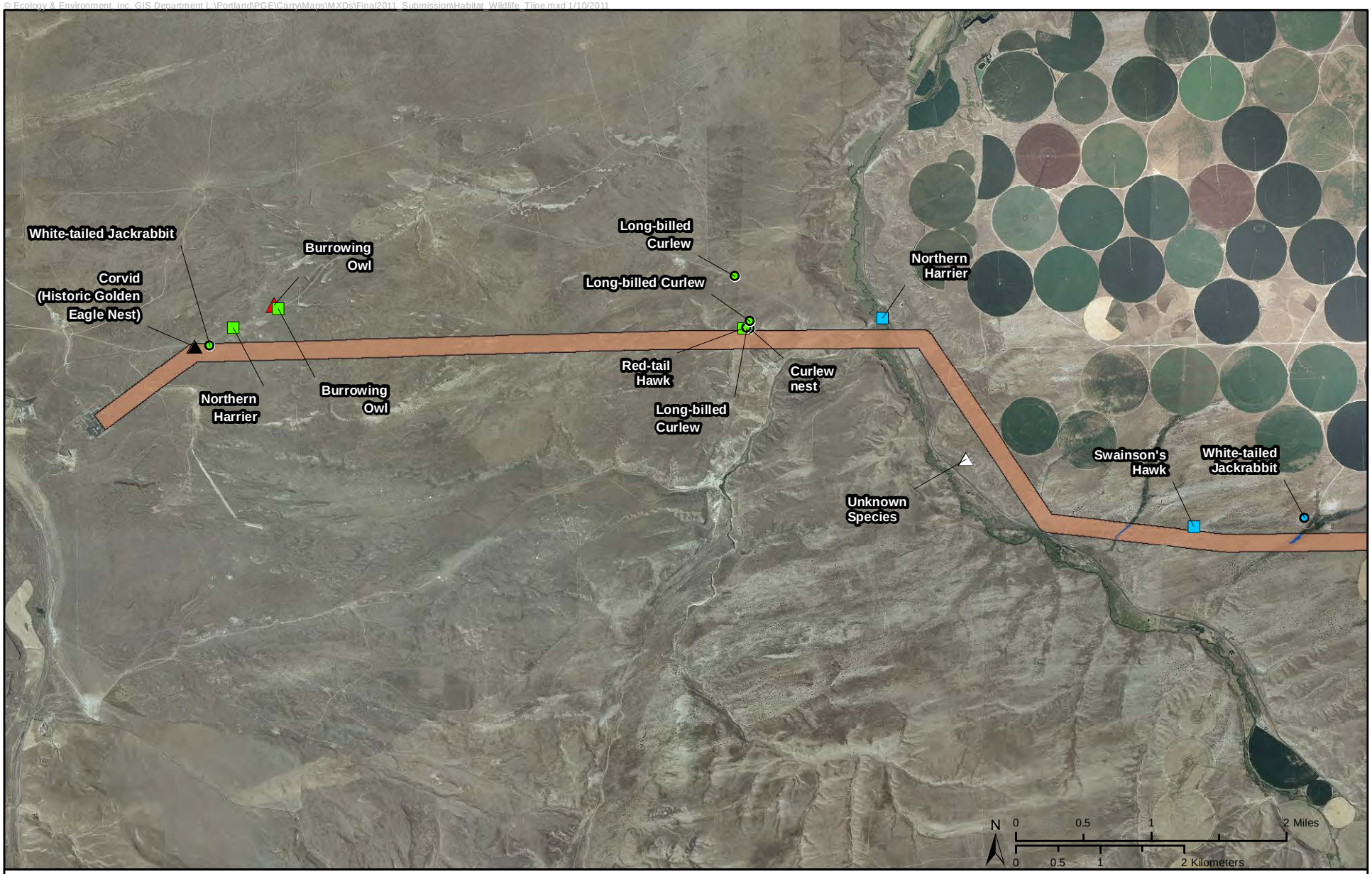

2010 Field Observation
- Sensitive Species Observation
- Raptor Observation

2009 Field Observation
- Sensitive Species Observation
- Raptor Observation

Raptor Nest
- Active Nest
- Inactive Nest
- Unknown Nest

Site Boundary

Habitat Category, Habitat Type
- 3, Riparian / Wetlands
- 4, Shrub-Steppe / Grazed-Weedy
- 6, Ag/Weedy Shrub ROW

Figure P-3
Habitat and Wildlife Survey Observations
PGE Carty Generating Station
Application for Site Certificate

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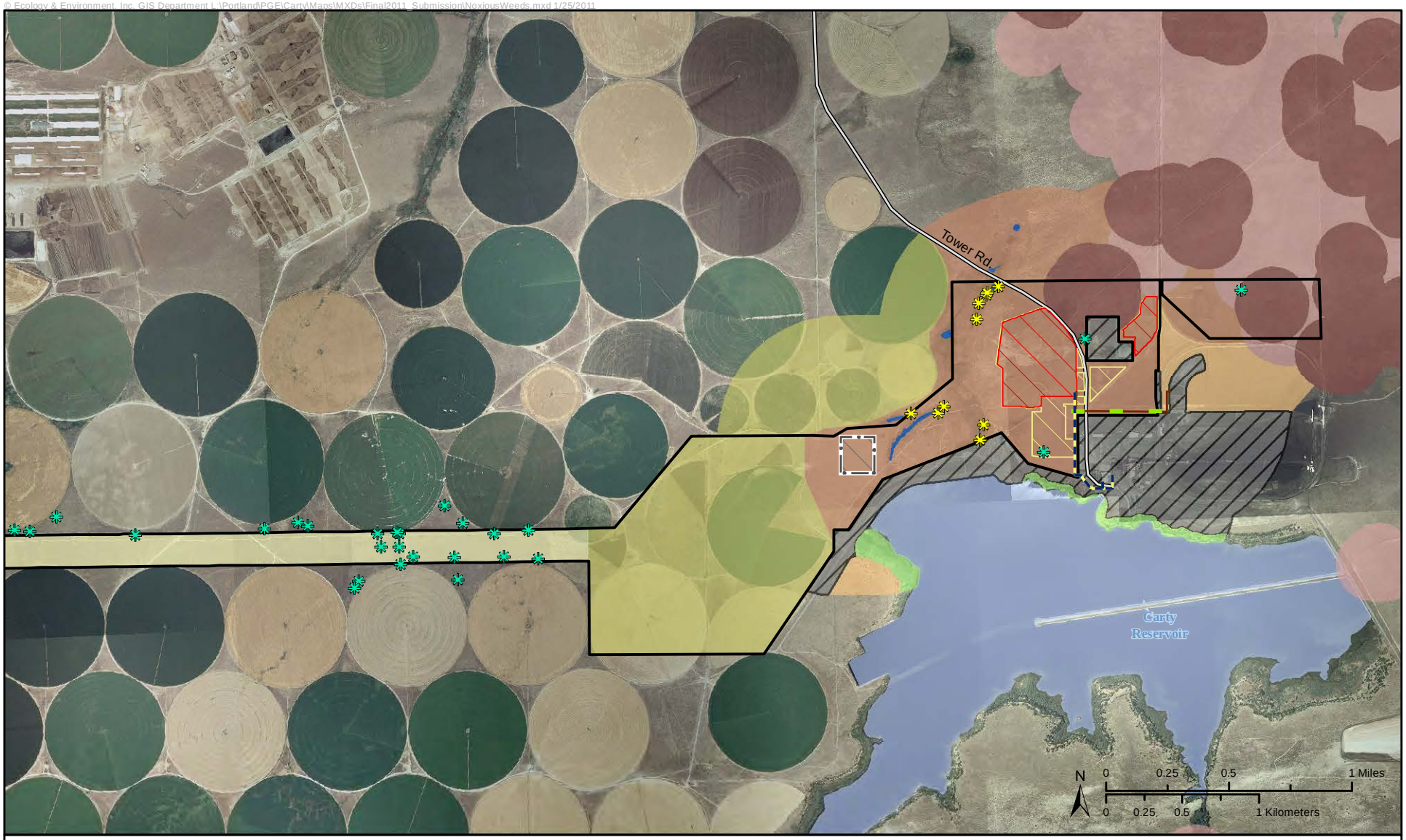

Site Boundary
Proposed Energy Facility Area
Temporary Construction Area
Proposed Grassland Switchyard
Utility Interconnect Corridor
Sewer Line

Noxious Weed Observation
2009
2010

Habitat Category, Habitat Type
1, Washington Ground Squirrel 2009-2010 Occupied Range (E&E, PGE, and TNC)
2, WGS Reported Range 2000-2008 (TNC and PGE)
3, Riparian / Wetlands
3, Riparian
4, Shrub-Steppe / Grazed-Weedy
5, Impacted Shrub-Steppe / Grassland
6, Agriculture Cropland
6, Developed (Industrial Use)
6, Ag/Weedy Shrub ROW

Figure P-4
Noxious Weed
Survey Observations
PGE Carty Generating Station
Application for Site Certificate

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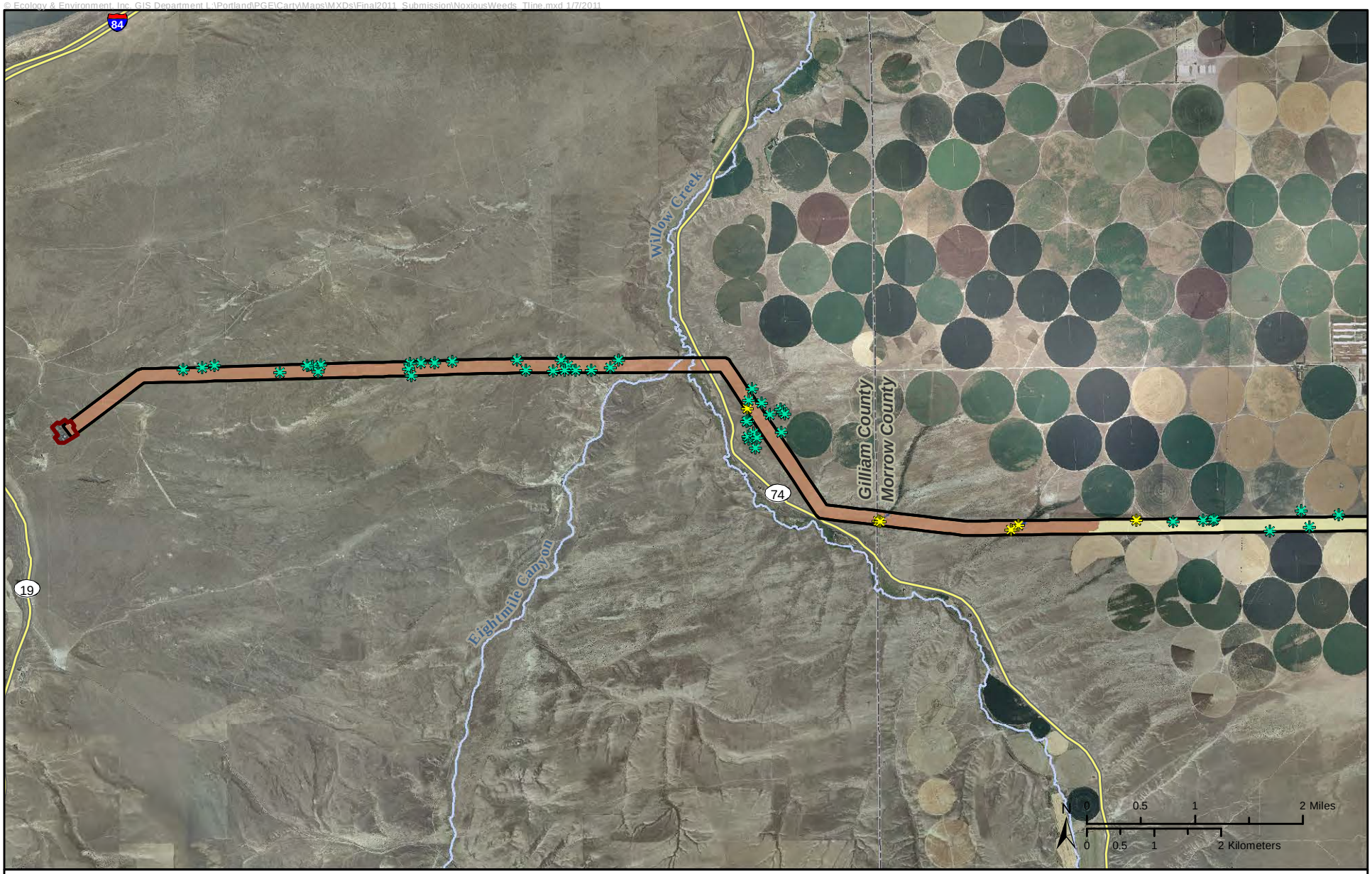

Site Boundary
Slatt Substation

Noxious Weed Observation
2009
2010

Habitat Category, Habitat Type
3, Riparian / Wetlands
4, Shrub-Steppe / Grazed-Weedy
6, Ag/Weedy Shrub ROW

Figure P-5
Noxious Weed
Survey Observations
PGE Carty Generating Station
Application for Site Certificate

Final 2011

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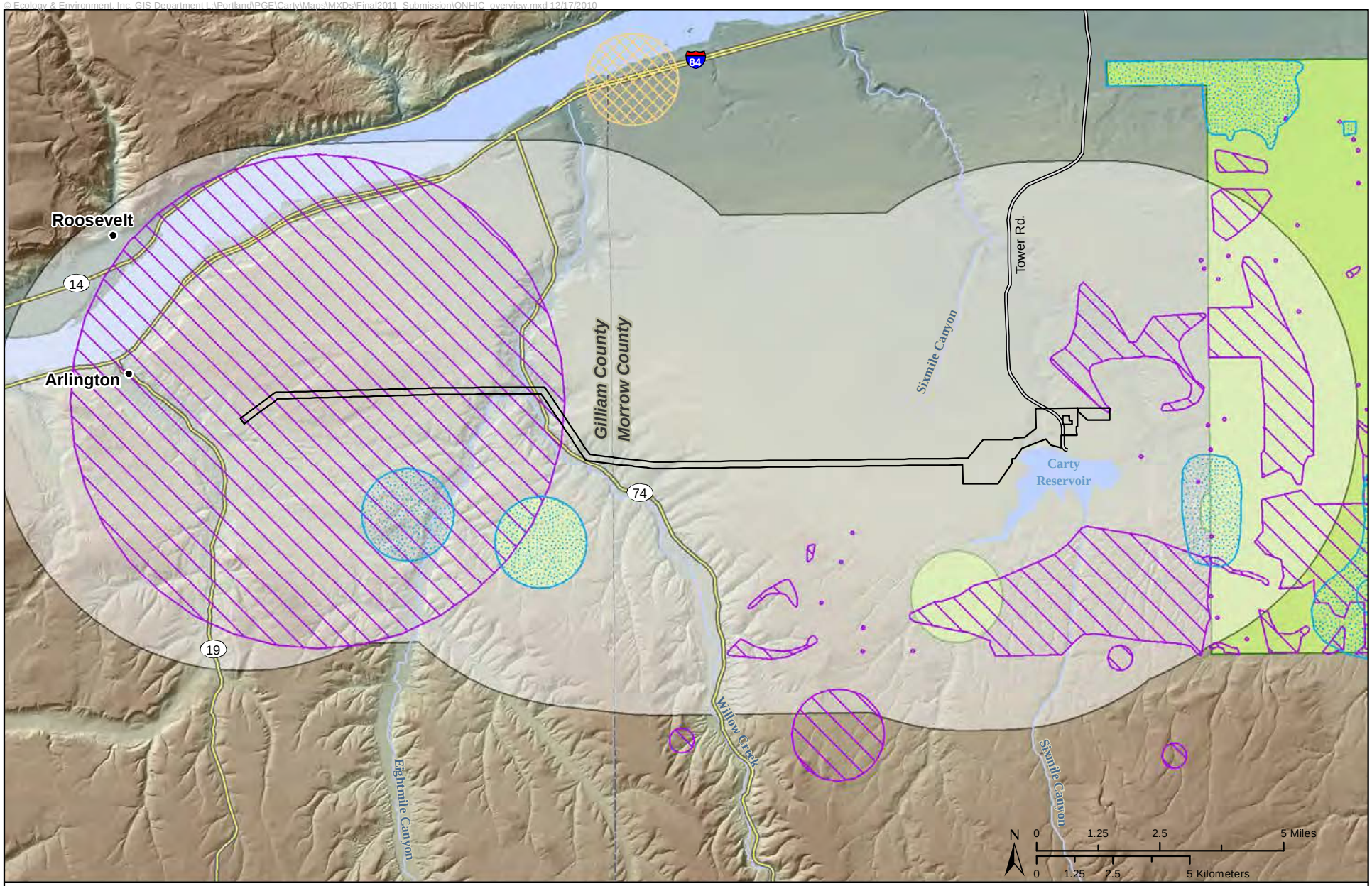

Site Boundary

T&E Data Search (5 Mile Radius)

Oregon Natural Heritage Information

Listed Endangered

Candidate for listing with enough information available for listing

Species of Concern

Sensitive-Vulnerable

Figure P-6
Oregon Natural Heritage Information
PGE Carty Generating Station
Application for Site Certificate

Final 2011

APPENDIX P-1

2009 Biological Survey Report for the Carty Generating Station

2009 Biological Field Survey Report for the Carty Generating Station

Submitted to:

PORTLAND GENERAL ELECTRIC

December 2009

Prepared by:

Ecology & Environment, Inc.
333 SW 5th Avenue, Suite 600
Portland, OR 97204

Table of Contents

Section **Page**

1 Introduction 1-1
1.1 Field Surveys - Purpose and Status 1-2
1.2 Habitat and Ecology 1-2

2 Project Overview 2-1

3 Survey Methodology 3-1
3.1 Habitat and Sensitive Plant Species Methodology 3-1
3.2 Avian and Wildlife Species Methodology 3-1
3.2.1 Raptor Nest Methodology 3-1
3.2.2 Threatened and Endangered Species: Washington Ground Squirrel Methodology 3-2
3.3 Wetlands and Streams 3-2

4 Results 4-1
4.1 Energy Facility Site and Surrounding Buffer Land 4-1
4.1.1 Habitat 4-1
4.1.2 Sensitive Plants and Noxious Weeds 4-2
4.1.3 Avian and Wildlife Species 4-3
4.1.4 Threatened and Endangered Species: Washington Ground Squirrels 4-4
4.1.5 Wetlands and Streams 4-6
4.2 Carty Transmission Line Area 4-6
4.2.1 Habitat 4-6
4.2.2 Sensitive Plants and Noxious Weeds 4-7
4.2.3 Avian and Wildlife Species 4-7
4.2.4 Threatened and Endangered Species: Washington Ground Squirrels 4-8
4.2.5 Wetlands and Streams 4-8

5 Conclusions and Recommendations 5-1

6 References 6-1

List of Tables

Table **Page**

Table 4.1 Dominant Vegetation in the Study Area 4-2

Table 4-2 Bird Species Observed in the Study Area 4-4

List of Figures

Figure

NW-1 Noxious Weed Survey Observations

RN-1 Raptor Nest Survey Observations

NW-2 Noxious Weed Survey Observations

RN-2 Raptor Nest Survey Observations

Acronyms and Abbreviations

ASC	Application for Site Certificate
BPA	Bonneville Power Administration
CRP	Conservation Reserve Program
E & E	Ecology & Environment, Inc.
EFSC	Energy Facility Sighting Council
GIS	Geographic Information System
GPS	Global Positioning System
MW	megawatt
NOI	Notice of Intent
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ORNHIC	Oregon Natural Heritage Information Center
PFO	palustrine forested wetland
PGE	Portland General Electric
Project	Carty Generating Station Facility and Transmission Line
ROW	right-of-way
TNC	The Nature Conservancy
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WGS	Washington ground squirrel
Work Plan	Biological Survey Work Plan

1 Introduction

Portland General Electric Company (PGE) is proposing to construct and operate an up to 900 megawatt (MW) combined-cycle natural gas-fired power generating facility, the Carty Generating Station, and an associated new 18-mile transmission line. The Carty Generating Station will be located approximately 13 miles southwest of Boardman, Oregon, adjacent to the existing Boardman Plant and Carty Reservoir in Morrow County, Oregon. The transmission line will originate at the Carty Generating Station and head west, along an existing transmission line corridor, approximately 18 miles to the Bonneville Power Administration's (BPA's) Slatt substation located in Gilliam County, Oregon.

Through out this survey report, the term "Site" includes any proposed location of the energy facility and its related or supporting facilities; "Site Boundary" is the perimeter of the Site. Between the preparation of the Notice of Intent (NOI) and Application for a Site Certificate (ASC) the Site and Site Boundary were reduced in size multiple times; therefore, the Site Boundary surveyed in spring and early summer of 2009 is larger than the final Site Boundary submitted in the ASC. In addition, an intermediate Site Boundary was defined in October 2009 which was smaller than the NOI Site Boundary but larger than the ASC Site Boundary. Unless otherwise noted, within this report the term Site and Site Boundary refer to the larger Site and Site Boundary which was defined at the time of the spring and early summer field surveys. The term "Study Area" includes the Site and the buffers set forth in the Biological Survey Work Plan (Work Plan). The term "Energy Facility Site" refers to approximately 90 acres of the Site near the Carty Reservoir that includes fenced areas that would enclose proposed buildings and structures, and areas containing evaporation ponds and a switchyard.

Biological survey work was conducted in the Study Area during the spring and early summer of 2009 (May 4th through June 26th). Surveys were conducted according to the Work Plan which was developed in coordination with the Oregon Department of Fish and Wildlife (ODFW). Details of the survey protocols are explained in the Work Plan; this plan is currently under development to reflect minor modification to survey procedures for the 2010 survey and will be provided upon completion, expected to be by February 28, 2010. The work was undertaken to comply with the Oregon Energy Facility Siting Council (EFSC) requirements, Oregon Threatened and Endangered Species Act of 1987, ODFW Habitat Mitigation Policy, and the Federal Endangered Species Act of 1973. The purpose of the surveys was to identify wildlife and plant resources including special status species, and wetlands and waters of Oregon and the United States that may be present within the Study Area. Sections 1.1 and 1.2 of this Introduction describe the purpose and status of the surveys including agency coordination for the biological surveys, and provide general site and habitat descriptions. Section two of this report presents an overview of the project. The

remainder of this Survey Report presents the results of biological resources survey effort, as listed below:

- Habitat Mapping and Sensitive or Noxious Plants;
- Avian and Wildlife, including raptor nests;
- Threatened and Endangered Species: Washington ground squirrel; and
- Wetlands and Waters of the United States.

1.1 Field Surveys - Purpose and Status

During the spring of 2009, Ecology & Environment, Inc. (E & E) conducted surveys for sensitive plant species, noxious weeds, raptor nests and Washington ground squirrels within the Study Area. The ODFW was consulted for comment on the survey protocol proposed in the Draft Work Plan. Their input is being incorporated into the Final Work Plan. Surveys were conducted on foot and by vehicle where access was possible; incidental wildlife occurrences were also recorded during the effort.

The following sensitive species surveys were conducted concurrent with the transects for the Washington ground squirrel (*Spermophilus washingtoni*): Greater sage-grouse (*Centrocercus urophasianus*), Grasshopper Sparrow (*Ammodramus savannarum*), Sage Sparrow (*Amphispiza belli*), Long-billed Curlew (*Numenius americanus*), Loggerheaded Shrike (*Lanius ludovicianus*), Burrowing Owl (*Anthene cunicularia*), Northern Sagebrush Lizard (*Sceloporus graciosus*), and White-tailed Jackrabbit (*Lepus townsendii*). Washington ground squirrel surveys were conducted concurrently with recording habitat and dominant plant species. Raptor nest surveys were also conducted during Washington ground squirrel surveys. However, additional raptor nest, avian point count, and Washington ground squirrel surveys will take place separately during the spring of 2010.

1.2 Habitat and Ecology

Dominant plant communities were recorded across the Study Area during surveys for sensitive species and, where encountered, noxious weed infestations were identified. Suitable habitat for targets species was covered by walking transects within the Study Area.

The Washington ground squirrel is a small ground squirrel occurring in grassland and shrubland habitats of the Columbia Plateau, east and south of the Columbia River in Washington and Oregon. The Washington ground squirrel is currently considered a candidate species for listing under the Federal Endangered Species Act by the United States Fish and Wildlife Service (USFWS) and is a state listed endangered species under the Oregon Endangered Species Act of 1987.

Washington ground squirrels may be found in native grassland and shrub-steppe habitats over silty loam soils, particularly Warden and Sagehill soils. Washington ground squirrels can also be found in some areas replanted to grassland under the Conservation Reserve

Program (CRP), if these sites are planted to native grassland species and adjacent or very near to undisturbed native grasslands. Data was collected from the Oregon Natural Heritage Information Center (ORNHIC) on potential occurrence of sensitive species. Where the Site Boundary encountered the occurrence areas, the boundary of the survey was expanded 1000 feet. Data collected on Washington ground squirrels included burrow locations potentially utilized by this species, scat or remains found, auditory calls, and sightings.

Active periods for the Washington ground squirrel include a short period during the early spring to early summer, depending on environmental conditions. The squirrels hibernate or estivate during a majority of the year and emerge in January and early March. Adults return to their burrows by late May to early June, with juveniles returning about a month afterward. After entering estivus they are thought to transition directly into hibernation. High annual mortality rates are associated with this species, with causes of mortality attributed to starvation or freezing during estivation/hibernation, predation, disease, and human interference (USFWS 2008).

2 Project Overview

As described in Section 1, PGE is proposing to construct and operate an up to 900 MW generating facility called the Carty Generating Station. The Carty Generating Station will be located approximately 13 miles southwest of Boardman, Oregon, adjacent to the existing Boardman Plant and Carty Reservoir in Morrow County, Oregon. The associated new transmission line will originate at the Carty Generating Station and head west, along an existing transmission line corridor, approximately 18 miles to the BPA's Slatt substation located in Gilliam County, Oregon. PGE would utilize both the existing transmission line and the new transmission line to distribute power produced at the Carty Generating Station.

Construction of the Carty Generating Station would result in impacts to the lands crossed. To reduce these impacts, PGE would restore lands affected by construction and perform appropriate reclamation in accordance with an Erosion and Sediment Control Plan and a Revegetation and Maintenance Plan. These measures would make impacts from construction and operation of the Carty Generating Station temporary or keep impacts confined to the footprints of aboveground facilities and access roads. These facilities and access roads would be sited in a way that is compatible, to the greatest extent possible, with any existing regulations, plans, and standards for the county where they are located.

Temporary impacts include short-term construction impacts to current land uses in laydown areas. Impacts are considered short-term along the proposed transmission line, after three to five growing seasons, the revegetated disturbed areas would resemble adjacent undisturbed lands. Areas with the vegetation types that have the potential for revegetation within three to five growing seasons include agricultural and pasture land, residential land, grassland, shrubland, rangeland, and riparian emergent/shrub areas.

3 Survey Methodology

E & E conducted surveys to document wildlife and habitat characteristics occurring in the Study Area. These surveys included sensitive and noxious plant species, sensitive wildlife, avian species, and raptor nests. Wetlands and streams also were identified and delineated during field work. Experienced field biologists conducted surveys according to protocols developed in consultation with ODFW.

3.1 Habitat and Sensitive Plant Species Methodology

Habitat was surveyed within the Study Area by walking transects on foot and from a vehicle where accessible. Habitat was characterized according to dominant vegetation and overall condition of the vegetation community, and included consideration of surrounding land uses. Sensitive plant species were looked for simultaneously during Washington ground squirrel transect surveys, wetland and stream surveys, and general habitat characterization. Focused walking surveys were conducted in areas where suitable conditions existed to support any of the target sensitive plant species.

3.2 Avian and Wildlife Species Methodology

Ground surveys were conducted for raptor nests, Washington ground squirrels, and other sensitive wildlife species over the entire Study Area. Aerial raptor surveys will be conducted in the spring of 2010. Raptor ground and aerial nest survey protocols are detailed in section 3.2.1. Washington ground squirrel survey protocols are detailed in section 3.2.2. Field biologists documented all wildlife observed in the Study Area, and recorded all sensitive species and wildlife breeding sites with a Global Positioning System (GPS) unit.

3.2.1 Raptor Nest Methodology

The objective of the raptor nest surveys was to locate and document all raptor nests that may be subjected to disturbance and/or displacement effects from the facility and transmission line construction. To meet this objective, raptor nest surveys were conducted within the Site Boundary and an additional 1-mile buffer around the Site Boundary (Exhibit P of the ASC, Figure P-1). The analysis area for 2010 surveys will be expanded to 2 miles around portions of the final Site Boundary to reflect comments from ODFW.

Two ground-based surveys were conducted in May and June 2009. Biologists experienced in raptor identification used high-powered optics to perform surveys on foot and in a four-wheel drive vehicle. The biologists examined the entire Study Area; however, efforts were intensified in areas where suitable nesting substrates (i.e., trees, rock ledges and cavities, power poles) occurred. All raptor nests and individuals were documented with a GPS unit and standardized data form, noting bird behavior and nest characteristics (see section 3.2.1.1). Photographs of the nests were taken to help illustrate nest shape, condition, and

substrate. Common raven (*Corvus corax*) nests also were recorded because some raptor species use established nests interchangeably with common ravens from year to year.

Helicopter surveys of the areas within a 1-mile buffer of the transmission corridor and within 2 miles of the Energy Facility Site will be conducted by two experienced avian ecologists, along with a pilot experienced in wildlife surveys, between April 5th and June 15th, 2010. The inclusion of aerial surveys in addition to the ground effort will increase the rate of detection that would have been achieved by using only one of these methods. Nests recorded in 2009 will be revisited to determine their activity level and species of occupancy. New nests documented during aerial surveys will be recorded in the same manner as nests during ground efforts. A laser rangefinder will allow surveyors to record nest coordinates from a distance, minimizing disturbance. In the event that adult raptors are not exhibiting defensive or breeding behavior at or near a nest, the surveyors will gain enough altitude to fly over the nest to look inside for eggs or chicks with the aid of binoculars. This will ensure that active nests are not mistakenly recorded as inactive because a brooding adult left the nest without the surveyor's knowledge. If a nest's location makes it difficult to confirm species identity, the nest will later be ground-truthed.

Optimum weather conditions for surveys are clear, calm days. In 2010, nests will not be visited during adverse weather conditions (e.g., extreme cold, precipitation events, windy periods, or the hottest part of the day), and visits will be as brief as possible.

3.2.2 Threatened and Endangered Species: Washington Ground Squirrel Methodology

ODFW requested that PGE survey for Washington ground squirrels. E & E developed the 2009 protocols through consultation with ODFW and adaptation of protocols set forth in the Boardman to Hemingway transmission line project. Data on Washington ground squirrel habitat was obtained from ORNHIC and applied to the Study Area. Areas were the project would occur in Washington ground squirrel habitat were surveyed by walking transects approximately 50 meters apart looking for burrow structures characteristic of Washington ground squirrels, fresh scat, listening for auditory calls, and visual sighting. The surveys that will be in conducted in 2010 are slightly different in that two sets of surveys will be conducted where the second set will use transects that are perpendicular to the first set.

Washington ground squirrels have a particular affinity for Warden silty loam soils possibly because it is well suited for their burrowing structure needs. Warden soils have a high silt content and are very deep which aid in maintaining burrow structure as compared to sandy or shallow soils. Soil type was observed during surveys to consider suitability for ground squirrel burrows.

3.3 Wetlands and Streams

The delineation of wetlands was conducted in the Study Area to document the location of wetlands and ordinary high water line delineation for waters of the United States. Wetland

identification and delineations followed the guidelines outline in the United States Army Corp of Engineers (USACE) "*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*" (USACE 2008). Jurisdictional waters were delineated according to the USACE "*Field Guide to the Identification of the OHWM in the Arid West Region of the United States*" using (Lichvar and McColley 2008). Boundaries of all wetlands and waters were mapped with a GPS or drawn on field maps when GPS reception was not available and digitized with Geographic Information System (GIS). Section 4 contains a summary of the results of the delineations and references to figures depicting the location of features found during the 2009 field work; Exhibit J of the ASC contains the full delineation report including field data sheets.

If a Federal and State wetland permit is required due to project impacts, the USACE and Oregon Department of State Lands will require a wetland functional assessment. A functional assessment will be conducted if it is determined that project features cannot avoid removal or fill activities in wetlands.

4 Results

This results section divides the Site into two areas. The first area is approximately 3,700 acres of land located north of the Carty Reservoir which will be call the Energy Facility Site and Surrounding Buffer Land, this area includes approximately 200 acres of transmission line right-of-way (ROW). The second area is the transmission line corridor located outside of the first area.

4.1 Energy Facility Site and Surrounding Buffer Land

4.1.1 Habitat

The eastern part of the Study Area contains shrub-steppe habitat, agriculture cropland, and some riparian areas. Approximately 1/5th of this area in the eastern portion, including wildlife conservation area, was burned by a fire that occurred in 2008. Dominant plant species in this area include cheat grass, stork's bill, yarrow, fiddle neck, and rabbit brush with sub dominants of big sage brush, bluebunch wheatgrass, and desert parsley. Areas of the shrub-steppe that were not impacted by recent fires are dominated by big sagebrush, bluebunch wheatgrass, cheat grass, and rabbit brush. The western portion of this area consists of irrigated agriculture crops and a riparian zone with mixed upland and water tolerant plants. The riparian area is dominated by Russian olive, Pacific willow, Canada goldenrod and Amaranth. Table 4.1 lists dominant plant species found across the Study Area and Figures P-2 and P-3 of Exhibit P of the ASC shows habitat type and category found on site.

Habitat categories are established according to ODFW guidance to evaluate mitigation potential for a given area of impact. Categories were developed to protect sensitive species and important habitats. Category 1 designations are made for habitat that is considered "irreplaceable, essential, and limited" and includes any habitat containing active Washington ground squirrel burrows and active raptor nest sites. The area north and east of the Boardman Plant was in the Study Area and is part of the Boardman Conservation area. By applying a 785 ft buffer to Washington ground squirrel monitoring data collected by TNC, areas were designated Category 1 where the Washington ground squirrel occurred in 2009. This area consisted of approximately 605 acres at the time of the spring and early summer surveys. Areas where active Washington ground squirrel burrows occurred in the past 8 years but were not active in 2009 were designated Category 2. The remainder of the Study Area around the Energy Facility Site consists of Category 4 and Category 6 habitat. The Category 4 is designated for "important" habitat that is not limited in abundance and specifically includes Columbia basin shrub-steppe that has been severely grazed and/or is weedy.

Table 4.1 Dominant Vegetation in the Study Area

Common	Scientific
West T-line ROW Dominants to Willow Creek:	
Cheat grass	Bromus tectorum
storks bill/Filaree	Erodium cicutarium
Gray rabbitbrush	Chrysothamnus nauseosus
Green rabbitbrush	Chrysothamnus viscidiflorus
Tall sage brush	Artemisia tridentate
Bluebunch wheatgrass	Pseudoroegneria spicata
Middle T-line ROW Dominants East of Willow Creek and West of Agriculture Area:	
Yellow star thistle	Centaurea solstitialis
Cheat grass	Bromus tectorum
Tall sage brush	Artemisia tridentate
Gray rabbitbrush	Chrysothamnus nauseosus
Green rabbitbrush	Chrysothamnus viscidiflorus
T-line Agriculture Area Dominants	
Cheat grass	Bromus tectorum
Russian thistle	Salsola tragus L.
Gray rabbitbrush	Chrysothamnus nauseosus
Tall sage brush	Artemisia tridentate
*note patches where recently burned, no veg.	
Energy Facility Site and Surrounding Buffer Land Dominants	
Cheat grass	Bromus tectorum
storks bill/Filaree	Erodium cicutarium
Gray rabbitbrush	Chrysothamnus nauseosus
Green rabbitbrush	Chrysothamnus viscidiflorus
Yarrow	Achillea millefolium
Bluebunch wheatgrass	Pseudoroegneria spicata
Fiddle neck	Amsinckia retrorsa
Desert parsley	Lomatium sp.
Tall sage brush	Artemisia tridentate
Sub-dominants (not listed above)	
Idaho fescue	Festuca Idahoensis
Hood's phlox	Phlox hoodii
Low pussytoes	Antennaria dimorpha
Strict buckwheat	Eriogonum strictum
Wavy-leaved microseris	Microseris troximoides
Sweetmarsh butterweed	Senecio foetidus
Amaranth	Amaranth sp.
Douglas brodiaea	Brodiaea douglasii
Alkali Swainsonpea	Sphaerophysa salsula
Rough cocklebur	Xanthium strumarium L.
Lamb's quarters	Chenopodium album var. album

4.1.2 Sensitive Plants and Noxious Weeds

Surveys for sensitive plants and noxious weeds were conducted simultaneously with habitat assessment and Washington ground squirrel surveys during each site visit. Six sensitive plant species were identified as potentially occurring in the Site Boundary and targeted

during field work where suitable habitat was encountered. Surveys were conducted during blooming periods for these six species to optimize potential for identification. No sensitive plant species were found in the Study Area.

The Oregon Department of Agriculture (ODA) has identified noxious weeds occurring in Gilliam and Morrow Counties. ODA has designated two categories of noxious weeds, "A" list species and "B" list species. Weeds designated on the "A" list are of known economic importance which occur in the state in small enough infestations to make eradication or containment possible; or is not known to occur but with a presence in neighboring states making future occurrence seem imminent. Weeds designated on the "B" list are of economic importance which is regionally abundant, but which may have limited distribution in some counties (ODA 2009). Scotch thistle, Bull thistle, and Canada thistle, ODA "B" listed species, occur near wetlands H and B. Diffuse knapweed was also identified in the Study Area occurring near wetland H and B at an approximate density less than 20% and occasionally in the eastern portion of the transmission line corridor although at approximate densities of less that 10%. Wetland A contains Common reed (Phragmites australis), an "A" list noxious weed species. Also, surrounding wetlands A and J is a patch of Alkali swainsonpea, a noxious species on the ODA "B" list. Figure NW-1 of this Survey Report provides the location of noxious weed observations; Exhibit J, Figure J-1 of the ASC shows the locations of the referenced wetlands.

4.1.3 Avian and Wildlife Species

Ground surveys were conducted from May 5th – May 8th and from June 22nd - 25th. Two raptor nests were observed on the south end of the proposed Carty Generating Station Facility, adjacent to the facility's reservoir (See Figure RN-1 of this Survey Report for raptor nest locations and Figure P-2 and P-3 of Exhibit P of the ASC for wildlife species observations on the proposed site). These nests included an active osprey (*Pandion haliaetus*) nest on an artificial nest stand and an inactive stick nest in a tree in the woodland to the northwest of the reservoir. An American kestrel (*Falco sparverius*), a male northern harrier (*Circus cyaneus*), and a pair of Swainson's hawks (*Buteo swainsoni*) also were observed in the Study Area; however, they did not exhibit breeding behaviors.

Seventeen bird species were observed in the Energy Facility Site and Surrounding Buffer Land area (Table 4.2). These observations included a breeding pair of long-billed curlews (*Numenius americanus*), a sensitive species, and at least one fledgling (Exhibit P, Figure P-2 of the ASC).

Other wildlife species observed within the Energy Facility Site and surrounding Buffer Land included Mule deer (*Odocoileus hemionus*), White-tailed jackrabbit (*Lepus townsendii*), and Pronghorn (*Antilocarpa americana*).

Table 4-2 Bird Species Observed in the Study Area

Common Name	Latin Name	Generating Station	Transmission Line
American Goldfinch	*Carduelis tristis*	x	
American Kestrel	*Falco sparverius*		x
Barn Swallow	*Hirundo rustica*	x	
Black-billed Magpie	*Pica hudsonia*		x
Brewer's Blackbird	*Euphagus cyanocephalus*		x
Burrowing Owl	*Athene cuniculara*		x
Canada Goose	*Branta canadensis*	x	
Caspian Tern	*Sterna caspia*	x	
Cliff Swallow	*Petrochelidon pyrrhonota*		x
Common Nighthawk	*Chordeiles minor*		x
Common Raven	*Corvus corax*	x	x
Eastern Kingbird	*Tyrannus tyrannus*	x	
Golden Eagle	*Aquila chrysaetos*		x
Horned Lark	*Eremophila alpestris*	x	x
Killdeer	*Charadrius vociferus*		x
Long-billed Curlew	*Numenius americanus*	x	x
Mallard	*Anas platyrhynchos*	x	
Mourning Dove	*Zenaida macroura*		x
Northern Harrier	*Circus cyaneus*	x	x
Osprey	*Pandion haliaetus*	x	x
Prairie Falcon	*Falco mexicanus*		x
Red-tailed Hawk	*Buteo jamaicensis*	x	x
Red-winged Blackbird	*Agelaius phoeniceus*	x	x
Swainson's Hawk	*Buteo swainsoni*	x	x
Turkey Vulture	*Cathartes aura*	x	
Western Kingbird	*Tyrannus verticalis*	x	x
Western Meadowlark	*Sturnella neglecta*	x	x

4.1.4 Threatened and Endangered Species: Washington Ground Squirrels

Surveys for Washington ground squirrels were conducted May 4th through May 8th and June 22nd through June 26th of 2009. During the first field visit biologists walked transects in the Study Area where Washington ground squirrel habitat was identified by ORNHIC data and expanded the survey corridor by an additional 1000 feet beyond the Site Boundary within the ORNHIC polygons (Exhibit P, Figure P-1). Observation of possible Washington ground squirrel activity or presence was documented and location recorded using a GPS. Areas that occur outside the ORNHIC habitat while still inside the ROW and Energy Facility Site were examined for Washington ground squirrel potential burrows in areas where habitat and soils were suitable.

Field surveys conduced by E & E biologists resulted in documentation of burrows with potential to be utilized by Washington ground squirrels currently or in the recent past. Burrows were evaluated based on size of burrow entrance holes, evidence of recent use

such as trimming of vegetation and roots around the hole, presence of spider webs, recent digging or collapse, and proximity to additional burrows and travel pathways between burrows in the patch. Each point represents a patch of burrows including 1 to 20 holes in close proximity. Although burrows may have met criteria to be logged as a potential site, likelihood that Washington ground squirrels are occupying the burrows in a patch is unknown. Exhibit Q, Figure Q-2 and Q-3 of the ASC show burrow patch locations found in the Study Area. Burrow patch locations appear to be concentrated in the area approximately ¼ mile east and west of the railroad track which runs north-south through the conservation area. The burrows appear to be concentrated in a forb dominant type of vegetation community. Soil type appears to have the largest influence on where burrows were found, areas with sandy soils may not be able to support tunnel digging activities.

No Washington ground squirrel scat was found during the E & E surveys nor were any calls heard or individuals observed. Observations of scat which appeared to have come from a mouse or rat were identified at many of the active burrows. Also several of the borrows showed tracks from tail drag by a rodent species with a narrow, non bushy tail unlike that of a ground squirrel. These are indicators that the inhabitant is a non squirrel species, although it does not rule out co-habitation in burrow complexes by ground squirrels and other rodents.

The eastern portion of the Study Area includes a plot of land which has established as a wildlife conservation area by an agreement between PGE, TNC, and other agencies and landowners. Data from TNC's Washington ground squirrel patch monitoring have been included in Exhibit Q, Figure Q-2 of the ASC, depicting documented squirrel activity recorded over the past 8 years. Data in this figure are color coded to show red being the highest scored observations, i.e., strongest evidence of Washington ground squirrel presence. Observations were assigned scores depending on what type of evidence was found. Below is a chart showing the score calculation chart used by TNC to evaluate Washington ground squirrel patch ranking and verification.

Score	Type of observation
1	Holes characteristic of those used by squirrels
2	Holes with one or more current year's ground squirrel droppings
5	Auditory call heard
9	Individual sighting

Ranking values are cumulative, sums of three and above indicate patch is occupied, and higher sums establish greater confidence in the status assessment (Vern Marr 2009 and 2004).

Additional surveys during the spring 2010 activity period for squirrels will better develop our understanding of current utilization of the analysis area. Because the current populations are at substantially low numbers, undocumented activity does not rule out future use of the area should population recovery occur. It is possible that the decline can be partially

attributed to recent fires causing a temporary reduction in edible vegetation and available food sources.

On-going consultation with Steve Cherry of the ODFW and Vern Marr, who has conducted recent surveys for TNC, will aid in developing an understanding of the current status of Washington ground squirrel populations in the analysis area and what measures will need to be taken to avoid and mitigate potential impacts.

4.1.5 Wetlands and Streams

Six wetlands (totaling approximately 4 acres) and three streams were identified and delineated occurring entirely or partially within the October intermediate Site Boundary. Wetland A (approx. 0.5 acre), Wetland B (approx. 2.2 acres), Wetland H (approx. 0.1 acre), and Wetland J (approx. 0.01 acres) were located within the proposed Energy Facility Site and Surrounding Buffer Land. Wetland B is a palustrine forested wetland (PFO) predominantly containing Russian olive and Pacific willow in the tree and shrub layers, and Cattail, Common reed, Three-square bulrush, and Sweetmarsh butterweed in the herb layer. Wetland A, H, and J are palustrine emergent wetlands containing only an herb strata and which included Cattail, Three-square bulrush, sweetmarsh butterweed and common reed. Full details of these wetlands are available in Exhibit J of the ASC; wetland locations are shown in Exhibit J, Figure J-1.

One of the three streams that would be crossed by the transmission line is Sixmile Canyon drainage, which is an ephemeral drainage. Sixmile Canyon drainage flows north and connects discontinuously to Sixmile Canyon Creek which flows into the Columbia River. Full details on this feature are included in the delineation report included in Exhibit J.

The Carty Reservoir is located adjacent to the proposed Energy Facility Site. Carty Reservoir has a maximum surface area of approximately 1,450 acres and contains approximately 38,000 acre feet of water (12 billion gallons) at a maximum pool elevation of 677 feet above mean sea level (MSL). The Reservoir was established for industrial uses, but has since become an area that is utilized by various wildlife species including fish, deer, raptors, and passerines.

4.2 Carty Transmission Line Area

This area includes the proposed transmission line corridor approximately 700 feet wide from the boundary of the Energy Facility Site and Surrounding Buffer Land and continuing west to the Slatt substation.

4.2.1 Habitat

The analysis area involved with the transmission line contains heavily grazed shrub-steppe habitat, agriculture cropland, and some riparian areas. The portion of ROW lying west of the Willow Creek crossing consists of heavily grazed shrub-steppe dominated by non-native cheat grass and stork's bill and patches of big sage and bluebunch wheatgrass with sub

dominants of yarrow, and fiddle neck. A sheep farming operation centered within the ROW is the primary source of graze impact. The area east of willow creek in the ROW consists of a strip of shrub-steppe habitat neighboring irrigated agriculture crops to the north and south. The shrup-steppe vegetation consists of predominantly of cheatgrass, green and grey rabbit brush, Russian thistle, and yarrow with occasional areas of big sagebrush. This section east of Willow Creek also includes two herbaceous wetlands (C and D) fed predominantly by cropland irrigation runoff from agriculture to the north. Table 4-1 lists dominant plant species found across the Study Area and Exhibit P Figures P-2 and P-3 of the ASC show habitat type and categories found in the Study Area.

4.2.2 Sensitive Plants and Noxious Weeds

Surveys for sensitive plants and noxious weeds were conducted simultaneously with habitat assessment and Washington ground squirrel surveys during each site visit. Six sensitive species were identified as potentially occurring in the project vicinity and targeted during field work where suitable habitat was encountered. Surveys were conducted during blooming periods for these six species to optimize potential for identification. No sensitive plant species were found in the Study Area.

West of Highway 74 Yellow star-thistle (Centaurea solstitialis), which is on the ODA "B" list of noxious weeds occurred occasionally as individual plants sparsely distributed for approximately two miles totaling density of less than 10%. In the Study Area immediately east of Hwy 74, an approximately 60 acre patch of Yellow star thistle was observed, ranging in density from 10% to 50% cover (see Figures P-2 and P-3). Additionally, yellow star thistle was found in the margin surrounding wetland C and D at varying width from 1 to 20 feet and cover ranging from 10% to 90% cover. Individual plants were encountered randomly east of wetland D in the ROW at density of less than 10% except at a dense patch (10% to 50%) approximately 1.3 acres in size located approximately 6.7 miles west of the energy facility site. Broad leaf pepperweed, an invasive weed in Oregon on the B list of noxious weeds was also found in a small patch in wetland D. Figure NW-2 of this Survey Report and Exhibit J, Figure J-2 show the location of noxious weed observations and wetlands along the transmission line ROW.

4.2.3 Avian and Wildlife Species

Ground surveys were conducted from May 5th – May 8th and from June 22nd - 25th. Three raptor nests were observed along the Carty Transmission Line Project area (See Figure RN-2 of the Survey Report) for raptor and sensitive species observations on the proposed transmission line ROW). The raptor nests included an active burrowing owl (*Athene cuniculara*) burrow complex, an inactive stick nest on a rocky ledge, and a stick nest constructed in a transmission tower at the east end of the Study Area. According to ODFW, the nest in the transmission tower has been historically occupied by golden eagles (*Aquila chrysaetos*). Eight raptor species were observed in the proposed transmission line Study Area, including Swainson's hawk, which is a sensitive species (Table 4-2).

Twenty bird species were observed in the Carty Transmission Line Project area (Table 4-2). These species included a pair of long-billed curlews with a 3-egg nest (Exhibit P, Figure P-3 of the ASC), which was discovered on May 6th A follow-up visit on June 23rd produced no signs of the adults and the nest contained only egg shell fragments and two dead chicks, still early in their post-hatching development. There was no indication that the nest had been depredated.

Incidental observations of other wildlife were few and infrequent, consisting of Mule deer (*Odocoileus hemionus*), White-tailed jackrabbit, Yellow-bellied marmot (*Marmota flaviventris*), Western rattlesnake (*Crotalus oreganus*), Gopher snake (*Pituophis catenifer*), Coyote (*Canis latrans*), Western fence lizard (*Sceloporus occidentalis*).

4.2.4 Threatened and Endangered Species: Washington Ground Squirrels

Surveys for Washington Ground Squirrels along the transmission line ROW were conducted during the same field visit as the energy facility site surveys and included the same methods as described in 4.1.3. Results included documentation of potential Washington ground squirrel burrows with current or recent use. Each point represents a patch of burrows including 1 to 20 holes in close proximity. Although burrows may have met criteria to be logged as a potential site, likelihood that Washington ground squirrels are occupying the burrows in a patch is unknown. Figure Q-3 shows burrow patch locations found in the survey corridor. Burrow patch locations appear to be concentrated in the area approximately 1.3 miles west of Highway 74 and again at approximately 2.5 miles west of Highway 74. The burrows did not appear to be concentrated in a particular type of vegetation community, as the vegetation is relatively consistent throughout this portion of the ROW. Soil type appears to have the biggest influence on where burrows were found, areas with sandy or rocky soils may not be able to support tunnel digging activities and deeper silt loam soils appear to be preferred.

There was no Washington ground squirrel scat found during the E & E surveys nor were any calls heard or individuals observed. Observations of scat which appeared to have come from a mouse or rat were identified at many of the active burrows. Also, several of the borrows showed tracks from tail drag by a rodent species with a narrow, non bushy tail like a rat or mouse and unlike that of a ground squirrel. These are indicators that the inhabitant is a non squirrel species, although it does not rule out co-habitation in burrow complexes by ground squirrels and other rodents.

4.2.5 Wetlands and Streams

Wetland C (approximately 0.9 acres) was located within the transmission line corridor, approximately 5.7 miles west of the proposed Energy Facility Site. Wetland D (approximately 0.2 acres) was located within the transmission line corridor, approximately 7 miles west of the proposed Energy Facility Site. Wetlands C and D are palustrine emergent wetlands with dominant vegetation consisting of Cattails, reed canary-grass, tall goundsel, lamb's quarters, and prostrate pigweed. Wetland D also contains a small patch or broad leaf

pepperweed, an invasive weed in Oregon. Wetland locations are shown in Exhibit J, Figure J-2 of the ASC.

Stream features observed in the ROW west of the Energy Facility Site included Willow Creek, a perennial stream located within the transmission corridor west of Heppner Highway 74, and Eightmile Canyon drainage, a disconnected ephemeral tributary of Willow Creek. Both streams flow north, Willow Creek flows into the Columbia River while Eightmile Canyon drainage is dry and bisected by the county road in two locations within the ROW. It appears that Eightmile Canyon drainage only flows during flood events. Data sheets for these features are available in Exhibit J.

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Site Boundary
Slatt Substation

E&E Field Observations
Noxious Weed

NW-1
Noxious Weed
Survey Observations
PGE Carty Generating Station

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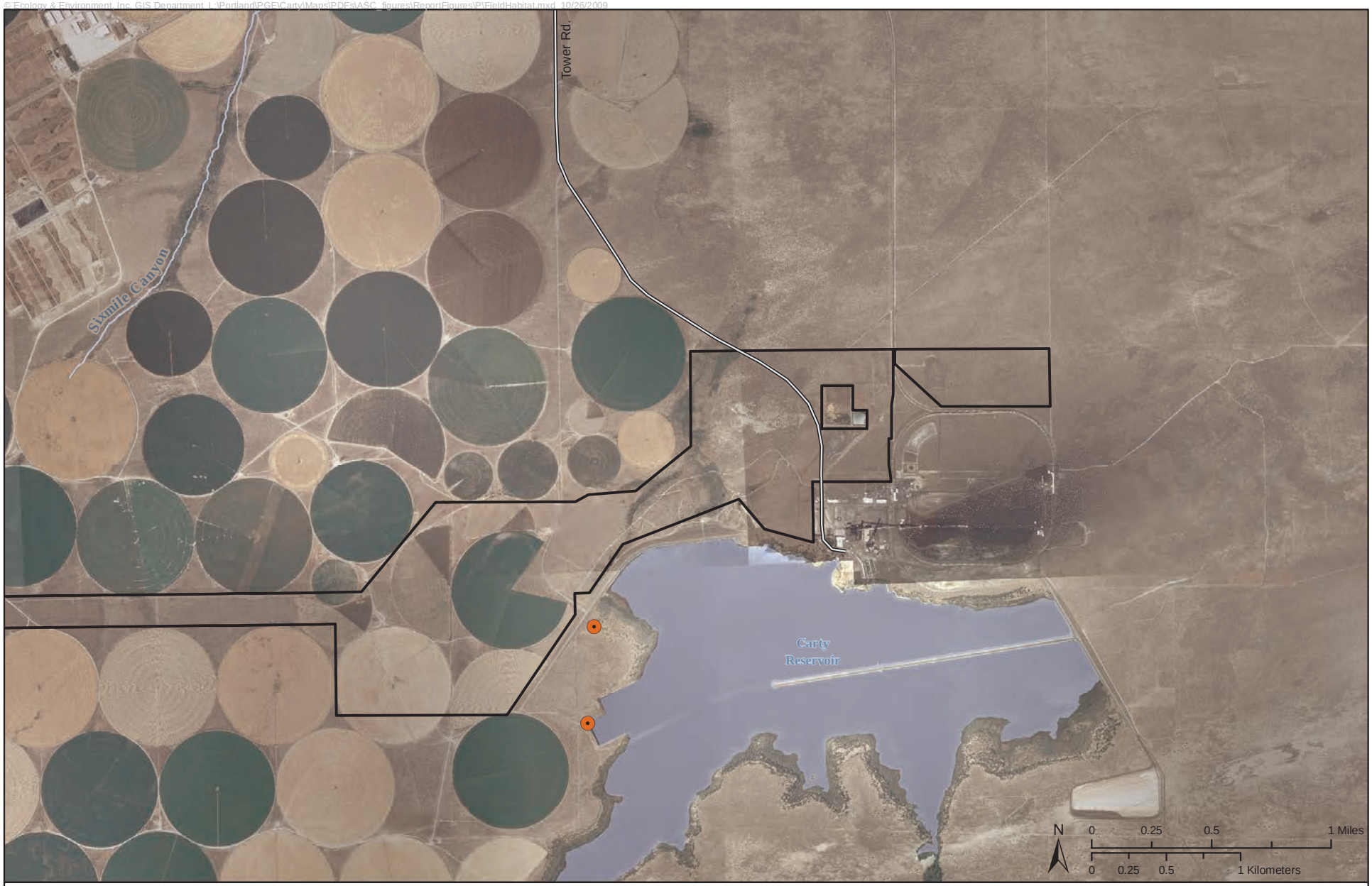

Site Boundary
Slatt Substation

E&E Field Observations
Raptor Nest

RN-1
Raptor Nest
Survey Observations
PGE Carty Generating Station

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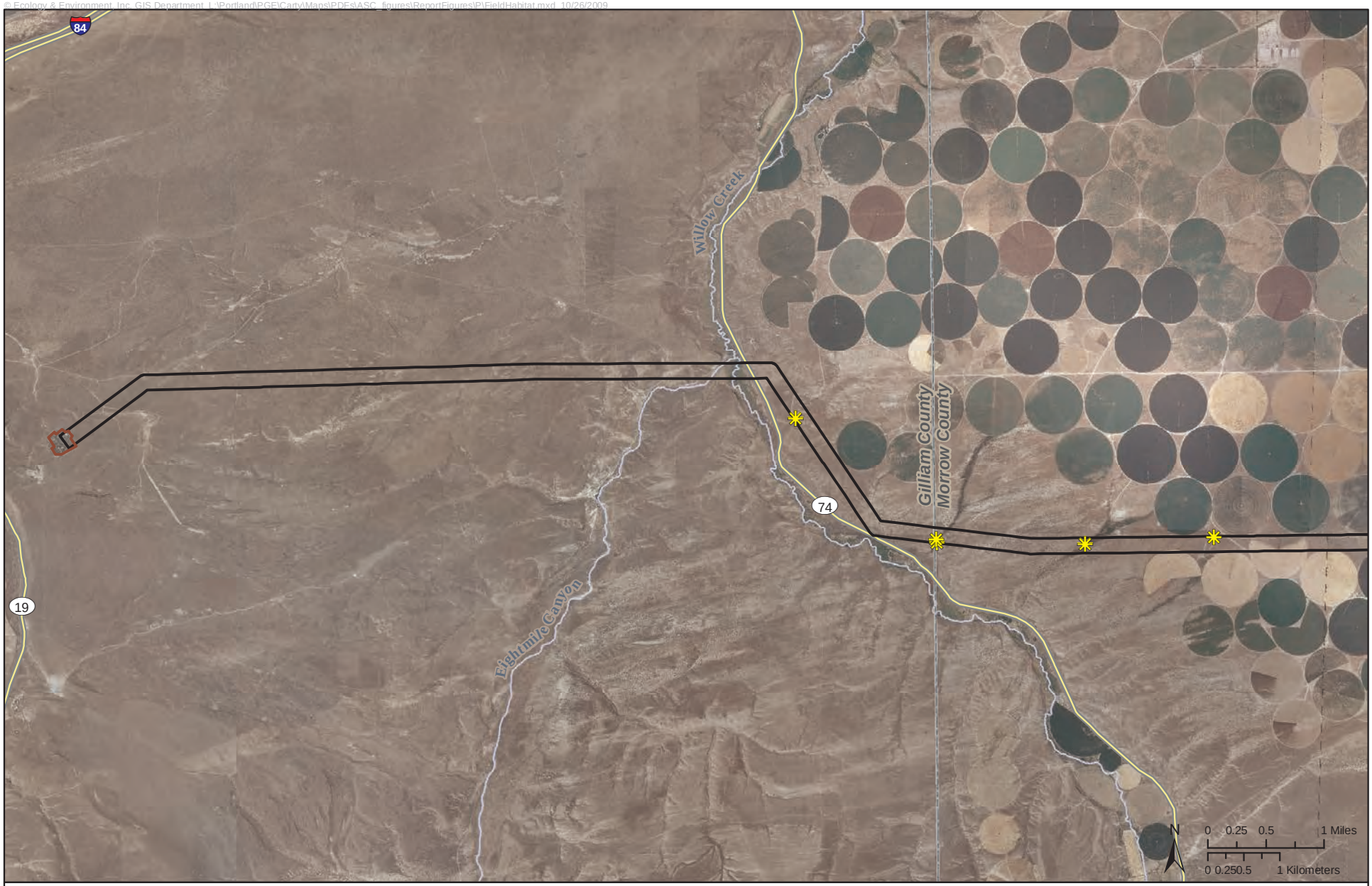

Site Boundary
Slatt Substation

E&E Field Observations
Noxious Weed

NW-2
Noxious Weed
Survey Observations
PGE Carty Generating Station

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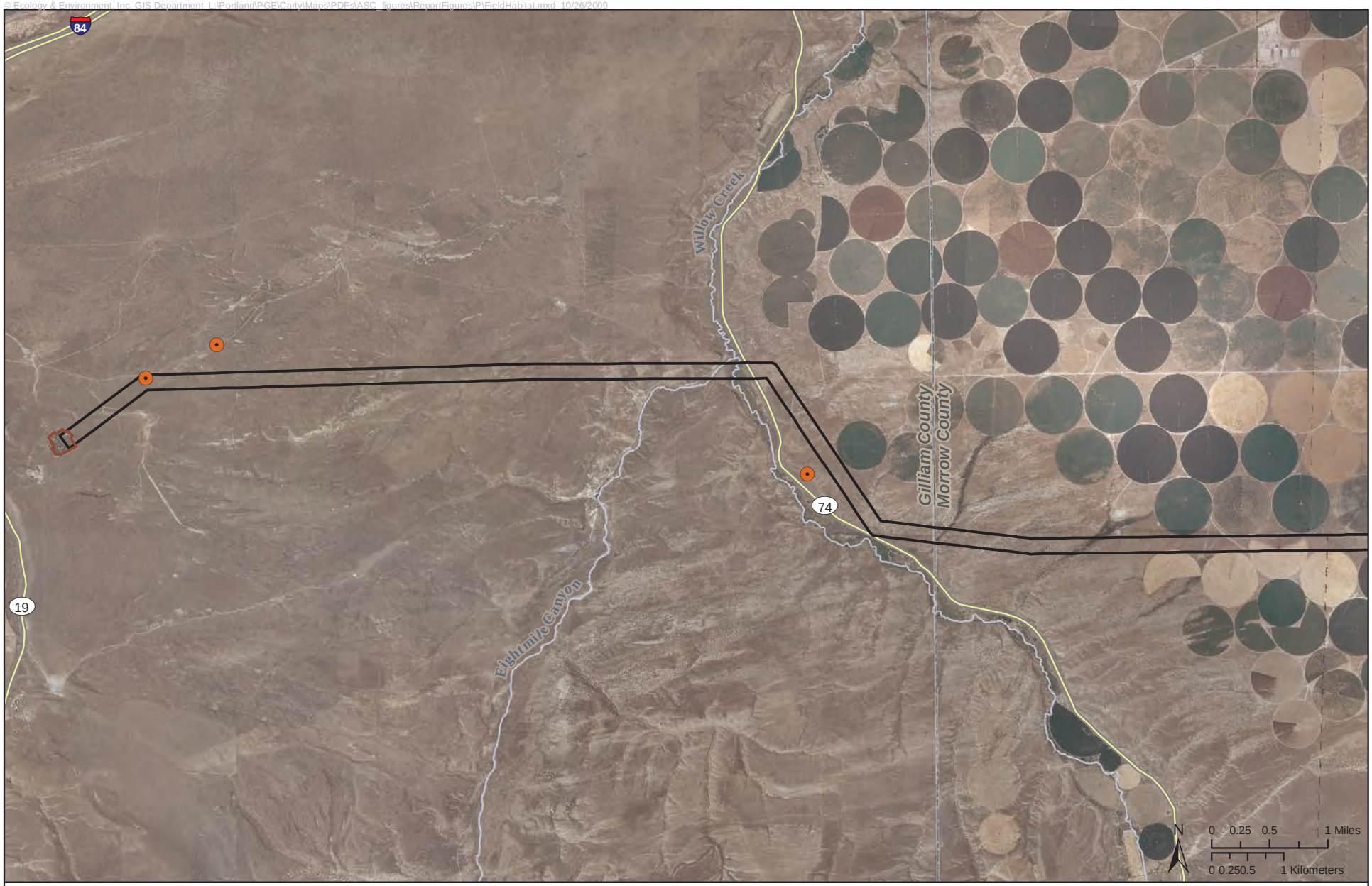

Site Boundary
Slatt Substation

E&E Field Observations
Raptor Nest

RN-2
Raptor Nest
Survey Observations
PGE Carty Generating Station

5 Conclusions and Recommendations

The Study Area contains shrub-steppe rangeland habitat, agriculture cropland, and industrial areas affiliated with the adjacent Boardman Plant. Six wetlands and three streams were identified within the Study Area.

The Washington ground squirrel has been documented inhabiting the northeast area of the Energy Facility Site and Surround Buffer Lands. Two recent occurrences have been documented in the area in 2009, although they are outliers from the more active burrowing areas found outside the area. The Nature Conservancy's data from monitoring efforts over the past 10 years shows fluctuating levels of occurrence in the area which generally coincides with the ORNHIC habitat polygon data at this location. Burrows with potential to be currently or recently occupied by Washington ground squirrels were identified by E & E in the western portion of the transmission line ROW. Patches of potential burrow sites were examined for scat and evidence of the inhabitant and logged using a handheld GPS devise. These locations and the TNC patches were revisited in late June 2009 to look for new evidence of presence and visual or auditory confirmation. No new evidence of presence was recovered during that time in the transmission line survey area or at the Energy Facility Site and Surrounding Buffer Lands.

There were no sensitive species identified within the Study Area during surveys. Several patches of noxious weeds were found, including both broad low density distributions and concentrated patches of Yellow star thistle, an isolated occurrence of Perennial pepperweed in wetland D, diffuse knapweed, and Common reed in wetland A.

Based on the results of field observations and surveys, it is highly recommended that additional surveys be conducted for Washington ground squirrel. Surveys should be conducted during April and May of 2010 to identify burrows occupied by the squirrels and species presence within the Site Boundary and buffers determined by ODFW. It is also recommended that additional avian surveys be conducted, specifically an aerial raptor nest survey in the spring and nest occupancy/fledging surveys.

Noxious weeds are present in the transmission line ROW and the Energy Facility Site and Surrounding Buffer Lands. It is recommended that the common reed be removed using appropriate methodologies as soon as possible and other noxious weeds be treated for in areas where project features will disturb the soil. Cheat grass is an aggressive invasive forb that will overtake disturbed areas out competing natural revegetation by native species. It is recommended that collaboration with the Natural Resource Conservation Service, the Oregon Department of Agriculture, and the Oregon Department of Fish and Wildlife be engaged to develop a restoration plan for any disturbed areas due to project construction and maintenance. There is a potential opportunity to enhance and improve shrub-steppe

wildlife habitat in the transmission line corridor and Energy Facility Site that is currently degraded.

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APPENDIX P-2

2010 Biological Survey Report for the Carty Generating Station

2010 Biological Field Survey Report for the Carty Generating Station

Submitted to:

PORTLAND GENERAL ELECTRIC COMPANY
121 SW Salmon Street
Portland, Oregon 97204

January 2011

Prepared by:

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Table of Contents

Section **Page**

1 Introduction 1-1
1.1 Purpose and Scope of Biological Surveys 1-1
1.2 Report Structure 1-2

2 Project Overview 2-1

3 Survey Methodology 3-1
3.1 Habitat and Special-status Plant Species 3-1
3.2 Wildlife Species 3-1
3.2.1 Threatened and Endangered Species: Washington Ground Squirrel 3-2

4 Results 4-1
4.1 Energy Facility Site and Surrounding Buffer Land 4-1
4.1.1 Habitat 4-1
4.1.2 Sensitive Plants and Noxious Weeds 4-3
4.1.3 Avian and Wildlife Species 4-7
4.1.4 Threatened and Endangered Species: Washington Ground Squirrels 4-15
4.2 Transmission Line Corridor 4-16
4.2.1 Habitat 4-16
4.2.2 Sensitive Plants and Noxious Weeds 4-16
4.2.3 Avian and Wildlife Species 4-17
4.2.4 Threatened and Endangered Species: Washington Ground Squirrels 4-17

5 Conclusions and Recommendations 5-1

6 References 6-1

Appendices

Appendix A: Work Plan A-1

Appendix B: Washington Ground Squirrel Characteristics and Habitat B-1

List of Tables

Table **Page**

Table 4-1 Dominant Vegetation in the Site Boundary 4-2

Table 4-2 Bird Species Observed in the Study Area During 2010 Surveys 4-7

Table 4-3 Insects Observed in the Study Area 4-8

List of Figures

Figure **Page**

Figure 1-1 Project Layout and Location – Energy Facility Site Area 1-3

Figure 1-2 Project Layout and Location – Transmission Line 1-4

Figure 4-1 Energy Facility Site Habitat Type and Category 4-5

Figure 4-2 Transmission Line Area Habitat Type and Category 4-6

Figure 4-3 Wildlife and Noxious Weed Observations 4-9

Figure 4-4 Wildlife and Noxious Weed Observations 4-10

Figure 4-5 Wildlife and Noxious Weed Observations 4-11

Figure 4-6 Wildlife and Noxious Weed Observations 4-12

Figure 4-7 Wildlife and Noxious Weed Observations 4-13

Figure 4-8 Washington Ground Squirrel Survey Results 4-14

Acronyms and Abbreviations

ASC	Application for Site Certificate
BPA	Bonneville Power Administration
E & E	Ecology & Environment, Inc.
EFSC	Energy Facility Siting Council
GPS	Global Positioning System
Monitoring and Mitigation Plan	Carty Generating Station Wildlife and Habitat Monitoring and Mitigation Plan
MW	megawatt
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ORNHIC	Oregon Natural Heritage Information Center
PGE	Portland General Electric Company
ROW	right-of-way
USFWS	United States Fish and Wildlife Service
WGS	Washington ground squirrel
Work Plan	Biological Survey Work Plan

1 Introduction

Portland General Electric Company (PGE) is proposing to construct and operate an up to 900-megawatt (MW) combined-cycle natural gas–fired power generating facility (the Carty Generating Station), an approximately 18-mile transmission line, and other associated facilities. The Carty Generating Station would be located approximately 13 miles southwest of Boardman, Oregon, adjacent to the existing Boardman Plant and Carty Reservoir in Morrow County, Oregon. The transmission line would originate at the Carty Generating Station and extend to the west, along an existing transmission line corridor, approximately 18 miles to the Bonneville Power Administration (BPA) Slatt substation located in Gilliam County, Oregon.

1.1 Purpose and Scope of Biological Surveys

Prior to the construction and operation of the Carty Generating Station, PGE must obtain a Site Certificate from the Oregon Energy Facility Siting Council (EFSC). As part of the Application for Site Certificate (ASC), PGE has tasked Ecology & Environment, Inc. (E & E), with conducting environmental studies, including biological surveys. The biological surveys described in this report were developed and implemented to comply with the Oregon EFSC requirements, Oregon Threatened and Endangered Species Act of 1987, Oregon Department of Fish and Wildlife Habitat Mitigation Policy, and the Federal Endangered Species Act of 1973.

Biological field surveys were conducted during the spring and early summer of 2009 (May 4 through June 26) with additional field visits in September and October. In 2010, surveys were conducted entirely during the spring (May 4 through May 28). Survey protocols are described in the Biological Survey Work Plan (Work Plan, provided in Appendix A), which E & E developed in coordination with the Oregon Department of Fish and Wildlife (ODFW). The results of the 2009 surveys were presented in the 2009 Biological Field Survey Report for the Carty Generating Station, which is included as Appendix P-1 in Exhibit P of the ASC for the Carty Generating Station. The remainder of this report discusses the findings of the 2010 surveys.

Throughout this survey report, the term “Site” includes proposed locations of the energy facility and its related or supporting facilities and consists of approximately 2,400 acres. “Site Boundary” is the perimeter of the Site. The 2010 “Study Area” includes areas within 1,000 feet of burrows identified during 2009 surveys that potentially are used by Washington ground squirrel (*Spermophilus washingtoni*) (WGS). The term “Energy Facility Site” refers to approximately 90 acres of the Site near the Carty Reservoir that includes fenced areas that would enclose proposed buildings and structures and evaporation ponds. An approximately 15-acre fenced switchyard located west of the energy facility is also included in the acreage of the Energy Facility Site.

The transmission line right-of-way (ROW) includes an existing transmission line; it occupies approximately 1,400 acres, and extends approximately 18 miles west from the Energy Facility Site to the existing Slatt substation. Of the approximately 910 acres remaining within the Site Boundary, land in the vicinity of the Energy Facility Site and the switchyard would be used as temporary laydown, fill stockpiling, and staging areas; the remainder is included as a buffer to the Energy Facility Site. The Site Boundary and the Study Area are shown in Figures 1-1 and 1-2 for the Energy Facility Site area and the transmission line, respectively.

The main purpose of the 2010 field surveys was to evaluate the presence of WGS at:

- Potential WGS burrow locations identified during 2009 surveys, and
- Other areas within the Site Boundary that contain suitable habitat for WGS burrows.

Surveys included reconnaissance along transects by foot, where possible, and by vehicle. In addition to WGS observations, the field survey team recorded site conditions, the dominant plant communities, and noxious weed infestations, when encountered. The field survey team also recorded incidental observations of the following sensitive species if present:

- Greater Sage-grouse (*Centrocercus urophasianus*),
- Grasshopper Sparrow (*Ammodramus savannarum*)
- Sage Sparrow (*Amphispiza belli*)
- Long-billed Curlew (*Numenius americanus*),
- Loggerheaded Shrike (*Lanius ludovicianus*),
- Burrowing Owl (*Anthene cunicularia*),
- Northern sagebrush lizard (*Sceloporus graciosus*), and
- White-tailed jackrabbit (*Lepus townsendii*).

The 2010 field survey did not include a raptor nest survey, as these data were collected in 2009. Incidental observations of nests were recorded during 2010 surveys where encountered. Raptor nests will be surveyed again in 2011 or prior to construction.

1.2 Report Structure

This report includes an overview of the proposed project in Section 2, a discussion of survey methodology in Section 3, results in Section 4, and conclusions and recommendations in Section 5. Section 6 lists the references relied upon for this report and for Appendix B.

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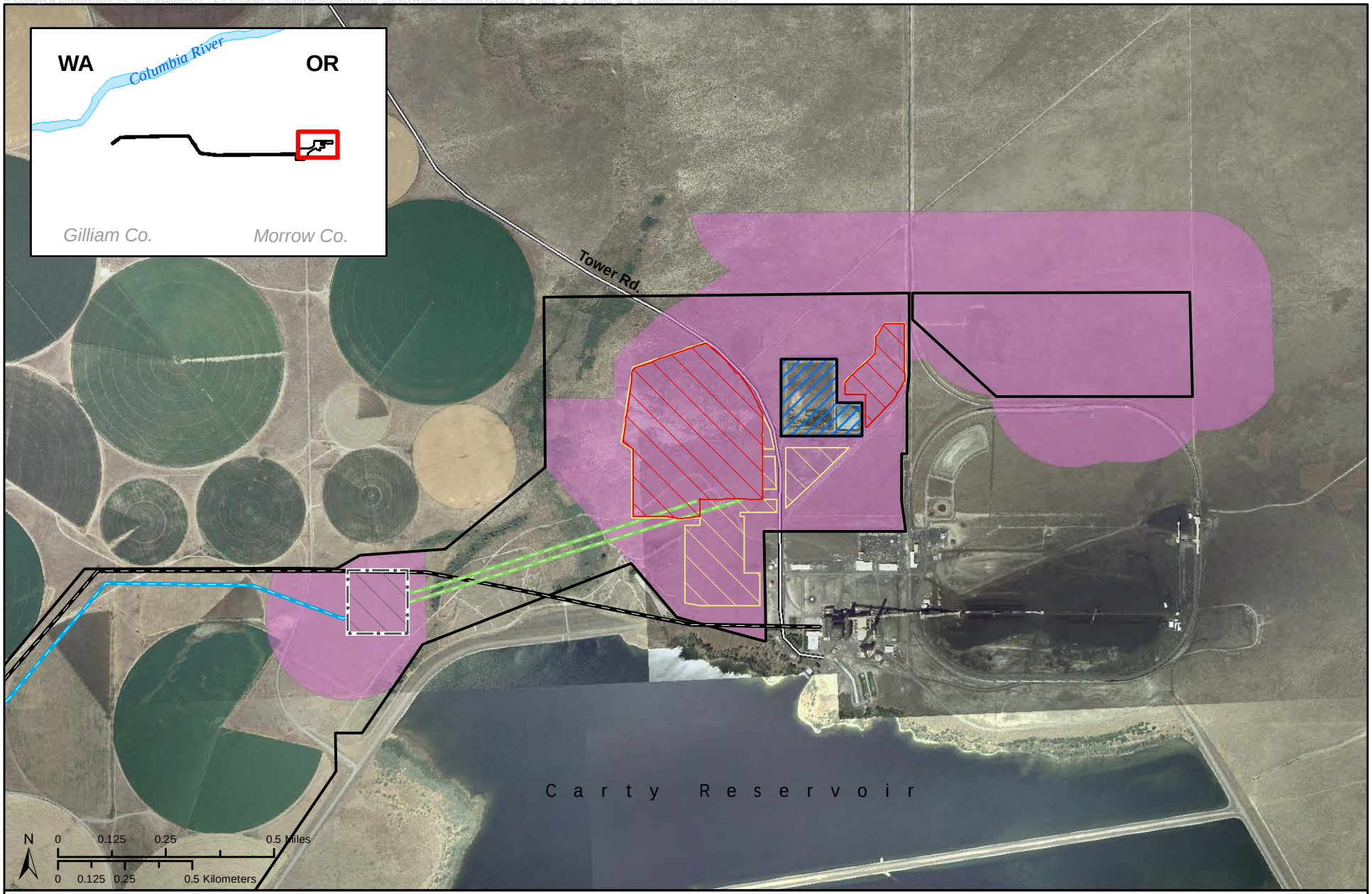

Site Boundary
2010 Survey Area
Existing Boardman Evaporation Pond
Tower Road

Transmission Lines
Existing Boardman to Slatt Substation 500kV Centerline
Proposed Line to Slatt Substation
Proposed Line(s) to Grassland Switchyard

Proposed Energy Facility Site
Temporary Construction Area
Proposed Grassland Switchyard

Figure 1-1
Project Layout and Location
PGE Carty Generating Station
2010 Biological Field Survey Report

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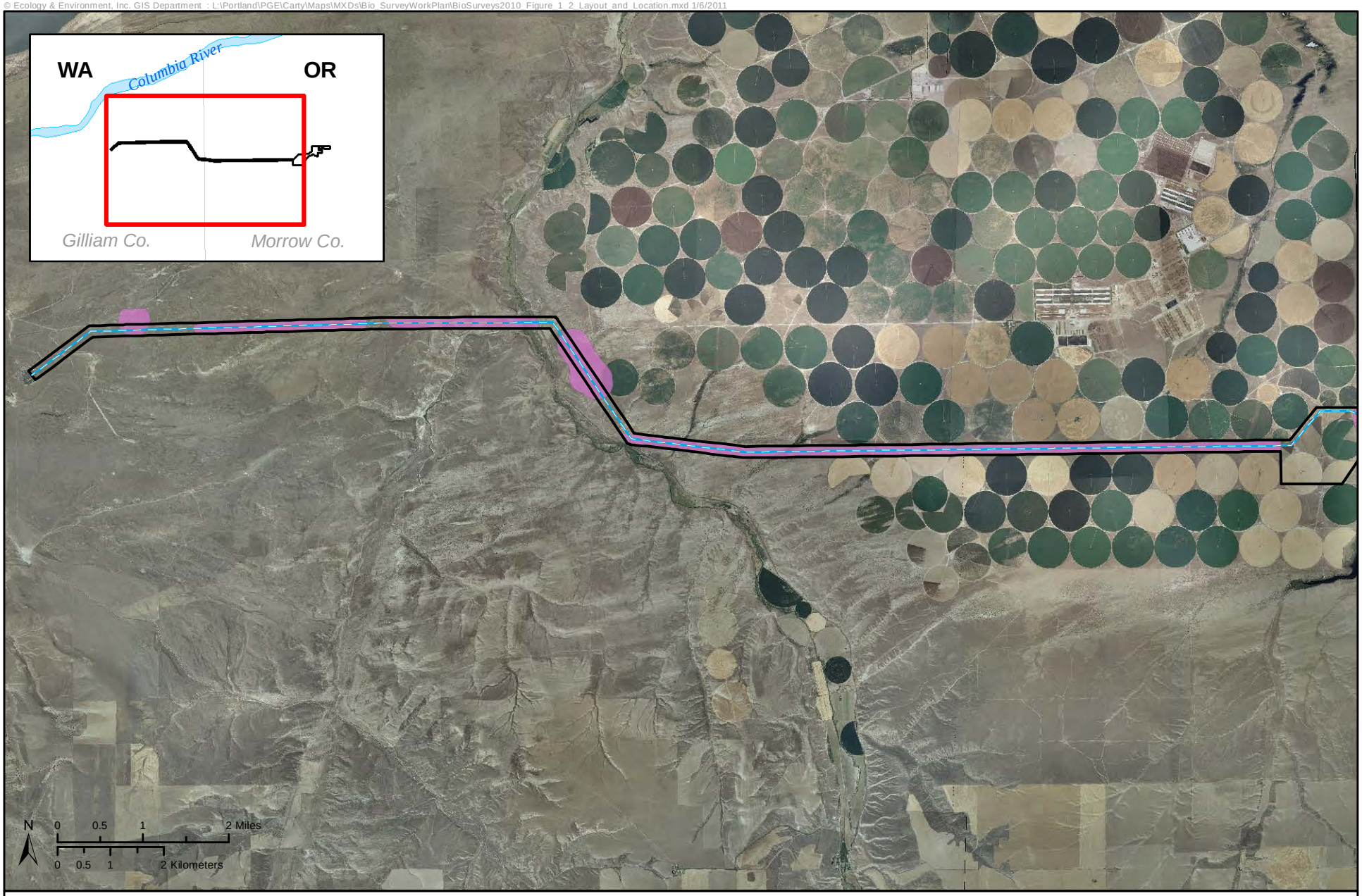

Site Boundary
2010 Survey Area

Transmission Lines
Proposed Line to Slatt Substation

Figure 1-2
Project Layout and Location
PGE Carty Generating Station
2010 Biological Field Survey Report

2 Project Overview

As described in Section 1, PGE is proposing to construct and operate an up to 900-MW generating facility called the Carty Generating Station. This facility would be located approximately 13 miles southwest of Boardman, Oregon, adjacent to the existing Boardman Plant and Carty Reservoir in Morrow County, Oregon. The associated new transmission line would originate at the Carty Generating Station and extend west, along an existing transmission line corridor, approximately 18 miles to the BPA's Slatt substation located in Gilliam County, Oregon. PGE would utilize both the existing transmission line and the new transmission line to distribute power produced at the Carty Generating Station.

Construction of the Carty Generating Station would result in impacts on the lands traversed by the project. To reduce these impacts, PGE would revegetate lands affected by construction and implement appropriate mitigation measures in accordance with an Erosion and Sediment Control Plan and a Mitigation and Monitoring Plan, which includes revegetation details. Implementation of these measures would minimize and revegetate temporary impact areas resulting from construction of the Carty Generating Station and improve confinement of permanent impacts to the footprints of aboveground facilities and access roads. These facilities and access roads would be sited in a manner that is compatible, to the greatest extent possible, with existing regulations, plans, and standards for the counties in which they are located.

Temporary impacts include construction impacts on current land uses in areas used for staging and equipment assembly. Impacts are considered short term along the proposed transmission line; after three to five growing seasons, the revegetated disturbed areas would resemble adjacent undisturbed lands. Vegetation types occurring on site that have the potential for revegetation within three to five growing seasons include agricultural and pasture land, grassland, shrubland, rangeland, and riparian emergent/shrub areas.

3 Survey Methodology

E & E conducted field surveys to document wildlife and habitat characteristics occurring throughout the 2010 Study Area. These included targeted surveys for WGS, special-status plants, and noxious and invasive plant species, as well as incidental observations of other wildlife species. Experienced field biologists conducted surveys according to protocols developed in consultation with ODFW (Work Plan, Appendix A). The study area in the western end of the transmission corridor was modified somewhat due to refusal of access to private property by the property owner (JR Krebs). Surveys were conducted within the easement for the transmission corridor but did not extend outward beyond the easement for that property (as reflected in Figure 1-2). The primary reason given by the property owner for denying access was the abundance of existing data collected in that area for multiple previous projects, none of which indicate the presence of WGS. Based on E & E's observations of habitat in this portion of the corridor and within the easement area, and the results of 2009 surveys, E & E considers it unlikely that WGS activity is occurring in the western portion of the transmission corridor.

3.1 Habitat and Special-status Plant Species

Habitat was characterized in 2009 according to dominant vegetation, overall condition of the vegetation community, and consideration of surrounding land uses. Pedestrian surveys were conducted in 2009 in project areas where habitat existed to support any of the target sensitive plant species. During 2009 surveys, two biologists walked parallel to each other at distances that allowed complete visual survey of the intervening vegetation for target species, taking into consideration the height and density of the surrounding vegetation. More intensive surveys were conducted at individual localities on semi-linear paths to best target the suitable habitat when observed. Data collected in 2010 consisted of habitat observations collected in the course of wildlife surveys (described below). The 2009 habitat data were updated with new information if changes were identified during 2010 surveys.

3.2 Wildlife Species

Surveys were conducted for WGS and incidental observation of other wildlife along transects within the 2010 Study Area on May 4 through 14 and 24 through 28. The entire Site was analyzed for special status species in 2009. Raptor nest surveys were conducted by foot and vehicle in 2009 within one mile of the site boundary. Aerial raptor surveys will be conducted in the spring prior to construction. Raptor ground and aerial nest survey protocols are detailed in the Work Plan (Appendix A). WGS survey protocols are detailed in Section 3.2.1 and the Work Plan (Appendix A).

Field biologists documented all wildlife observed in the Study Area and recorded all sensitive species and wildlife breeding sites with a Global Positioning System (GPS) unit.

3.2.1 Threatened and Endangered Species: Washington Ground Squirrel

ODFW requested that PGE survey for WGS. E & E developed the protocols through consultation with ODFW and adaptation of protocols set forth in the Boardman to Hemingway transmission line project. Data on WGS habitat were obtained from the Oregon Natural Heritage Information Center (ORNHIC) and applied to the Study Area. Areas where the project occurred within the ORNHIC WGS polygons, or habitat that was identified as suitable (Warden silty loam soils), were surveyed in 2009 by walking transects approximately 50 meters apart and recording signs of WGS presence, including burrow structures characteristic of WGS, fresh scat, auditory calls, and visual sightings. Soil type was also observed during surveys to consider suitability for WGS burrows. The surveys conducted in 2010 were slightly different in that two sets of surveys were conducted; the second set of transects were positioned perpendicular to the first set in areas with concentrations of potential burrows and suitable habitat as identified in 2009. See the Work Plan (Appendix A) for a detailed description of the WGS survey protocol. (Additional information regarding the habits and habitats of the WGS is included in Appendix B.)

4 Results

This section divides the Site into two areas. The first area is approximately 1,000 acres of land located north of the Carty Reservoir, referred to in this report as the Energy Facility Site and surrounding buffer land, and includes approximately 200 acres of transmission line ROW between the generating station location and the switchyard. The second area is the transmission line corridor, located outside of the first area and to the west to the Slatt substation, occupying approximately 1,400 acres.

4.1 Energy Facility Site and Surrounding Buffer Land

4.1.1 Habitat

The habitat has gone largely unchanged since the 2009 field report. The Study Area in the vicinity of the Energy Facility Site contains approximately 60% shrub-steppe habitat, 35% agriculture cropland, and 5% riparian areas. For a majority of the shrub-steppe habitat, the dominant plant species are cheat grass (*Bromus tectorum*), stork's bill (*Erodium cicutarium*), yarrow (*Achillea millefolium*), fiddle neck (*Amsinckia retrorsa*), and rabbit brush (*Chrysothamnus nauseosus* and *Chrysothamnus viscidiflorus*), with sub-dominants of big sage brush (*Artemisia tridentate*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and desert parsley (*Lomatium sp.*). The remaining shrub-steppe area is dominated by big sagebrush, bluebunch wheatgrass, cheat grass, and rabbit brush. Agriculture cropland consists of irrigated agriculture crops with weedy areas between crop circles. The depression area north of the Carty reservoir includes weedy shrub-steppe and riparian habitat. The riparian habitat consists of mixed upland and water tolerant plants and a few wetlands. The riparian area is dominated by Russian olive (*Elaeagnus angustifolia*), Pacific willow (*Salix lucida ssp. lasiandra*), Canada goldenrod (*Solidago Canadensis*), and amaranth species (*Amaranthus sp.*).

Habitat categories are established according to ODFW guidance to evaluate mitigation potential for a given area of impact. Categories were developed to protect sensitive species and important habitats. The 2010 habitat categorization has been adjusted to reflect buffer distances from updated active WGS colony locations (Figures 4-1 and 4-2). Category 1 designations are made for habitat that is considered "irreplaceable, essential, and limited" and include any habitat containing active WGS burrows and active raptor nest sites. The area north and east of the Boardman Plant, within the Study Area, is part of the Boardman Conservation area. By applying a 785-foot buffer to WGS data collected during surveys, areas where WGS occurred in 2009 and 2010 were designated Category 1. These areas comprise approximately 90 acres within the Site Boundary. Areas where active WGS

burrows occurred in the past eight years, but were not active in 2009 or 2010, were designated Category 2 and account for approximately 16 acres.

The remainder of the Study Area around the Energy Facility Site consists of Category 3, Category 4, and Category 6 habitat. The Category 3 habitat is identified as "important and limited" and comprises riparian areas and wetlands within the project boundary. Category 4 is used to designate "important" habitat that is not limited in abundance and specifically includes Columbia basin shrub-steppe that has been severely grazed and/or is weedy. Category 6 habitat includes agriculture land and developed areas with low potential to become essential or important habitat. There are approximately 4 acres of Category 3 habitat, 1304 acres of Category 4 habitat, and 873 acres of Category 6 habitat in the Project Site. Figures 4-1 and 4-2 show the distribution of designated habitat categories throughout the Project Site.

Table 4-1 Dominant Vegetation in the Site Boundary

Common	Scientific
West T-Line ROW Dominants to Willow Creek:	
Cheat grass	*Bromus tectorum*
Storks bill/Filaree	*Erodium cicutarium*
Gray rabbitbrush	*Chrysothamnus nauseosus*
Green rabbitbrush	*Chrysothamnus viscidiflorus*
Sandberg's bluegrass	*Poa secunda*
Bluebunch wheatgrass	*Pseudoroegneria spicata*
Middle T-Line ROW Dominants East of Willow Creek and West of Agriculture Area:	
Yellow star thistle	*Centaurea solstitialis*
Cheat grass	*Bromus tectorum*
Sandberg's bluegrass	*Poa secunda*
Bluebunch wheatgrass	*Pseudoroegneria spicata*
Tumble mustard	*Sisymbrium altissimum*
Tall sage brush	*Artemisia tridentate*
Gray rabbitbrush	*Chrysothamnus nauseosus*
Green rabbitbrush	*Chrysothamnus viscidiflorus*
T-Line Agriculture Area Dominants	
Cheat grass	*Bromus tectorum*
Russian thistle	*Salsola tragus L.*
Tumble mustard	*Sisymbrium altissimum*
Sandberg's bluegrass	*Poa secunda*
Star thistle	*Centaurea solstitialis L.*
Gray rabbitbrush	*Chrysothamnus nauseosus*
Green rabbitbrush	*Chrysothamnus viscidiflorus*
Tall sage brush	*Artemisia tridentate*
**note patches where recently burned, no veg.*	
Energy Facility Site and Surrounding Buffer Land Dominants	
Cheat grass	*Bromus tectorum*
Storks bill/Filaree	*Erodium cicutarium*
Gray rabbitbrush	*Chrysothamnus nauseosus*

Table 4-1 Dominant Vegetation in the Site Boundary

Common	Scientific
Green rabbitbrush	*Chrysothamnus viscidiflorus*
Tumble mustard	*Sisymbrium altissimum*
Bluebunch wheatgrass	*Pseudoroegneria spicata*
Sandberg's bluegrass	*Poa secunda*
Desert parsley	*Lomatium sp.*
Tall sage brush	*Artemisia tridentate*
Sub-dominants (not listed above)	
Idaho fescue	*Festuca Idahoensis*
Hood's phlox	*Phlox hoodii*
Fiddle neck	*Amsinckia retrorsa*
Yarrow	*Achillea millefolium*
Low pussytoes	*Antennaria dimorpha*
Needle and Thread grass	*Hesperostipa comata*
Strict buckwheat	*Eriogonum strictum*
Wavy-leaved microseris	*Microseris troximoides*
Sweetmarsh butterweed	*Senecio foetidus*
Amaranth	*Amaranth sp.*
Douglas brodiaea	*Brodiaea douglasii*
Alkali Swainsonpea	*Sphaerophysa salsula*
Rough cocklebur	*Xanthium strumarium L.*
Lamb's quarters	*Chenopodium album var. album*

4.1.2 Sensitive Plants and Noxious Weeds

Surveys for sensitive plants and noxious weeds were conducted simultaneously with habitat assessment and WGS surveys in 2010. Six sensitive plant species were identified in 2009 as potentially occurring in the Site Boundary and targeted during the 2009 field work. None of these sensitive species were observed during the 2009 survey effort. As a result, the Oregon Department of Agriculture (ODA) determined that no further survey for sensitive plant species was warranted. During the 2010 surveys, none of these sensitive plant species were observed.

The ODA has identified noxious weeds occurring in Gilliam and Morrow Counties. The ODA has designated two categories of noxious weeds, "A" list species and "B" list species. The "A" list contains weeds of known economic importance that occur in the state in small enough infestations to make eradication or containment possible, or are not known to occur but whose presence in neighboring states makes future occurrence seem imminent. The "B" list designates weeds of economic importance that are regionally abundant but that may have limited distribution in some counties (ODA 2009). Scotch thistle (*Onopordum acanthium*), bull thistle (*Cirsium vulgare*), and Canada thistle (*Cirsium arvense*), ODA "B" list species, occur near wetlands A, B, H, H-2, and J (Figure 4-1). Diffuse knapweed (*Centaurea diffusa*), also a "B" list species, was identified in the Study Area occurring near wetland H and B at an approximate density of 20%. Wetland A contains common reed (*Phragmites sp.*), potentially an "A" list noxious weed species, which requires laboratory analysis to determine if it is the

native or noxious subspecies. Additionally, surrounding wetlands A and J is a patch of alkali swainsonpea (*Sphaerophysa salsula)*, a noxious species on the ODA "B" list.

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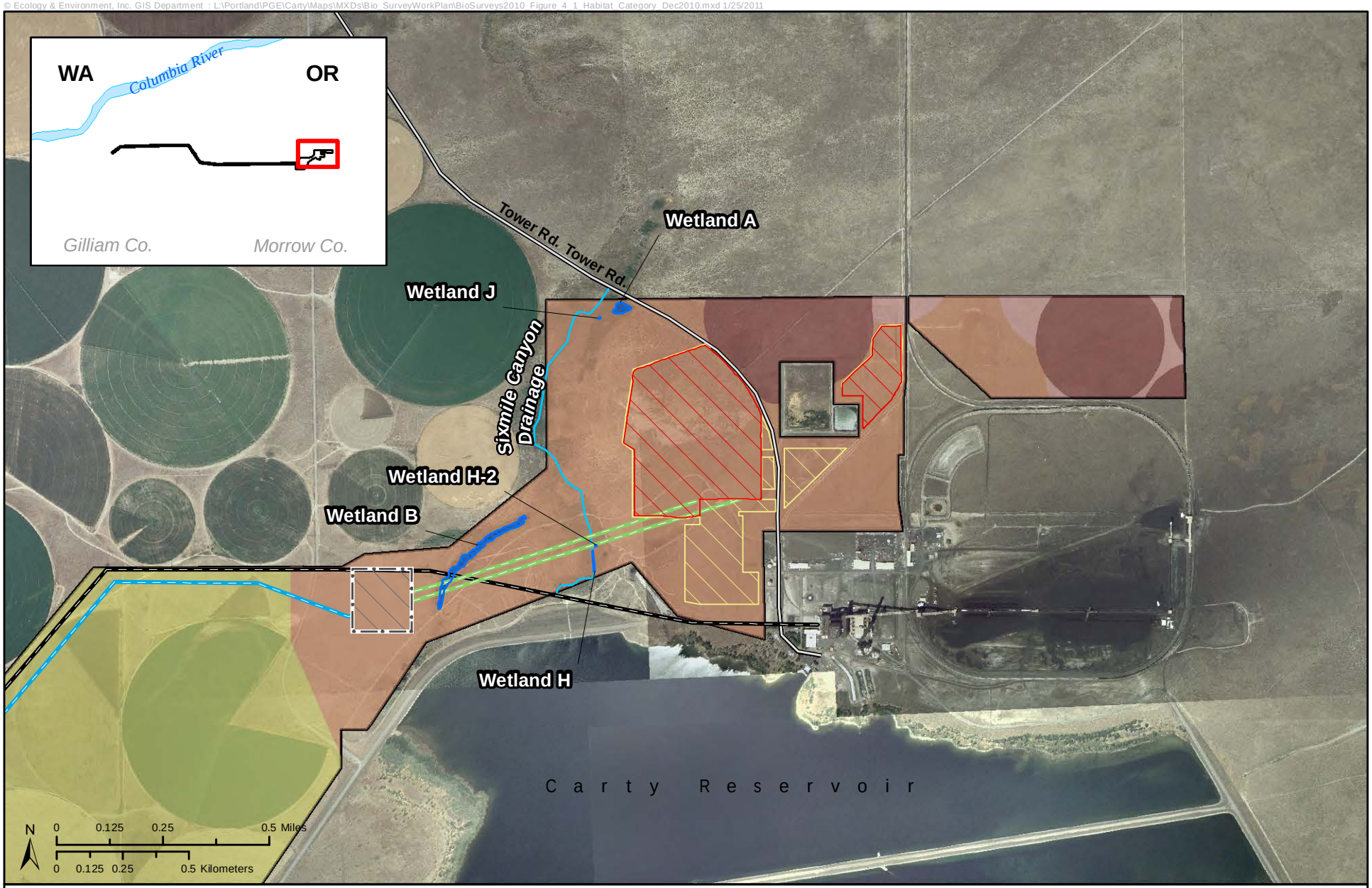

Habitat Category, Habitat Type

- 1, Washington Ground Squirrel 2009-2010 Occupied Range (E&E, PGE, and TNC)
- 2, WGS Reported Range 2000-2008 (TNC and PGE)
- 3, Riparian / Wetlands
- 4, Shrub-Steppe / Grazed-Weedy
- 6, Agriculture Cropland
- Drainage Feature
- Site Boundary
- Proposed Energy Facility Area
- Temporary Construction Area
- Proposed Grassland Switchyard

Transmission Lines

- Existing Boardman to Slatt Substation 500kV Centerline
- Proposed Line to Slatt Substation
- Proposed Line(s) to Grassland Switchyard

Figure 4-1
Energy Facility Site
Habitat Type and Category
PGE Carty Generating Station
2010 Biological Field Survey Report

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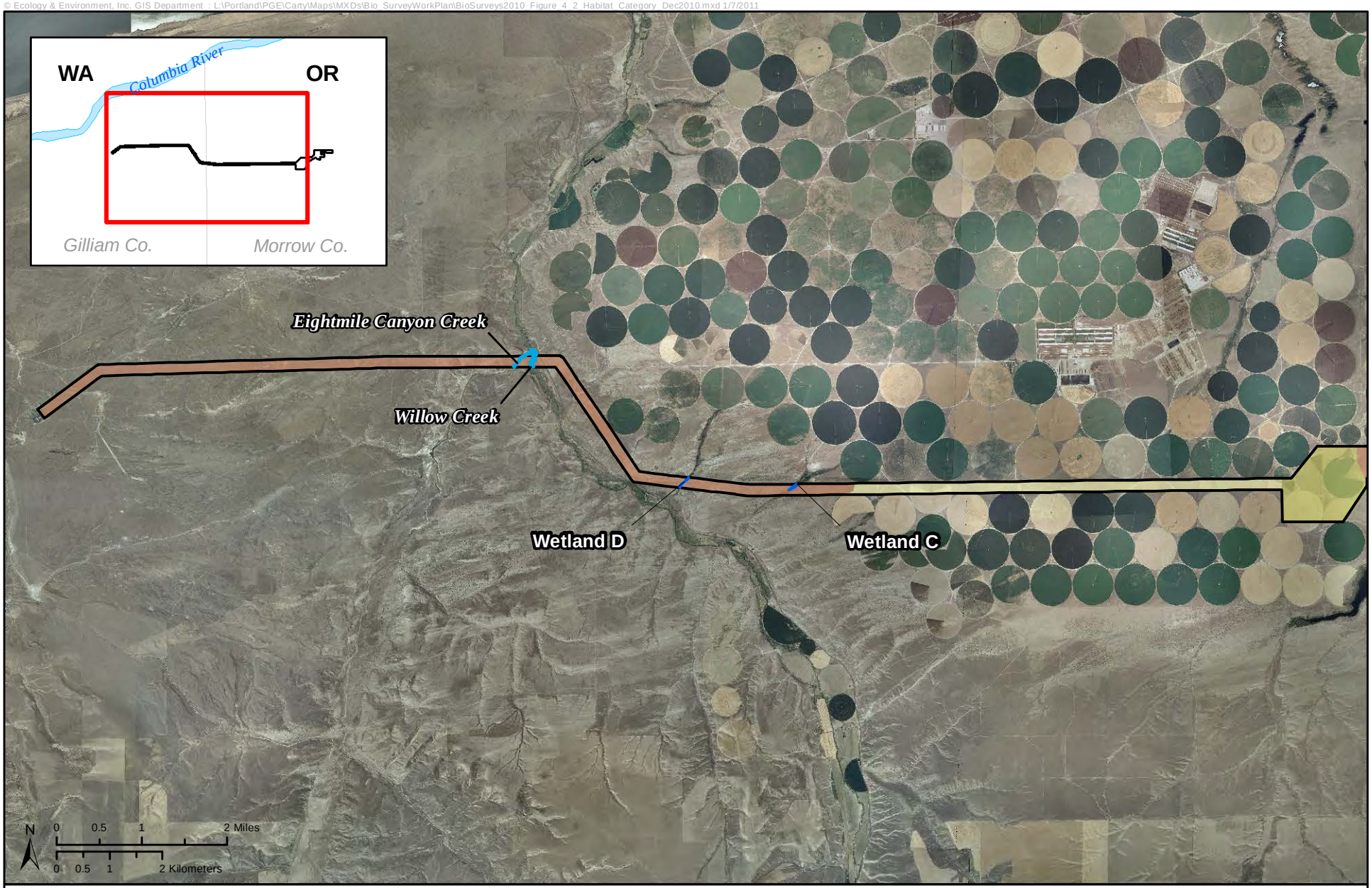

Habitat Category, Habitat Type

- 3, Riparian / Wetlands
- 4, Shrub-Steppe / Grazed-Weedy
- 6, Agriculture Cropland
- 6, Ag/Weedy Shrub ROW

- Drainage Feature
- Site Boundary

Figure 4-2
Trans. Line Area
Habitat Type and Category
PGE Carty Generating Station
2010 Biological Field Survey Report

4.1.3 Avian and Wildlife Species

Ground surveys for avian and wildlife species were conducted in the 2010 Study Area from May 4 through 14 and 24 through 28, concurrently with WGS surveys. Observations for the following sensitive species were conducted: Greater Sage-grouse, Grasshopper Sparrow, Sage Sparrow, Long-billed Curlew, Loggerheaded Shrike, Burrowing Owl, northern sagebrush lizard, and white-tailed jackrabbit.

No raptor nest surveys were conducted in 2010. An aerial survey will be conducted prior to construction to identify nests occupied during that season requiring avoidance or mitigation. In 2009, raptor nests were observed just south of the Site Boundary, adjacent to the Carty reservoir. These nests included an active Osprey (*Pandion haliaetus*) nest on an artificial nest stand at the reservoir shoreline and an active Great Horned Owl (*Bubo virginianus)* nest in a tree in the woodland to the west of the reservoir. The Great Horned Owl nest fledged two chicks in 2010. The nest of a Red-tailed Hawk (*Buteo jamaicensis*) located in a transmission tower slightly south of the site boundary near the Carty Spillway has been documented consistently over several years through PGE's Terrestrial Monitoring Program for the Boardman Plant. A Red-tailed Hawk and American Kestrel (*Falco sparverius*) were also observed in the Energy Facility Site Area; however, they did not exhibit breeding behaviors. Figures 4-3 through 4-7 display the locations of wildlife observations and noxious weeds found during 2009 and 2010 surveys.

Seventeen bird species were observed in the Energy Facility Site Area during 2010 surveys (Table 4.2). These observations included long-billed curlew, an ODFW "Vulnerable" species and federal "Species of Concern," indicating that they are not in imminent danger of being listed as threatened or endangered, but could be if changes in populations, habitat, or increased threats occur. A breeding pair of Long-billed Curlews and at least one fledgling (Exhibit P, Figure P-2 of the ASC) were seen in 2009 approximately one mile north of the 2010 Study Area, and a few individuals were seen during 2010 surveys.

Table 4-2 Bird Species Observed in the Study Area During 2010 Surveys

Common Name	Latin Name	Energy Facility Site	Transmission Line
American Goldfinch	*Carduelis tristis*	x	
American Kestrel	*Falco sparverius*		x
American Robin	*Turdus migratorius*		x
Black-billed Magpie	*Pica hudsonia*		x
Brewer's Blackbird	*Euphagus cyanocephalus*		x
California Quail	*Callipepla californica*		x
Cliff Swallow	*Petrochelidon pyrrhonota*	x	x
Common Raven	*Corvus corax*	x	x
Great Horned Owl	*Bubo virginianus*	x	
Horned Lark	*Eremophila alpestris*	x	x

Table 4-2 Bird Species Observed in the Study Area During 2010 Surveys

Common Name	Latin Name	Energy Facility Site	Transmission Line
Killdeer	*Charadrius vociferus*		x
Loggerhead Shrike	*Lanius ludovicianus*		x
Long-Billed Curlew	*Numenius americanus*	x	x
Mallard	*Anas platyrhynchos*	x	
Mourning Dove	*Zenaida macroura*		x
Northern Flicker	*Colaptes auratus*		x
Northern Harrier	*Circus cyaneus*	x	x
Osprey	*Pandion haliaetus*	x	x
Red-tailed Hawk	*Buteo jamaicensis*	x	x
Red-winged Blackbird	*Agelaius phoeniceus*	x	x
Ring-necked Pheasant	*Phasianus colchicus*		x
Savannah Sparrow	*Passerculus sandwichensis*		x
Say's Phoebe	*Sayornis saya*	x	
Swainson's Hawk	*Buteo swainsoni*	x	x
Turkey Vulture	*Cathartes aura*	x	
Western Kingbird	*Tyrannus verticalis*	x	x
Western Meadowlark	*Sturnella neglecta*	x	x
White-crowned Sparrow	*Zonotrichia leucophrys*	x	

Other wildlife species observed in 2010 within the Energy Facility Site and surrounding buffer land included mule deer (*Odocoileus hemionus*), white-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), western rattlesnake (*Crotalus viridis*), and western yellow-bellied racer (*Coluber constrictor mormon*).

Several insects were observed in the 2010 Study Area while searching for WGS and burrows on May 24 through 28, 2010. Photos were compiled and viewed for defining characteristics of the individuals to view against guides to obtain the highest level of classification. Because photos were taken in passing, not all defining characteristics were obtained to complete identification to the species level for each individual. Eight specific insects were identified in the Energy Facility Site 2010 Study Area, as shown in Table 4-3.

Table 4-3 Insects Observed in the Study Area

Common Name/Group	Highest Identified Taxonomic Level	Generating Station	Transmission Line
Ichneumon wasp	(Family) Ichneumonidae		x
Pond damsel	*Enallagma* sp.		x
Potter wasp	(Subfamily) Eumeniane	X	
Robber fly	*Efferia* sp.		x
Skunk beetle	*Elodes* sp.	X	x
Solitary wasp	*Ammophila* sp.		x
Shield-backed katydid	(Subfamily) Tettigoniinae	X	
Variegated meadowhawk	*Sympetrum corruptum*	X	

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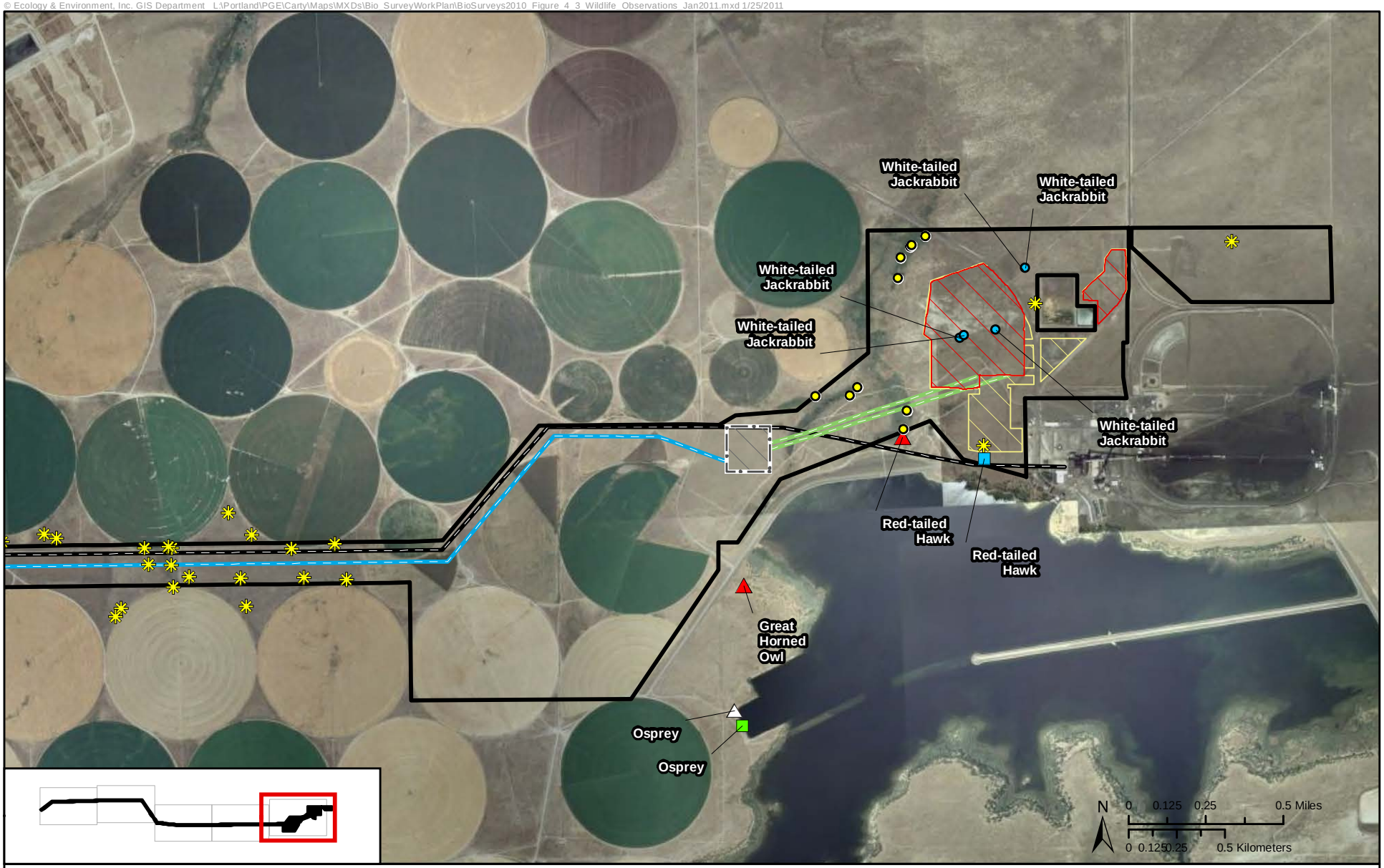

2010 Field Observation
- Sensitive Species Observation
- Raptor Observation

2009 Field Observation
- Sensitive Species Observation
- Raptor Observation

Raptor Nest
- Active Nest
- Inactive Nest
- Unknown Nest

Noxious Weed
- 2009
- 2010

- Proposed Energy Facility Site
- Temporary Construction Areas
- Proposed Grassland Switchyard
- Site Boundary
- Slatt Substation

Transmission Lines
- Existing Boardman to Slatt Substation 500kV Centerline
- Proposed Line to Slatt Substation
- Proposed Line(s) to Grassland Switchyard

Figure 4-3
Wildlife and Noxious Weed Observations
PGE Carty Generating Station
2010 Biological Field Survey Report

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2010 Field Observation
- Sensitive Species Observation
- Raptor Observation

2009 Field Observation
- Sensitive Species Observation
- Raptor Observation

Raptor Nest
- Active Nest
- Inactive Nest
- Unknown Nest

Noxious Weed
- 2009
- 2010

- Proposed Energy Facility Site
- Temporary Construction Areas
- Proposed Grassland Switchyard
- Site Boundary
- Slatt Substation

Transmission Lines
- Existing Boardman to Slatt Substation 500kV Centerline
- Proposed Line to Slatt Substation
- Proposed Line(s) to Grassland Switchyard

Figure 4-4
Wildlife and Noxious Weed Observations
PGE Carty Generating Station
2010 Biological Field Survey Report

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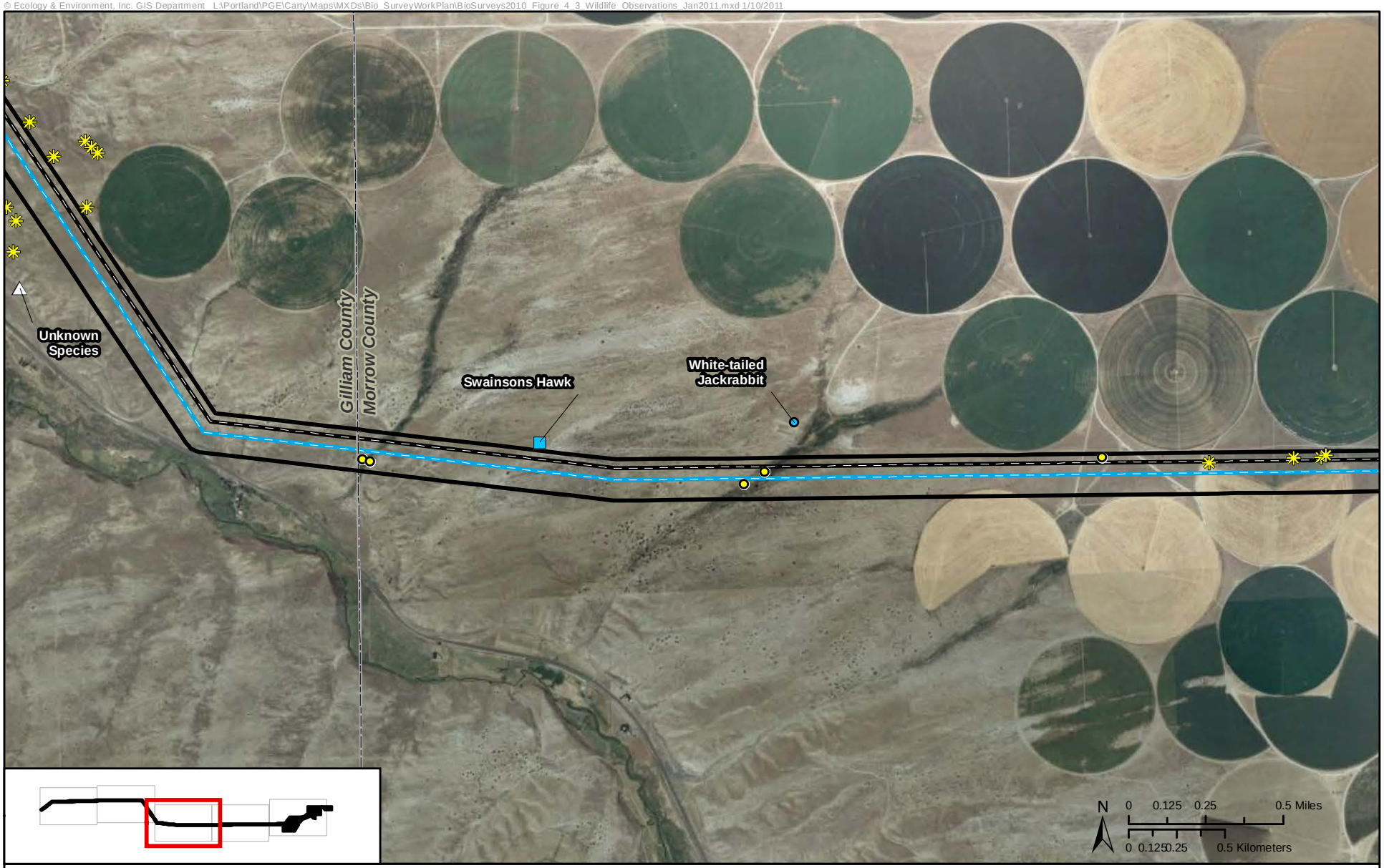

2010 Field Observation
- Sensitive Species Observation
- Raptor Observation

2009 Field Observation
- Sensitive Species Observation
- Raptor Observation

Raptor Nest
- Active Nest
- Inactive Nest
- Unknown Nest

Noxious Weed
- 2009
- 2010

- Proposed Energy Facility Site
- Temporary Construction Areas
- Proposed Grassland Switchyard
- Site Boundary
- Slatt Substation

Transmission Lines
- Existing Boardman to Slatt Substation 500kV Centerline
- Proposed Line to Slatt Substation
- Proposed Line(s) to Grassland Switchyard

Figure 4-5
Wildlife and Noxious Weed Observations
PGE Carty Generating Station
2010 Biological Field Survey Report

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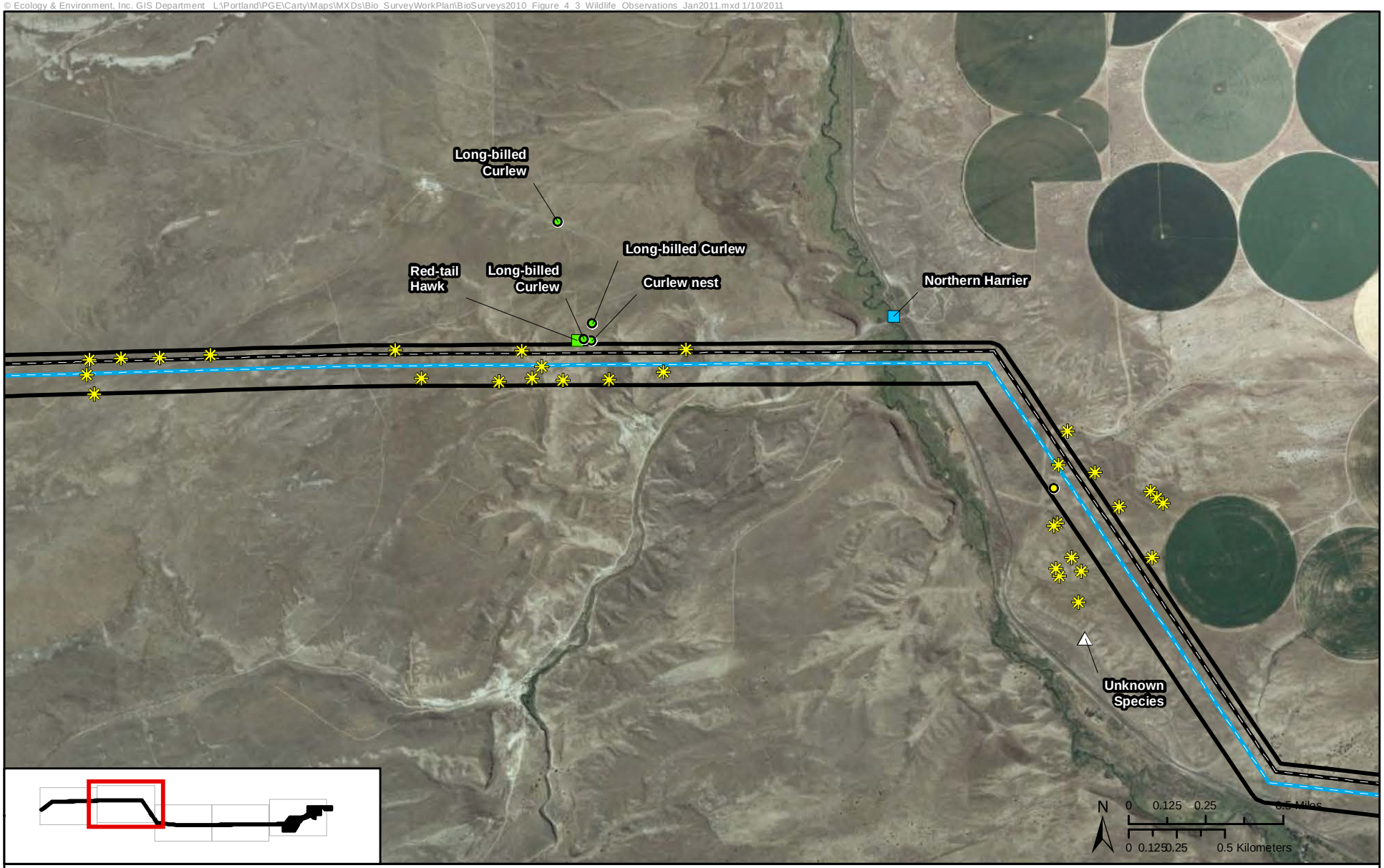

2010 Field Observation
- Sensitive Species Observation
- Raptor Observation

2009 Field Observation
- Sensitive Species Observation
- Raptor Observation

Raptor Nest
- Active Nest
- Inactive Nest
- Unknown Nest

Noxious Weed
- 2009
- 2010

- Proposed Energy Facility Site
- Temporary Construction Areas
- Proposed Grassland Switchyard
- Site Boundary
- Slatt Substation

Transmission Lines
- Existing Boardman to Slatt Substation 500kV Centerline
- Proposed Line to Slatt Substation
- Proposed Line(s) to Grassland Switchyard

Figure 4-6
Wildlife and Noxious Weed Observations
PGE Carty Generating Station
2010 Biological Field Survey Report

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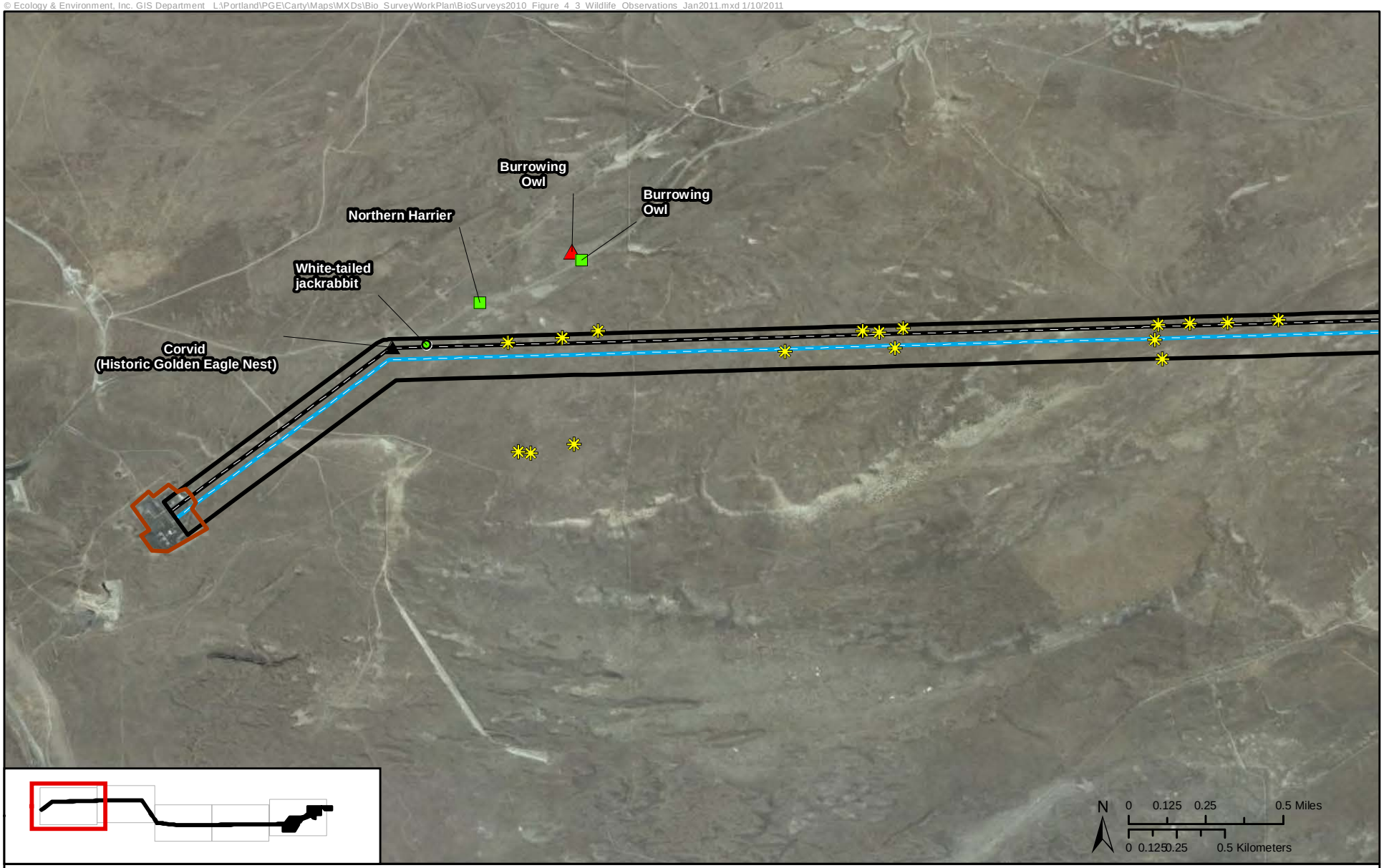

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Figure 4-7
Wildlife and Noxious Weed Observations
PGE Carty Generating Station
2010 Biological Field Survey Report

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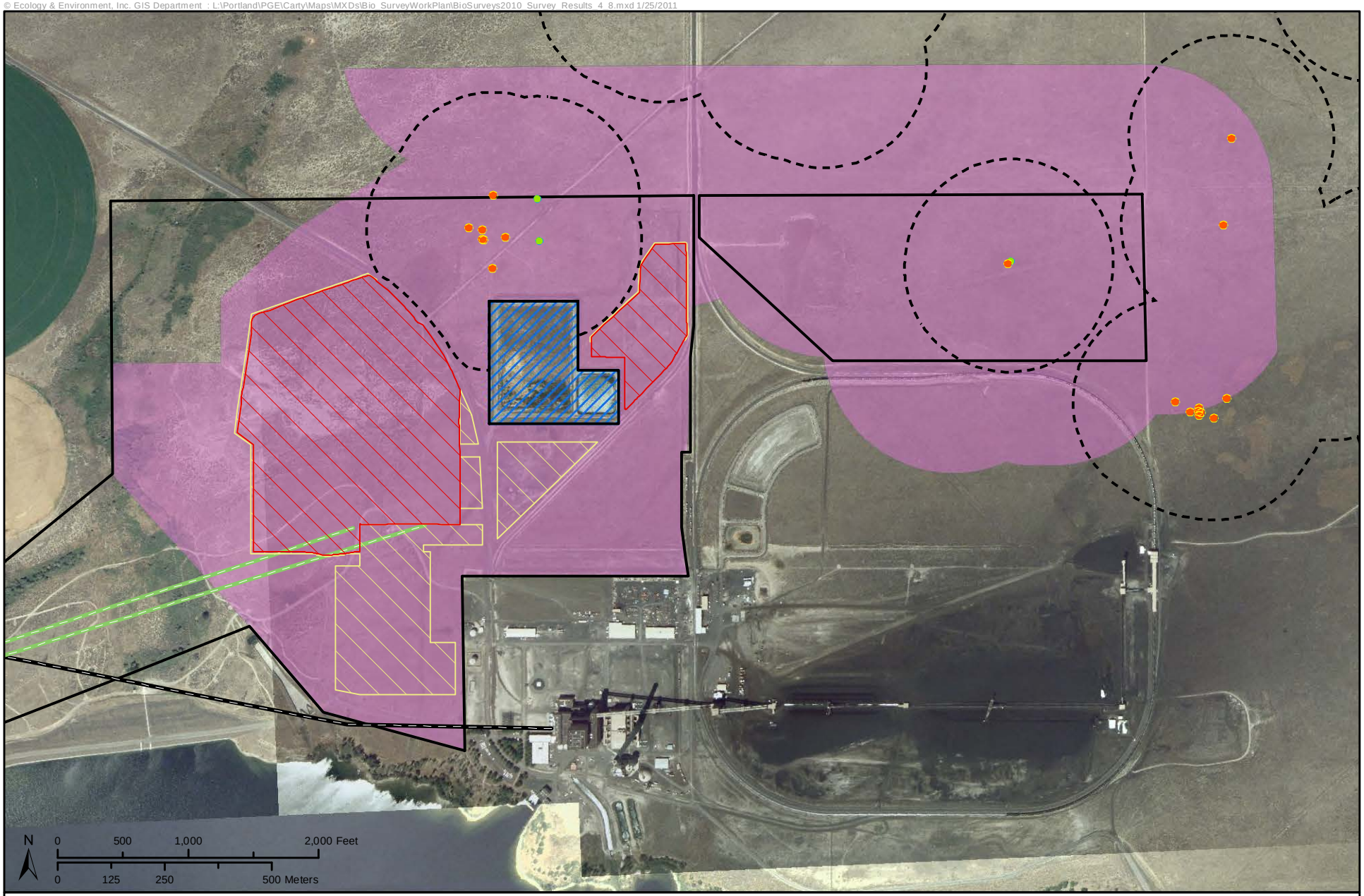

Figure 4-8
Washington Ground Squirrel Survey Results
PGE Carty Generating Station
2010 Biological Field Survey Report

4.1.4 Threatened and Endangered Species: Washington Ground Squirrels

In 2009, biologists walked transects in the Study Area where WGS habitat was identified by ORNHIC data and an expanded survey corridor of an additional 1,000 feet beyond the Site Boundary within the ORNHIC polygons (Exhibit P, Figure P-1). Observations of possible WGS activity or presence were documented and locations recorded using a GPS. Areas outside the ORNHIC habitat, but inside the Energy Facility Site, were examined for WGS potential burrows in areas where habitat and soils were suitable. The 2009 surveys resulted in documentation of burrows with potential to be utilized by WGS currently or in the recent past. Burrows were evaluated based on size of burrow entrance holes, evidence of recent use such as trimming of vegetation and roots around the hole, presence of spider webs, recent digging or collapse, and proximity to additional burrows and travel pathways between burrows in the patch.

Surveys for WGS in 2010 were conducted May 4 through 14 and 24 through 28. The survey protocols are detailed in the Work Plan attached to this report in Appendix A. WGS burrows were identified in the Energy Facility Site area. One patch of burrows was found north of the existing evaporation pond and included six burrows with fresh scat distributed in an area approximately 500 feet in diameter. The construction disturbance area is 705 feet from the nearest burrow in this patch, although Tower Road bisects the area at 630 feet from the burrow. In consultation with ODFW, it was determined that Tower Road is a significant habitat boundary and the WGS buffer ends where it meets Tower Road. In the eastern portion of the Energy Facility Site Buffer Area, a burrow was located near the center with both fresh scat and older scat (likely from the previous year). This burrow is over 2400 feet from the nearest construction disturbance area. Within the 1,000-foot extended survey area to the southeast of the Energy Facility Site, a patch of burrows was identified that included abundant fresh scat, and auditory alarm calls from the squirrels were heard. This burrow patch is approximately 380 feet southeast of the site boundary and over 3,800 feet from the nearest construction disturbance area. Two more additional burrows with fresh scat were observed within the eastern extended survey area. One of these was approximately 600 feet east of the Site Boundary, and the other was approximately 790 feet northeast of the Site Boundary (burrow locations observed in 2010 are shown in Figure 4-8).

Observations of scat that appeared to have come from a mouse, vole, or rat were found at many of the potential burrows identified in 2009. Additionally, several of the burrows showed tracks from tail drag by a rodent species with a narrow, non-bushy tail unlike that of a WGS. These are indicators that the inhabitant is likely a non-squirrel species.

Current populations of WGS are at substantially low numbers (Marr 2010); however, undocumented activity does not rule out future use of an area should population recovery occur. Areas identified as occupied by WGS during 2010 surveys will be surveyed again

prior to construction. Ongoing consultation with Travis Schultz (ODFW), Steve Cherry (ODFW), and Vern Marr (research biologist specializing in WGS) has aided in developing an understanding of the current status of WGS populations in the Study Area.

4.2 Transmission Line Corridor

4.2.1 Habitat

The transmission line corridor contains heavily grazed shrub-steppe habitat, weedy shrub-steppe habitat, agriculture cropland, and some riparian areas. The portion of ROW lying west of the Willow Creek crossing consists of heavily grazed shrub-steppe dominated by non-native cheat grass and stork's bill and occasional patches of green and grey rabbitbrush, Sandberg's bluegrass, and bluebunch wheatgrass, with sub-dominants of yarrow, and fiddle neck. A sheep farming operation centered within the ROW is the primary source of graze impact. The area east of Willow Creek in the ROW consists of similar grazed shrub-steppe habitat for approximately eight miles before becoming a strip of weedy shrub-steppe habitat neighboring irrigated agriculture crops to the north and south. The weedy shrub-steppe vegetation consists predominantly of cheat grass, green and grey rabbit brush, Russian thistle, tumble mustard, and yarrow, with occasional areas of big sagebrush and Sandberg's bluegrass. The section east of Willow Creek also includes two herbaceous wetlands (C and D) fed primarily by cropland irrigation runoff from agriculture to the north. Table 4-1 lists dominant plant species found across the Study Area, and Figure 4-2 shows habitat type and categories found in the Site Boundary.

4.2.2 Sensitive Plants and Noxious Weeds

Surveys for sensitive plants and noxious weeds were conducted simultaneously with habitat assessment and WGS surveys during each Site visit. Six sensitive species were identified as potentially occurring in the project vicinity and targeted during field work where suitable habitat was encountered. Surveys were conducted during blooming periods for these six species to optimize potential for identification. No sensitive plant species were found in the Study Area in 2009 or 2010.

West of Highway 74, yellow star-thistle (*Centaurea solstitialis*), which is on the ODA "B" list of noxious weeds, occurred occasionally as individual plants sparsely distributed for approximately 2 miles, totaling density of less than 10%. In the Study Area immediately east of Hwy 74, an approximately 60-acre patch of yellow star-thistle was observed, ranging in density from 10% to 50% cover (see Figure 4-6). Additionally, yellow star-thistle was found in the margin surrounding wetland C and D at varying patch widths of 1 to 20 feet and percent cover ranging from 10% to 90%. Additional patches of yellow star-thistle were encountered randomly east of wetland D in the ROW between the agriculture fields at a density of typically less than 10%, with the exception of a dense patch (10% to 50%) approximately 1.3 acres in size located approximately 6.7 miles west of the Energy Facility

Site. Bull thistle was also found distributed at a density of less than 10% in the transmission line ROW approximately one half mile west of Willow Creek and continuing at low density to the west end of the ROW. Perennial pepperweed (*Lepidium latifolium*), an invasive weed in Oregon on the "B" list of noxious weeds, was also found in a small patch in wetland D. Figures 4-3 through 4-7 identify locations of noxious weed observations where density was generally over 10% along the transmission line ROW.

4.2.3 Avian and Wildlife Species

Avian and wildlife species surveys were conducted as incidental observations concurrently with WGS surveys in the 2010 study area. Additional raptor nest surveys will be conducted prior to construction. The 2009 raptor nest survey results included an active burrowing owl burrow, an inactive stick nest on a rocky ledge, and a stick nest constructed in a transmission tower at the western end of the Study Area. According to ODFW, the nest in the transmission tower has historically been occupied by Golden Eagles (*Aquila chrysaetos*), although 2010 surveys observed it being used by a corvid (most likely a common raven). Eight raptor species were observed in the proposed transmission line Study Area in 2009, and two species were observed in 2010, including Swainson's Hawk, which is a sensitive species (Table 4-2).

Twenty-two bird species have been observed in the Carty Transmission Line Project area from 2009 and 2010 surveys (Table 4-2). These observations included a pair of Long-billed Curlews with a three-egg nest that was discovered on May 6, 2009 (in Figure 4-6, this is identified with several 2009 "Avian" points clustered near the center). A follow-up visit on June 23, 2009, produced no signs of the adults, and the nest contained only egg shell fragments and two dead chicks, still early in their post-hatching development. There was no indication that the nest had been depredated. Surveys conducted in 2010 did not identify any nesting curlews.

Incidental observations of other wildlife were few and infrequent, and consisted of mule deer, coyote, white-tailed jackrabbit, a vole (likely *Lemmiscus curtatus*), a rodent likely to be Ord's Kangaroo rat (*Dipodomys ordii*), numerous Western rattlesnakes (*Crotalus oreganus*), gopher snake (*Pituophis catenifer*), western yellow-bellied racer (*Coluber mormon*), and western fence lizard (*Sceloporus occidentalis*).

Within the 2010 transmission line survey area, eight specific insects were identified as shown in Table 4-3.

4.2.4 Threatened and Endangered Species: Washington Ground Squirrels

Surveys for WGS along the transmission line ROW were conducted during the same field visit as the Energy Facility Site surveys and included the same methods as described in Appendix A, Work Plan. Potential WGS burrows were documented during 2009 surveys.

The 2010 survey area was determined by the locations where potential burrows were identified that were in suitable habitat or where soil conditions appeared favorable for supporting burrow structures. No WGS scat was found, no auditory alarm calls were heard, and no individuals were observed during the E & E surveys in 2009 or 2010 in the transmission line ROW. Observations of scat that appeared to have come from a mouse, rat, or vole were identified at many of the active burrows. Also, several of the burrows showed tail drag marks made by a rodent species with a narrow, non-bushy tail like a rat or mouse and unlike that of a ground squirrel. These are indicators that the inhabitant is likely a non-squirrel species.

5 Conclusions and Recommendations

The Study Area contains shrub-steppe rangeland habitat, weedy shrub-steppe, agriculture cropland, riparian areas, and industrial areas associated with the adjacent Boardman Plant. Six wetlands and three streams have been identified within the Study Area.

The WGS has been documented inhabiting the northeastern area of the Energy Facility Site and surrounding buffer lands. 2010 surveys revealed a patch of burrows north of the existing evaporation pond and in the east buffer area of the Energy Facility Site. Additional burrows occur southeast, east, and northeast of the Site boundary in the extended Study Area. Occurrences were documented in the area in 2009, although they were outliers from the more active burrowing areas found outside the Study Area. The Nature Conservancy's data from monitoring efforts over the past 10 years show fluctuating levels of occurrence, which generally coincides with the ORNHIC habitat polygon data at this location. No burrows showed evidence of WGS occupation in the western portion of the transmission line ROW. Patches of potential burrow sites were examined for scat and evidence of the inhabitant. The identified burrows will be revisited and the surrounding areas surveyed prior to construction to document any movement of the inhabitants.

Sensitive species observed within the 2010 Study Area include Washington ground squirrel, white-tailed jackrabbit, Long-billed Curlew, a single Swainson's Hawk and a Loggerhead Shrike. Several patches of noxious weeds were found, including both broad, low density distributions and concentrated patches of yellow star-thistle; an isolated occurrence of perennial pepperweed in wetland; and diffuse knapweed, bull thistle, and possibly invasive common reed in wetland A.

Based on the results of field observations and surveys, it is recommended that surveys be conducted for WGS prior to construction, as stated in the Carty Generating Station Wildlife and Habitat Monitoring and Mitigation Plan (Monitoring and Mitigation Plan). Surveys should be conducted during April and May. It is also recommended that an aerial raptor nest survey be conducted prior to construction in the spring, and nest occupancy/fledging surveys be conducted at active nests during construction.

Noxious weeds are present in the transmission line ROW and the Energy Facility Site and surrounding buffer lands. It is recommended that a common reed specimen be sent to ODA to determine if it is an invasive "A" list noxious weed. If found to indeed be noxious, appropriate methodologies should be used as soon as possible to remove that species, and other "B-list" noxious weeds should be controlled in areas where Project features will disturb the soil.

It is recommended that collaboration with the Natural Resource Conservation Service, the ODA, and the ODFW be continued to ensure that revegetation plans for construction disturbance areas are implemented successfully according to the Monitoring and Mitigation Plan. There is potential that currently degraded shrub-steppe wildlife habitat in the transmission line corridor and Energy Facility Site can be enhanced and improved with weed control and revegetation activities in temporary disturbance areas.

6 References

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----------. December 15, 2010. Letter from USFWS La Grande Field Office to Ms. Sue Oliver, Energy Facility Siting Officer, Oregon Department of Energy. Subject: “Comments on the Wildlife and Habitat Monitoring and Miigation Plan for the PGE Carty Generating Station locted in Morrow and Gilliam Counties, Oregon (13420-2011-TA-0039).

Appendix A: Work Plan

Biological Survey Work Plan
for the
Carty Generating Station
Boardman, Oregon

April 2010

Prepared for:

Portland General Electric

Prepared by:

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Table of Contents

Section **Page**

Executive Summary 1

1 Introduction 1-1
1.1 Biological Survey Agency Coordination 1-2
1.2 Site Description and Analysis Area 1-2

2 Vegetation and Habitat Mapping 2-1
2.1 Land Cover and Vegetation Classification 2-1
2.2 Mapping Methods 2-2
2.2.1 Vegetation Mapping Data 2-2
2.2.2 Vegetation Ground Truthing 2-2
2.3 Final Habitat Maps 2-2

3 Field Survey Schedule 3-1

4 Wildlife Resources Field Surveys 4-1
4.1 Survey Components and Methods 4-1
4.1.1 Wildlife Surveys – Overview 4-1
4.1.2 Washington Ground Squirrel 4-3
4.1.3 Ferruginous Hawk, Swainson's Hawk, Golden Eagle, and Other Raptor Nests 4-3
4.1.4 Migratory and Breeding Bird Surveys 4-4
4.2 Potential Additional Wildlife Observations and Surveys 4-5

5 Sensitive Plant Species and Noxious Weed Surveys 5-1
5.1 Survey Components and Methods 5-2
5.1.1 Existing Literature/Data 5-2
5.1.2 Sensitive Plant Survey Timing 5-3
5.1.3 Survey Method 5-3
5.1.4 Rare Plant Site Documentation 5-3
5.1.5 Noxious Weed Survey Method 5-3

6 Wetlands and Waters Delineation 6-1

7 Data Collection and Reporting 7-1
7.1 Compilation and Storage 7-1
7.2 Technical Reports 7-1

Table of Contents (cont.)

Section		Page
8	References	8-1
A	Wildlife Survey Protocols	A-1
B	Special Status Plant Descriptions	B-1
C	Noxious Weeds List of Oregon	C-1
D	Wetland Delineation Data Form (Arid West Region)	D-1

List of Tables

Table **Page**

Table 3-1 Timeframe for Wildlife and Vegetation Surveys 3-2

Table 4-1 Sensitive Wildlife Species Potentially Occurring Onsite 4-2

Table 5-1 Sensitive Plant Species, Survey Timeframe Identified for Field Surveys..... 5-1

List of Figures

Figure **Page**

Figure 1-2 2010 Survey Areas 1-7

List of Abbreviations and Acronyms

API	Aerial Photo Interpretation
ASC	Application for Site Certificate
CRP	Conservation Reserve Program
E & E	Ecology and Environment, Inc.
EFSC	Oregon Energy Facility Siting Council
ES	Ecological Systems
ESA	Endangered Species Act
GIS	Geographic Information System
GPS	Global Positioning System
mph	miles per hour
NOI	Notice of Intent
NWR	National Wildlife Refuge
NW ReGap	Northwest Regional Gap Analysis Project
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ORNHIC	Oregon Natural Heritage Information Center
PGE	Portland General Electric Company
Project	Portland General Electric Company proposed Carty Generating Station
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
Work Plan	Draft Biological Survey Work Plan

Executive Summary

Portland General Electric Company is proposing to construct, operate, and maintain a combined-cycle natural gas–fired power generating facility and an associated 18-mile transmission line. The proposed Carty Generating Station would be capable of producing up to 900 megawatts of electricity. The station will be located approximately 13 miles southwest of Boardman, Oregon, adjacent to the existing Boardman Generating Plant and associated Carty Reservoir in Morrow County, Oregon. The transmission line will originate at the Carty Generating Station and extend west, along an existing transmission line corridor, approximately 18 miles to the Bonneville Power Administration's Slatt substation located in Gilliam County, Oregon.

This Draft Biological Survey Work Plan describes the surveys that will be conducted to obtain site-specific information required to support Exhibits J, P, and Q of the Application for Site Certificate. Information provided in the Application for Site Certificate will be used by the Oregon Department of Energy-Energy Facility Siting Council during its evaluation of the Carty Generating Station. This work is being undertaken to comply with the Oregon Energy Facility Siting Council requirements, Oregon Department of Fish and Wildlife habitat categorization requirements, and the Federal Endangered Species Act of 1973. The purpose of the surveys is to identify wildlife resources, vegetation resources, special status species, and wetlands and waters of Oregon and the United States that may be present within the project area.

The areas proposed for surveys in 2010 differ slightly from those surveyed in 2009 due to layout refinements. The 2009 survey for species of concern included study areas based on typical default conditions: a 250-foot buffer around the proposed footprint of the Carty Generating Station site boundary and a 350-foot buffer on both sides of the transmission line centerline (700-foot total width), with the following exceptions. The survey areas were expanded to include a 1000-foot buffer where suitable habitat occurs for Washington ground squirrel, and a one-mile buffer for the raptor nest survey. Areas surveyed in 2009 are shown in Figure 1-1.

The 2010 Analysis Area represents the Analysis Area defined in the Project Order issued by the Oregon Department of Energy in November 2009. The Analysis Area has been modified to reflect the revised site boundary of the Carty Generat-

ing Station (the Application for Site Certificate reflects the most current site boundary, which encompasses a smaller area than that shown in the Notice of Intent). Survey areas proposed for 2010 are shown in Figure 1-2, and details are provided below in section 4.1. This Work Plan describes the following aspects of pre-construction biological survey work for the Carty Generating Station project: vegetation and habitat mapping methods; survey components and methods for sensitive wildlife, sensitive plants, and wetlands; biological field survey schedules and detailed location maps; and data collection and reporting protocols.

Vegetation and Habitat Mapping

The Northwest Regional Gap Analysis Project or derivatives from this dataset will be used as the foundation for vegetation and habitat mapping. Aerial photography of the project area, in addition to field observations, will be used to verify and correct Gap Analysis data, and develop vegetative cover and habitat maps of the entire Analysis Area with land cover types accepted by the appropriate agencies.

Wildlife Surveys

The wildlife resources field survey section of the Work Plan describes the proposed method for wildlife surveys and the proposed survey schedule (Table 3-1). Communication with the Oregon Department of Fish and Wildlife and U.S. Fish and Wildlife Service identified the following sensitive wildlife that will require site-specific survey techniques beyond general observational surveys typically used to characterize the site and identify natural resources:

- Washington ground squirrel (*Spermophilus washingtoni*) and associated burrows;
- Raptors, including ferruginous hawk (*Buteo regalis*), Swainson's hawk (*B. swainsoni*), and golden eagle (*Aquila chrysaetos*).

All observed wildlife and signs of wildlife will be recorded during all survey activities conducted on site. Other sensitive species with the potential to occur within the Analysis Area include white-tailed jack rabbit (*Lepus townsendii*), greater sage-grouse (*Centrocercus urophasianus*), sage sparrow (*Amphispiza belli*), burrowing owl (*Anthene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), grasshopper sparrow (*Ammodramus savannarum*), long-billed curlew (*Numenius americanus)*, and northern sagebrush lizard (*Sceloporus graciosus*).

Surveys for Washington ground squirrels will be conducted during their peak activity periods, typically between April and May, and comply with the survey protocol. Based on data received from the Oregon Natural Heritage Information Center, suitable habitat for Washington ground squirrels occurred within and near the 2010 Analysis Area. Surveys conducted during 2009 revealed areas of concentrated burrowing activity with potential presence of Washington ground squirrels. Surveys during 2010 will concentrate on these areas to confirm presence or absence of Washington ground squirrels.

Ferruginous hawk, Swainson's hawk, golden eagle, and other raptor nest locations were surveyed from the ground in 2009 around the proposed Carty Generating Station area and along the 18-mile transmission line route. Aerial surveys will be conducted prior to the expected start of construction, likely spring 2011, and will be followed by ground surveys to verify species identification for nests where positive identification was not possible in the helicopter. This is important because species may have different construction buffers associated with their nests. The objective of the raptor nest survey is to locate all raptor nests that may be subject to disturbance from project construction or operation and maintenance.

Sage-grouse are reported to have been extirpated from the area, and there are no active leks documented within the Analysis Area (Schultz 2009a). However, if birds or scat are detected during site-specific surveys, greater sage-grouse lek surveys will be conducted between mid-April and early May. The number of males, females, and unclassified birds in attendance will be noted at each lek found, along with other pertinent information such as current weather conditions and land cover type.

General avian species occurrence was documented during 2009 surveys and will be documented during transect surveys for Washington ground squirrel and other species along the transmission line right-of-way in May 2010. Due to the availability of data on avian species found in the area, avian surveys conducted in 2010 are limited to incidental observations.

Incidental non-avian wildlife observations were also recorded during the 2009 surveys and will be recorded again during 2010 surveys. Surveyors will record sensitive species locations, if encountered.

Sensitive Plant and Noxious Weed Surveys

Surveys for sensitive plant species and noxious weeds within the Analysis Area will be conducted as described in this Work Plan. Plant surveys in 2009 were conducted at appropriate times to best identify sensitive species according to their habitat requirements and life history, with specific consideration to blooming period. No sensitive plant species were identified in the Study Area during 2009 surveys. Surveyors will document occurrence of sensitive plants during 2010 surveys if they are encountered.

No plant species protected under the Federal Endangered Species Act are known to occur in the Analysis Area. According to the U.S. Fish and Wildlife Service, there are six federal species of concern that occur in Gilliam and/or Morrow counties. Five of these species are Oregon state listed (ORNHIC 2007). The state listed species include Snake River goldenweed (*Haplopappus radiatus*) as endangered; Laurence's milk-vetch (*Astragalus collinus* var. *laurentii*) as threatened; and disappearing monkeyflower (*Mimulus evanescens*), dwarf evening-primrose (*Camissonia pygmaea*), and sessile mousetail (*Myosurus sessilis*) as candidates. The sixth species, Robinson's onion (*Allium robinsonii*), is not state listed.

Surveys conducted in 2009 for sensitive plant species were focused on locations of potentially suitable habitat and during the highest likelihood of blooming to ensure positive identification. For these surveys, two botanists walked parallel to each other at distances determined by the size of the target species and the height and density of the surrounding vegetation to ensure thorough visual inspection of potentially occupied areas (see section 5.1.3 for further details). No sensitive plant species are known to occur within the Analysis Area, and surveyors did not locate any sensitive plant species during 2009 surveys. The Oregon Department of Agriculture has reviewed the 2009 field survey results and requires no further surveys for sensitive plant species in the Analysis Area. Incidental observations of sensitive plants will be recorded during 2010 survey work.

Noxious weeds are non-native, invasive species that threaten agriculture, rangelands, waterways, parks, wildlife, property values, public health and safety, and general ecological health and diversity of native ecosystems. Noxious weed locations identified in 2009 were marked where found at significant densities or patch sizes. The 2009 survey area contained multiple locations with noxious weeds present in both low-density distributions and high-density patches (see the *2009 Biological Field Survey Report for the Carty Generating Station* [PGE 2009a] for more information). Collecting noxious weed data will continue during 2010 surveys. Existing site-specific disturbances and land uses (e.g., grazing, grading, etc.) that may be contributing to the introduction, spread, or viability of weed populations will also be recorded.

Wetland Delineation

The Wetlands and Waters Delineation section (Section 6) of this Work Plan describes the methods that were used to identify and delineate wetlands and waters that occur in the Analysis Area for the Carty Generating Station and transmission line. Potential jurisdictional wetlands and waters are identified in the 2009 Wetland Delineation Report following current U.S. Army Corps of Engineers guidance developed specifically for the arid west (see Exhibit J of the ASC). A wetland functional assessment will be completed using the Oregon Rapid Wetland Assessment Protocol for wetlands if impacts are going to occur due to the project. However, under the current design, there are no anticipated significant impacts to potentially jurisdictional waters, and therefore this functional assessment is not necessary.

1 Introduction

Portland General Electric Company (PGE) is proposing to construct, operate, and maintain a combined-cycle natural gas–fired power generating facility and an associated 18-mile transmission line. The proposed Carty Generating Station would be capable of producing up to 900 megawatts of electricity. The Carty Generating Station will be located approximately 13 miles southwest of Boardman, Oregon, adjacent to the existing Boardman Generating Plant and associated Carty Reservoir in Morrow County, Oregon. The transmission line will originate at the Carty Generating Station and extend west, along an existing transmission line corridor, approximately 18 miles to the Bonneville Power Administration's Slatt substation located in Gilliam County, Oregon.

This Draft Biological Survey Work Plan (Work Plan) describes the surveys and tasks that were conducted in 2009 and those that will take place in 2010 to complete the biological resource studies necessary for the Oregon Energy Facility Siting Council (EFSC) evaluation of the Carty Generating Station. The work described herein is being conducted to comply with the Oregon EFSC requirements, Oregon Department of Fish and Wildlife (ODFW) Habitat Mitigation Policy, and the Federal Endangered Species Act (ESA) of 1973. Surveys are being undertaken to identify biological resources including special status wildlife and plant species, and wetlands and waters of Oregon and the United States that may be present within the Analysis Area. Sections 1.1 and 1.2 of this Work Plan describe agency coordination for the biological surveys, provide a general site and project description, and define the Analysis Area. Details of construction monitoring and post-construction surveys will be provided in a separate report that will include the habitat mitigation and restoration plan. The following sections of this Work Plan describe the pre-construction surveys for biological resources:

- Section 2: Vegetation and Habitat Mapping,
- Section 3: Field Survey Schedule,
- Section 4: Wildlife Resources Field Surveys,
- Section 5: Sensitive Plant Species and Noxious Weed Surveys,
- Section 6: Wetlands and Waters Delineation, and
- Section 7: Data Collection and Reporting.

1.1 Biological Survey Agency Coordination

Initial consultation with ODFW and the U.S. Fish and Wildlife Service (USFWS) took place in early 2009 to discuss survey protocols for identified wildlife species, rare plant species, vegetation, and general habitat assessment. PGE sent draft protocols to ODFW and USFWS for review prior to the 2009 survey efforts. The survey protocols included survey timeframes, locations, and sampling efforts. Agency specialists responded with input that was used to confirm the special status federal and state species that would require site-specific field surveys, the species targeted for supplemental observation, and the species for which field surveys would not be required. Section 4 (Table 4-1) discusses sensitive species and their current listing status in addition to their likelihood to occur on the project site. Agency feedback and comments were used to make in-field adjustments to the 2009 survey protocols. Recommendations have also been incorporated into this Work Plan where appropriate and will be incorporated into the 2010 field survey effort.

1.2 Site Description and Analysis Area

Within this Work Plan, the term "Site" includes any proposed location of the energy facility and its related or supporting facilities; for the Carty Generating Station, the Site covers approximately 2,400 acres. "Site Boundary" is the perimeter of the approximately 2,400-acre Site. Within the approximately 2,400-acre Site there are three areas, defined as follows: 1) The "Energy Facility Site" refers to approximately 90 acres of the Site near the Carty Reservoir; this area includes fenced portions that would enclose proposed buildings and structures, and fenced portions that would contain evaporation ponds; 2) Within the Energy Facility Site is an approximately 15-acre fenced switchyard located west of the energy facility; and 3) The "transmission line right-of-way (ROW)" includes an existing transmission line[1] and occupies approximately 1,400 acres extending westward to the existing Slatt substation, located approximately 18 miles west of the proposed Energy Facility Site. The 910 acres remaining within the Site Boundary is composed of land in the vicinity of the Energy Facility Site and the switchyard. This area would be used as temporary laydown, fill stockpiling, staging areas, construction parking, construction offices, assembly areas, and includes a buffer to the Energy Facility Site.

The 2009 study area boundary was based on a larger site boundary, which was revised after 2009 surveys were conducted, after submittal of the Notice of Intent (NOI). The 2010 Site Boundary excludes a large area that was included in the previous study area because this excluded area is no longer being considered as part of the project (see Figures 1-1 and 1-2). The 2010 Analysis Area includes the area within the Site Boundary and additional buffers for the Washington ground squirrel survey areas. The Analysis Area is located in Township 2 north, Range 24 east, and Township 3 north, Range 24 east, Willamette Meridian.

[1] For the purposes of this application the term "transmission line" refers to any wire transmitting electricity.

The transmission line will utilize the existing Boardman to Slatt transmission line corridor. This corridor is approximately 18 miles long. The corridor is 700 feet in width for most of its length, which results in a total analysis area for the transmission line of approximately 1,600 acres (not including species-specific buffers). Land use along the transmission line is agricultural and rangeland. The 2009 and 2010 transmission line study areas are the same, excluding the raptor nest search area.

Construction of the transmission line will temporarily disturb 1 acre at the base of each transmission tower and 20 acres of laydown areas, all of which will occur within the 700-foot easement. In addition, stringing the wire will require a reel truck at one end and a puller/tensioner at the other. Typically, the two trucks are spaced 3 to 4 miles apart. This equipment has a temporary impact of approximately 12,000 square feet per pulling site. Generally, these operations occur 300 feet from the tower and in-line with the planned alignment. With a transmission line of 18 miles, assuming the trucks are spaced 3 miles apart, the total temporary disturbance due to stringing the wire is estimated to be 1.8 acres. Some new access roads are planned, but a majority of access will utilize existing roads. If new access roads are required that would extend beyond the boundaries of the current Analysis Area, additional surveys will be conducted prior to construction to cover such roads. Each transmission line tower will permanently impact approximately 50 square feet, totaling less than 1 acre for all towers combined.

The terrain of the area proposed for the generating station is relatively flat and surrounded by rangeland, the existing Boardman Generating Plant, and irrigated agriculture. The primary landscape feature of the surrounding region is high plain desert with low-lying vegetation, including big sagebrush (*Artemisia tridentata*).

The Analysis Area consists of two parts: the area associated with the Carty Generating Station and the area associated with the transmission line. The collective 2009 survey area is identified in Figure 1-1. The 2009 study area encompassed the Option 1 and Option 2 potential Carty Generating Station energy facility sites and any potential temporarily disturbed areas. The 2010 Analysis Area includes the current Site Boundary for the Carty Generating Station, as shown in the Application for Site Certificate (ASC) submitted in 2009, which reflects a reduction in the overall area of the Site Boundary from that initially shown in the NOI. Figure 1-2 shows the 2010 survey area.

The transmission line will be constructed in the center of an existing 700-foot transmission line easement. This existing easement is considered the Analysis Area and currently contains one transmission line constructed approximately 150 feet from the northern boundary of the easement. Surveys were conducted in 2009 for the entire 700-foot width of the easement, 350 feet from either side of the centerline of the proposed transmission line, for all species unless otherwise indicated in specific protocols. At the time of the 2009 surveys, the location of proposed transmission line towers, staging areas, and pulling/tensioning operations was unknown.

Since the entire length and width of the corridor was surveyed, the majority of the areas that would be temporarily disturbed during construction were surveyed during the 2009 effort. However, follow up surveys may be needed for staging areas and pulling/tensioning operations once those locations are identified, should they extend beyond the Analysis Area.

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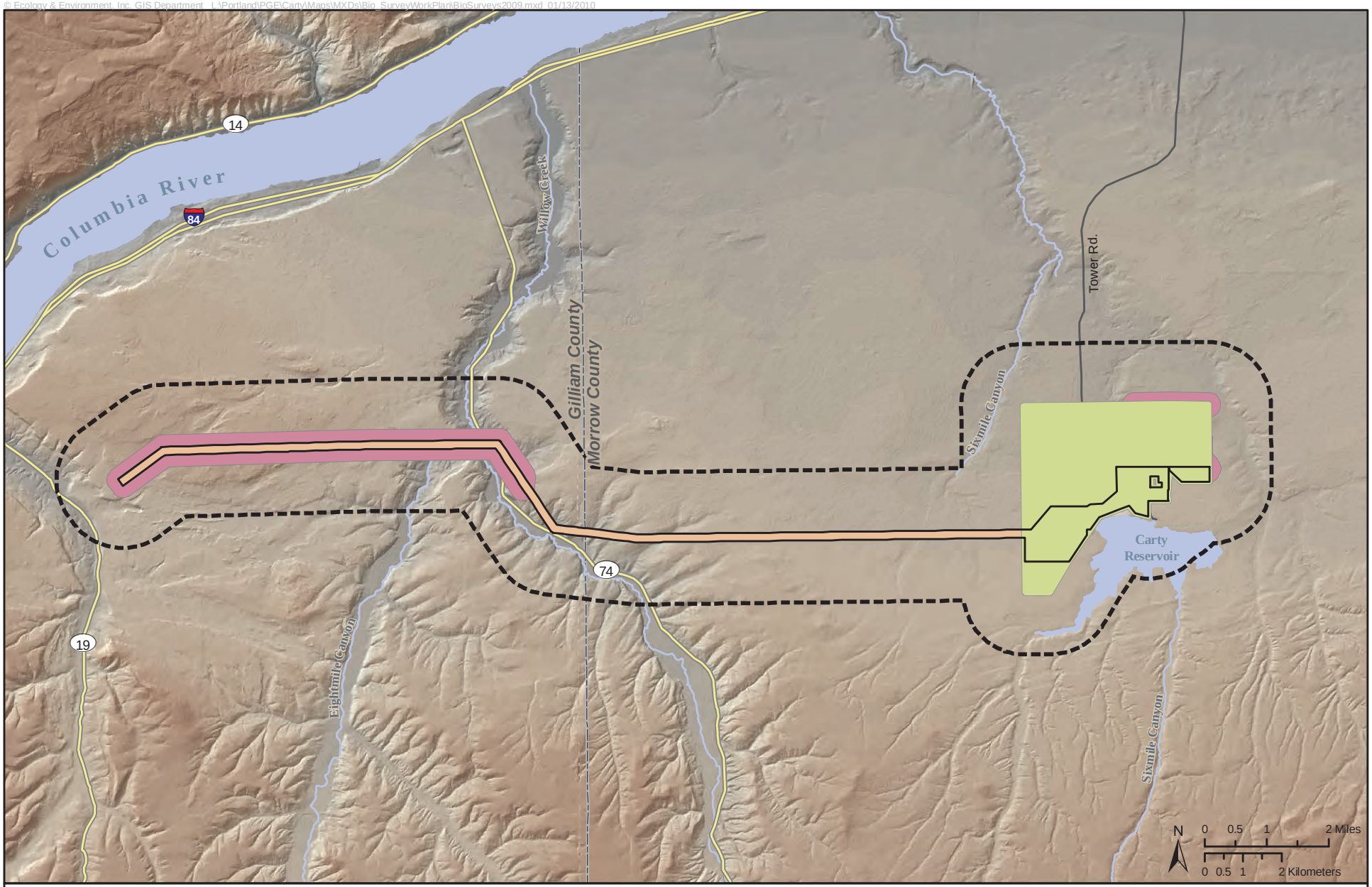

Site Boundary

Survey Areas
- 2009 Energy Facility Survey Area
- Transmission Line Survey Area
- Ground Squirrel Extended Survey Area

Raptor Survey Area (1 Mile Radius)

Figure 1-1
2009 Survey Areas
Biological Survey Work Plan
Carty Generating Station

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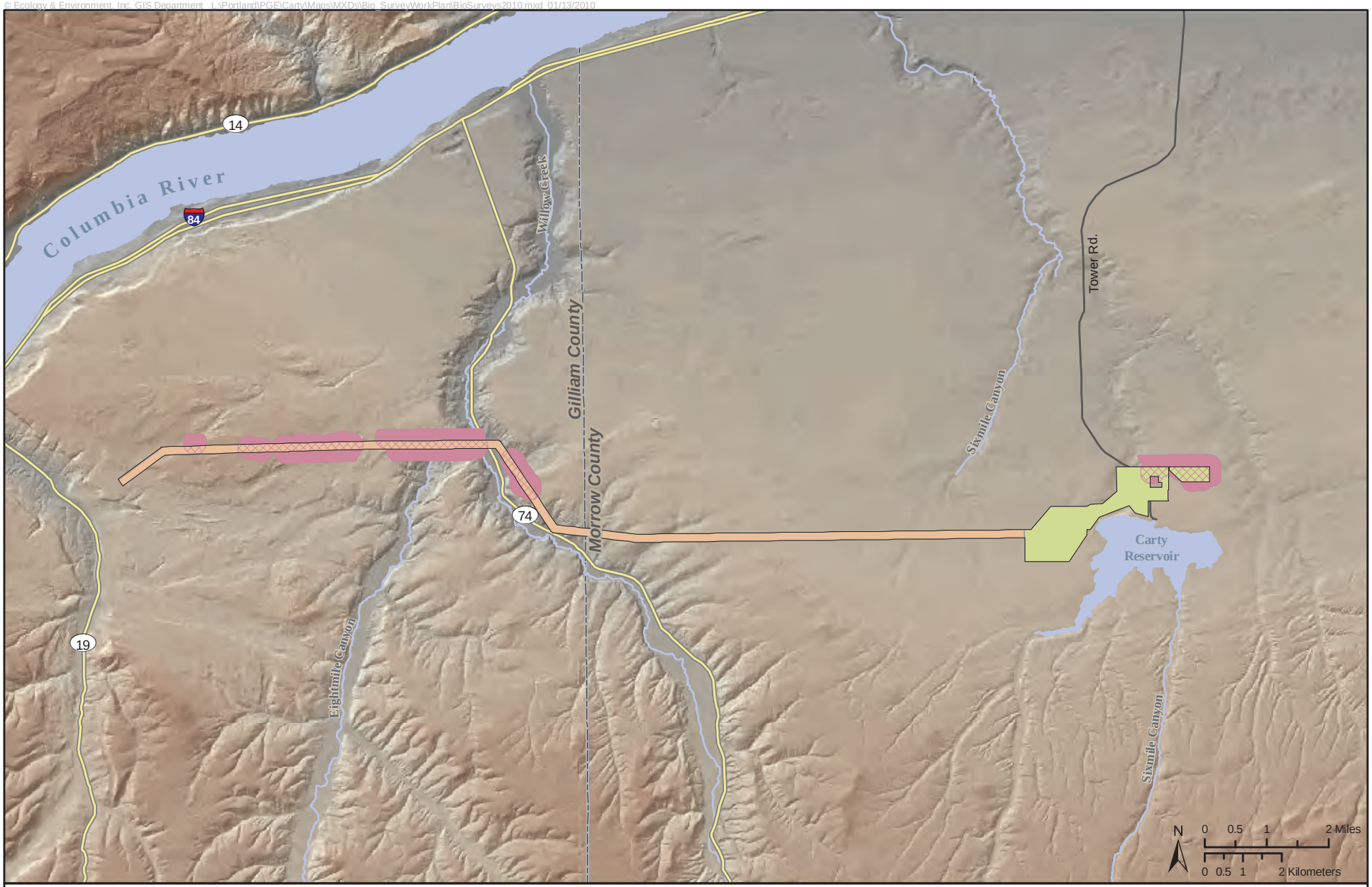

Site Boundary

Survey Areas

2010 Energy Facility Survey Area

Transmission Line Survey Area

Ground Squirrel Transect Survey Area

Figure 1-2
2010 Survey Areas
Biological Survey Work Plan
Carty Generating Station

2 Vegetation and Habitat Mapping

The mapping of vegetation and habitat was conducted through a two-step process. Prior to the biological field surveys, a desk-top analysis was conducted utilizing existing and available data to prepare maps that would guide the planning and conduct of the field surveys. Field observations were then used to verify and supplement the existing data, which collectively contributed to the preparation of maps showing vegetation and habitat throughout the Analysis Area. These maps serve as tools to focus avoidance, minimization, and mitigation measures appropriately. The primary goal was to develop accurately representative habitat maps covering the entire Analysis Area that comply with agency classifications and are accepted by the appropriate agencies. This was accomplished by:

- Identifying suitable habitat for special status plant and animal species;
- Evaluating the quality of habitat for special status wildlife species by field reconnaissance and input from appropriate agencies; and
- Obtaining baseline information and field observations to assess the condition and suitability of the habitat in the Analysis Area in accordance with ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0000 through -0025).

2.1 Land Cover and Vegetation Classification

The most current and accurate spatial land cover dataset available that covers the Analysis area is the Northwest Regional Gap Analysis Project (NW ReGAP). The land cover classifications used by NW ReGAP are called Ecological Systems (ESs), defined as “groups of plant community types that tend to co-occur within landscapes with similar ecological processes, substrates and/or environmental gradients” (Comer et al 2003). The ES classification complies with Federal Geographic Data Committee standards, and each ES is defined by the respective National Vegetation Classification Standard alliances found therein.

2.2 Mapping Methods

2.2.1 Vegetation Mapping Data

If available NW ReGap data accurately reflected local habitats and known plant communities, NW ReGap was converted to polygons for the project area, and Aerial Photo Interpretation (API) was utilized. Ecologists, working with a Geographic Information System (GIS) specialist, digitized images using ArcGIS 9.3 (ESRI, Inc.) to verify the accuracy and adjust ES classifications for the project area. The map and data sources listed below were used to assist ecologists in verifying each ES during 2009 surveys.

- Aerial photos – National Agriculture Imagery Program;
- Natural Resources Conservation Service Soil Survey Geographic Database (1:24k);
- Site condition classes: gradient, aspect, primary community vegetation (NatureServe);
- Elevation – United States Geological Survey National Elevation Dataset 10-meter precision;
- Existing state and federal datasets (sensitive species locations, crucial habitats, and historic wildland fires);
- Current land use;
- Historic wildland fires – Bureau of Land Management;
- Existing canals, rivers, streams and water bodies – National Hydrologic Dataset;
- Existing wetlands – National Wetlands Inventory; and
- Irrigated agricultural – Agriculture Census of the United States

The same dataset in conjunction with the results of 2009 surveys will be used during 2010 field surveys.

2.2.2 Vegetation Ground Truthing

Field ecologists collected data during the 2009 surveys to evaluate the accuracy of preliminary vegetation mapping and interpreted habitat condition during the 2009 surveys. Corrections to the vegetation and habitat maps were completed based on ground-recorded data and field observations.

2.3 Final Habitat Maps

Adjusted vegetation and habitat maps in conjunction with API, wildlife spatial data, and land use impact observations were used to determine the ODFW habitat mitigation categories for the Analysis Area. Examples of wildlife spatial data included, but were not limited to:

- Washington ground squirrel burrows or complexes;
- Sensitive species locations or habitats;
- Raptor nest locations;
- Wetlands; and
- Areas of increased wildlife observations.

Final habitat maps, with associated ODFW categories and a summary table showing the acres of each habitat type and ODFW habitat category within the Analysis Area, were presented in the appropriate ASC Exhibit: J, P, and/or Q.

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3 Field Survey Schedule

Table 3-1 shows the schedule used for 2009 field surveys. This schedule was designed to coincide with optimal survey periods for each species. The 2010 field surveys will follow the same general schedule. Appendix A contains required wildlife survey protocols.

Surveys of plant and wildlife species were conducted concurrently, to the extent allowed by identified survey time frames for each species. Incidental observations of other non-sensitive wildlife and plants were also recorded during field surveys. Details of the results from 2009 wetland delineations and wildlife surveys are provided in Exhibits J and P, respectively, of the ASC (PGE 2009a and b).

Typically, surveys for the following sensitive species can be conducted concurrently with surveys for the Washington ground squirrel (*Spermophilus washingtoni*): grasshopper sparrow (*Ammodramus savannarum*), sage sparrow (*Amphispiza belli*), long-billed Curlew (*Numenius americanus*), loggerheaded shrike (*Lanius ludovicianus*), burrowing owl (*Anthene cunicularia*), northern sagebrush lizard (*Sceloporus graciosus*), and white-tailed jackrabbit (*Lepus townsendii*). During the survey effort, biologists will be alert to observe evidence of greater sage-grouse (*Centrocercus urophasianus*), although it is unlikely that this species occupies the project area. Washington ground squirrel surveys were being conducted concurrently with habitat and vegetative surveys during 2009. Surveys in 2010 will focus on Washington ground squirrel and include incidental observations of other wildlife and habitat verification.

Table 3-1 Timeframe for Wildlife and Vegetation Surveys

Common Name	Scientific Name	Survey Timeframe			
		April	May	June	July
Wildlife					
Grasshopper sparrow	*Ammodramus savannarum*	■	■	■	
Sage sparrow	*Amphispiza belli*	■	■	■	
Black throated sparrow	*Amphispiza belineata*	■	■	■	■
Burrowing owl	*Anthene cunicularia*	■	■	■	
Ferruginous hawk	*Buteo regalis*	■	■		
Swainson's hawk	*Buteo swainson*		■	■	
Greater sage-grouse	*Centrocercus urophasianus*	■	■	■	
Loggerhead shrike	*Lanius ludovicianus*	■	■	■	
White-tailed jack rabbit	*Lepus townsendii*	■	■	■	■
Long-billed curlew	*Numenius americanus*	■	■	■	
Northern sagebrush lizard	*Sceloporus graciosus*	■	■	■	
Washington ground squirrel	*Spermophilus washingtoni*	■	■		
Vegetation					
Robinson's onion	*Allium robinsonii*			■	■
Laurence's milkvetch	*Astragalus collinus* var. *laurentii*		■	■	
Dwarf evening-primrose	*Camissonia pygmaea*			■	
Snake River goldenweed	*Haplopappus radiatus*			■	■
Disappearing monkeyflower	*Mimulus evanescens*		■	■	
Sessile mousetail	*Myosurus sessilis*			■	

4 Wildlife Resources Field Surveys

This section describes the 2009 wildlife field survey effort and wildlife surveys that will be conducted in 2010. Biological surveys were performed using a global positioning system (GPS) unit that was uploaded with the site boundary and species-specific buffer data. Known fixed locations and structures in the vicinity of the proposed Carty Generating Station and transmission line easement were utilized as reference points for verification with the GPS. The following species required site-specific field surveys:

- Washington ground squirrel and associated burrows; and
- Raptors, including the ferruginous hawk (*Buteo regalis*), Swainson's hawk (*B. swainsoni*), and golden eagle (*Aquila chrysaetos*).

Appendix A includes field survey protocols for the above species. Methods and timing were based on survey protocols established by agency personnel or approved of during consultation with agency specialists. The wildlife survey objectives are to:

- Identify wildlife species occurrence and utilization of the Analysis Area in order to establish a baseline understanding of local diversity and habitat conditions;
- Collect site-specific information on wildlife species and their utilization of the Analysis Area to evaluate the potential impacts of construction, operations, and maintenance of the Carty Generating Station and transmission line; and
- Provide the basis for siting of project components to avoid or minimize environmental impacts and identify potential mitigation measures where appropriate.

4.1 Survey Components and Methods

4.1.1 Wildlife Surveys – Overview

Wildlife field surveys in 2009 consisted of pedestrian surveys for Washington ground squirrels; sensitive raptors (ferruginous hawk, Swainson's hawk, golden eagle); other raptors; and raptor nests, which may indicate the presence of nesting pairs in the vicinity. Incidental wildlife observations, including observations of

other sensitive wildlife species, were recorded while conducting the above surveys, sensitive plant species surveys, and wetland delineations. All data were recorded in field note books and GPS data sheets. Similar surveys and methods will be conducted within the Analysis Area in 2010, as described below and in the attached protocols. The ODFW refers to ORNHIC for location specific data on potential sensitive species occurrence. Through consultation with ODFW and data provided by ORNHIC, sensitive species potentially occurring on site were identified and are listed in Table 4.1.

Table 4-1 Sensitive Wildlife Species Potentially Occurring Onsite

Common Name	Scientific Name	Status	Potential to Occur
		State/Federal	
Wildlife			
Grasshopper sparrow	*Ammodramus savannarum*	SV/ --	Likely, observed in vicinity and habitat present
Sage sparrow	*Amphispiza belli*	SC/ --	Possible, although no recent observations
Black throated sparrow	*Amphispiza belineata*	SP/ --	Possible, although no recent observations
Burrowing owl	*Anthene cunicularia*	SC/SOC	Likely, observed in vicinity and habitat present
Ferruginous hawk	*Buteo regalis*	SC/SOC	Likely, observed in vicinity and habitat present
Swainson's hawk	*Buteo swainson*	SV/ --	Likely, observed in vicinity and habitat present
Greater sage-grouse	*Centrocercus urophasianus*	SV/C	Not likely, outside current range
Loggerhead shrike	*Lanius ludovicianus*	SV/ --	Likely, observed in vicinity and habitat present
White-tailed jack rabbit	*Lepus townsendii*	SU/ --	Likely, observed in vicinity and habitat present
Long-billed curlew	*Numenius americanus*	SV/ --	Likely, observed in vicinity and habitat present
Northern sagebrush lizard	*Sceloporus graciosus*	SV/SOC	Possible, although no recent observations
Washington ground squirrel	*Spermophilus washingtoni*	LE/C	Likely, observed in vicinity and habitat present
Source: ORNHIC 2007			

SOC : federal species of concern
C: federal candidate species
SV: state vulnerable
SC: state critical
SP: state peripheral or naturally rare
SU: undetermined
LE: state listed endangered species
--: not listed

4.1.2 Washington Ground Squirrel

The Washington ground squirrel is currently considered a candidate species for listing under the Federal ESA by the USFWS and is listed as endangered by ODFW. This species can be described as a small ground squirrel occurring in grassland and shrubland habitats of the Columbia Plateau, east of the Columbia River in Washington and south of the Columbia River in Oregon.

Washington ground squirrels have shown particular affinity to grassland and shrub-steppe habitats that occur over loamy soils, particularly Warden and Sagehill soils. They can also be found occupying habitats over some sandy loam soils, although the soil must be able to support burrowing structures. Other potential habitats include areas replanted to grassland under the Conservation Reserve Program (CRP), if these sites are planted to native grassland species and are adjacent to or very near undisturbed native grasslands.

The objective for 2009 surveys was to survey all areas of potential suitable habitat for Washington ground squirrels within the Site Boundary and transmission line ROW, and within 1,000 feet of areas where potential Washington ground squirrel habitat, possible burrows, or historic burrow locations were present. The 2009 surveys identified key areas containing suitable habitat and active burrowing that were likely to be occupied by Washington ground squirrels. Figure 1-2 shows the areas within the Analysis Area identified during 2009 surveys as having potentially suitable habitat or possible burrows. These areas will be surveyed again in 2010.

2010 Survey Methods

Washington ground squirrel sites will be surveyed in 2010 during their peak activity period in April through May and in compliance with the survey protocol. Visual and audible confirmations will be used to identify Washington ground squirrel presence in addition to finding fresh fecal material around burrow entrances. Each area of potential habitat identified during 2009 surveys will be surveyed twice in 2010 (see Appendix A for field survey protocol). Surveys will be conducted by one crew of two experienced observers.

4.1.3 Ferruginous Hawk, Swainson's Hawk, Golden Eagle, and Other Raptor Nests

Ferruginous hawks are most often found in open grasslands and shrub-steppe communities, including cropland in rolling or rugged terrain. They tend to avoid high elevations, forest interiors, and narrow canyons (Black 1992). This species builds nests in trees, shrubs, on rock outcrops, cliffs, and on the ground (Dechant et al. 2001).

Swainson's hawks often occupy grassland, shrubland, and agricultural fields where vegetation is relatively low with open areas, providing visibility of small prey and nearby roost sites (National Audubon Society 2009). For nesting, Swainson's hawks often utilize trees bordering agricultural fields, in wetland borders, and on abandoned farms (National Audubon Society 2009).

Golden eagles prefer hilly or mountainous regions and generally forage over open spaces in tundra, desert transition, prairie, barren areas, and coniferous forests (Kochert et al. 2002). Their range extends from Alaska into north-central Mexico and east, with year-round populations from the Pacific coast east to the western portion of the Dakotas and Texas. Golden eagle breeding generally occurs from February to September, and they typically nest in trees and on cliffs (Brown and Amadon 1968). They feed on rabbits, ground squirrels, prairie dogs, birds, and reptiles (Boeker and Ray 1971).

The objective of the raptor nest survey is to locate potential raptor nests that may be subjected to disturbance and/or displacement effects from the generating station and transmission line construction. Ferruginous hawks, Swainson's hawks, and golden eagles have been reported in the vicinity of the Analysis Area.

Survey Methods

The raptor nest search area in 2009 was defined as the area within 1 mile of the 2009 site boundary and within 1 mile of the 18 mile-long transmission line centerline (Figure 1-1). The initial survey took place in early May 2009. An aerial raptor nest survey will be conducted prior to construction, likely in 2011. The raptor nest search area will include the area within one-half mile of all ground-disturbing activity at the Energy Facility Site and within one-half mile of each side of the transmission centerline. The aerial survey will occur between late April and mid May, followed by ground survey if necessary to document nest condition, activity, and status (see Appendix A for survey protocol).

Aerial surveys will be conducted from a helicopter using two avian biologists with experience in surveying raptor nests and raptor identification. The helicopter will fly in transects along the Analysis Area and concentrated passes in areas of high potential for raptors to occur or where nests are identified. Surveys by foot will be conducted to ground truth nests identified during aerial surveys and document nest condition and activity. Surveyors will use high-powered optics during both efforts. When a nest, individual, or high quality habitat is identified, the area will be investigated from an appropriate distance to minimize disturbance.

The avian biologists will record GPS locations for each raptor nest identified. If raptors are present, species and nest activity will also be noted when possible. Any significant comments describing nest sites will be recorded on the data forms. The *2009 Biological Field Survey Report for the Carty Generating Station* (PGE 2009a) includes the results of 2009 raptor nest surveys.

4.1.4 Migratory and Breeding Bird Surveys

Experienced biologists skilled in avian surveys will record observations of avian species encountered while conducting transect surveys for Washington ground squirrel and other survey efforts along the transmission line right-of-way and in the vicinity of the energy facility. Data collected during 2009 and 2010 surveys will be used in addition to existing data collected in the area to represent the bird species that occur in the project area.

Sources for existing data include the Multi-Species Candidate Conservation Agreement with Assurances, Annual Monitoring Reports for 2008 and 2009.

4.2 Potential Additional Wildlife Observations and Surveys

Surveys for the following wildlife species were conducted in 2009 concurrently with the Washington ground squirrel surveys and wildlife surveys. The 2010 surveys will be conducted similar to the 2009 survey approach for these species, although the survey area will be focused on potential Washington ground squirrel habitat identified in 2009 (Figures 1-1 and 1-2).

Greater Sage-Grouse

No greater sage-grouse leks have been previously documented in the Analysis Area or the greater Boardman area. However, during Washington ground squirrel and raptor surveys, biologists will be alert to identify potential leks by scanning for the presence of greater sage-grouse and or their scat.

If a greater sage-grouse, scat, or lek is observed, the coordinates will be recorded on a GPS unit, a data form will be completed, and other pertinent information, such as current weather conditions and land cover type, will be recorded. If it is determined that a lek is present within 1 mile of the project site, ODFW will be contacted and a lek survey following agency survey guidelines will be conducted (ODFW 2005).

Burrowing Owl

Burrowing owls can be found occupying open, dry grasslands, desert habitats, agricultural areas, and range lands and are often associated with burrows made by other species, such as ground squirrels. Potential burrowing owl habitat can be found in the Analysis Area, and they are known to occur in the Analysis Area vicinity (within 5 miles) (ORNHIC 2009). One burrowing owl was identified during 2009 surveys, perched on a burrow, north of the transmission corridor and Rhea road (see the 2009 Field Survey Report for details). In 2010, field surveys for burrowing owls and potential nest burrows will occur in the areas targeted for Washington ground squirrel surveys as well as at the location of the 2009 observation. In addition, the Analysis Area will be surveyed again for burrowing owls and potential nest burrows during pre-construction raptor nest surveys prior to construction.

Long-Billed Curlew

The long-billed curlew stands out for its long, downward curved bill and is the largest shorebird in North America. During the summer, long-billed curlews breed in open grasslands, including some agricultural fields from central Oregon and northeastern California east to the midwestern states (PRBO Conservation Science 2009). Long-billed curlews, and their nests, have been documented in the Analysis Area and within the project boundary (see the *2009 Biological Field Survey Report for the Carty Generating Station* [PGE 2009a] for more details).

The 2010 surveys will include revisiting identified nesting sites that occur within the Analysis Area to document breeding activity if feasible.

Loggerhead Shrike

Loggerhead shrikes use open habitat during both breeding and non-breeding seasons. They typically forage in grasslands or pastures with short or patchy grasses. Scattered trees, shrubs, or hedgerows are most often used for nesting and perching. In the shrub-steppe of eastern Oregon, loggerhead shrikes are found in lowland communities of sagebrush, mixed shrub communities containing big sagebrush and communities containing bitterbrush (*Purshia tridentata*), Indian ricegrass (*Achnatherum hymenoides*), and needle-and-thread grass (*Hesperostipa comata*) (Altman and Holmes 2000). Potential loggerhead shrike habitat can be found in the Boardman area (ORNHIC 2009), although no individuals were observed during 2009 surveys. Biologists will be alert to potential loggerhead shrike occurrences during 2010 surveys.

Northern Sagebrush Lizard

Northern sagebrush lizards are small, attaining sizes of up to a total length of 6 inches, and are predominately found in sagebrush cover. They can also be found in greasewood (*Sacrobatus vermiculatus*) and other desert shrubs and sometimes on small rocky outcrops (Nussbaum 1983). Potential northern sagebrush lizard habitat can be found in the Boardman area (ORNHIC 2009). No northern sagebrush lizards were observed during 2009 surveys. Biologists will be alert to potential occurrences of this species during 2010 surveys.

Grasshopper Sparrow

In the breeding season, this sparrow generally occupies native grassland and shrub-steppe habitat; it can also be found in CRP grasslands. Grasshopper sparrows have been documented in the vicinity of the Analysis Area, where suitable habitat exists (ORNHIC 2009). No grasshopper sparrows were observed during 2009 surveys. Biologists will be alert to potential grasshopper sparrow occurrences during 2010 surveys.

Sage Sparrow

The sage sparrow can be found in sagebrush shrub-steppe habitat. Potential sage sparrow habitat can be found in the greater Boardman area, including the Analysis Area (Schultz 2009b). No sage sparrows were observed during 2009 surveys. Biologists will be alert to potential sage sparrow occurrences during 2010 surveys.

White-Tailed Jack Rabbit

White-tailed jackrabbits frequently inhabit open grasslands, shrub-steppe, and forested areas, as well as pastures and fields. White-tailed jack rabbits and their habitat are present in the greater Boardman area, including within the Analysis Area (Schultz 2009b). This species was observed twice during 2009 surveys: once in the Carty Generating Station survey area and once within the survey corridor, approximately 1 mile east from the western end of the transmission line.

Biologists will be alert to potential white-tailed jack rabbit occurrences during 2010 surveys.

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5 Sensitive Plant Species and Noxious Weed Surveys

No plant species protected under the Federal ESA are known to occur in the Analysis Area. According to the USFWS, six federal species of concern occur in Gilliam and/or Morrow counties (USFWS 2009). Five of these species are Oregon state listed (ORNHIC 2007). The state listed species include the endangered Snake River goldenweed (*Haplopappus radiatus*); threatened Laurence's milkvetch (*Astragalus collinus* var. *laurentii*); and the following candidates: disappearing monkeyflower (*Mimulus evanescens*), dwarf evening-primrose (*Camissonia pygmaea*), and sessile mousetail (*Myosurus sessilis*). The sixth species, Robinson's onion (*Allium robinsonii*), is not state listed. Appendix B contains descriptions os special status plant species in Oregon.

The 2009 survey area for these plants included the Carty Generating Station Site Boundary and the 700-foot transmission line corridor (350 feet to either side of the centerline). Species surveyed and blooming periods are presented in Table 5-1. Surveys of suitable habitat within the 2009 survey area did not identify any sensitive plant species. The ODA has reviewed the 2009 field survey results and requires no further surveys for sensitive plant species in the Analysis Area. Incidental observations of sensitive plants will be recorded during 2010 survey work.

Table 5-1 Sensitive Plant Species, Survey Timeframe Identified for Field Surveys

Common name (*Scientific Name*)	Blooming Period/ Survey Time-frame	State/Federal Status
Disappearing monkeyflower (*Mimulus evanescens*)	May-June	C/SOC
Dwarf evening-primrose (*Camissonia pygmaea*)	June	C/SOC
Laurence's milkvetch (*Astragalus collinus var. laurentii*)	May-June	LT/SOC
Robinson's onion (*Allium robinsonii*)	June	SOC
Sessile mousetail (*Myosurus sessilis*)	June	C/SOC
Snake River goldenweed (*Haplopappus radiatus*)	June – July	LE/SOC

SOC : federal species of concern
C: state candidate species
LT: state listed threatened species
LE: state listed endangered species

With the possible exception of Robinson's onion, historic records indicate it is unlikely that any of the sensitive plant species will be found in the Analysis Area. Robinson's onion has historically occurred in dry watercourses in Morrow County. There are "vouchered" and "unvouchered" observations of this species west of the Boardman area (OSU 2009). Disappearing monkeyflower has been documented south of the Analysis Area, on the border of Gilliam and Morrow counties. However, this observation is classified as "unvouchered" by the Oregon Flora Project (OSU 2006). All sightings of dwarf evening-primrose are documented in the counties south of Morrow and Gilliam counties (OSU 2006). Sessile mousetail occurs in sparsely vegetated areas of vernal pools; no vernal pools occur in the Analysis Area. Snake River goldenweed occurs primarily in Baker County and, to a lesser extent, in Malheur County, with many populations centered around the town of Huntington. It is undocumented in either Morrow or Gilliam counties (Kaye 2002). Laurence's milk-vetch was documented south of the Analysis Area; however, these sightings were made over 30 years ago and are now considered "unvouchered" by the Oregon Flora Project (OSU 2009).

Noxious weeds are nonnative, invasive species that are highly competitive and persistent, often can germinate under a wide variety of environmental conditions, and often show fast seedling growth. Nonnative species, such as the ones occurring in the Analysis Area, are introduced and lack natural control agents (Keane and Crawley 2002). Appendix C provides a listing of noxious weeds that may occur in Gilliam and Morrow counties. Several patches of noxious weeds were identified and documented during 2009 surveys (see the *2009 Biological Field Survey Report for the Carty Generating Station* [PGE 2009a] for more details). The specific locations of broadly distributed populations of low density (<10%) yellow star-thistle *(Centaurea solstitialis)* were not documented and mapped due to this species' occurrence throughout most of the central portion of the transmission line corridor analysis area. This species is rated by Oregon Department of Agriculture (ODA) as a B (regionally abundant) and T (priority noxious weed targeted for development of a statewide management plan) listed weed (see Appendix C for further information).

5.1 Survey Components and Methods

5.1.1 Existing Literature/Data

Prior to conducting field surveys, vegetation cover and habitat maps were prepared using available literature and data. In addition to mapping efforts and Oregon Natural Heritage Information Center (ORNHIC) data records, the ODA, and Gilliam County and Morrow County agriculture extension offices were contacted to obtain additional species-specific information and guidance regarding likelihood to occur, identification tips, local documented occurrence reports, photos, and blooming period variations. Information of sensitive nature provided by outside sources is kept confidential such as specific sensitive species name with location.

5.1.2 Sensitive Plant Survey Timing

Sensitive plant surveys were conducted in 2009 during the appropriate blooming periods to increase the likelihood of positive identification. Since no sensitive plants were found during the 2009 surveys, ODA is not requiring any further surveys for sensitive plants in the Analysis Area. However, biologists will be vigilant for the presence of sensitive plants during 2010 and subsequent wildlife surveys.

5.1.3 Survey Method

During the 2009 sensitive plant and noxious weeds surveys, two ecologists walked parallel to each other at distances that allowed complete survey of the intervening vegetation for target species, taking into consideration the height and density of the surrounding vegetation. Search pattern intensity was increased when potentially suitable sensitive plant habitat was encountered.

For 2009 surveys of areas containing potentially suitable habitat where multiple survey transects were required, surveyors recorded GPS points at the beginning and end of each transect. Transect direction of the parallel transects was determined by a compass bearing taken at the beginning of each transect. Vascular species observed within appropriate habitats were recorded. This list is included in the *2009 Biological Field Survey Report for the Carty Generating Station*.

5.1.4 Rare Plant Site Documentation

If sensitive plants are located incidentally during 2010 surveys, GPS units will be used to record polygons for large populations and individual points for lone plants or sparse populations. Using a GPS data dictionary, multiple characteristics for each listed plant location will be documented. This data dictionary will store information that incorporates the ORNHIC rare plant field survey form fields (Appendix D). Using this format, individual site records will be consistent with the ORNHIC forms, and site forms will be included as an appendix to the 2010 biological survey report.

5.1.5 Noxious Weed Survey Method

Locations of significant (over 10% cover) infestations of noxious weeds were recorded during field surveys. All significant noxious weed observations were mapped using GPS, and the relative abundance and size of the infestation (i.e., <0.1 acre, 0.1-1 acre, <1 acre) were recorded. Data will be updated, as needed, based on observations during 2010 surveys.

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6 Wetlands and Waters Delineation

A field delineation was conducted at each wetland identified within the Site Boundary. The location and ordinary high water line for each wetland was documented. Wetland identification and delineations follow the guidelines outlined in the U.S. Army Corp of Engineers (USACE) "*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*" (USACE 2008) and "*Field Guide to the Identification of the OHWM in the Arid West Region of the United States*" (Lichvar and McColley 2008). Boundaries of all wetlands and waters were drawn on field maps and mapped with GPS units. The *Carty Wetland Delineation Report* is available as an appendix to the *2009 Biological Field Survey Report for the Carty Generating Station* and in the ASC Exhibit J.

Under current design, the project will avoid all wetlands identified during 2009 surveys. No federal or state wetland permit are expected to be required; however, if modifications to project design warrant such permits, the USACE and Oregon Department of State Lands will require a wetland functional assessment. A functional assessment will be conducted if it is determined that project features cannot avoid wetlands with an adequate buffer (the applicant-proposed 100-feet).

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7 Data Collection and Reporting

7.1 Compilation and Storage

Field crews will use hand-held GPS units for data collection activities in addition to Rite-in-the-rain® field logbooks. Standardized data sheets downloaded to the GPS units will be used for all biological surveys. Quality Control/Quality Assurance will be implemented during data entry and download. If data quality issues are encountered, although unanticipated, they will be addressed and resolved immediately with the surveyor who gathered the data. Quality assurance assessments include validation procedures (data are logical and within normal ranges) as well as domain and validation checks.

7.2 Technical Reports

The 2009 field survey results are reported in the *2009 Biological Field Survey Report for the Carty Generating Station*, which is available in Exhibit P of the ASC for the Carty Generating Station. A stand alone technical report will be prepared after completion of 2010 biological surveys. This report will include results of field reconnaissance, species-specific surveys, and previously collected data and literature. The 2010 report will be shared with appropriate federal and state agencies to facilitate dialogue with these agencies during the pre-construction process and mitigation strategy development.

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A Wildlife Survey Protocols

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PROTOCOL FOR WASHINGTON GROUND SQUIRREL SURVEYS

Introduction

This survey protocol describes the methods Ecology & Environment, Inc. (E & E) will follow while conducting Washington ground squirrel surveys at the Portland General Electric Company (PGE) proposed Carty Generating Station (Project) Site. These methods are designed to fulfill the recommendations outlined by the Oregon Department of Fish and Wildlife (ODFW). The prescribed ODFW recommendations relate to the planning, construction, operation, and maintenance of the Project and associated transmission line in an effort to minimize or avoid impacts to Washington ground squirrels and their habitat. The main survey objectives will consist of documenting occupied Washington ground squirrel habitat within the vicinity of Project disturbance areas and identifying high quality Washington ground squirrel habitat. The collected information will be compiled, analyzed, and presented in the *2010 Biological Survey Report*.

Objective

The primary objective for these surveys is to survey known and/or historical Washington ground squirrel (*Spermophilus washingtoni*) colony sites within the Analysis Area to confirm occupancy. Second, areas identified as suitable habitat for Washington ground squirrels will be surveyed within the Analysis Area. The protocol described below outlines a method to identify the presence or absence of Washington ground squirrels. In addition, the following species will be surveyed concurrently with Washington ground squirrels: burrowing owl, greater sage-grouse, grasshopper sparrow, loggerhead shrike, long-billed curlew, sage sparrow, white-tailed jack rabbit, and northern sagebrush lizard. Raptor sightings will also be recorded.

2009 Methods - Meandering Walking Transects

Two walking transect surveys were conducted between April 27 and June 3, 2009 (results are available in the *2009 Biological Field Survey Report for the Carty Generating Station*, Exhibit P of the Application for Site Certificate for the Carty Generating Station). Surveys were typically conducted in the morning hours between 0600 and 1200 hours, with some surveys conducted until 1300 hours when the survey conditions were optimal (no or low wind, mild temperatures) and wildlife appeared to still be active. During surveys when winds increased to greater than a steady 10-miles per hour (mph), surveyors walked areas sheltered from the wind, such as the downwind side of prominent ridges and in swales.

The surveys in 2009 covered land that was in habitat suitable for Washington ground squirrels both within the project boundary and within 1,000 feet of the outer perimeter of the project boundary. Areas deemed suitable were determined based on ORNHIC data, vegetative cover including sufficient species that are part of the squirrel's forb-dominant diet, and soils that were conducive to burrowing activities characteristic to the ground squirrel. This included native grassland and shrub-steppe. No Conservation Reserve Program land was identified in the survey area. Landowner access was confirmed prior to entry into survey areas.

During all walking transects conducted within the survey corridors, two surveyors walked at similar paces, meandering through the habitat while progressing forward. The 2009 transects were no more than 195 feet (60 meters) apart (except where conditions were hazardous due to steep terrain). Most surveys were conducted 165 feet (50 meters) apart or less, specifically in areas where burrowing activity was identified.

2010 Methods – Two Surveys

The 2010 surveys will be conducted along transects no more than 165 feet (50 meters) apart and concentrated to an area within 1000 feet (305 meters) of where burrowing activity was identified during 2009. The 2010 survey will consist of two survey efforts. For the second survey effort, in areas where potential burrows were identified but the presence of Washington ground squirrels is not confirmed by droppings or visual or auditory observation, those areas will be resurveyed with transects oriented perpendicular to the initial survey transects. In areas of potential habitat where no suitable burrows or other indications of Washington ground squirrels are observed, surveyors will have the option of surveying along perpendicular transects, in the Energy Facility survey area, or along transects that are oriented parallel with the first round transects and staggered to be positioned between the first transects, for the transmission line areas of the project that are more linear in nature. Note that this will allow for a much more efficient survey effort and also a more complete search of the area for potential burrows than allowed by perpendicular transects. With perpendicular transects, the closest approach to certain locations (i.e. the point at the center of the square formed by intersecting perpendicular transects) would be as far as 30 meters. With staggered parallel transects, a surveyor would pass within 15 meters of all locations over the course of two surveys (this assumes the potential addition of one more transect than the original number). Whenever new burrows are found, the area will be intensively searched to find more burrows, look for squirrels or scat, and identify the extent of the potential colony within the study corridor.

Surveyors can share observations by talking quietly, using hand signals, or contacting each other with handheld radios. This will aid in limiting the potential for inadvertent double-recording of species. Surveyors can occasionally clap hands or gently prod large shrubs in an attempt to flush animals out of shrub patches or to stimulate a response from animals. The observers will scan ahead and periodically behind, looking for animal activity. GPS Coordinates will be recorded for active or suspected Washington ground squirrel sites.

While conducting the walking transects, surveyors will search for signs of squirrels, including listening for their high-tone alarm calls, seeking visual confirmation, and looking for fresh scat at the entrance of potentially suitable holes/burrows. Holes are determined suitable according to size and condition. Washington ground squirrels can occupy burrows with various entrance diameters, and active burrows are typically clear of vegetation, free of spider webs, and structurally sound. When potential holes are located, surveyors will notify each other and slow their walking pace or stop near the area to listen and scan. Inten-

sive searches will then be conducted to locate the animal(s) or droppings in the immediate area. This species scat can be identified from other burrow-dwelling species in the area by difference in shape and size. Washington ground squirrel scat is typically elongate and irregular in shape, larger than scat of the local mouse and rat species (Marr personal communication 2009). Presence is confirmed when the animal(s) is visually detected, when squirrel calls are heard, or droppings are found. The area will be further searched to identify the outside perimeter of the active site (where land access is permitted). Although Washington ground squirrels are expected to be the only small squirrel present in the area, there is a remote possibility that a similar species, the Townsend's ground squirrel, may occur. All squirrels seen will be identified when possible.

In places where only potentially suitable holes (similar size and shape of hole) are located, the area will be searched for confirmation of presence by looking for droppings on the soil surface or by roughly sifting through dirt within 1 foot of the holes. In areas where questionable holes are found and no sign of squirrels is noted, surveyors will note the location on maps and identify the site for further investigation during the second survey. High-use areas (likely the primary natal site) and/or groups of holes will be mapped and the GPS coordinates recorded. These high-use areas are defined as sites with numerous holes containing recent sign of activity and/or where animals are detected. Locations of holes not in use were also mapped during 2009 surveys if it was strongly suspected that they belong to squirrels. These were defined as holes/burrows with characteristics of ground squirrel holes (size) but not showing any sign of use in recent months or weeks. Indicators of absence include recent vegetation growth obscuring the hole, spiders nesting in the burrow, fresh kangaroo rat or other non-squirrel droppings, and no "mowed" vegetation near the entrance or recent rubbing of vegetation roots exposed on the hole edge.

Raptor Surveys

The initial raptor nest survey was conducted via foot and four-wheel drive in early May 2009 when ferruginous hawks typically are actively establishing nests, incubating eggs, or brooding/attending young. The Project area was surveyed a second time in mid-June 2009 to document additional nests via foot and four-wheel drive vehicle. The objective of the raptor nest survey was to locate all raptor nests that may be subjected to disturbance from the Project construction.

An aerial survey will be conducted by helicopter between April and June during the year prior to construction, likely in 2011. The earlier part of this time period offers better nest-viewing due to lack of or minimal foliage in deciduous trees. The latter part of this period allows the observer to document birds that initiate nesting later than other raptor species (e.g., Swainson's hawks). Optimally, aerial surveys should be completed in mid-May. The aerial survey will be followed by ground reconnaissance at identified nest sites to verify species identification, nesting status, and nest condition. Locations of inactive nests will be recorded and mapped as they may be occupied during other years.

A 1-mile buffer around the Carty Generating Study Area and the transmission centerline was surveyed in 2009. The nest search area prior to construction will include a one-half-mile radius from ground disturbing activity at the Carty Generating Station and a one-half-mile area along both sides of the transmission centerline. Nest searches will be conducted by examining habitat suitable for most above-ground nesting species, focusing on important raptor habitat such as rock outcrops, cliffs, ridges, knolls, stream banks, conifer *(Pinophyta sp.)* and cottonwood *(Populus sp.)* trees. If a nest is observed, ground surveyors will look for signs of activity. All surveys should be conducted on clear, calm days, and visits will be as brief as possible to avoid disturbance to nesting birds.

Observers record as much information as possible during the brief investigation of nest sites. At a minimum, GPS-collected coordinates are attributed to every nest identified in the Project area. When possible, the species associated with the nest is recorded, as well as age classification (adult or juvenile) and nest activity (active or inactive). Site description is noted and would include the nest substrate (pine, poplar, cottonwood, juniper, shrub, rocky outcrop, cliff or man-made structure); nest type (stick, scrape, eyrie); and other general descriptors such as aspect, approximate height, and surrounding terrain.

Active Nests are defined as nests that are repaired or tended in the current (survey) year by a pair of raptors. Presence of raptors (adults, eggs, or young), evidence of nest repair or nest marking, freshly molted feathers or plucked down, or current year's mute remains (whitewash) suggest site occupancy. Additionally, all nest sites within a nesting territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity for a given area. Once a specific nest is selected for use by a breeding pair, other nests in the nesting territory will no longer be considered occupied for the current breeding season.

A nest site remains occupied throughout the periods of initial courtship and pair bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.

Inactive Nests are defined as nests not selected by raptors for use in the current (survey) year. Inactive nests would also be considered unoccupied for the non-breeding period of the year. The exact point in time when a nest becomes unoccupied should be determined by a qualified wildlife biologist based upon knowledge that the breeding season has advanced such that nesting is not expected. Inactivity at a nest site or territory does not necessarily indicate permanent abandonment.

See Attachment 1 for raptor nest datasheets and associated codes.

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Attachment 1 Raptor Nest Data Sheet

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RAPTOR NEST LOCATION

Raptor Inventory Data Sheet

Raptor Nest ID*:_____

Species:_____

Location: Township _____ N S, Range _____ E W

Section _____, _____ ¼ _____ ¼

UTM Zone: _____

Geo. Datum (circle one): NAD 27 NAD 83

Northing: _____

Easting: _____

Nest Site Elevation: _____

USGS Quad Name: _____

County: _____

Nest Status*: _____

Nest Condition*: _____

Number of Eggs: _____ Young: _____

Date First Observed*:_____

Observed By:_____

Ownership: P S Other ____

Nest Substrate*: _____

Height of Substrate (ft.): _____

Nest Height on/in Substrate (ft.): _____

Nest Exposure: _____

Vegetation Type*: _____

Remarks/Comments: Physical Relationship to Other Nests, Proximity to Potential Disturbances, Etc.

_____

_____

_____

_____

_____

*Use existing data codes Historic Nest Record Monitoring of Nest Activity on Reverse Side

Map/Photo

NEST HISTORY

Nest Number _____

* Date MM/DD/YY	* Nest Status	* Nest Condition	Number Of Young	Observer Name	Remarks

*** Use existing data codes.**

Species

BUOW = Burrowing Owl
BANO = Barn Owl
COHA = Cooper's Hawk
FEHA = Ferruginous Hawk
GOEA = Golden Eagle
GHOW = Great Horned Owl
NOGO = Northern Goshawk
BAEA = Bald Eagle
AMKE = American Kestrel
LEOW = Long-eared Owl
MERL = Merlin
NOHA = Northern Harrier
WESO = Western Screech-Owl
OSPR = Osprey
PEFA = Peregrine Falcon
PRFA = Prairie Falcon
RTHA = Red-tailed Hawk
SWHA = Swainson's Hawk
SSHA = Sharp-shinned Hawk
UNAC = Unknown Accipiter
UNBU = Unknown Buteo
UNOW = Unknown Owl
UNRA = Unknown Raptor
UNFA = Unknown Falcon

Location

Enter Township Number;
Enter Range Number;
Enter the Quarter, and Quarter/Quarter Section.

Nest Site Elevation

Enter the elevation at the nest in feet. (Not nest height, but the elevation of the terrain.)

USGS Quad Name

Enter the name of the appropriate USGS 7.5-inch quadrangle.

County

Enter the name of the appropriate county.

Nest Status

Record the status of the nest at the time of observation. BLM utilizes the four-character nest codes; however, Ecology and Environment, Inc. (E & E) will write out the full word on data sheets (e.g., Active nest, Active failed, Occupied, etc.).

ACTI: Active Nest; a nest in which a breeding attempt was made as indicated by:

1) Eggs in nest, or
2) Young in nest, or
3) Fledged young near nest, or
4) Incubating/brooding adult.

ACTF: Active Failed; an active nest that did not fledge young, indicated by:

1) Egg shells in or around nest with no young when young should be in the nest, or
2) Young present but known not to have fledged, or
3) Eggs in nest but obviously abandoned (past the time when eggs would normally have hatched).

DNLO: Did Not Locate; surveyor searched but was unable to locate the nest (does not mean nest is gone or destroyed, merely that the observer was unable to find the nest).

OCCU: Occupied; a nest with one or more of the following:

1) Fresh lining material;
2) Adult presence at or near the nest; and/or
3) Recent and well-used perch site near the nest.

OCAL: Occupied Alternate; a tended nest within the boundaries of a territory housing an active nest.

INAC: Inactive; a nest with no apparent recent use or adult presence at the time of observation, but in good condition.

INAL: Inactive Alternate; an inactive nest within a territory that contains an active nest.

INDI: Inactive Dilapidated; an inactive nest in a state of ruin due to weather, natural aging and/or neglect.

INDE: Inactive Destroyed; a nest showing no sign of raptor activity that is destroyed to the point that it is no longer usable without major reconstruction. These nests, for all practical purposes, have disappeared, but there is often still lingering evidence of an historic presence.

GONE: A nest that was located during a previous survey but has subsequently been found to be destroyed and no longer exists. No evidence remains.

PRED: Predated; the nest was active, but there is evidence that it was predated (remains of adults or young, feathers or egg shells scattered, or other physical evidence is present).

Nest Condition

EXCELLENT: Nest can be used with little or no attention or maintenance.
GOOD: Nest is in need of only minor attention in order to be used.
FAIR: Nest is not dilapidated but needs significant repair before it can be used.
POOR: Nest is dilapidated, in need of major repair before it can be used.
REMNANTS: Scant material remaining and not usable unless fully rebuilt.
GONE: There may or may not be evidence of where the nest was, but it is no longer there.
UNKNOWN: The nest is obviously present (i.e., a tree cavity, rock cavity), but because of its location, a determination can not be made.

Number of Young

Record the number of young in the nest, if observed.

Date Observed

Date of observation in month/day/year format (MM/DD/YYYY).

Observed By

Record the name of the person making the first observation of this nest.

Ownership

P: Private Land
S: State Land
OTHER: Other - Specify

Nest Substrate

Substrate upon which nest is built (three characters):

ABB = Abandoned Burrow
ACB = Active Burrow
ANS = Artificial Nesting Structure
ASP = Aspen Tree
BLS = Blue Spruce Tree
BLT = Broadleaf Tree
BOX = Boxelder Tree
BTT = Butte
CLF = Cliff
CKB = Creek Bank
CTL = Cottonwood Tree (Live)
CTD = Cottonwood Tree (Dead)
DOF = Douglas Fir
UNK = Unknown
WIL = Willow (Live)

LIM = Limber Pine Tree
LOW = Low Ridge/Knoll
LPP = Lodgepole Pine Tree
MMS = Manmade Structures
OSS = Other Shrub Species
PON = Ponderosa Pine Tree
RIM = Rimrock
RIP = Riparian Area
ROC = Rock Cavity
ROK = Rock Outcrop
ROL = Rocky Ledge
ROP = Rock Pillar/Pinnacle
SAG = Sagebrush
GHS = Ground/Hillside
JUN = Juniper Tree

Height of Substrate

Record (in feet) the height of the substrate upon/in which the nest is located (i.e., the height of the cliff/butte/tree/etc. above the surrounding terrain).

Height of Nest on Substrate

Record (in feet) the height of the nest on/in the substrate (i.e., the height of a tree nest above the ground or the height of a cliff ledge nest on cliff above the surrounding terrain).

Nest Exposure

Record the general direction of nest exposure (e.g., North, Northeast, South, Southwest, etc.).

SAGE-GROUSE LEK COUNTING FORM

County: _____ Lek Name: _____ Year: _____

UTM (NAD 83): _____ Elevation: _____

Status (Occupied, Unoccupied, Active, Inactive): _____

Site Description and Habitat Type: _____

INSTRUCTIONS

1. A minimum of three counts should be made at approximate weekly intervals between March 20 and May 7. Maximum seasonal count should be observed after the peak of breeding.
2. Make all counts from one-half hour before to one and one-half hours after sunrise.
3. Record the maximum number of Males observed on the dancing ground each date visited in space provided below. Each lek should be counted 3 to 5 times each morning to determine the maximum number of males.
4. Use a separate form for each lek.
5. Record weather conditions as specified below.
6. Record other observations or comments such as disturbances to the birds (eagles, coyotes), the presence of hens and if breeding in occurring, snow conditions, and if the count was good.
7. Completed forms must be returned to the Regional Office no later than May 15; and to SLO by June 1.

Beaufort Wind Scale:

Calm	smoke rises vertically, leaves motionless
1-3 mph	smoke drifts, leaves move slightly
4-7 mph	wind felt on face
8-12 mph	leaves move constantly
13-18 mph	dust rises, small branches move

DATE	OBSERVER	# OF MALES	TEMP	WIND VELOCITY	% CLOUD COVER	COMMENTS

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B Special Status Plant Descriptions

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Endangered, Threatened and Candidate Plant Species Potentially Occurring in the Project Area:

Laurence's milk-vetch (*Astragalus collinus* var. *laurentii*)
Oregon State Threatened; ORNHIC List 1

A. collinus var. *laurentii* is a perennial herb in the pea family (Fabaceae) that branches freely into small leaflets. Flowering occurs from May to July; the flower petals are cream or yellowish. Fruit (pendulous pods bearing short, shaggy hairs) are present from June to early August. The species occurs on dry slopes in areas with loess deposits, occasionally with sandy or rocky substrates, in bluebunch wheatgrass-Idaho fescue (*P. spicata-Festuca idahoensis*) palouse grassland or canyon communities. The majority of sites are in roadsides adjacent to wheatlands, or on canyon walls above streams and below the farmlands.

Snake River Goldenweed (*Pyrrocoma radiata*)
Oregon State Endangered; ORNHIC List 1

P. radiata is a large herbaceous perennial in the sunflower family, Asteraceae. Plants have clasping stem leaves and large, yellow headed flowers. Flowering occurs in July; germination may occur both in fall and spring. Dieback depends on severity of frosts. The species is commonly associated with big sage/bluebunch wheatgrass-Sandberg's bluegrass communities. Slopes and aspect vary, but rarely occurs on north slopes. Elevations range from 2,000 to 4,000 feet on shallow, mesic, slightly acidic soils.

Disappearing Monkey flower (*Mimulus evanescens*)
Oregon State Candidate: ORNHIC List 1

M. evanescens is a small herbaceous annual in the figwort family, scrophulariaceae. Plants have small yellow petal flowers and generally grow in sagebrush-juniper plant communities among rock rubble and boulders in vernally moist, heavy gravel. The known populations occur in association with big sagebrush, western juniper, other monkeyflower species, fleshy porterella, blue eyed Mary species, calicoflower, and bulbous bluegrass among other species. It is distributed widely along the northwestern edge of the Great Basin at elevations between 3500 to 5500 feet, although only one site in Oregon is confirmed with others in California. Grazing is likely the primary threat to this species

Dwarf evening-primrose (*Camissonia pygmaea*)
Oregon State Candidate: ORNHIC List 1

C. pygmaea is a short herbaceous annual growing up to 40 cm tall that is part of the willowherb or evening primrose family, Onagraceae. The inflorescence is a crowded, many-flowered spike and petals are obovate and white to pinkish with age. It's distribution potential occurs from Eastern Washington to Eastern California and Nevada, although in Oregon it is known to occur only in Wasco, Wheeler, Grant, and Harney Counties. Habitat preferred by this plant includes

dry plains and slopes with unstable soils or on gravel in steep talus, dry washes, banks and roadcuts. It is generally found at elevations between 500 and 2000 feet and flowers June through August.

Sessile mousetail (*Myosurus sessilis*)
Oregon State Candidate: ORNHIC list 1

M. sessilis is a small herbaceous plant that grows from 0.8 to 2.5 cm tall which flowers in the spring approximately from March through May. It is found in vernal pools and alkali flats at elevations up to 5000 feet and is known to occur in Oregon and California. This species often grows with M. minimus and hybrids commonly occur between the two species. Flowers are immersed among the leaves and dominated by the achenes. Leaf blades are typically linear, 1.6 to 7.4 cm in length.

Other species listed in the survey table are not Federal or State Listed as threatened, endangered, or candidate species. Very limited information is available on those, pictures were primarily used for their identification during field surveys.

ORNHIC Lists:
List 1: Threatened or Endangered throughout range
List 2: Threatened, Endangered, or extirpated from Oregon; secure elsewhere
List 3: Review species
List 4: Watch species

C Noxious Weeds List of Oregon

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Noxious Weed Control Classification Definitions

Noxious weeds, for the purpose of this system, shall be designated "A" or "B" and may be given the additional designation of "T" according to the Oregon State Weed Board's Noxious Weed Classification System.

"A" Designated Weed – a weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent.

Recommended action: Infestations are subject to eradication or intensive control when and where found.

"B" Designated Weed – a weed of economic importance which is regionally abundant, but which may have limited distribution in some counties.

Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.

"T" Designated Weed – a priority noxious weed designated by the Oregon State Weed Board as a target for which the ODA will develop and implement a statewide management plan. "T" designated noxious weeds are species selected from either the "A" or "B" list.

A List - Oregon

"A" Designated weeds as determined by the Oregon Department of Agriculture

Common Name
Scientific Name

African rue
Peganum harmala

Camelthorn
Alhagi pseudalhagi

Coltsfoot
Tussilago farfara

Common reed
Phragmites australis

Cordgrass
Common
Spartina anglica

Dense-flowered
Spartina densiflora

Saltmeadow
Spartina patens

Smooth
Spartina alterniflora

European water chestnut
Trapa natans

Flowering rush
Butomus umbellatus

Giant hogweed
Heracleum mantegazzianum

Goatgrass

Barbed
Aegilops triuncialis

Ovate
Aegilops ovata

Goatsrue
Galega officinalis

Hawkweed
King-devil
Hieracium piloselloides

Meadow
Hieracium pratense

Mouse-ear
Hieracium pilosella

Orange
Hieracium aurantiacum

Yellow
Hieracium floribundum

Hydrilla

Hydrilla verticillata

Japanese dodder
Cuscuta japonica

Kudzu
Pueraria lobata

Matgrass
Nardus stricta

Oblong spurge
Euphorbia oblongata

Paterson's curse
Echium plantagineum

Purple nutsedge
Cyperus rotundus

Silverleaf nightshade
Solanum elaeagnifolium

Spanish heath
Erica lusitanica

Skeletonleaf bursage
Ambrosia tomentosa

Squarrose knapweed
Centaurea virgata

Starthistle

Iberian
Centaurea iberica

Purple
Centaurea calcitrapa

Syrian bean-caper
Zygophyllum fabago

Texas blueweed
Helianthus ciliaris

Thistle

Plumeless
Carduus acanthoides

Smooth distaff
Carthamus baeticus

Taurian
Onopordum tauricum

Woolly distaff
Carthamus lanatus

White bryonia
Bryonia alba

Yellow floating heart
Nymphoides peltata

http://www.oregon.gov/ODA/PLANT/WEEDS/statelist2.shtml
- top

B list - Oregon

"B" designated weeds as determined by the Oregon Department of Agriculture (*indicates targeted for biological control)

Common Name
Scientific Name

Armenian blackberry (Himalayan blackberry)
Rubus armeniacus (R. procerus, R. discolor)

Biddy-biddy
Acaena novae-zelandiae

Broom

French*
Genista monspessulana

Portuguese
Cytisus striatus

Scotch*
Cytisus scoparius

Spanish
Spartium junceum

Buffalobur
Solanum rostratum

Butterfly bush
Buddleja davidii (*B.variabilis*)

Common bugloss
Anchusa officinalis

Common crupina (bearded creeper)
Crupina vulgaris

Creeping yellow cress
Rorippa sylvestris

Cutleaf teasel
Dipsacus laciniatus

Dodder
Cuscuta spp.

Dyers woad
Isatis tinctoria

English ivy
Hedera helix (H. hibernica)

Eurasian watermilfoil
Myriophyllum spicatum

False brome
Brachypodium sylvaticum

Field bindweed*

Convolvulus arvensis

Garlic mustard
Alliaria petiolata

Giant horsetail
Equisetum telmateia

Gorse*
Ulex europaeus

Halogeton
Halogeton glomeratus

Herb Robert
Geranium robertianum

Houndstongue
Cynoglossum officinale

Johnsongrass
Sorghum halepense

Jointed goatgrass
Aegilops cylindrical

Jubata grass
Cortaderia jubata

Knapweeds

Diffuse*
Centaurea diffusa

Meadow*
Centaurea pratensis (C. jacea x C. nigra)

Russian*
Acroptilon repens

Spotted*
Centaurea stoebe (C. maculosa)

Knotweeds
Giant
Fallopia sachalinense (Polyganum)

Himalayan
Fallopia polystachyum (Polyganum)

Japanese (fleece flower)
Fallopia japonica (Polyganum cuspidatum)

Kochia
Kochia scoparia

Lesser celandine
Ranunculus ficaria

Mediterranean sage*
Salvia aethiopis

Medusahead rye
Taeniatherum caput-medusae

Old man's beard
Clematis vitalba

Parrots feather
Myriophyllum aquaticum

Perennial peavine
Lathyrus latifolius

Perennial pepperweed
Lepidium latifolium

Poison hemlock
Conium maculatum

Policeman's helmet
Impatiens glandulifera

Puncturevine*
Tribulus terrestris

Purple loosestrife*
Lythrum salicaria

Quackgrass
Agropyron repens

Ragweed
Ambrosia artemisiifolia

Rush skeletonweed*
Chondrilla juncea

Saltcedar*
Tamarix ramosissima

Shiny geranium
Geranium lucidum

Small broomrape
Orobanche minor

South American waterweed
Egeria densa (Elodea)

Spikeweed
Memizonia pungens

Spiny cocklebur
Xanthium spinosum

Spurge laurel
Daphne laureola

Spurge

Leafy*
Euphorbia esula

Myrtle
Euphorbia myrsinites

St. Johnswort (Klamath weed) *
Hypericum perforatum

Sulfur cinquefoil
Potentilla recta

Swainsonpea (Austrian peaweed)
Sphaerophysa salsula

Tansy ragwort*

Senecio jacobaea

Thistles

Bull*
Cirsium vulgare

Canada*
Cirsium arvense

Italian*
Carduus pycnocephalus

Milk*

Silybum marianum

Musk*
Carduus nutans

Scotch
Onopordum acanthium

Slender-flowered*
Carduus tenuiflorus

Toadflax

Dalmatian*
Linaria dalmatica (L. genista)

Yellow*
Linaria vulgaris

Velvetleaf
Abutilon theophrasti

Whitetop

Hairy
Lepidium pubescens (Cardaria)

Lens-podded
Lepidium chalepensis (Cardaria)

Hoary cress
Lepidium draba (Cardaria)

Yellow flag iris
Iris pseudacorus

Yellow nutsedge
Cyperus esculentus

Yellow starthistle*
Centaurea solstitialis

Source: Oregon Department of Agriculture, Noxious Weed Control Program, 2009. Noxious Weed Policy and Classification System 2009.

Noxious Weeds Documented in Gilliam and Morrow Counties

Gilliam County

Common Name	Scientific Name	List*
Canada thistle	*Cirsium arvense*	B
Dalmatian toadflax	*Linaria dalmatica*	B
Diffuse knapweed	*Centaurea diffusa*	B
Kochia	*Kochia scoparia*	B
Leafy spurge	*Euphorbia esula*	B, T
Musk thistle	*Cardus nutans*	B, T
Myrtle spurge	*Euphorbia myrsinites*	B
Perennial pepperweed	*Lepidium latifolium*	B
Poison hemlock	*Conium maculatum*	B
Puncturevine	*Tribulus terrestris*	B
Purple loosestrife	*Lythrum salicaria*	B, T
Rush skeletonweed	*Chondrilla juncea*	B, T
Russian knapweed	*Acroptilon repens*	B
Saltcedar	*Tamarix ramosissima*	B
Scotch thistle	*Onopordum acanthium*	B
Spikeweed	*Hemizonia pungens*	B
Spotted knapweed	*Centaurea maculosa*	B, T
St. Johnswort (Klamath weed)	*Hypericum perforatum*	B
White top (Hoary cress)	*Cardaria draba*	B
Yellow starthistle	*Centaurea solstitialis*	B, T
Yellow toadflax	*Linaria vulgaris*	B

Morrow County

Common Name	Scientific Name	List
Bull thistle	*Cirsium vulgare*	B
Canada thistle	*Cirsium arvense*	B
Dalmatian toadflax	*Linaria dalmatica*	B
Diffuse knapweed	*Centaurea diffusa*	B
Giant knotweed	*Polygonum sachalinense*	B, T
Houndstongue	*Cynoglossum officinale*	B
Japanese knotweed	*Polygonum cuspidatum*	B, T
Leafy spurge	*Euphorbia esula*	B, T
Mediterranean sage	*Salvia aethiopis*	B
Musk thistle	*Cardus nutans*	B, T
Puncturevine	*Tribulus terrestris*	B
Purple loosestrife	*Lythrum salicaria*	B, T
Rush skeletonweed	*Chondrilla juncea*	B, T
Russian knapweed	*Acroptilon repens*	B
Scotch thistle	*Onopordum acanthium*	B
Spotted knapweed	*Centaurea maculosa*	B, T
St. Johnswort (Klamath weed)	*Hypericum perforatum*	B
Tansy ragwort	*Senecio jacobaea*	B, T
White top (Hoary cress)	*Cardaria draba*	B
Yellow starthistle	*Centaurea solstitialis*	B, T
Yellow toadflax	*Linaria vulgaris*	B

Source: WeedMapper (2009). http://www.weedmapper.org/county_maps.html
Website Accessed April 8, 2009

D Wetland Delineation Data Form (Arid West Region)

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: _____ City/County: _____/_____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☐**
Hydric Soil Present?	Yes ☐	No ☐		
Wetland Hydrology Present?	Yes ☐	No ☐		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size:_____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size:_____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
Woody Vine Stratum (Plot size:_____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of :	Multiply by:
OBL species _____	x1 = _____
FACW species _____	x2 = _____
FAC species _____	x3 = _____
FACU species _____	x4 = _____
UPL species _____	x5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is $\leq 3.0^1$

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☐**

Remarks:

Project Site: _____

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]		

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Hydric Soils Present? **Yes** ☐ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☐ Depth (inches): _____

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☐ Depth (inches): _____

Wetland Hydrology Present? **Yes** ☐ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B: Washington Ground Squirrel Characteristics and Habitat

The Washington Ground Squirrel (WGS) is a small ground squirrel occurring in grassland and shrubland habitats of the Columbia Plateau, east and south of the Columbia River in Washington and Oregon. WGS is currently considered a candidate species for listing under the Federal Endangered Species Act by the United States Fish and Wildlife Service (USFWS) and is a state listed endangered species under the Oregon Endangered Species Act of 1987.

WGS may be found in native grassland and shrub-steppe habitats associated with silty loam soils, particularly Warden and Sagehill soils. WGS can also be found in some areas that have been replanted to grassland under the Conservation Reserve Program. In 2009, data were collected from the Oregon Natural Heritage Information Center (ORNHIC) on potential occurrences of sensitive species. Those data revealed potentially suitable WGS habitat occurring within the Site. Where the Site Boundary encountered sensitive species occurrence areas, the boundary of the 2009 survey was expanded an additional 1,000 feet. Identifiers of WGS presence surveyed for during 2009 included locations of potentially utilized burrows, scat, carcasses, auditory calls, and sightings.

Active periods for WGS include a short period during the early spring to summer, depending on environmental conditions. Squirrel activity is highest from February through June, with some activity in January and July. The squirrels hibernate or estivate approximately seven to eight months per year. Adults emerge in mid to late January to early February and begin estivation/hibernation in late May to early June. Juveniles, referred to as pups, emerge in late March to April and begin estivation/hibernation in early July. After entering estivus, they are thought to transition directly into hibernation. The fact that squirrels are active only four to five months of the year highlights the importance of reproducing and fattening quickly to have viable young and survive seven to eight months of estivation/hibernation. High annual mortality rates are associated with this species, with causes attributed to starvation or freezing during estivation/hibernation, predation, disease, and human interference (USFWS 2008, 2010).

APPENDIX P-3

Carty Generation Station Wildlife and Habitat Monitoring and Mitigation Plan

Carty Generating Station

Wildlife and Habitat Monitoring and Mitigation Plan

Submitted to:

Oregon Department of Fish and Wildlife
Oregon Department of Energy

February 2011

Prepared by:

Portland General Electric Company
121 SW Salmon St.
3WTC-BR05
Portland, OR 97204

Portland General Electric

ecology and environment, inc.

Table of Contents

1.0 Introduction 1

2.0 Description of the Development Action 1

3.0 Sensitive Species Preconstruction Surveys and Potential Impacts 2

3.1 Washington Ground Squirrel 2
3.2 Raptor Nests 4
3.3 Migratory and Grassland Birds 5
3.4 Sensitive Fish and Aquatic Species 6

4.0 Description of Habitat Categories Impacted by the Development Action 6

4.1 Impacts to Habitat from the Development Action 7
4.1.1 Category 4 – Upland Shrub-Steppe 8
4.1.2 Category 6 – Agricultural Cropland and Agricultural/Weedy Shrub Right-of-Way 9

5.0 Avoidance, Mitigation, and Monitoring Measures 9

5.1 General Avoidance and Minimization Measures 9
5.2 Sensitive Species Avoidance, Monitoring, and Mitigation 10
5.2.1 Washington Ground Squirrel Protection, Monitoring, and Habitat Enhancement 10
5.2.2 Sensitive Raptor Nest Avoidance and Mitigation 10
5.2.3 Avian Protection 12
5.3 Mitigation of Habitat Impacts 13
5.3.1 Description of the Habitat Mitigation Area 13
5.3.2 Habitat Enhancement and Restoration Actions 16

6.0 Monitoring and Data Reporting 17

7.0 Success Criteria 18

8.0 Amendment of the Plan 19

9.0 References 20

Appendix A Avian Protection Plan..... 1

List of Tables

Table		Page
Table 2	Critical Nesting Periods for Sensitive Raptors	10

List of Figures

Figure		Page
Figure 1	Habitat Mitigation Area	15

List of Abbreviations and Acronyms

Term	Definition
APP	Avian Protection Plan
Applicant	Portland General Electric Company
ASC	Application for Site Certificate
EFSA	Energy Facility Survey Area
EFSC	Energy Facility Siting Council
GIS	geographic information systems
HMA	Habitat Mitigation Area
MSCCAA	Multi-Species Candidate Conservation Agreement with Assurances
OAR	Oregon Administrative Rules
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
PGE	Portland General Electric Company
ROW	right-of-way
TLSA	Transmission Line Survey Area
USFWS	United States Fish and Wildlife Service
WGS	Washington ground squirrel

1.0 Introduction

Portland General Electric Company (PGE, or Applicant) has prepared this Wildlife and Habitat Monitoring and Mitigation Plan to demonstrate compliance of the Carty Generating Station Project with the Oregon Department of Energy (ODOE) Energy Facility Siting Council (EFSC) standards for fish and wildlife habitat (Oregon Administrative Rules [OAR]-345-022-0060) and for threatened and endangered species (OAR-345-022-0070). Under OAR-345-022-0060, EFSC must find that the design, construction, and operation of the facility, taking mitigation into account, are consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025. Under OAR-345-022-0070, EFSC must find that the design, construction, and operation of the proposed facility, taking mitigation into account, are not likely to significantly reduce the likelihood of survival or recovery of the species listed as threatened or endangered by the Oregon Fish and Wildlife Commission or plants or plant species listed as threatened or endangered by the Oregon Department of Agriculture.

This plan supports and expands upon information presented in Exhibits P and Q of the Application for Site Certificate (ASC). It summarizes the sensitive wildlife species and wildlife habitat categories that could be impacted by construction and operation of the Carty Generating Station and transmission line. Avoidance, mitigation, and monitoring measures are proposed to address potential sensitive species impacts and compensate for permanent and temporary modifications to habitat as a result of construction and operation of the energy facility.

2.0 Description of the Development Action

A Development Action is defined by OAR 635-415-0005 as any activity subject to regulation by local, state, or federal agencies that could result in the loss of fish and wildlife habitat. For the purpose of this plan, the Development Action consists of the construction, operation, and maintenance of a natural gas–fueled combined cycle combustion turbine facility with a nominal generating capacity of up to 900 megawatts of electrical power, an approximately 18-mile transmission line, and other associated facilities, as described in the ASC. The term "Site" includes any proposed location of the energy facility and its related or supporting facilities; for the Carty Generating Station, the Site covers approximately 2,400 acres. "Site Boundary" is the perimeter of the approximately 2,400-acre Site. Within the approximately 2,400-acre Site, there are three areas, defined as follows. The Energy Facility Site area refers to approximately 90 acres of the Site near Carty Reservoir, including fenced areas that would enclose proposed buildings and structures, and fenced areas containing evaporation ponds. An approximately 15-acre fenced switchyard located west of the energy facility is also included in the acreage of the Energy Facility Site. The transmission line right-of-way (ROW) includes an existing transmission line and occupies approximately 1,400 acres extending westward to the existing Slatt substation, located approximately 18 miles west of the proposed Energy Facility Site. Of the approximately 910 acres remaining within

the Site Boundary, land in the vicinity of the Energy Facility Site and the switchyard would be used as temporary laydown, fill stockpiling, and staging areas; the remainder is included as a buffer around the Energy Facility Site. For the purposes of this document, the combined area of the Energy Facility Site, switchyard, and buffer all within the Site Boundary is referred to as the Energy Facility Survey Area (EFSA). In addition, the ROW occurring outside the EFSA is referred to as the Transmission Line Survey Area (TLSA) (see Exhibit P, Figure P-1). Within the entire Site Boundary (Energy Facility Site, switchyard, and transmission line), permanent facility components occupy approximately 91 acres. Temporary construction-related impacts would occur on approximately 208 acres.

3.0 Sensitive Species Preconstruction Surveys and Potential Impacts

This section provides information on sensitive wildlife species known to occur in the area that could be impacted by the Development Action. As detailed in the ASC, no sensitive plant species were found during preconstruction surveys.

3.1 Washington Ground Squirrel

The Applicant conducted field surveys for the Washington ground squirrel (*Urocitellus washingtoni*) (WGS) from May 4 through May 8, 2009; June 22 through June 26, 2009; May 4 through May 14, 2010; and May 24 through May 28, 2010. WGS surveys were completed by qualified wildlife biologists in areas identified by the Oregon Biodiversity Information Center (formerly Oregon Natural Heritage Information Center) as suitable habitat, in other areas within the Site Boundary that exhibited suitable habitat and soils, and in an expanded survey corridor extending 1,000 feet from such areas. Surveys were conducted in accordance with protocols developed in consultation with the Oregon Department of Fish and Wildlife (ODFW) (see the Biological Survey Work Plan for the Carty Generating Station, Boardman, Oregon, April 2010, provided in Exhibit P, Appendix P-2, Appendix A).

The eastern portion of the WGS study area includes land protected and monitored as WGS habitat under the 2004 Multi-Species Candidate Conservation Agreement with Assurances (MSCCAA). Data from previous WGS monitoring have been included in Exhibit Q, Figure Q-2, depicting documented squirrel activity recorded over the past eight years. Previous WGS surveys in the Development Action area and vicinity had found WGS activity in the north and northeastern portions of the Site Boundary.

WGS surveys during 2009 documented potential WGS burrows with evidence of current use or activity in the recent past. Burrows were evaluated based on size of entrance holes, evidence of recent use such as trimming of vegetation and roots around the hole, presence of spider webs, recent digging or collapse, and proximity to additional burrows and travel pathways between burrows in the patch (colony or cluster of burrows). Scat that appeared to have come from a jumping mouse, kangaroo rat, or vole was observed in many areas surveyed. In addition, several burrows showed tracks from tail drag by a

rodent species with a narrow, non-bushy tail similar to that of a rat, mouse, or lizard and unlike that of a ground squirrel. These are indicators that the inhabitant is a non-squirrel species, although co-habitation in burrow complexes by ground squirrels and other burrowing species is not ruled out.

In the vicinity of the proposed Energy Facility Site, observed burrow patch locations were concentrated in the area approximately one-quarter mile east and west of the railroad track that runs north from the current Boardman plant and through the South Farm Conservation Area (as designated in the MSCCAA). The burrows appear to be concentrated in a forb-dominant type of vegetation community. Soil type appears to have the largest influence on where burrows were found; areas with sandy soils may not be able to support tunnel-digging activities.

Surveys for WGS during 2010 revealed occupation in areas similar to those found during 2009 in the northeast area of the Site Boundary. Scat was found at a few isolated locations in the easternmost area of the Site Boundary, and also east of the Site Boundary within the 1,000-foot extended survey area; calls were also heard in this area. Scat was found at a burrow complex north of the existing evaporation pond, indicating occupation. The westernmost burrow in this complex is approximately 630 feet northeast of Tower Road, a large two lane roadway used for primary access to the Boardman Plant. Tower Road is approximately 75 feet wide (including gravel shoulders) at this location. The proposed Energy Facility Site is located on the southwest side of Tower Road. In consultation with ODFW, it was determined that Tower Road is a significant boundary to WGS habitat. Therefore, the buffer for this burrow complex ends where it meets Tower Road. Although the Energy Facility Site is within 785 feet of the burrow complex, it is not within the applied WGS buffer. Two other active burrows in this complex are within approximately 785 of the Energy Facility Site where an evaporation pond is planned near an existing evaporation pond. Habitat associated with these active burrows is not included in the habitat mitigation calculations because the Applicant intends to avoid the habitat using avoidance measures approved by ODFW.

No active WGS burrows were found along the transmission line ROW during 2009-2010 surveys. Surveys for WGS along the transmission line ROW were conducted in 2009 and 2010 during the same survey periods and using similar methods as for the Energy Facility Site surveys. The Biological Survey Work Plan for the Carty Generating Station, 2010, contains details of survey methodology and is available in Exhibit P, Appendix P-2, Appendix A. The 2009 transmission line survey results documented potential WGS burrows (Exhibit P, Appendix P-1). Each mapped site represents a patch of burrows, including 1 to 20 holes in close proximity. However, the 2009–2010 surveys did not reveal WGS occupation in any of the potential burrow locations along the transmission line ROW. Evidence of occupation by a species other than WGS was found at several of potential burrows identified in the transmission line ROW. This included scat from a mouse, vole, or rat and tracks from tail drag by a rodent species with a narrow, non-bushy tail unlike that of a WGS. Figure Q-3 in Exhibit Q shows potential burrow patch locations found in the transmission line survey corridor. The 2010 biological survey report contains detailed information on results (Exhibit P, Appendix P-2).

WGS occurs in the area north of the existing Boardman Plant evaporation pond and could move into the Development Action area in the future. Monitoring activities described Section 5 of this report are designed to address that possibility. If WGS is found within the Development Action area prior to or during construction, the Applicant will consult with ODFW regarding appropriate measures to avoid (if possible), minimize, and mitigate impacts to WGS and its habitat.

3.2 Raptor Nests

The primary objective of raptor nest surveys is to identify active raptor nests that could be impacted by the Development Action. Although survey protocols and results document nests of all raptor species, the nest locations of sensitive raptor species are of particular concern for designating construction buffer distances. Sensitive raptor species that occur in the area and that could nest in the Development Action area include Swainson's Hawk (*Buteo swainsoni*), Ferruginous Hawk *(Buteo regalis*), Golden Eagle (*Aquila chrysaetos*), and Burrowing Owl (*Athene cuniculara*).

Raptor nest surveys were conducted in 2009 to locate and document all raptor nests that may be subjected to disturbance and/or displacement from the facility and transmission line construction. Surveys were conducted within the Development Action area and an additional 1-mile buffer. Biologists examined the entire Development Action area, and efforts were intensified in areas with suitable nesting substrates (trees, rock ledges and cavities, power poles, and potential burrow sites). The surveyors documented all raptor nests and individuals observed, noting bird behavior and nest characteristics.

Ground surveys were conducted from May 5 through May 8, 2009, and from June 22 through June 25, 2009. Two raptor nests were observed on the south end of the proposed facility, adjacent to the reservoir, and three were observed along the transmission line corridor. Nests near the Energy Facility Site included an inactive Osprey (*Pandion haliaetus*) nest on an artificial nest platform (0.77 miles from the switchyard, 0.29 miles from the Site Boundary) and an inactive stick nest in the woodland to the northwest of the reservoir (0.37 miles from the switchyard, 0.09 miles from the Site Boundary). Nests along the transmission line corridor included an active Burrowing Owl burrow (0.24 miles north of the Site Boundary, 0.30 miles from a proposed transmission tower); an inactive stick nest on a rocky ledge (0.17 miles south of the Site Boundary, 0.23 miles from a proposed transmission tower); and a stick nest (within the Site Boundary, 246 feet from a proposed transmission tower) built on a transmission tower near the western end of the proposed corridor. According to ODFW, the nest on the transmission tower has historically been occupied by Golden Eagles.

During surveys conducted in 2010, biologists revisited known raptor nest locations and documented evidence of activity. The stick nest in the woodland northwest of the reservoir was occupied by a Great Horned Owl (*Bubo virginianus*) and included two juveniles. A stick nest located in a transmission tower near the Boardman Plant has been consistently occupied by Red-tailed Hawk for the past several years (PGE 2010). A stick nest in a transmission tower occurring approximately 4.7 miles west of the Boardman

Plant was occupied by a corvid (likely Common Raven (*Corvus corax*)). The Burrowing Owl burrow was visited two times during the 2010 survey effort and appeared to be inactive during both visits. The historic Golden Eagle nest was occupied by a corvid (likely Common Raven) as of mid-April 2010.

Additional raptor nesting surveys will be completed prior to construction activities to identify any raptor nests occupied by sensitive raptor species within a 2-mile radius from the Site Boundary (see section 5.2.2). Avoidance and mitigation measures for active raptor nests would be conducted as described in Section 5.3 of this report.

3.3 Migratory and Grassland Birds

A total of 36 avian species were documented during 2009 and 2010 field surveys of the Energy Facility (20 species) and transmission line (26 species) survey areas (see Exhibit P, Table P-5). Observations of sensitive avian species in 2009 included two breeding pairs of Long-billed Curlews (*Numenius americanus*), a state sensitive species. At least one fledgling Long-billed Curlew was observed and one three-egg nest, which was discovered on May 6, 2009. A follow-up visit on June 23, 2009, produced no signs of the adults. The nest contained only egg shell fragments and two deceased chicks, still early in their post-hatching development. There was no indication that the nest had been depredated. No curlew nests were observed during surveys in 2010.

Other sensitive avian species that could occur in the Development Action area and have been documented in the vicinity include Grasshopper Sparrow (*Ammodramus savannarum*), Loggerhead Shrike (*Lanius ludovicianus*), and Sage Sparrow (*Amphispiza belli*). The Loggerhead Shrike was observed in the Development Action area during the 2010 surveys. Additional pre-construction monitoring and mitigation measures related to sensitive avian species are described in Section 5.3 of this report. Observations of avian species during 2010 surveys are documented in the Exhibit P, Appendix P-2.

Some selected species, such as the Barn Swallow (*Hirundo rustica*), that readily nest in human structures (Brown and Brown 1999), may benefit from the construction of structures for the Carty Generating Station. However, construction of the Generating Station would result in permanent loss of avian nesting and foraging habitat in areas within the project area footprint (see Exhibit P, section P-7 for discussions of raptors and sensitive species). Operation of the Carty Generating Station would also likely cause continued disturbance to avian species in the immediate vicinity of the facility. Avian habitat impacts from construction of the transmission line would likely be short term, with disturbed areas expected to resemble adjacent undisturbed areas in three to five growing seasons. With the exception of the sensitive species described above, the avian species identified within the analysis area are relatively common and would likely utilize surrounding habitats during the construction phase and repopulate the transmission line corridor as the area is restored. Operation of the transmission line would cause minimal if any disturbance to avian species, as the new transmission lines would be adjacent to an existing transmission line. Mitigation plans will be updated in consultation with ODFW if additional sensitive species are observed.

3.4 Sensitive Fish and Aquatic Species

The transmission line would cross Willow Creek near Highway 74 and Rhea Road, approximately 11 miles west of the Energy Facility Site. The proposed crossing point of willow creek is approximately 6 miles south of its confluence with Willow Lake and a total of 7 miles from the Columbia River. Willow Creek is characterized by intermittent flow downstream of Lexington due to irrigation draw down (ODFW 2011). The transmission line ROW crosses this creek approximately 31 miles downstream of Lexington.

Willow Creek contains habitat which may be used by resident Inland Columbia Basin redband trout (*Oncorhynchus mykiss gairdneri*). This species is identified by USFWS as a Species of Concern and is considered a "Vulnerable" sensitive species in the State of Oregon. Transmission line stringing across Willow Creek would be conducted by foot, crossing a single time for each cable, totaling approximately nine times. Vegetation is expected to recover quickly if damage from foot traffic occurs. Equipment would use the existing Rhea Road bridge to cross the creek. Transmission towers and access routes would be located outside any riparian areas associated with Willow Creek. The construction and operation of the Carty Generating Station is not likely to impact Willow Creek or its associated riparian areas. Through consultation with ODFW, it was determined that construction of the Project utilizing the methods described here would not impact the Inland Columbia Basin redband trout.

4.0 Description of Habitat Categories Impacted by the Development Action

Aerial photos, Gap Analysis Program data, and on-site field surveys were used to map habitat and identify vegetation cover types within the Development Action Study Area. The term "Study Area" includes any proposed location of the energy facility and its related or supporting facilities and the buffers set forth in the Biological Survey Work Plan, provided in Exhibit P, Appendix P-2, Appendix A. Habitat types in the Study Area were validated during field surveys conducted in May and June 2009 and were further refined with 2010 survey results. Habitat was surveyed in transects by vehicle and on foot and was characterized according to dominant vegetation and overall condition of the vegetation community, including consideration of surrounding land uses. Habitat types were then digitized, using aerial photos and field-collected data, into a geographic information systems (GIS) database. The GIS database was used to produce habitat maps and acreage estimates for each habitat type.

The portion of the Site Boundary referred to as the Energy Facility Study Area (EFSA) contains shrub-steppe habitat, agriculture cropland, and some riparian areas and wetlands. Areas of shrub-steppe are dominated by big sagebrush (*Artemisia tridentata*), bluebunch

wheatgrass (*Pseudoroegneria spicata*), cheat grass (*Bromus tectorum*), gray rabbitbrush (*Chrysothamnus viscidiflorus*), needle-and-thread grass (*Hesperostipa comata)*, and Sandberg's bluegrass *(Poa secunda).* The western portion of the Site Boundary, referred to as the Transmission Line Study Area (TLSA), consists of irrigated agriculture crops, weedy/grazed shrub-steppe, and a riparian zone with mixed upland and water-tolerant plants, a few wetlands, and willow creek. Wetland areas are dominated by Russian olive (*Elaeagnus angustifolia*), Pacific willow (*Salix lucida ssp.*), Canada goldenrod (*Solidago canadensis*), amaranth (*Amaranthus sp.)*, and broadleaf cattail (*typha latifolia*). Although these habitat types are found within the Site Boundary, several of them are not likely to be impacted by construction or operation of the proposed project.

Each habitat type was assigned to a specific category based on the ODFW Fish and Wildlife Habitat Mitigation Goals and Standards defined in OAR 635-415-0025. The habitat categories that would be affected by the Development Action are identified in Table 2. Note that no impacts are anticipated in Category 1, Category 2, Category 3, or Category 5 habitat.

4.1 Impacts to Habitat from the Development Action

During construction activities, the Development Action would temporarily impact a total of approximately 208 acres of habitat (approximately 115.3 acres of Category 4 shrub-steppe and 52.2 acres of Category 6 agricultural cropland and weedy shrub ROW). Permanent impacts, primarily due to the permanent foundation of the Energy Facility Site, total approximately 91 acres of shrub-steppe habitat (nearly all in Category 4; Table 1).

Table P-1 Temporary and Permanent Impacts and Mitigation for the Development Action by Habitat Category (acres)

Habitat Type	Temporary			Mitigation*
	Energy Facility Site	Transmission Line	Total	
Category 4				
Shrub-Steppe	40	115	155	77.5
Category 6				
Agricultural Cropland and Agricultural/Weedy Shrub ROW	0	52	52	0
Total	40	167	207	77.5
Habitat Type	**Permanent**			**Mitigation***
	Energy Facility Site	**Transmission Line**	**Total**	
Category 4				
Shrub-Steppe	90	1	91	91
Category 6				
Agricultural Cropland and Agricultural/Weedy Shrub ROW	0	0	0	0
Total	90	1	91	91
Total Mitigation for both Temporary and Permanent Impacts				**168.5**

*****Temporary impact mitigation is based on a 0.5:1-acre ratio of Category 4. Permanent impact mitigation is based on a 1:1 acre ration of Category 4.

4.1.1 Category 4 – Upland Shrub-Steppe

Category 4 shrub-steppe habitat occurs along an existing transmission line ROW and dirt access road, punctuated with portions of agricultural cropland, weed-dominated shrub-steppe, and a paved access road. This habitat type may be important to some wildlife species but is not considered limited. Approximately 884 acres of this habitat type are located in the transmission line ROW. The EFSA includes approximately 420 acres of previously disturbed Category 4 habitat.

Construction and operation at the Energy Facility Site would permanently impact approximately 90 acres and temporarily impact an additional approximately 40 acres of Category 4 shrub-steppe habitat. Installation of lattice transmission towers, line stringing, and new access roads would temporarily impact approximately 115 acres and permanently impact approximately 1 acre of this habitat type.

4.1.2 Category 6 – Agricultural Cropland and Agricultural/Weedy Shrub Right-of-Way

Agricultural cropland and Agricultural/Weedy Shrub ROW are the types of Category 6 habitat in the Site Boundary. Habitat identified as Agricultural/Weedy Shrub can be described as the area between irrigation circles that includes access roads, the existing transmission line, and vegetation dominated by weeds. Some of the soil surface in this area is covered by thick layers of farm waste and includes large patches of 100% cover by Russian thistle (*Salsola tragus L.*), yellow star-thistle (*Centaurea solstitialis*), and other weeds. Other areas include patches of weed-dominated shrub-steppe. One Swainson's Hawk was observed in the Agricultural/Weedy Shrub ROW habitat during 2009 surveys. No other rare species were observed or are expected to occur in the Category 6 habitat associated with the Development Action.

This habitat is not considered limited. Approximately 429 acres of agriculture cropland and Agricultural/Weedy Shrub habitat are located within the TLSA, and the EFSA encompasses approximately 444 acres of agricultural cropland and Agricultural/Weedy Shrub.

Construction and operation of the transmission line would temporarily impact approximately 52 acres and permanently impact less than 0.1 acres of this habitat type. The proposed Energy Facility Site does not occur in this habitat type; therefore, no temporary or permanent impacts are likely.

5.0 Avoidance, Mitigation, and Monitoring Measures

This section describes the Applicant's proposed avoidance, mitigation, and monitoring measures to be implemented during pre-construction, construction, and operation of the Carty Generation Station and transmission line. Such measures are presented in three main categories: general avoidance and minimization measures; sensitive species avoidance, monitoring, and mitigation; and mitigation of habitat impacts.

5.1 General Avoidance and Minimization Measures

Avoidance and minimization of significant potential impacts to wildlife and habitat would include the following: (1) siting the proposed energy facility at a site intended for energy generation projects and adjacent to an existing power plant; (2) aligning the proposed transmission line so that it would use an existing ROW; (3) prohibiting equipment from entering perennial and intermittent streams and wetlands; (4) siting the construction laydown areas on an already developed/disturbed site; and (5) using existing water intake structures to provide process water for the energy facility, rather than constructing a separate new structure.

5.2 Sensitive Species Avoidance, Monitoring, and Mitigation

Avoidance, monitoring, and mitigation measures applicable to WGS and nests of sensitive raptor species are described below.

5.2.1 Washington Ground Squirrel Protection, Monitoring, and Habitat Enhancement

As described in Section 5.3, the Applicant proposes to protect and enhance approximately 150 acres in proximity to the disturbed areas, consistent with ODFW's mitigation goals and standards and in coordination with ODFW. Such protection and enhancement would include the Applicant's management of the mitigation area to maintain and enhance WGS habitat, including active prevention, inventory, and control of noxious weeds. The site selected for the Habitat Mitigation Area (HMA) is described in Section 5.3.

Additional pre-construction surveys will be conducted within known WGS-occupied areas as necessary in 2011-2012 to document any changes in the location and extent of the colonies. The Applicant will also conduct post-construction surveys on known colonies in the Development Action area, and on land owned by the Applicant, where known active burrows were recorded during preconstruction field surveys (2009-2012). The WGS surveys will be conducted by qualified biologists in year one, year three, and year five after operations have begun and then at least every five years after that for the life of the Project. Surveyors will record evidence of WGS activity, current land use, and evidence of conditions caused by the project that might increase erosion or result in a decline in vegetation quality and adversely affect a WGS colony. The Applicant would monitor and control access to the mitigation area and post informative signs depicting the area as "protected" and providing species information.

5.2.2 Sensitive Raptor Nest Avoidance and Mitigation

The Applicant would not conduct high-impact construction activities within 1 mile (line of sight) of active golden eagle nests, or within 0.6 mile (line of site) of nests occupied by certain other sensitive raptor species during their critical nesting periods. These buffer distances may be decreased after consultation with ODFW and USFWS depending on the intensity of construction activity and whether sufficient barriers (e.g., vegetation, topography) are present to shelter a particular nest site from construction disturbance. Critical nesting periods for sensitive raptor species are indicated in Table 2.

Table 2 Critical Nesting Periods for Sensitive Raptors

Species	Critical Nesting Period	Early Release Date
Ferruginous Hawk	March 1 to July 15	May 31
Swainson's Hawk	April 1 to August 15	May 31
Golden Eagle	February 1 to July 15	May 31
Burrowing Owl	April 1 to August 15	July 15

During the year in which construction of any phase occurs, the Applicant would conduct aerial raptor surveys according to the protocol stated in Exhibit P to determine whether there are any active nests of these species within 0.6 miles of any areas that would be

disturbed during construction. Surveys would be extended to 2 miles from the site boundary for Golden Eagle nests. If a nest is occupied by any of these species after the beginning of the sensitive period, the Applicant will not engage in high-impact construction activities (activities that involve blasting, grading, or other major ground disturbance) or allow high levels of construction traffic within 0.6 miles (1 mile for golden eagles) of the nest site. This construction buffer distance may be decreased with approval by ODFW and USFWS depending on the intensity of construction activity and whether there is an adequate physical barrier (i.e., vegetation, topography, etc.) between the nest site and the construction impacts or if consultation determines a lesser distance is feasible and appropriate. The applicant also will instruct construction personnel to avoid any unnecessary activity within the buffer area. If a Golden Eagle nest is identified, construction and maintenance activities between January 1 and July 15 (courtship and nesting period) will be avoided within 1 mile of the active nest (or 0.5 miles if the active nest is not in line-of-sight of activities). The Applicant will direct a qualified biological monitor, as approved by ODOE, to observe the active nest sites during the sensitive period for signs of disturbance. If an active raptor nest is found during construction, the Applicant will consult with ODFW and USFWS and institute buffer distances and monitoring as appropriate.

The Applicant may begin or resume high-impact construction activities before the ending day of the sensitive period if any known nest site is not occupied by the early release date. If a nest site is occupied, the Applicant may begin or resume high-impact construction before the ending day of the sensitive period, with the approval of ODFW and USFWS, after the young are fledged. The Applicant would use a protocol approved by ODFW and USFWS to determine when the young are fledged (that is, when the young are independent of the core nest site).

During construction, the Applicant will provide an annual sensitive species raptor nest monitoring report to ODFW and USFWS. The report will document the nest productivity of sensitive raptor species monitored during construction as described above (including Golden Eagle nests occurring within 1 mile of the Development Action). If nest monitoring detects nest site abandonment or other adverse impact to nesting activity caused by project activity, the Applicant will implement appropriate mitigation, in consultation with ODFW and subject to the approval of ODOE. The Applicant will propose and implement mitigation for the affected species in consultation with ODOE, ODFW and USFWS. Mitigation will be designed to benefit the affected species or contribute to overall scientific knowledge and understanding of what causes nest abandonment or nest failure. Mitigation may be designed to proceed in phases over several years. It may include, but would not be limited to, additional raptor nest monitoring, protection of natural nest sites from human disturbance or cattle activity (preferably within the general area of the facility), or participation in research projects designed to improve scientific understanding of the needs of the affected species. All bird mortalities found in association with project facilities will be documented and reported consistent with PGE's Avian Protection Plan (see section 5.2.3). All eagle and sensitive raptor species mortalities will be reported immediately to USFWS and ODFW.

5.2.3 Avian Protection

The Applicant implemented a company-wide Avian Protection Plan (APP, provided in Appendix A of this document) in 2007 to reduce impacts to avian species from electrocutions and collisions with electric utility power lines and equipment. The APP includes the following three-phased approach to address avian risks that will be applied to the Development Action:

- Preventive – Emphasize compliance with applicable laws, regulations, and permits. Use avian-safe standards in areas identified as having high avian risk;
- Reactive – Implement the Avian Reporting System (report bird mortalities and conduct remedial measures as appropriate); and
- Proactive – Conduct employee training and risk assessments of existing lines, modify lines when necessary, and contribute to research of avian/electrical equipment interactions.

Electrocution from transmission lines is very rare because the distances between conductors, and between conductors and grounded hardware, are greater than the wingspan of any raptor (APLIC 1996). The 500-kilovolt transmission line proposed in the ASC would not present an electrocution risk for raptors. However, the transmission line could present a collision risk for birds. Consistent with the APP, the Applicant would employ pre-construction measures to protect raptors in the design and construction of transmission lines. Protection measures to reduce the potential risks to raptors and other birds would include the following:

- Design and construct all above-ground transmission line support structures following the practices suggested by the Avian Powerline Interaction Committee, including a minimum separation of 9 feet between all energized transmission conductors;
- Install perch guards as needed and safe alternative perch or nesting locations,[1] as appropriate; and
- Install bird flight diverters and line marking devices where necessary to minimize areas of bird collision risk, such as bird concentration areas (wetland/riparian areas) and known flight routes.

A Nest Management Procedure, which identifies steps employees must take when a nest is encountered on utility structures, is also included in the APP. As described in the APP, the Applicant would track avian mortalities, nest management issues, and remedial actions taken using an internal reporting system and database, the Avian Reporting System. This reporting database allows: (1) tracking of incidents and remedial actions to ensure that all measures are completed and documented, (2) accumulation of a long-term data set, and (3) compliance with the reporting requirements of the USFWS Special Purpose permit. The reporting system also provides data on the location and frequency of bird mortalities and problem nests.

1 The Applicant has installed and recorded successful utilization of Osprey nesting platforms to provide alternative nest locations for birds nesting on electrical structures.

As possible and practicable, the Applicant would conduct site preparation for construction of the Carty Generating Station and transmission line in a manner that minimizes potential for impacting nesting native birds protected by the Migratory Bird Treaty Act, such as conducting initial site clearing outside of the typical bird breeding season (generally March to July). Prior to commencement of construction activity during the breeding season, a qualified biologist will survey the construction site to determine the presence of any active protected bird nests. Construction personnel would be trained in avian awareness, reporting of protected bird nests, and the proper procedures if dead birds are found at the construction site. The Applicant would consult with USFWS and ODFW about any active protected bird nests found within the construction disturbance area.

5.3 Mitigation of Habitat Impacts

For impacts that could not be avoided or minimized, mitigation has been developed to compensate, using reliable methods that comply with the ODFW habitat mitigation goals and standards. Permanent impacts to Category 4 shrub-steppe habitat would be mitigated for at a ratio of 1:1 acres. Temporary impacts to Category 4 shrub-steppe habitat would be mitigated for at a ratio of 0.5:1 acres. Mitigation for Category 6 habitat would consist of minimizing direct loss and avoiding impacts to off-site habitat. Mitigation recommendations and standards for impacted habitat categories, as defined by OAR 635-415-0025, are outlined below.

Category 4

- No net loss in existing habitat quantity or quality.
- Mitigate through avoidance, in-kind, out-of-kind, in-proximity, or off-proximity habitat mitigation.

Category 6

- Minimize impacts.
- Minimize direct habitat loss and avoid impacts to off-site habitat.

5.3.1 Description of the Habitat Mitigation Area

To meet the mitigation criteria outlined in OAR 635-415-0025, the Applicant would mitigate for approximately 150 acres of Category 4 habitat (approximately 59 acres for temporary impacts and approximately 91 acres for permanent impacts) in a manner consistent with the ODFW habitat mitigation policy and subject to the approval of ODFW. The Habitat Mitigation Area (HMA) would be maintained, enhanced, and monitored throughout the life of the Development Action through implementation of the habitat enhancement actions described below. The Applicant would provide appropriate legal documentation showing the legal right to create, maintain, and protect the HMA for the life of the Development Action to the Department, prior to construction. The Applicant would not undertake any development activities within the HMA throughout the life of the Development Action.

The mitigation area is located immediately east of the Site Boundary and adjacent to existing conservation areas (Figure 1). The property is currently owned by PGE and co-owners of the Boardman Plant. It is abutted by the existing PGE Conservation Area on the north and east sides and a by conservation area maintained by The Nature Conservancy along part of the west boundary. Parcel information for the HMA includes all or portions of tax lots 101, 113, and 116, all in tax map number 3N24E.

The vegetation in the HMA is dominated by Sandberg's bluegrass, bluebunch wheatgrass, and intermittent areas of needle-and-thread grass, and cheat grass. There is also occasional green rabbitbrush (*Chrysothamnus teretifolia*) and gray rabbitbrush, big sagebrush, fiddleneck (*Amsinckia menziesii*), and yarrow (*Achillea millefolium*). The western edge of the HMA occurs on Sagehill fine sandy loam soil, making up approximately 17% of the HMA; the remaining 83% occurs on Taunton fine sandy loam. WGS burrows were identified on the HMA and in surrounding lands during 2010 surveys by Ecology and Environment, Inc and PGE (see Exhibit Q, Figure Q-2). The portion of the HMA that occurs within 785 feet from identified WGS burrows equates to approximately 82% of the area and is designated Category 1. The remaining portion of the HMA is included in the buffer area for previously-occupied WGS activity areas that were documented during the last 8 years and is designated Category 2.

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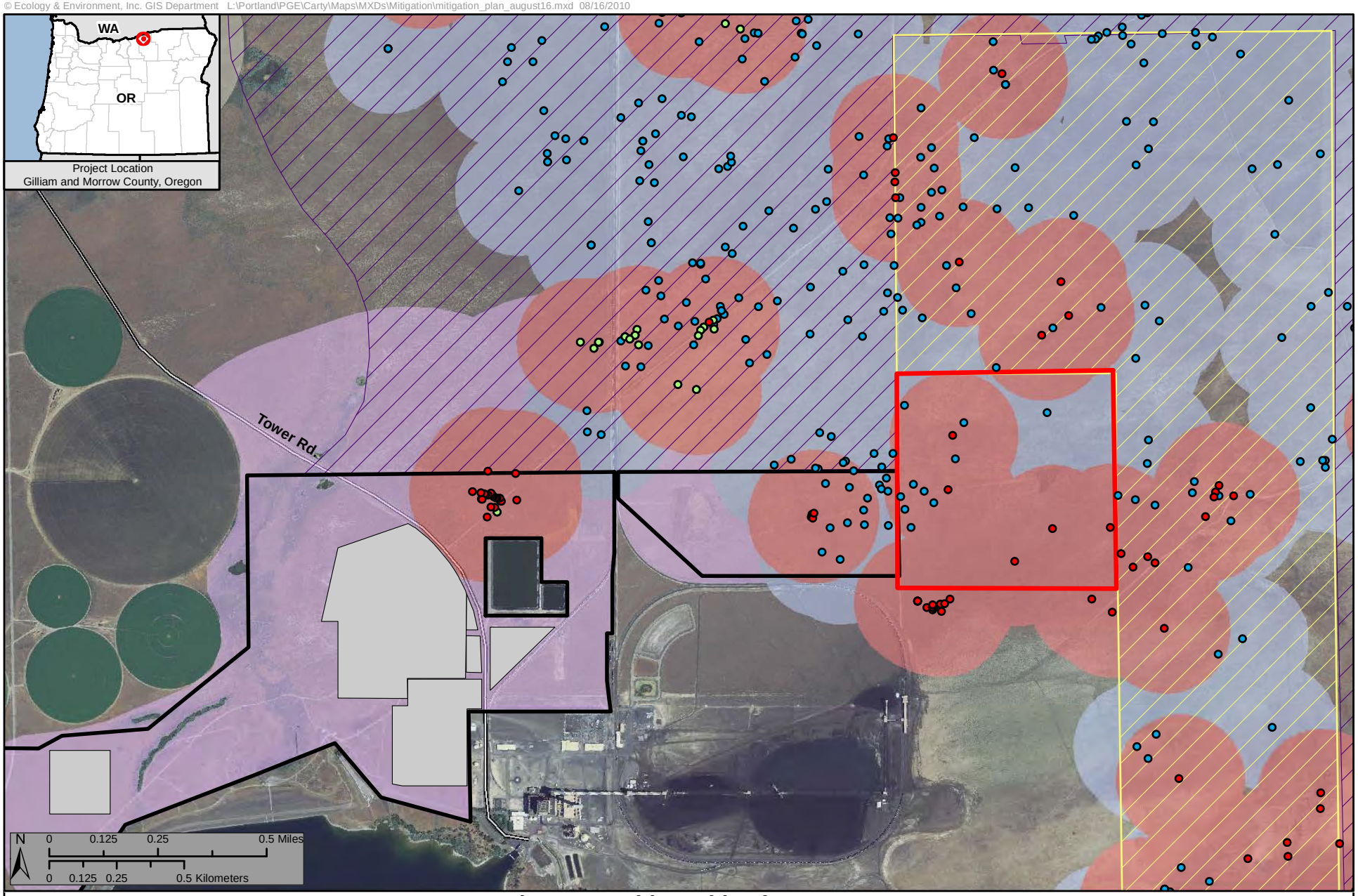

Figure 1: Habitat Mitigation Area

Site Boundary
Project Features
Habitat Mitigation Area
TNC Managed Areas
PGE Conservation Area

Habitat Category, Habitat Type
1, Washington Ground Squirrel 2009-2010 Occupied Range (E&E/PGE/TNC)
2, WGS Reported Range 2000-2008 (TNC and PGE)
4, Shrub-Steppe / Grazed-Weedy

WGS Evidence (Scat, Calls, or Burrows)*
2010
2009
2000-2008

5.3.2 Habitat Enhancement and Restoration Actions

The objectives of habitat enhancement and restoration are to protect habitat within the mitigation area from degradation, improve the habitat quality of the mitigation area, and revegetate construction-related temporary disturbance areas within the Site Boundary. By achieving these goals, the Applicant can address and minimize the permanent habitat impacts of the Development Action and meet the ODFW goals of no net loss of Category 4 habitat. Mitigation for the 37.4 acres of Category 6 habitat would consist of minimizing direct loss and avoiding impacts to offsite habitat.

The Applicant would implement revegetation of construction disturbance areas as soon as practicable following completion of construction in a given area. Habitat enhancement actions in the mitigation area would be initiated in the first year following the start of construction, once the design layout of the Development Action and incurred total impacts have been finalized. The Applicant would implement the revegetation and habitat enhancement actions outlined in the Revegetation and Noxious Weed Control Plan (Exhibit P, Appendix P-4).

Noxious Weed Prevention, Inventory, and Control within the Habitat Management Area

The Applicant would conduct noxious weed inventories to identify patches of weed infestation during year one, year three and year five after construction, and then continue once every 5 years for the life of the project. Weeds would be controlled as needed to maintain and enhance habitat quality within the mitigation area, with the goal of working toward eradication of targeted noxious weeds or, if eradication is not practical, decreasing their abundance to minimize impacts to native plant communities. Weed management practices would be consistent with an integrated weed management approach, using an appropriate combination of inventory; prevention (such as best management practices to prevent weed establishment); and control methods (such as hand pulling, mowing, biological control, and/or herbicides). Controlling weeds in the HMA would promote growth of native vegetation. If a substantial area of soil is left bare from weed control activities, the area would be seeded using the appropriate methods (as described in Exhibit P, Appendix P-4) during the appropriate time of year and using an appropriate mixture of native grass and/or shrub seeds.

Fire Control Plan

The Applicant shall implement a fire control plan for wildfire suppression within the HMA according to the existing Boardman Wildfire Control Plan. A copy of the fire control plan will be provided to ODOE upon request. If vegetation in the HMA is damaged from fire or from fire suppression efforts (e.g., vehicular disturbance), the area would be seeded as necessary with the appropriate seed mix using the appropriate methods for the Site, as described in the Revegetation and Noxious Weed Control Plan (Exhibit P, Appendix P-4).

Access Control and Wildlife-Compatible Fencing

The Applicant would monitor and control access to the mitigation area and would post informative signs depicting the area as "protected" and including natural resources information as appropriate for the life of the facility. Access to the area is currently limited to only Boardman Plant operational needs and MSCCAA monitoring and noxious weed control efforts. The area is accessed from two points: a locked gate from Tower Road approximately 1 mile west (currently used by PGE and The Nature Conservancy) and a south entrance through the Boardman Plant, which is also gated. Any fences within or bordering the mitigation area would be removed or modified to wildlife-friendly specifications as appropriate. No livestock grazing is currently occurring on the Site, and grazing would not be allowed in the future. Periodic monitoring (at least annually but typically more frequently concurrent with other Site activities) would be conducted to evaluate effectiveness of access control measures and signage maintenance needs.

6.0 Monitoring and Data Reporting

The Applicant shall monitor the HMA to evaluate the protection of habitat quality, the results of enhancement actions, and the use of the area by avian and mammal species. Monitoring would begin in the first year following the beginning of construction of the Development Action and continue for the life of the facility, according to the schedule described for each activity below. The Applicant would employ a qualified investigator to conduct monitoring activities. The investigator would visit the Site to complete all monitoring requirements as necessary during the first, third, and fifth year following the beginning of construction of the Development Action, and monitoring activity would be conducted every five years thereafter (unless otherwise specified for specific measures). Components of the monitoring activity include assessment of:

- General quality of vegetation cover (dominant species, structural age, etc.), as determined by ocular estimates and photo points (see below);
- Success of weed control efforts;
- Success of remedial actions to restore habitat quality in damaged areas (such as managed weed infestations and any necessary seeding/planting areas), as determined by vegetation cover (ocular estimate) and photo points (see below). Areas where remedial actions involve soil disturbance and reseeding would be monitored consistent with the revegetation monitoring methods and schedule as described in the Revegetation and Noxious Weed Plan (Exhibit P, Appendix P-4) (i.e., annually for 5 years).
- Photos taken from established photo points within the HMA, including: 1) a minimum of five permanent photo points distributed to show general vegetation status throughout the HMA, and 2) additional photo points as needed to monitor success of significant enhancement activities, such as managed weed infestations and/or any necessary seeding/planting areas;
- Incidental wildlife occurring within the HMA (counts concurrent with all other monitoring work);
- Environmental factors found on site during monitoring activities and annual summary records (such as precipitation);

- Surveys of resident special status wildlife species (WGS) that have been documented during previous monitoring or survey efforts within the HMA, using existing protocols approved by ODFW; and,
- Avian point counts during the breeding season conducted annually as part of the existing Boardman Plant Ecological Monitoring Program (four existing point count stations are located in the immediate vicinity of the proposed HMA).

The Applicant will submit a report including wildlife and habitat monitoring data and analysis to ODOE and ODFW during each monitoring year according to the general monitoring schedule (i.e., first, third, and fifth years following construction, and every five years thereafter). The Applicant would notify USFWS and ODFW immediately if any federal or state endangered or threatened species are killed or injured on the facility site. The Applicant may include the reporting of wildlife monitoring data and analysis in the report required under OAR 345-026-0080 or submit this information as a separate document concurrently with the submittal of the report. In addition, the Applicant would provide ODOE with any data or record generated by the investigators in carrying out this monitoring plan upon request by ODOE.

7.0 Success Criteria

Mitigation of the permanent and temporary habitat impacts of the Development Action would be considered successful if the Applicant protects a sufficient amount of habitat to meet ODFW's goals of no net loss of Category 4 habitat. The Applicant must protect the habitat within the HMA for the life of the facility. Mitigation is considered successful if the HMA contains a sufficient quantity (identified in section 5) of Category 4 or higher habitat for the life of the facility. Success will be evaluated through a qualitative assessment of habitat status supported by data from the vegetation and monitoring data described above.

Indicators of success include maintaining or enhancing the quality of habitat currently found in the HMA, as indicated by native vegetation dominance or recruitment. The Applicant may demonstrate successful mitigation through results of monitoring activity that confirm native vegetation dominance or recruitment and effective weed management efforts. Increased or continued use by WGS can be used as an indicator of successful habitat management, although behavior patterns and population cycles for this species are unpredictable and a reduction in the number of WGS occurring on site does not necessarily indicate that insufficient action is being taken to protect the quality of the habitat. Similarly, avian point counts may not be a reliable indicator of mitigation success in the short term, but counts will document the diversity of avian species using the HMA and possibly help to signal future HMA management needs.

If, at any time during the life of the facility, the Applicant cannot demonstrate that the HMA is providing sufficient habitat to meet the goal of no net loss of category 4 habitat, the Applicant shall propose remedial action. The Department may require corrective measures such as enhanced seeding/planting efforts or increasing the size of the HMA.

8.0 Amendment of the Plan

This Wildlife Monitoring and Mitigation Plan may be periodically amended by agreement of the Applicant and ODOE. Such amendments may be made without amendment of the Site Certificate. EFSC typically authorizes ODOE to agree to amendments to this plan and to mitigation actions that may be required under this plan. ODOE typically notifies EFSC of all amendments and mitigation actions, and EFSC retains the authority to approve, reject, or modify any amendment of this plan or mitigation action agreed to by ODOE.

9.0 References

Brown, Charles R. and Mary Bomberger Brown. 1999. Barn Swallow (Hirundo rustica), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/452

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Ecology and Environment, Inc. 2009. *2009 Biological Field Survey Report for the Carty Generating Station.* Prepared for Portland General Electric. December 2009. Portland, Oregon.

Oregon Department of Fish and Wildlife, 2011. Personal Communication from Travis Schultz, Heppner field office, with Lucas Meek of Ecology and Environment, Inc. on January 24, 2011.

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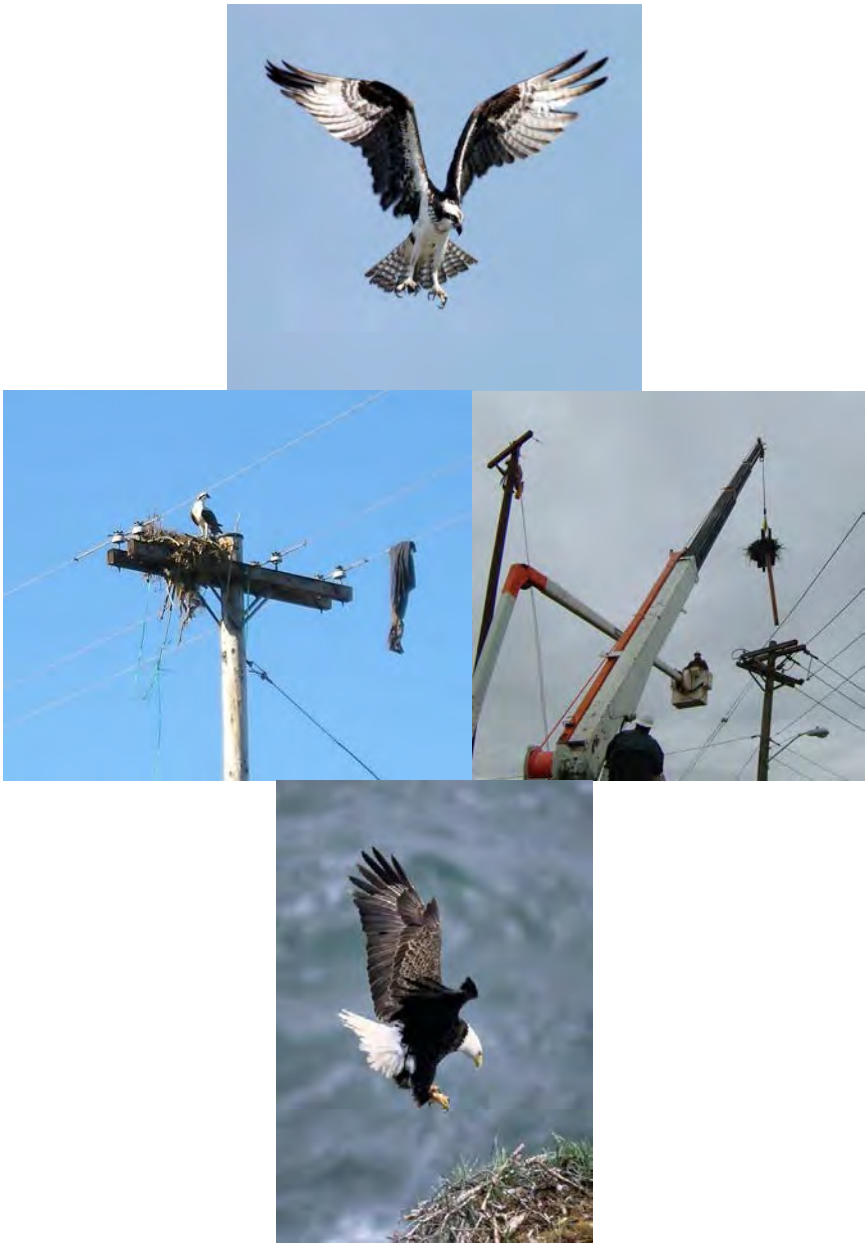
Appendix A Avian Protection Plan

Avian Protection Plan

Portland General Electric



Prepared by:
PGE Environmental Services
April 2007

TABLE OF CONTENTS

LIST OF APPENDICES ii

INTRODUCTION 1

BACKGROUND 2

PROGRAM OVERVIEW 4

PGE CORPORATE BIRD MANAGEMENT POLICY 5

TRAINING 6

PERMIT COMPLIANCE 7

CONSTRUCTION DESIGN STANDARDS 8

NEST MANAGEMENT 10

AVIAN REPORTING SYSTEM 11

RISK ASSESSMENT METHODOLOGY 12

MORTALITY REDUCTION MEASURES 13

AVIAN ENHANCEMENT OPTIONS 14

QUALITY CONTROL 15

PUBLIC AWARENESS 16

KEY RESOURCES 17

REFERENCES 19

LIST OF APPENDICES

Appendix A-1.	Migratory Bird Treaty Act of 1918, Summary
Appendix A-2.	Bald and Golden Eagle Protection Act of 1940, Summary
Appendix A-3.	Endangered Species Act of 1973, Summary
Appendix B.	PGE Environmental Policy
Appendix C-1.1.	PGE Dead Bird Disposal and Reporting Procedure
Appendix C-1.2.	PGE Load Dispatch Dead Bird Reporting Procedure
Appendix C-1.3.	PGE Avian Mortality Data Form
Appendix C-2.1.	PGE Nest Management Procedure
Appendix C-2.2.	PGE Nest Management Data Form
Appendix C-3.	Protected Species Photos
Appendix D.	Migratory Bird Special Purpose Permit
Appendix E.	PGE Construction Design Standards for Wildlife Protection

INTRODUCTION

The purpose of the Portland General Electric (PGE) Avian Protection Plan (APP) is to reduce risks to avian (bird) species that can result from electrocutions and collisions with electric utility power lines and equipment. Through development and implementation of an Avian Protection Plan, PGE intends to benefit through regulatory compliance, reliability improvements, and positive recognition from regulators and the public.

The Portland General Electric (PGE) distribution service area covers portions of six counties in northwest Oregon and includes the Portland and Salem metro areas. PGE also owns and operates electrical generation facilities and transmission lines in northwest Oregon on the lower Columbia, Sandy, Willamette and Clackamas rivers and in central Oregon. The extensiveness of the company's system, especially its electrical distribution lines, creates substantial potential for interactions with large birds.

PGE's APP includes a three-phased approach that addresses avian risk issues while maintaining the company's focus on system reliability and operational excellence. The three aspects of this approach include:

- **Preventive:** Emphasize compliance with all applicable laws, regulations, and permits. Construct all new or rebuilt lines (and other electrical equipment/facilities as appropriate) in identified areas with high avian risk (which may include rural areas, areas of known raptor use, etc.) to avian-safe standards (see Construction Design Standards section and APLIC 2006 for discussions of avian-safe standards).

- **Reactive:** Document all bird mortalities and problem nests associated with PGE electrical facilities through an avian reporting system. Conduct remedial measures to the extent practicable and feasible. Notify resource agencies according to applicable APP procedures, permits and regulations.

- **Proactive:** Provide the necessary training and resources to improve employees' knowledge and awareness of avian protection issues and APP procedures. Conduct risk assessments of existing lines (and other electrical equipment/facilities as appropriate) in potential raptor use areas. Based on such risk assessments, modify existing structures to raptor-safe standards where appropriate and feasible. Seek opportunities to contribute to research on bird/electrical equipment interactions and enhance avian habitat associated with company projects and facilities.

The foundation of PGE's APP consists of company-wide procedures for documenting and tracking avian mortalities and problem nests. Procedures are designed to guide company personnel in the appropriate response to and documentation of incidents involving birds and electrical equipment. The resulting accumulation of company experience and bird incident data will be a valuable asset in accomplishing the preventative, reactive, and proactive aspects of the plan. The focus of this plan is on large birds (i.e. raptors, crows/ravens, waterfowl, etc.).

BACKGROUND

Power lines and associated electrical equipment can cause mortality of raptors, eagles, and other migratory birds through electrocution and collisions. Various statutory authorities establish civil, criminal, or administrative penalties for the unauthorized take of migratory birds. The following general discussion of avian risks and applicable regulations provides some background on the need for an Avian Protection Plan (APP).

Avian Risks: Electrocution and Collision

Birds, especially open-country raptors such as eagles, buteos (large soaring hawks) and ospreys, use power poles and other electrical equipment for a variety of purposes. Poles and other electrical equipment may be used for nesting or as perches for resting, hunting, roosting or territorial defense. A bird can be electrocuted when it completes an electrical circuit by simultaneously touching two energized parts or an energized part and a grounded part. Most electrocutions occur on medium-voltage distribution lines (4 to 34.5 kilovolts), because the spacing between conductors on such lines can be small enough to be bridged by birds. To be raptor-safe, structures must provide adequate clearance between energized parts and/or grounded parts to accommodate a large bird. Raptor species (i.e. eagles, hawks, ospreys and owls), due to their behavior and large wingspans, are most often considered when addressing electrocution risk. However, other large birds, such as crows, ravens, waterfowl, and wading birds, can also be electrocuted by insufficiently spaced conductors. Electrical equipment, such as transformers, that have numerous, closely-spaced energized parts can present a risk to even small birds.

Collisions with electrical lines also present a risk of injury or mortality for migratory birds. The risk of collision depends on a variety of factors related to the behaviors of the species of bird involved, the surrounding environment and weather conditions, and the location and configuration of lines. Raptors generally are agile fliers with keen eyesight, and therefore their risk of collision with power lines is low. On the other hand, large, heavy-bodied birds such as cranes and herons have relatively higher risk for collisions due to their large wingspans and lack of agility. Also, flocking behavior by waterfowl may limit maneuverability and ability to avoid collision hazards, particularly if flocks are taking off or landing under conditions of limited visibility. Therefore, power lines in proximity to bodies of water frequented by wading birds and waterfowl, or in terrestrial feeding areas used by such species, likely pose a higher risk for collision than lines in other areas.

Applicable Regulations

The Migratory Bird Treaty Act (MBTA) protects listed migratory birds (and their parts, nests and eggs) that occur in North America (Appendix A-1). There are 836 species listed for protection under the act as currently amended, including all birds native to North America. The MBTA prohibits the “take” (defined as “pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt any of these acts”), possession, or transportation of any migratory bird or any part, nest, or egg of a migratory bird. It is a strict liability law, meaning that proof of intent is not a necessary element of a violation. Violations can result in fines (which may be doubled for

organizations) of up to $15,000 and/or up to six months imprisonment for a misdemeanor, and up to $250,000 and/or up to 2 years imprisonment for a felony.

In addition to being covered under the MBTA, bald and golden eagles are protected by the Bald and Golden Eagle Protection Act (BGEPA) (Appendix A-2). The BGEPA includes prohibitions and fines similar to those in the MBTA. Also, the Endangered Species Act (ESA) protects species that are listed as endangered or threatened under the act (Appendix A-3). Bald eagles in the lower 48 states are currently (February 2007) listed as threatened under the ESA. The bald eagle has been proposed for delisting under the ESA. However, the ESA delisting will not affect protections for the bald eagle under the MBTA and BGEPA.

The USFWS is the federal agency principally responsible for enforcement of the MBTA, BGEPA and ESA. USFWS has worked with the Avian Power Line Interaction Committee (APLIC) to develop guidelines for voluntary APP's. In April 2005, APLIC and USFWS finalized the Avian Protection Plan Guidelines (APLIC & USFWS 2005). USFWS is advising utilities to use the guidelines to develop a plan that is specific to their needs and demonstrates their commitment to reducing risks to protected migratory birds.

PROGRAM OVERVIEW

This Avian Protection Plan (APP) focuses on PGE's policies and procedures for 1) responding to and documenting bird/electrical equipment interactions when they occur, and 2) reducing overall avian risk associated with the company's facilities. PGE has developed this document with reference to the guidelines developed cooperatively by APLIC and USFWS (APLIC & USFWS 2005). Consistent with the guidelines, the PGE APP includes the following elements:

- *Corporate Policy* – A statement of PGE's commitment to avian protection and effective implementation of the plan.

- *Training* – Programs and resources in place for increasing employees' knowledge and awareness of avian protection issues and APP procedures.

- *Permit Compliance* – A review of current permit requirements and procedures for permit compliance.

- *Construction Design Standards* – Standards to be used for design of new construction in areas of avian risk and for retrofitting equipment where bird mortality has occurred.

- *Nest Management* – Procedures for assessing and managing nests on utility structures.

- *Avian Reporting System* – Procedures and data systems used to report, document, and track bird mortality incidents.

- *Risk Assessment Methodology* – Methods for using the Avian Reporting System data and additional data on bird activity areas to assess avian risk and prioritize areas for avian-safe new construction standards and proactive retrofit efforts.

- *Mortality Reduction Measures* – Steps the company will take, if warranted by risk assessment results, to develop an avian mortality reduction plan for areas of concern.

- *Avian Enhancement Options* – Procedures for evaluating, and implementing where feasible, potential proactive measures to enhance migratory bird populations or habitat.

- *Quality Control* – Procedures that may be used to periodically assess the effectiveness of the APP program and possible areas for improvement.

- *Public Awareness* – Methods that may be used to educate the public about avian protection issues, PGE's APP, and the company's successful avian protection efforts.

- *Key Resources* – Resources to be used by PGE in implementing the APP.

PGE CORPORATE BIRD MANAGEMENT POLICY

A successful Avian Protection Plan (APP) requires management endorsement and support to ensure that resources are allocated as necessary, there is a unified company strategy for implementing the plan, and the necessary oversight is in place to ensure the plan is effective. PGE is committed to complying with legal requirements for protecting avian species while also improving customer service and distribution system reliability. PGE management and employees are committed to minimizing detrimental impacts of bird interactions with power lines and other electrical equipment.

Commitments in PGE's existing Environmental Policy (Appendix B) directly applicable to responsible bird management include:

- Requiring strict adherence to environmental laws, regulations and standards by all employees and contractors;
- Ensuring that our employees receive adequate training and are aware of the importance of their roles in protecting our environment;
- Working cooperatively with environmental and community organizations to further mutual goals for resource protection;
- Maintaining open and constructive dialogue with regulatory agencies, public officials, environmental groups and customers to identify and respond to emerging issues and concerns;
- Incorporating environmental considerations into the planning and design of new projects and the upgrade of existing projects; and,
- Clearly establishing accountability within the Company for environmental planning, performance and oversight.

To fulfill the above commitments in regard to avian protection, PGE will:

- Implement and comply with its APP;
- Ensure its actions comply with applicable laws, regulations, permits, and APP procedures;
- Document bird mortalities, problem poles/lines/electrical equipment, and problem nests;
- Provide information, resources and training to improve its employees' awareness of avian protection issues and APP content and procedures;
- Conduct risk assessments to determine areas of high avian risk.
- Construct all new or rebuilt lines (and other electrical equipment as appropriate) in identified areas with high avian risk (which may include rural areas, areas of known raptor use, etc.) to PGE raptor-safe standards;
- As practicable, modify or retrofit power poles (and other electrical equipment as appropriate) where a raptor or other large bird has died or been injured; and,
- Inform the community about PGE's avian protection efforts in order to raise public awareness about migratory bird protection issues and regulations.

Through these proactive procedures, PGE will strive to reduce risk to migratory birds while providing reliable electrical service in a cost-effective manner.

	Name	Title	Date
Signed:	Stephen R Hawke	SR. VICE PRESIDENT	5-1-2007
JPS	Arleen N. Barnett	Vice President	5/7/07

TRAINING

Training is an important element of the PGE Avian Protection Plan. All appropriate personnel, including managers, supervisors, line and electrical maintenance crews, dispatch, engineering, and design personnel, will be trained in avian protection issues as applicable to their work. Training will include information on: avian electrocution/collision risks; applicable laws and permit requirements; protected birds in the PGE service territory; avian mortality reporting, recordkeeping, and carcass disposal; remedial action procedures; company design standards; and nest management protocols. Training will be conducted on a periodic basis to ensure that new employees are trained and to address any significant changes to regulations, permit conditions, or internal procedures.

Training materials will include: 1) flow diagrams and/or written instructions detailing company procedures for nest management and the handling and reporting of dead birds (Appendix C-1 & C-2); and, 2) photos and identification information for common raptors and endangered species occurring in PGE's service area, or at other project sites as applicable (Appendix C-3). Training format will consist of multimedia presentations at departmental meetings and compliance trainings. As the training program progresses, various training materials and formats, including brochures, videos, and computer-based training exercises will likely be developed and used. Additional ongoing training opportunities will consist of follow-up and "lessons learned" communications to employees about bird-related incidents.

PGE's training efforts to date have included:

- Distribution of interim dead bird reporting and disposal procedures to company line and electrical maintenance personnel in December 2005;
- Subsequent discussions of the interim procedures in crew safety meetings in early 2006;
- Brief presentations on migratory bird laws and company reporting procedures by a PGE wildlife biologist at repairman safety meetings in August and September 2006; and,
- Case-by-case discussions between company biologists and field personnel regarding management of osprey nests on power poles and bird mortality incidents.

PGE's plans for future training include:

- Initial formal training sessions (to occur Jan – Dec 2007) for all relevant work groups to introduce the completed APP, the overall need for avian protection efforts, and applicable procedures;
- Inclusion of avian protection content in the training of new employees beginning in 2007; and,
- Refresher trainings to occur every year if possible, or as needed to review current and/or new regulations and procedures.

PERMIT COMPLIANCE

PGE will work with resource agencies (i.e. USFWS Regional Migratory Bird Permit Office and Oregon Department of Fish and Wildlife (ODFW)) as necessary to identify and obtain required permits for operational activities that impact protected avian species. PGE currently holds a Special Purpose permit (No. MB117979-0) from the USFWS Region 1 Migratory Bird Permit Office (Appendix D). The permit outlines authorized procedures for handling and disposal of dead birds and relocation of problem nests when necessary for bird safety and/or system reliability.

Handling and Disposal of Dead Birds

PGE's Special Purpose permit authorizes Company personnel (under advisement of a PGE wildlife biologist) to pick up and bury non-eagle carcasses at the site where they are found. The permit requires an annual report detailing the locations and dates that bird carcasses were found and buried. Consistent with the permit and applicable laws, ODFW and USFWS Law Enforcement Office, will be notified of all eagle mortalities (or other threatened/endangered species) when they occur. Eagle carcasses will be turned over to one of the two agencies. PGE's dead bird reporting and disposal procedures provide a mechanism for documenting bird mortalities and ensuring that bird carcasses are handled and disposed of according to permit restrictions (see Avian Reporting System section & Dead Bird Reporting and Disposal Procedures, Appendix C-1).

Injured Birds and Specimen Salvage

Transport of injured birds to rehabilitators may be necessary and will be coordinated with the appropriate agencies. The Special Purpose permit allows authorized PGE personnel to pick up and transfer injured raptors and other birds to a federal or state licensed rehabilitation facility. If an injured eagle is involved, PGE must notify ODFW and the USFWS Law Enforcement Office. Only permitted rehabilitators will be used, and injured birds will be transported by wildlife agency personnel or a permitted rehabilitator whenever possible. PGE may choose on a case-by-case basis to offer carcasses as specimens for scientific or educational purposes. Such salvage activities will be conducted in coordination with another organization that holds a valid salvage permit (i.e. an educational institution with a salvage permit) and consistent with the requirements of that permit.

Nest Relocation

PGE's Special Purpose permit authorizes PGE to relocate active (containing eggs or chicks) migratory bird nests from transformers and conductors when the threat of fire hazard and power outages is present at the current nest location. The USFWS permit office must be informed of the nest location and relocation details within 72 hours of the action. Relocation of eagle nests (or nests of other threatened or endangered species), whether active or inactive, are not authorized under the permit. Additional permitting is required if management of an eagle or endangered/threatened species nest is absolutely necessary. To ensure that permitting requirements are followed, all nest relocation/removal activities will be performed and documented according to established company procedure (see Nest Management section and Nest Management Procedures, Appendix C-2).

CONSTRUCTION DESIGN STANDARDS

PGE considers avian interactions in the design and installation of new facilities as well as in the operation and maintenance of existing facilities. PGE will implement accepted avian-safe design standards for: 1) new construction in identified areas with high avian risk (which may include rural areas, areas of known raptor use, etc.), and; 2) as practicable, retrofitting existing structures where bird mortalities have occurred. PGE's avian-safe design standards have been developed with reference to APLIC guidance documents (*Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*) and standards used by other electrical utilities.

New Construction

Avian-safe design will be used for all new construction and line rebuilds in identified areas with high avian risk (which may include rural areas, areas of known raptor use, etc.). High avian risk areas will be determined by bird mortality data and avian risk assessments (see Avian Reporting System section, Risk Assessment section). The objective of avian-safe design is to provide 60 inches (1.5 meters) of separation between energized conductors and/or energized conductors and grounded hardware, or to insulate energized parts and grounded hardware if adequate spacing is not possible. If other system design considerations prohibit avian-safe design for a particular line segment, other measures, such as perch guards and installation of safe alternative perch locations, may be implemented to minimize the potential for birds perching in unsafe locations.

In addition, risk factors for avian collisions with power lines should be considered when siting new lines. When possible, new line placement will avoid bird concentration areas (such as wildlife refuges, wetlands and riparian areas) and known flight routes. When such areas can not be avoided, the use of bird flight diverters and line marking devices may effectively reduce collision risk. Site specific factors such as vegetation and topographic features can also be evaluated to determine the line placement that minimizes collision risk.

Retrofitting Existing Facilities

Any PGE power line structure or other equipment involved in an avian electrocution or collision incident will be evaluated and modified as practicable and feasible. Other structures in the vicinity with similar design and in similar habitat will also be modified when practicable and feasible. Other "problem poles" or high-risk equipment may be identified through the bird mortality database (i.e. multiple electrocutions/collisions documented in one area or on a particular circuit), avian risk assessments, and/or feedback from field personnel, wildlife agencies, and concerned customers.

Proactive retrofits of equipment identified as high risk to birds will be conducted as feasible, particularly when work can coincide with routine maintenance activities or when significant system reliability improvements may result. In fact, concurrent with the development of this plan, PGE is planning to conduct proactive retrofits of distribution lines in the vicinity of selected public wildlife refuge areas in the Company's service area (see Mortality Reduction section). Also, PGE is incorporating avian risk criteria into the Company's ongoing pole

inspection and treatment (FITNES) program, through which each pole in the distribution system is reviewed every 10-15 years. The data collected will be used for targeting future retrofit efforts (see Risk Assessment section).

A remedial action should accomplish the following objectives in order to prevent or reduce the risk of avian electrocution and/or collision:

- Provide 60 inches of separation between energized conductors and/or energized conductors and grounded hardware;
- Cover/insulate hardware or conductors to reduce risk of simultaneous contact if adequate spacing is not possible;
- Discourage birds from perching in unsafe locations;
- As practicable, provide alternative locations for perching and/or nesting; and, if applicable,
- Increase the visibility of conductors or shield wires to prevent avian collisions.

With the above objectives in mind, PGE engineering, operations, and environmental personnel will consult on each problem line or equipment situation to determine the most appropriate remedial action in consideration of site-specific factors (i.e. bird species involved, local land use, habitat and topography, line and equipment configuration, design constraints, etc.). Retrofit measures may include one or a combination of the following: reframing or replacing a structure to achieve adequate spacing of conductors; covering jumper wires, conductors, and equipment; installing perch guards to discourage perching in unsafe locations; install bird flight diverter and/or line marker devices to increase line visibility and reduce collision risk; and, other modifications as appropriate.

See Appendix E for illustrations of the types of avian-safe specifications/construction designs/retrofit techniques that PGE uses for avian protection retrofits.

NEST MANAGEMENT

Raptors and some other birds occasionally nest on distribution and transmission structures. All active nests (eggs or young present) of migratory birds are protected by the Migratory Bird Treaty Act. PGE has an established history of responsibly managing nests, especially osprey nests, on utility poles and communicating with agencies concerning nest locations and management needs. PGE has also provided crews and bucket trucks to assist USGS research biologists with osprey management and research projects, including collecting eggs from nests and taking blood samples from chicks.

PGE's APP includes procedures for nest management on utility structures (See Nest Management Procedure, Appendix C-2.1 & C-2.2). To ensure that all permitting requirements are followed, all nest relocation/removal activities will be performed and documented according to established company procedure. PGE's federal Special Purpose permit authorizes PGE to relocate active (containing eggs or chicks) migratory bird nests from transformers and conductors when the threat of fire hazard and power outages is present at the current nest location. However, PGE must report active nest relocations to USFWS within 72 hours. Relocation of bald or golden eagle nests, or nests of threatened or endangered species, whether active or inactive, are not authorized under the permit. Additional permitting is required if management of an eagle or endangered/threatened species nest is absolutely necessary. Relocation of eagle and other endangered/threatened species nests will be conducted only under the advisement of a PGE wildlife biologist and after any additional required permits or authorizations have been obtained.

Osprey nesting platforms are valuable tools for reducing electrocution risk for nesting birds and improving electrical system reliability. PGE has successfully used osprey nest platforms many times in the past, and will continue to do so as necessary in the future. Typically, a separate pole with a nest platform is located nearby a "problem nest" pole, with the platform higher than the existing structure to make it desirable to the nesting ospreys. If an established nest is present, it is then relocated to the new platform, and the existing structure is retrofitted to reduce risk of injury or to discourage perching or nest building in unsafe locations. If the specific location can not accommodate a separate nest platform pole, a combination of avian-safe retrofits and addition of a platform on a pole-top extension has been successfully used. The Company's experience indicates that ospreys readily adapt to new nest platforms.

Timing of nest management activities is also an important consideration. Whenever possible, PGE plans nest management activities to avoid disturbance of active migratory bird nests. For example, relocation of osprey nests is conducted prior to egg laying or delayed until after the breeding season, unless immediate relocation is necessary due to public safety, system reliability, or bird safety concerns. Often, simple retrofits such as insulating conductors can minimize risk to nesting birds, and, if necessary, the nest can be moved at a later date outside of the active nesting season.

AVIAN REPORTING SYSTEM

PGE has developed an internal reporting system and database for tracking avian mortalities, nest management issues, and remedial actions taken. The Dead Bird Reporting and Disposal Procedure (Appendix C-1.1) directs Company personnel to report bird mortalities to the System Control Center (Load Dispatch). Load Dispatch then notifies a PGE wildlife biologist via pager, and the biologist contacts field personnel to provide guidance on bird identification, handling and disposal (Appendix C-1.2). The biologist records incident information on the Avian Mortality Data Form (Appendix C-1.3) and forwards the form to the appropriate distribution or other facility manager. The manager consults with the appropriate personnel to determine the necessary remedial action and schedule. Throughout this process, information on the incident and remedial action is recorded on the Avian Mortality Data Form and entered into the Avian Protection Database by a PGE wildlife biologist or other designated database manager.

A similar process is followed to document problem nest situations and nest management activities. The Nest Management Procedure (Appendix C-2.1) directs personnel to consult a PGE wildlife biologist prior to removing or relocating a migratory bird nest (see Nest Management Section). The biologist advises field personnel on appropriate nest management with regard to migratory bird laws and permit requirements. Information on the problem nest situation and management actions taken are documented on the Nest Management Data Form (Appendix C-2.2) and entered into the Avian Protection Database.

These reporting and data management procedures allow documentation of bird mortalities, problem nest situations, and remedial actions conducted to make the facilities involved more avian-safe. The resulting database will allow: 1) tracking of incidents and remedial actions to ensure that all measures are completed and documented; 2) accumulation of a long-term data set; and, 3) compliance with the reporting requirements of the federal USFW Special Purpose permit.

The reporting system also will provide data on the location and frequency of bird mortalities and problem nests. Such data will be necessary for conducting the proactive risk assessment and mortality reduction measures described below.

RISK ASSESSMENT METHODOLOGY

An effective APP should incorporate methods for assessing avian risk. Rather than simply reacting to bird mortalities as they occur, avian risk assessments can be used to identify areas of relatively high avian risk and prioritize them for proactive retrofit efforts. PGE's APP includes methods for evaluating risks to migratory birds and identifying areas and issues of particular concern.

The Avian Reporting System discussed above will be an important part of the PGE's risk assessment approach. As the Company collects data on bird mortalities and problem nests over time, patterns will likely emerge indicating areas in the distribution system that may pose relatively high avian risk. The data may also indicate particular equipment types and/or configurations that are most dangerous to birds.

The Company will use information (both from existing data sets and information collected by company biologists) on bird concentration areas (such as wildlife refuges, wetlands, riparian areas, known flight routes, etc.) to determine areas where high bird use may result in relatively high avian risk. Information considered in a risk assessment may include structure configuration, level of avian use, avian mortality, nesting problems, established flyways, adjacent wetlands, prey populations, perch availability, effectiveness of existing procedures, remedial actions, and other factors that affect avian interactions with utility facilities. These types of analyses would allow PGE to focus efforts in a cost effective manner on areas that pose the greatest risk to migratory birds. For instance, risk of bird electrocutions and collisions may be of particular concern where the company's power lines are located near high use raptor foraging and breeding areas, such as bald eagle and osprey activity areas along the Columbia and Willamette rivers and their tributaries.

PGE also is incorporating avian risk criteria into the Company's ongoing pole inspection and treatment (FITNES) program. Through this program, each pole in the distribution system is reviewed every 10-15 years. During FITNES surveys, avian risk information will be collected for each pole. The data collected can be used for targeting future retrofit efforts.

MORTALITY REDUCTION MEASURES

The avian reporting and risk assessment procedures detailed in this APP will help PGE identify areas of high avian risk that warrant mortality risk reduction measures. Examples of mortality risk reduction measures include system monitoring to further define risk, system retrofits, and avian-safe standards for new construction. If necessary, PGE will develop risk reduction plans that address where retrofit efforts should be focused and where new construction warrants special attention to avian issues. Risk reduction plans will identify areas where mortality reduction measures should be implemented, the specific measures that will be implemented, and an implementation schedule.

During development of this APP, a general consensus emerged among PGE personnel and wildlife agency contacts regarding three areas within PGE's service area that warrant proactive mortality reduction measures. These three areas are the Tualatin River National Wildlife Refuge (including the Wapato Lake Unit added to the Refuge in 2007), Sauvie Island, and Jackson Bottom Wetlands. PGE anticipates spending up to $100,000 per year during the next three-four years (2007-2010) to reduce avian risks in the vicinity of these wildlife refuge areas. The following measures will be conducted for each of the three wildlife areas.

- Review maps and conduct field surveys of the PGE distribution and transmission systems in the area and review existing information on wildlife use areas in the vicinity in order to assess the avian risk potential of various portions of the system.

- retrofit poles in the vicinity of the wildlife area as practicable to reduce avian risk If practicable, mark transmission lines that may present high risk of avian collisions.

Over time PGE will use the avian reporting and risk assessment procedures described in this APP to identify other areas that warrant mortality reduction measures. Prior to conducting more comprehensive risk assessment efforts, the Company regards the three areas described above to be of sufficient priority to justify proceeding with proactive mortality reduction measures.

AVIAN ENHANCEMENT OPTIONS

In addition to the goal of reducing avian mortalities, PGE's APP may also address opportunities for enhancing avian populations or habitat. Such proactive efforts for avian habitat conservation could include developing nest platforms, managing habitat to benefit migratory birds, or participating in research on bird populations and habitat management. PGE may identify avian habitat enhancement opportunities during the course of mortality reporting, risk assessment and mortality reduction planning. Avian habitat enhancement measures will be encouraged and explored where practical and economically feasible, especially in cases where they can contribute to improved electrical system reliability (such as construction of nest platforms).

PGE has an established history of successfully managing osprey nests using nest platforms. Company bucket truck crews also have assisted USGS research biologists with osprey management and research projects, including collecting eggs from nests and taking blood samples from chicks.

Other PGE programs related to avian population monitoring and habitat management include:

- Annual occupancy and productivity surveys of eagle, osprey, and prairie falcon nests associated with PGE hydro project reservoirs in central Oregon;
- Annual bald eagle and waterfowl winter use surveys at PGE hydro project reservoirs in central Oregon;
- Annual sponsorship of the Eagle Watch public event at Lake Billy Chinook;
- Periodic financial contributions to support the statewide bald eagle nest site monitoring program;
- Annual surveys of bald eagle fall and winter communal roosts at PGE hydro project reservoirs in central Oregon;
- A commitment to develop bald eagle nest site and roost site management plans for nest and roost sites monitored at PGE hydro project reservoirs in central Oregon; and,
- Participation in a Multi-Species Candidate Conservation Agreement with Assurances (MSCCAA) including habitat protection, management and monitoring activities intended to benefit populations of ferruginous hawks, loggerhead shrikes, and sage sparrows on PGE-owned and adjacent lands at PGE's Boardman Coal Plant.

QUALITY CONTROL

Effective database management will be the primary tool through which PGE assesses and maintains the quality of Company avian protection procedures and activities. Documentation and tracking of bird mortalities, nest problems, and remedial actions will allow assessment of the effectiveness of avian management actions. For example, tracking of nest management problems will help determine whether nest management actions have been effective or whether nest-related problems are re-occurring at specific locations. The Avian Protection Database will allow Company wildlife biologists to identify re-occurrence of bird mortalities at sites that have been retrofitted. The database will be a key tool for determining the effectiveness of specific retrofit techniques.

In addition to tracking reported mortalities and nest problems, company wildlife biologists will regularly monitor the Company's Outage Management System to detect any outage-related avian issues that are not reported under the APP reporting procedures. In addition, ongoing communications with employees through trainings and follow-up communications to avian incidents will provide an ongoing feedback loop to aid in the evaluation and improvement of avian protection procedures.

PUBLIC AWARENESS

PGE's efforts at avian protection will undoubtedly provide opportunities for educating the public about avian electrocution issues, the company's APP, and the company's successes in avian protection. A substantial increase in awareness among Company employees in general is expected to result from APP trainings and internal communications about avian protection initiatives. PGE communicates news to employees on a weekly basis through the company intranet. Therefore, news about avian protection related initiatives, projects, and events can be conveyed to employees as relevant on an ongoing basis.

PGE may publicize information about its APP and avian protection projects through the company internet site or through fliers distributed in customer mailings or at community events. In addition, direct interaction with customers during the course of avian protection activities (such as investigating bird mortalities, conducting system retrofits, and performing nest management work on customer property) will provide opportunity for raising public awareness about avian protection issues.

The company will also seek sponsorship and participation in community events or symposiums with avian conservation themes. Current examples include: PGE's sponsorship (in cooperation with Cove Palisades State Park and the Confederated Tribes of Warms Springs) of the annual Eagle Watch public event at Lake Billy Chinook; and, sponsorship of the Oregon Zoo's Wild Life Live! bird show.

KEY RESOURCES

Communication between avian experts and utility decision-makers is important for regulatory compliance, reduction of avian risks, and associated improvements in system reliability. Useful resources for PGE personnel may include Company biologists and contacts at federal and state resource agencies, universities, conservation organizations, wildlife rehabilitation centers, and other utilities. The following is a list of such resources for reference by company personnel.

PGE Wildlife Biologists

Greg Concannon (Supervisor)
Location (Pelton Round Butte)
Office: 541-325-5339
Cell: 541-419-4736

Andy Bidwell (Wildlife Biologist)
Location (3 WTC)
Office: 503-464-8526
Cell: 503-887-3002

Robert Marheine (Wildlife Biologist)
Location (Pelton Round Butte)
Office: 541-325-5350
Cell: 541-410-2909

Resource Agency Contacts

Oregon Department of Fish and Wildlife (http://www.dfw.state.or.us/wildlife/)

Susan Barnes
Wildlife Diversity Biologist
503-657-2000 ext. 230

Dick Caldwell
Regional Wildlife Biologist
503-657-2000 ext. 250

US Fish and Wildlife Service (http://www.fws.gov/birds/)

Office of Law Enforcement
Phillip A. Land
Special Agent
503-682-6131

US Fish and Wildlife Service (cont.)

Oregon Field Office
Kevin Maurice
Biologist
503-231-6179

Migratory Bird Permit Office
Tami Tate-Hall
503-872-2715

Bird Conservation and Information Resources

American Bird Conservancy (http://www.abcbirds.org/)

Cornell Lab of Ornithology (http://www.birds.cornell.edu/)

HawkWatch International (http://www.hawkwatch.org/)

Idaho Bird Observatory (http://www.boisestate.edu/biology/ibo/)

National Biological Information Infrastructure (http://birdcon.nbii.gov/)

USGS Patuxent Wildlife Research Center (http://www.pwrc.usgs.gov/)

USGS Raptor Information System (http://ris.wr.usgs.gov/)

North American Bird Conservation Initiative (NABCI) (http://www.nabci-us.org/main2.html#)

Partners in Flight (http://www.partnersinflight.org/)

Smithsonian Migratory Bird Center
(http://nationalzoo.si.edu/conservationandscience/MigratoryBirds/)

Utility Resources

Avian Power Line Interaction Committee (APLIC) (http://www.aplic.org/)

Edison Electric Institute (http://www.eei.org/)

PacifiCorp, Jim Burruss, 801-220-2535

Wildlife Rehabilitator Resources

Portland Audubon Society (http://www.audubonportland.org/)

Wildlife Care Center
5151 NW Cornell Road
503-292-0304

REFERENCES

APLIC 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994.

APLIC 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. PIER Final Project Report CEC-500-2006-022.

APLIC & USFWS 2005. Avian Protection Plan Guidelines. Prepared bv Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and the U.S. Fish and Wildlife Service.

APPENDIX P-4

Revegetation and Noxious Weed Control Plan

Carty Generating Station Revegetation and Noxious Weed Control Plan

February 2011

1 Introduction

This Revegetation and Noxious Weed Control Plan outlines the goals, methods, and success criteria that the project will use for revegetation of areas disturbed during construction of the Carty Generating Station, including areas in the Energy Facility Site and along the associated transmission line right-of-way (ROW). This plan has been developed in consultation with the Oregon Department of Fish and Wildlife (ODFW) and utilizes restoration and revegetation methods developed by other energy projects in this region of Oregon that were approved by Oregon Energy Facility Siting Council (EFSC 2007). The goal of this plan is to provide clear guidelines for the revegetation of all areas disturbed by project-related activities that are not occupied by permanent structures or facilities.

The proposed project area is composed primarily of shrub-steppe rangeland of varying quality, weedy agricultural areas, and active agriculture cropland. In general, the intensity of construction impacts on vegetation and habitat in temporary disturbance areas would be low and would often be limited to the flattening of vegetation by rubber-tired vehicles. In some instances, the intensity of impacts in temporary disturbance areas would be higher and would require the removal of topsoil and vegetation through grading, excavation, or drilling activities. Portland General Electric Company (PGE) will implement revegetation measures in all temporary construction disturbance areas where soil is disturbed. Such soil disturbance sites will require active measures to restore vegetation cover in a timely manner, control erosion, and prevent the establishment and spread of noxious weeds. Construction crews will segregate topsoil from subsoil during all grading and excavation activities and replace this topsoil during the restoration phase of the project. The project will implement a number of best management practices (BMPs) designed to control sediment and minimize erosion, particularly in the vicinity of project drainages and waterbodies. These erosion and sediment control practices will be maintained for the duration of the construction restoration phases of the project, but may be maintained longer if a high risk of erosion still exists. A description of erosion and sediment control measures is provided in the Erosion and Sediment Control Plan, located in Exhibit I, Appendix I-2.

2 Site Description

The Energy Facility Site is located in Morrow and Gilliam Counties, Oregon, approximately 13 miles southwest of the town of Boardman. The new transmission line will originate at the Carty Generating Station and extend approximately 18 miles to the west along an existing transmission line corridor. The project area is situated approximately 7–10 miles south of the Columbia River within the Columbia Plateau physiographic region. The generating facility and associated transmission line ROW would be located on an upland plateau at an elevation of approximately 650 feet above sea level. The project facilities will be located entirely on private lands that are characterized as shrub-steppe rangeland, weedy agricultural and shrub ROW, or agricultural cropland. Soils are typically loess formations of well-drained, moderately permeable silt and fine sandy loams over basalt. The area receives approximately 9 inches of precipitation annually. The generating station will be located primarily in shrub-steppe habitat on the eastern edge of a large agricultural area that is dominated by irrigation circles. The transmission line will pass between the irrigation circles of the agricultural area in the ROW and re-enter shrub-steppe habitat approximately 7.5 miles west of the generating station. The agricultural lands are typically used for rotating crop production, including potatoes, onions, and corn. A majority of the shrub-steppe rangeland along the western end of the transmission line ROW is currently being used for grazing. Areas of the transmission line ROW nearer to the agricultural fields are being used for grazing or are weedy areas being used for farm waste disposal with a few patches of weedy shrub habitat. The shrub-steppe habitat located toward the eastern end of the project, including areas near the generating facility, is rangeland that is no longer being grazed. One perennial stream, one intermittent stream, and several acres of wetlands are present within the project area but would be avoided by construction altogether and would therefore not require revegetation.

Much of the native shrub-steppe vegetation within the project boundary has been modified by livestock grazing and past wildfires. Functional mature shrub-steppe habitat is patchy. It consists of low-stature rabbitbrush-dominated shrub lands with patches of big sagebrush and native grasses, and varying degrees of non-native invasive grass and forb species.

3 Revegetation Methods

Soil preservation and preparation techniques that are essential to a successful revegetation program, including topsoil soil segregation, erosion control, and noxious weed control, will begin prior to, or at the start of, construction. Other restoration and revegetation measures will be initiated immediately after construction and other disturbances to project areas are completed. Re-seeding activities may need to be delayed, depending on the season or on weather condition, but would always occur as soon as appropriate after construction.

The project will employ the following general restoration and revegetation steps to meet short- and long-term goals:

- Reseed construction soil disturbance areas to restore vegetation;
- Pre-treat all state-designated noxious weeds, as practical, in disturbance areas;
- Minimize weed dispersal by following appropriate and standard methods of abatement, including BMPs for washing project-related vehicles and equipment, especially for vehicles newly arriving at the project site from other areas and following work in weed-infested areas;
- Use proper soil management techniques, including topsoil stripping, stockpiling, and reapplying to establish surface conditions that would enhance development of diverse, stable, and self-generating plant communities. Topsoil management will apply to all areas of the project where excavation, grading, or other construction activities could result in mixing of soil layers;
- Establish stable surface and drainage conditions and use standard erosion control devices and techniques to minimize soil erosion and sedimentation, including the installation of silt fencing, straw bales, mulch, straw wattle, erosion control fabric, and slope breakers, as appropriate;
- Use certified weed-free straw bales and straw mulch for soil erosion and sedimentation control measures;
- Establish terrain compatible with the surrounding landscape (recontouring) that emphasizes restoration of existing drainage and landform patterns, to the extent practical;
- Prevent introduction of seeds from plants that are listed by Oregon or on the U.S. Department of Agriculture federal list (PLANTS website) as noxious or invasive weeds; and
- Minimize construction impacts in the project area by, where practical and safe, limiting grading and clearing to avoid impacts to native vegetation and wildlife habitat.

3.1 Revegetation of Agricultural Cropland

No disturbance of actively cultivated land is anticipated. However, if cropland is disturbed, PGE will coordinate with the landowner and, as necessary, restore croplands to original grade and contour and repair any agricultural drainage systems that are impacted by construction. Individual landowners would be consulted when determining the proper seed mix to be used during re-seeding activities on agricultural lands. The primary goal of cropland revegetation would be to return croplands to a condition consistent with typical fallow or pre-planting

conditions. If necessary, in coordination with the landowner, an appropriate cover crop would be planted to hold the site until the next crop planting rotation. Cultivated agricultural areas are successfully revegetated if the replanted areas achieve crop production comparable to adjacent non-disturbed cultivated areas. PGE shall consult with the landowner or farmer to determine whether these areas have been successfully revegetated and shall report to the Oregon Department of Agriculture (ODA), Oregon Department of Energy (ODOE), and ODFW on the success of revegetation in these areas.

3.2 Revegetation of Shrub-Steppe Rangeland

Shrub-steppe rangeland is the primary non-agricultural vegetation type present in the project area. Although many of the areas with this habitat are considered marginal in quality due the presence of invasive weeds, grazing, past fires, and frequent disturbance (e.g., areas between irrigation circles along transmission line route), there are some patches of moderate quality habitat (e.g., west of the agriculture area along the transmission line route). PGE has selected a seed mixture consisting of native species and desirable non-native species known to provide erosion control and wildlife forage benefits. Seed mixture selection was based on consultation with ODFW (2010b) and online guidance provided by ODFW for the restoration of burned areas in northeastern Oregon (ODFW 2010a). The current seed mix (Table 1) may be altered at the request of landowners, ODOE, and ODFW. To prevent the spread of noxious or invasive weed species, the project will only use certified weed-free seed obtained from a supplier approved by the State of Oregon.

Areas of temporary disturbance will be restored to original grade and soil condition as soon as possible after the final construction ground disturbance and will generally be re-contoured and decompacted if necessary. These areas will then be evaluated to determine whether re-seeding or other revegetation techniques are required to return the area to preconstruction vegetation conditions. Re-seeding may not be necessary or appropriate in some areas, including places where vegetation has been flattened but not crushed and those where little or no vegetation was present prior to construction.

3.3 Seed Planting Methods and Schedule

Re-seeding of temporary disturbance areas will be conducted during the appropriate season and as weather conditions allow. The recommended seed mixture (Table 1) will be applied at an approximate rate of 8 to 12 pounds/acre. Seeds will be applied using either manual or mechanical methods, depending on factors such as the size of the area to be re-seeded and risk for further disturbance due to the use of planting equipment (e.g., tractor or all-terrain vehicle). In addition, the project may employ either broadcasting or drilling techniques as appropriate and feasible. Straw mulch may be applied as needed immediately after seeding. PGE anticipates using the restoration and re-seeding guidelines provided in this plan; however, the methods and timing could be altered at the request of landowners, ODOE, ODFW, and ODA.

Disturbed areas will be re-seeded as soon as possible after final construction disturbance in each area. Broadcasting or seed drilling methods will be used according to which method is most appropriate for the disturbance area. Crews will attempt to conduct all re-seeding during the period from February through early April for construction disturbances that occurred during the winter and early spring. For areas where construction is completed outside of the winter or spring periods, re-seeding will be delayed until the months of October or November. If final construction and soil restoration is not completed at a time that allows immediate re-seeding during one of the two periods listed above (winter/spring or fall), the areas will be mulched or otherwise treated to minimize erosion until seeding can be conducted.

Table 1 Seed Mix for Temporarily Disturbed Project Areas in Shrub-Steppe Habitat

Common Name	Scientific Name	PLS lbs/ Acre[1,2]	Description/ Purpose
Secar bluebunch wheatgrass	*Pseudoregneria spicata*	6	(N) (EC) (F)
Sherman big bluegrass	*Poa ampla*	1.5	(N) (F)
Ladak alfalfa	*Medicago sativa*	1.0	(I) (F)
Small burnet	*Sanguisorba minor*	2.0	(I) (F)
Great Basin wildrye *	*Elymus cinereus*	1.0	(N) (EC) (F)
Needle and thread grass*	*Hesperostipa comata*	1.0	(N) (EC) (F)
Western yarrow *	*Achillea millefolium var. occidentalis*	1.0	(N) (F)
Big sagebrush *	*Artemisia tridentata*	1.0	(N) (F)

(N) = Native, (I) = Introduced, (EC) = Erosion Control, (F) = Forage

* Optional species depending on site and availability

[1] PLS= pure live seed

[2] Final lbs/acre may change at the request of the landowner or ODFW

4 Monitoring Program

PGE will monitor the revegetated non-agricultural areas of the project (i.e., shrub-steppe rangeland) according to the schedule described below. Restored and revegetated agricultural

areas would also be monitored according to the schedule unless otherwise requested by the landowner. The monitoring schedule and potential remedial actions for agriculture areas would be conducted in agreement with the landowner in a way that causes the least disturbance to agricultural activity. The purpose of monitoring is to evaluate long-term soil stability, vegetation composition and cover, and occurrence of noxious and invasive weeds within areas disturbed during construction.

4.1 Monitoring Procedures

Annual surveys will be conducted for a period of five years to monitor revegetation success and invasive species control needs at the plant construction site and areas disturbed during transmission line construction. A representative sample (at least 50%) of all disturbance sites will be monitored for revegetation success. Revegetation monitoring will begin in the first year following the beginning of construction of the Carty Generating Station and continue annually for five years or until monitored sites are suitably revegetated according to the criteria described below. Each monitored soil disturbance site will be visited at least once within the first year following revegetation, and annual surveys will be conducted as needed for five years. If needed, additional monitoring (beyond five years) of any problem revegetation sites will be scheduled in coordination with ODFW and ODOE.

During revegetation surveys, a qualified biologist will collect the following information:

- Confirmation that all areas requiring revegetation have been seeded;
- Success of vegetation establishment
    a) Percentage of total vegetative cover (ocular estimate)
    b) Percentage of bare soil (ocular estimate);
- Presence of invasive plant species (species listed as noxious under the ODA Noxious Weed Control Program), and density estimates by species if present; and
- Presence of erosion problems that require further mitigation measures.

4.2 Remedial Action and Maintenance

Following each of the surveys described above, PGE will conduct remedial measures as needed to address remaining soil impacts and revegetation requirements not achieved through initial plantings. Common remediation measures would include:

- Reseeding of select areas where significant areas of bare soil remain after establishment of initial seeding;

- Control of noxious weed/invasive plant species by qualified personnel using appropriate methods for the target species (e.g., herbicides applied according to label requirements if herbicides required);

- Repair of erosion control structures; and

- Soil decompaction.

PGE will make every attempt to implement the recommended remedial actions as soon as possible, considering the season, weather conditions, and other site-dependent constraints. PGE will document revegetation progress and remedial actions in an annual Revegetation and Noxious Weed Control Monitoring Report to ODFW and ODOE (see section 4.4 below).

4.3 Revegetation Success Criteria

The revegetation of non-agricultural areas (i.e., shrub-steppe rangeland) will generally be considered successful when the revegetated areas support non-noxious plant communities that are similar in vegetation percent cover and erosion potential comparable to surrounding undisturbed areas. When PGE determines that an area of the project has been successfully restored by satisfying all success criteria, this will be stated in the annual revegetation report. If ODFW and ODOE concur, PGE will conclude that it has no further obligation to perform revegetation activities in that area of the project.

The goal for each soil disturbance site will be a minimum of 40 percent vegetation cover (of seeded vegetation and desirable naturally recruiting species and excluding invasive plant/noxious weed cover) and zero ongoing erosion issues. Vegetation percent cover goals may be adjusted to match the typical percent cover in surrounding undisturbed areas. Reseeding or replanting efforts will occur, in consultation with ODFW, in any area where monitoring identifies a restoration failure.

The following criteria will be used to determine success of revegetation efforts:

1. The vegetation percent cover by native species and desirable non-native species (both seeded and naturally recruited) is 40 percent or more, or not significantly less than the percent vegetation cover of surrounding undisturbed areas.

2. Noxious weeds are absent or constitute only a small percentage (<5%) of vegetation otherwise dominated by native or desirable non-native species.

3. The percentage of bare soil (excluding rocky areas) in the sample plot is not significantly greater than the percentage of bare soil in surrounding undisturbed areas.

4.4 Reporting

PGE will provide an annual Revegetation and Noxious Weed Control Monitoring Report for five years following initial revegetation of construction disturbance areas. Each annual report will contain a summary of field data collected during field visits and include an assessment of

whether revegetation efforts are meeting the success criteria. The reports will also document remedial actions (e.g., seeding, noxious weed control, and repair of erosion control structures) taken to date, additional remedial actions planned for areas that are not trending towards success, and the anticipated dates of completion of each of these actions.

4.5 Amendment of Plan

This Revegetation Plan may be amended by agreement of PGE and ODOE. Amendments will be prepared in consultation with ODFW and ODOE and may be made without altering the site certificate.

5 References

Oregon Department of Fish and Wildlife. 2010a. Rehabilitating Habitat. ODFW website: http://www.dfw.state.or.us/fire/fire_rehab.asp. Accessed on December 15, 2010.

_____. 2010b. Personal communication between Lucas Meek of Ecology and Environment, Inc. and Travis Schultz of ODFW. Email correspondence dated December 8, 2010.

EFSC (Energy Facility Siting Council). 2007. Biglow Canyon Wind Farm: Revegetation Plan. March 10, 2007. http://www.oregon.gov/ENERGY/SITING/docs/BCWOa2B.pdf

EXHIBIT Q

THREATENED AND ENDANGERED SPECIES
OAR 345-021-0010(q) and OAR 345-022-0070

TABLE OF CONTENTS

Q.1 SUMMARY Q-1

Q.2 ANALYSIS AREA Q-2

Q.3 APPLICABLE STATUTES AND ADMINISTRATIVE RULES Q-3
Q.3.1 Division 21 EFSC Rules (Application for a Site Certificate) Q-3
Q.3.2 Division 22 EFSC Rules (General Standards for Siting Facilities) Q-4

Q.4 METHODOLOGY Q-5
Q.4.1 General Q-5
Q.4.2 Wildlife Q-6
Q.4.3 Plants Q-7

Q.5 EXISTING CONDITIONS AND POTENTIAL IMPACTS TO STATE AND FEDERAL LISTED, CANDIDATE AND PROPOSED SPECIES Q-7
Q.5.1 Wildlife Q-8
Q.5.2 Plants Q-10

Q.6 DESCRIPTION OF MEASURES PROPOSED TO AVOID OR REDUCE ADVERSE IMPACTS TO SPECIES Q-14
Q.6.1 Plants Q-15

Q.7 FINDINGS THAT THE PROPOSED FACILITY WILL NOT LIKELY CAUSE A SIGNIFICANT REDUCTION IN THE LIKELIHOOD OF SURVIVAL OR RECOVERY OF THE LISTED PLANT SPECIES Q-16

Q.8 FINDINGS THAT THE PROPOSED FACILITY WILL NOT LIKELY CAUSE A SIGNIFICANT REDUCTION IN THE LIKELIHOOD OF SURVIVAL OR RECOVERY OF THE LISTED FISH AND WILDLIFE SPECIES Q-16

Q.9 MONITORING PROGRAM Q-17

Q.10 REFERENCES Q-17

APPENDICES

Q-1 Agency Consultation and Response to NOI

LIST OF TABLES

Table Q-1 State and Federal Listed, Candidate and Proposed Species with the Potential to Occur Within the Vicinity of the Carty Generating Station Site Boundary Q-2

Table Q-2 Summary of Applicable Rules Q-4

FIGURES

Q-1 Results of ORNHIC Database Search

Q-2 Washington Ground Squirrel Survey and Data Analysis - Carty Generating Station

Q.1 SUMMARY

OAR 345-021-0010(1)(q) *Information about threatened and endangered plant and animal species that may be affected by the proposed facility and provide evidence to support a finding by the Council, as required by OAR 345-022-0070.*

Response: Consultations to identify federal and state listed species were conducted between Portland General Electric Company (PGE) and the following agencies and data resources: United States Fish and Wildlife Service (USFWS), Oregon Department of Fish and Wildlife (ODFW), Oregon Department of Agriculture (ODA), Oregon Natural Heritage Information Center (ORNHIC), and The Nature Conservancy (TNC). Federal Species of Concern and State Sensitive species are addressed in Exhibit P; this exhibit addresses all state and federal listed threatened or endangered, candidate, and proposed species. Candidate and proposed species are included because of their potential for listing during the application process.

Based on data received from ORNHIC (ORNHIC 2009, shown in Figure Q-1) and consultations with USFWS and ODFW (documents provided in Appendix Q-1), one federally listed candidate wildlife species (Table Q-1) has the potential to exist within or near the Site Boundary: the Washington ground squirrel (*Spermophilus washingtoni*). This species is also state listed as endangered.

In addition, five state listed plant species (Table Q-1) have the potential to exist within or near the Site Boundary. These include one state endangered species, one state threatened species, and three state candidate species. All five of these plant species are considered species of concern by USFWS.

Exhibit Q provides a description of the nature, extent, locations, and timing of each species occurrence in the analysis area and how the facility might adversely affect each listed or candidate species (OAR 345-021-0010(q)(B)). The descriptions and evaluation of potential impacts on these species are included in Section Q.5. The measures proposed to avoid and/or reduce the potential impacts are presented in Section Q.6. Sections Q.7 and Q.8 document the potential for the construction and operation of the Carty Generating Station to cause a significant reduction in the likelihood of survival or recovery of the listed species. Section Q.9 addresses the proposed monitoring program.

Table Q-1 State and Federal Listed, Candidate and Proposed Species with the Potential to Occur Within the Vicinity of the Carty Generating Station Site Boundary

Species	Federal Status	State Status	Detected in Analysis Area	Impacts
Washington ground squirrel *Spermophilus washingtoni*	Candidate	Endangered	Yes	Potential
Disappearing monkeyflower *mimulus evanescens*	Species of Concern	Candidate	No	No
Dwarf evening-primrose *Camissonia pygmaea*	Species of Concern	Candidate	No	No
Sessile mousetail *Myosurus sessilis*	Species of Concern	Candidate	No	No
Snake River goldenweed *Haplopappus radiatus*	Species of Concern	Endangered	No	No
Laurence's milk-vetch *Astragalus collinus var. laurentii*	Species of Concern	Threatened	No	No

Q.2 ANALYSIS AREA

For state and federal threatened and endangered species, the analysis areas were developed in consultation with ODFW and USFWS.

For threatened and endangered animal and plant species, the analysis areas were, at a minimum, 350 feet on either side of the proposed transmission line, as well as the area within the Energy Facility Survey Area, as defined in Exhibit P. The analysis areas for Washington ground squirrels in 2009 were extended an additional 1,000 feet in areas where the survey boundary intersected Washington ground squirrel habitat areas as identified by ORNHIC. In 2010, the Washington ground squirrel analysis area was extended 1,000 feet from areas where potential burrows were identified in suitable habitat and where squirrels were documented in 2009 surveys. Details of the Washington ground squirrel analysis areas are available in Exhibit P, Appendix P-2, Appendix B.

The analysis area includes the transmission corridor from the proposed Carty Generating Station site to the Slatt substation and the Energy Facility Site, including extensions (buffers) for Washington ground squirrel. The proposed pipeline lateral that would transport natural gas from an existing pipeline operated by Gas Transmission Northwest Corporation to the Carty Generating Station is not included within the scope of this Application for Site Certificate. The gas pipeline lateral is being permitted as a separate project, is an interstate pipeline, and is subject to the Federal Energy Regulatory Commission's jurisdiction.

The Energy Facility Site would be located within areas zoned for general industrial and agricultural use. This location contains primarily a shrub-steppe plant community dominated by big sage and cheat grass. The proposed transmission line corridor crosses agricultural, grazed and weedy shrub-steppe rangeland, riparian, and wetland areas.

Q.3 APPLICABLE STATUTES AND ADMINISTRATIVE RULES

The following section describes the applicable statutes and administrative rules that define the requirements and criteria for the contents of this exhibit.

Q.3.1 Division 21 EFSC Rules (Application for a Site Certificate)

The Division 21 Rules (OAR 345-021-0000—0100), which outline the requirements for the contents of a site application, require applicants to present information about threatened and endangered plant and animal species that may be affected by the proposed facility, and to provide evidence to support a finding by the Energy Facility Siting Council (EFSC), as required by OAR 345-022-0070. The Division 21 Rules require the following information to be included within Exhibit Q:

A. Based on appropriate literature and field study, identification of all threatened or endangered species listed under ORS 496.172(2), ORS 564.105(2) or 16 USC § 1533 that may be affected by the proposed facility;

B. For each species identified under A, a description of the nature, extent, locations and timing of its occurrence in the analysis area and how the facility might adversely affect it;

C. For each species identified under A, a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact;

D. For each plant species identified under A, a description of how the proposed facility, including any mitigation measures, complies with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3);

E. For each plant species identified under A, if the Oregon Department of Agriculture has not adopted a protection and conservation program under ORS 564.105(3), a description of significant potential impacts of the proposed facility on the continued existence of the species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species;

F. For each animal species identified under A, a description of significant potential impacts of the proposed facility on the continued existence of such species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and

G. Applicant's proposed monitoring program, if any, for impacts to threatened and endangered species.

Q.3.2 Division 22 EFSC Rules (General Standards for Siting Facilities)

In order to issue a site certificate, the Division 22 Rules (OAR 345-022-0070), which address threatened and endangered species considerations, require EFSC, after consultation with appropriate state agencies, to find the following:

1. For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction, operation, and retirement of the proposed facility, taking into account mitigation:

a. Are consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3); or

b. If the Oregon Department of Agriculture has not adopted a protection and conservation program, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and

2. For wildlife species that the Oregon Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction, operation, and retirement of the proposed facility, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species.

Response: As a reference, Table Q-2 contains the applicable EFSC rules that define the requirements and criteria for the contents of this exhibit and indicate which sections of this exhibit address each.

Table Q-2 Summary of Applicable Rules

Rules	General Description	Oregon Revised Statutes	Exhibit Q Section
EFSC Division 21 Rules			
OAR 345-021-0010(q)(A)	Identification of all state and federal threatened and endangered species	ORS 496.172 (2), ORS 564.105 (2)	Q.1, Q.4
OAR 345-021-0010(q)(B)	Description of each species and potential impacts from the project		Q.5
OAR 345-021-0010(q)(C)	Measures to avoid or reduce impacts		Q.6
OAR 345-021-0010(q)(D)	Compliance w/ODA protection and conservation program, if applicable	ORS 564.105 (3)	Q.7
OAR 345-021-0010(q)(E)	Protection of plant species not protected by an ODA protection and conservation program	ORS 564.105 (3)	Q.7
OAR 345-021-0010(q)(F)	Documentation that the project will not cause a significant reduction in the likelihood of survival or recovery of animal wildlife species		Q.8
OAR 345-021-0010(q)(G)	Description of the monitoring program		Q.9
EFSC Division 22 Rules			
OAR 345-022-0070(1)(A)	Demonstration that facility is/will be consistent w/ODA protection and conservation program	ORS 564.105 (2), ORS 564.105 (3)	Q.7

Table Q-2 Summary of Applicable Rules

Rules	General Description	Oregon Revised Statutes	Exhibit Q Section
OAR 345-022-0070(1)(B)	Demonstration that the facility will not cause significant reduction in likelihood of survival of plant species not protected by ODA protection and conservation program	ORS 564.105 (2), ORS 564.105 (3)	Q.7
OAR 345-022-0070(2)	Demonstration that the facility will not cause a significant reduction in the likelihood of survival of wildlife species	ORS 492.172 (2)	Q.8

Q.4 METHODOLOGY

OAR 345-021-0010(q)(A) *Based on appropriate literature and field study, identification of all threatened or endangered species listed under ORS 496.172(2), ORS 564.105(2) or 16 USC § 1533 that may be affected by the proposed facility.*

Response:

Q.4.1 General

A letter was written to the ORNHIC requesting information on threatened, endangered, and sensitive species within 5 miles of the proposed plant site and transmission line. This area was the initial study area prior to submittal of the Notice of Intent. The results of the database search provided an initial list of the species included in the draft work plan, which was submitted to USFWS and ODFW for review. The final list of species included in this exhibit reflects ORNHIC data in addition to the responses of USFWS and ODFW to the work plan and ODA's comments on the NOI.

Field investigations were conducted by qualified wildlife biologists on the proposed Energy Facility Site and transmission line corridor on the following days in 2009: May 4–8, June 22–26, September 14 and 30, and October 1. Field investigations were conducted on the following days in 2010: May 4–28. In 2009, biologists conducted ground surveys for raptor nests, Washington ground squirrels, special status plants and wildlife, wetlands and streams, and general wildlife occurrence and habitat. In 2010, biologists conducted ground surveys for Washington ground squirrels and included incidental observation of special-status plants, noxious and invasive plants, and general wildlife occurrence and habitat.

Wildlife biologists would conduct Washington ground squirrel surveys again prior to construction. The results of these surveys would be incorporated into a Pre-construction Field Survey Report that would be prepared to meet federal Endangered Species Act requirements and would be submitted to USFWS, ODFW, and ODA for review.

Q.4.2 Wildlife

Existing literature and scientific data were reviewed to determine species distribution and habitat requirements. The ORNHIC database was queried, and ODFW was consulted for documented and projected occurrences of candidate, proposed, and listed species in the vicinity of the Site Boundary (ORNHIC 2009; ODFW 2009). In addition, monitoring data were acquired from TNC from Washington ground squirrel monitoring efforts in the Boardman Conservation area. Field surveys were conducted by qualified wildlife biologists as described in the Field Survey Work Plan (provided in Exhibit P, Appendix P-2, Appendix A). Results of the field studies conducted in 2009 and 2010 are provided in the 2009 Biological Survey Report for the Carty Generating Station and the 2010 Biological Survey Report for the Carty Generating Station, respectively (provided in Exhibit P, Appendices P-1 and P-2).

Ecology and Environment, Inc. (E & E) developed survey protocols in consultation with ODFW that were adapted from those set forth in the Boardman to Hemingway transmission line project. Data on Washington ground squirrel habitat were obtained from ODFW and ORNHIC and examined in relation to the Site Boundary. Areas where the Site Boundary intersected Washington ground squirrel habitat were surveyed by walking transects 50 meters apart looking for burrow structures characteristic of Washington ground squirrel, fresh scat, and visual sighting of squirrels and listening for auditory calls.

Washington ground squirrels have a particular affinity for Warden silty loam soils, possibly because this soil type is well suited for their burrowing structure needs. Warden soils have a high silt content and are very deep, which helps maintains burrow structure better than sandy or shallow soils. Soil type was observed during surveys to consider suitability for ground squirrel burrows.

Surveys for Washington ground squirrels were conducted in May and June of 2009 and in May of 2010. During surveys conducted in 2009, biologists walked transects within the Site Boundary where Washington ground squirrel habitat was identified in ORNHIC data, plus an additional 1000 feet beyond the boundaries of the ORNHIC polygons. Observations of possible Washington ground squirrel activity or presence were documented and locations recorded using a handheld Global Positioning System unit. In addition, biologists conducted surveys for Washington ground squirrel in areas located outside of the ORNHIC habitat and buffer area and in areas that were inside the Site Boundary and contained suitable habitat for this species. During surveys conducted in May of 2010, biologists primarily focused on areas that were identified during 2009 surveys as having potential Washington ground squirrel burrows. A crew walked two sets of transects through these areas: one set parallel to 2009 transects and one set perpendicular to 2009 transects. In addition, in 2010 the crew conducted transect surveys in some areas that were had not been surveyed with the transect method in 2009 surveys.

Field surveys conducted by E & E biologists in 2009 resulted in the documentation of burrows with the potential for current or recent utilization by Washington ground squirrels. Burrows were evaluated based on size of entrance holes, evidence of recent use such as trimming of

vegetation and roots around the hole, presence of spider webs, recent digging or collapse, and proximity to additional burrows and travel pathways between burrows in the patch. Figure Q-2 shows burrow patch locations identified in the Site Boundary. Each burrow point shown in Figure Q-2 represents a patch of burrows that includes 1 to 20 holes in close proximity. Although burrows may have met the criteria to be logged as potential sites, the likelihood that Washington ground squirrels are occupying the burrows in a given patch was unknown. Surveys conducted in 2010 verified presence or absence of Washington ground squirrels in the areas where potential burrows were identified. Burrow patch locations appear to be concentrated in two areas. The first area is situated immediately north of the proposed Energy Facility Site and to the north of two existing roads. The second area is situated approximately ½ mile east of the proposed Energy Facility Site. The burrows did not appear to be concentrated in a particular type of vegetation community. Rather, soil type appears to have the biggest influence on where burrows were found; areas with sandy soils may not be able to support tunnel digging activities.

Steve Cherry, Heppner District Wildlife Biologist, ODFW; Travis Schultz, Heppner District Wildlife Technician, ODFW; and Jodi Delvan, Fish and Wildlife Biologist, Endangered Species, USFWS were consulted for information on the possible occurrence and habitat requirements of the wildlife species. All references are cited in the References section (Section Q.10 of this Exhibit).

Q.4.3 Plants

PGE retained E & E consultants to conduct a Threatened, Endangered, and Sensitive plant survey within the analysis area of the proposed Energy Facility Site and transmission corridor. The report that details the survey methodology is provided in Exhibit P. The surveys were conducted in May and June of 2009 and in May of 2010, which is an appropriate time to identify the plant species found in the ORNHIC database search, based on agency consultation. The survey was conducted by biologists familiar with the identification of these species and qualified to conduct such surveys.

A literature search for each of these species was also conducted to determine habitat requirements and current range information. All references are cited in Section Q.10 for review.

Q.5 EXISTING CONDITIONS AND POTENTIAL IMPACTS TO STATE AND FEDERAL LISTED, CANDIDATE AND PROPOSED SPECIES

OAR 345-021-0010(1)(q)(B) *For each species identified under 345-021-0010(1)(q)(A), a description of the nature, extent, locations and timing of its occurrence in the analysis area and how the facility might adversely affect it.*

Response: Table Q-1 presents wildlife and plant species that are either known to occur or have the potential to occur within the analysis area, based on habitat suitability and information received from ORNHIC, USFWS, and ODFW. Table Q-1 also reports whether each species was

detected within the Site Boundary and lists the potential for impacts that may result from the construction and operation of the proposed facility. Figure Q-1 illustrates the approximate locations of threatened and endangered wildlife within the Carty Generating Station vicinity, as reported by ORNHIC.

The following section describes the "*…nature, extent, location and timing…*" (OAR 345-021-0010(q)(B) of each of the listed species with the potential to occur within the analysis area or that may be affected by the proposed facility. This section also addresses how the construction and operation of the facility might affect these species (OAR 345-021-0010(q)(B). Mitigation for potential impacts is addressed in Section Q.6.

Q.5.1 Wildlife

Washington Ground Squirrel

Natural History and Occurrence in Analysis Area

The Washington ground squirrel is a small ground squirrel occurring in grassland and shrubland habitats of the Columbia Plateau, east and south of the Columbia River in Washington and Oregon. The Washington ground squirrel is currently considered a candidate species for listing under the Federal Endangered Species Act by USFWS and is a state listed endangered species under the Oregon Endangered Species Act of 1987.

Washington ground squirrels may be found in native grassland and shrub-steppe habitats over silty loam soils, particularly Warden and Sagehill soils. Washington ground squirrels can also be found in some areas replanted to grassland under the Conservation Reserve Program, if these sites are planted to native grassland species and adjacent or very near to undisturbed native grasslands. Where the Site Boundary encompassed land identified by ORNHIC as Washington ground squirrel habitat, the boundaries of the surveys were expanded 1,000 feet. Data collected on Washington ground squirrel included burrow locations potentially utilized by this species, scat or remains found, auditory calls, and visual sightings.

Active periods for Washington Ground Squirrel include a short period during the early spring to summer, depending on environmental conditions. Squirrel activity is highest from February through June, with some activity in January and July. The squirrels hibernate or estivate approximately seven to eight months per year. Adults emerge in mid- to late January to early February and begin estivation/hibernation in late May to early June. Juveniles, referred to as pups, emerge in late March to April and begin estivation/hibernation in early July. After entering estivus, they are thought to transition directly into hibernation. The fact that squirrels are active only four to five months of the year highlights the importance of reproducing and fattening quickly to have viable young and survive seven to eight months of estivation/hibernation. High annual mortality rates are associated with this species, with causes

attributed to starvation or freezing during estivation/hibernation, predation, disease, and human interference (USFWS 2007, 2010).

During surveys conducted in 2009, biologists recorded numerous potential Washington ground squirrel burrows near the proposed Energy Facility Site, as well as along the transmission line route; however, no evidence of occupation was detected, including scat, auditory calls, or sightings of individuals. Because no evidence of this species was observed, 2009 surveys could neither confirm nor deny the presence of this species along the transmission line. Due to the suitability of the soils and abundance of potential burrows in these areas, the transmission corridor segments 9.6 miles to 10.7 miles west of the Energy Facility Site and from 11.3 miles to 12.5 miles west of the Energy Facility Site were considered potential Washington ground squirrel habitat and were included in 2010 surveys.

During 2010 surveys, scat that appeared to have come from mice, voles, or rats was observed at many of the burrows previously identified as potential burrows in 2009 along the transmission line corridor. Several of the burrows showed tracks from tail drag by a rodent species with a narrow, non-bushy tail, unlike that of a ground squirrel. These are indicators that at least some of the burrows are occupied by a non-squirrel species. No evidence of Washington ground squirrels were observed in the transmission line corridor.

Data collected during the 2010 surveys did, however, verify the presence of Washington ground squirrel in two general areas near the proposed Energy Facility Site. The first area is situated immediately north of the main proposed Energy Facility Site, and on the north side of two existing roads. The second area is situated approximately 0.5 mile east of the proposed Energy Facility Site (shown in Figure Q-2). Both areas are located outside of the proposed Energy Facility Site, but within the Site Boundary. Evidence of occupation included scat and auditory calls observed at intact burrow complexes. No other potentially active Washington ground squirrel burrows were detected outside of these two areas. For a more detailed discussion of 2010 survey results refer to the 2010 Biological Survey Report for the Carty Generating Station (Exhibit P, Appendix P-2).

Current Washington ground squirrel populations in the region are at relatively low numbers. It should be noted that the lack of documented squirrel activity does not rule out future use of the area should squirrel populations recover.

Potential Impacts

A group of active Washington ground squirrel burrows is located 630 feet northeast of Tower Road and 255 feet north of the existing evaporation pond for the Boardman Plant. This group of burrows is located approximately 705 feet north of the proposed Energy Facility Site (Figure Q-2). Tower Road crosses between the proposed Site location and the group of burrows. Consultation with ODFW determined that Tower Road presents a significant boundary to the Washington ground squirrel habitat and therefore reduces the 785-foot non-disturbance buffer to the road's edge, at a distance of 630 feet from the burrows. There some potential that the

Washington ground squirrel could move across the road and into the proposed Energy Facility Site and be impacted by construction of the proposed facility, although it is unlikely. Habitat in the proposed Energy Facility Site is dissimilar to the habitat where the burrows exist; there is significantly less forb cover for foraging, and soils contain more sand, which may not support the structure of Washington ground squirrel burrows. An evaporation pond is proposed approximately 810 feet southeast of the burrow complex and would include a temporary construction area that borders the 785-foot buffer. All features proposed for construction and temporary disturbance areas are planned outside the 785-foot buffer. There is potential that construction of the evaporation pond could impact Washington ground squirrels if they occurred outside the 785-foot buffer in the construction zone.

Surveys will be conducted prior to construction during the appropriate season for Washington ground squirrels to determine their occupied area and to establish appropriate buffers. The outer extent of the buffer will be marked with high-visibility flagging and stakes prior to the start of construction. Mitigation measures and best management practices will be followed to reduce the potential for impacting Washington ground squirrels. Specific measures that would be enforced are described in the Carty Generating Station Wildlife and Habitat Mitigation and Monitoring Plan (Mitigation and Monitoring Plan), provided in Appendix Q-2.

Q.5.2 Plants

Disappearing monkeyflower

Natural History and Occurrence in Analysis Area

Disappearing monkeyflower (*Mimulus evanescens*) is a federal species of concern and is a state of Oregon candidate species. This succulent annual herb is distributed widely along the northwestern edge of the Great Basin at elevations between 1,200 and 1,700 meters. It ranges from southwest Idaho through eastern Oregon and south into northeastern California.

Disappearing monkeyflower grows in sagebrush-juniper plant zones, among moist gravelly rocky areas, and low wet fields. The habitat for disappearing monkeyflower can only be evaluated from two known existing sites. Both occur within sagebrush-juniper-dominated vegetation zones. Plants at both sites have been observed scattered among rock fragments and alongside small boulders. The plants were in moist, heavy gravel that had been inundated earlier in the spring. Both known populations have the following associated species: sage brush (*Artemisia tridentate*), western juniper (*Juniperus occidentalis*,) floriferous monkeyflower (*Mimulus floribundus*), Suksdorf onkeyflower (*Mimulus suksdorfii*), fleshy porterella (*Porterella carnosula*), giant blue eyed Mary (*Collinsia grandiflora*), maiden blue-eyed Mary (*Collinsia parviflora*), downingia (*Downingia* sp.), false monkeyflower (*Mimetanthe pilosa*), rareflower heterocodon (*Heterocodon rariflorum*), bulbous bluegrass (*Poa bulbosa*), and cheat grass (*Bromus*) spp. The perennials California damsonium (*Machaerocarpus californicus)* and hairy waterclover (*Marsilea vestita*) were common along the shoreline at the Lassen County site (OFP 2005).

Potential Impacts

Even though the disappearing monkeyflower species is rare, it has broad geographic range and unspecialized habitat. This small species is considered extremely vulnerable to grazing and can be easily trampled. It has disappeared from much of its former range. The rarity of the species could be due to disturbance or habitat loss. No occurrences of this species were identified in the Energy Facility Site or the transmission line corridor during 2009 and 2010 surveys; thus, no impacts are expected to occur to this species from construction or operation of the proposed Energy Facility.

Dwarf evening-primrose

Natural History and Occurrence in Analysis Area

Dwarf evening-primrose (*Camissonia pygmaea*) is a federal species of concern and a State of Oregon candidate species. This species occurs from eastern Washington to eastern California and Nevada. In Oregon, it is found in Wasco, Wheeler, Grant, and Harney Counties.

Dwarf evening-primrose grows at 150 to 600 meters in elevation on dry plains and slopes with unstable soils, or on gravel in steep talus, dry washes, and roadcuts. This species occurs in eroded open areas. Due to the unstable nature of its habitat, the size and location of the population varies from year to year. Associated species may include small flowered gilia (*Gilia minutiflora*), threadleaf phacelia (*Phacella linearis*), big sagebrush (*Artemisia tridentate*), bushy mentzelia (*Mentzelia dispersa*), winged cryptantha (*Cryptantha pterocarya*), Suksdorf's monkeyflower, and obscure evening-primerose (C*amissonia andina*).

Potential Impacts

No occurrences of this species were identified in the Energy Facility Survey Area or the Transmission Line Survey Area during 2009 and 2010 surveys; thus, no impacts are expected to occur to this species from construction or operation of the proposed Energy Facility.

Sessile mousetail

Natural History and Occurrence in Analysis Area

Sessile mousetail (*Myosurus sessilis*) is a federal species of concern and is a state of Oregon candidate species. An estimated 200 plants are found in Oregon and an unknown number in California. The total acreage of its occurrence is estimated to be less than 10,000. Its range extent is large but limited to the Great Central Valley of California and one canyon in north-central Oregon. This very small annual plant is found in clay-bottomed vernal pools and alkali flats at 10 to 1,600 meters in elevation (NatureServe 2009).

Sessile mousetail often grows with tiny mousetail (*Myosurus minimus*), and hybrids between the two species are common (NatureServe 2009).

Potential Impacts

No occurrences of this species were identified in the Energy Facility Survey Area or the Transmission Line Survey Area during 2009 and 2010 surveys; thus, no impacts are expected to occur to this species from construction or operation of the Energy Facility.

Snake River goldenweed

Natural History and Occurrence in Analysis Area

Snake River goldenweed (*Haplopappus radiatus*) is a federal species of concern and a state of Oregon listed endangered species. This species is found in Washington, Idaho, and Malheur County in Oregon. Snake River goldenweed grows at elevations that range from 650 to 1,500 meters in arid shrub-steppe rangeland. It is found in loam soils on steep rocky hillsides in big sagebrush, bluebunch wheatgrass, arrowleaf balsamroot (*Balsamorhiza sagittata*), and Idaho fescue communities (*Agropyron spicatum-Festuca idahoensis*) (Kaye 2002). This species is susceptible to grazing, seed predation by insect larvae, and invasive and noxious weeds (Kaye 2002).

Associated species may include yarrow (*Achillea millefolium*), bluebumch wheatgrass, bristly fiddleneck (*Amsinckia tessellate*), sagebrush (*Artemisia tridentate*), Cusick's milk-vetch (*Astragalus cusickii*), wollypod mildvetch (*A. purshii*), arrowleaf balsamrood, cheat grass, whitetop (*Cardaria draba*), rubber rabbitbrush (*Chrysothamnus nauseosus var. albicaulis*), yellow rabbitbrush (*C. viscidiflorus*),tiny trumpet (*Collomia linearis*), largeflower hawksbeard (*Crepis occidentalis*), basin wildrye (*Elymus cinereus*), shaggy fleabane (*Erigeron pumilus*), arrowleaf buckwheat (*Eriogonum compositum*a), tall woolly buckwheat (*E. elatum*), slender buckwheat (*E. microthecum*), blue mountain buckwheat (*E. strictum*), redstem fillaree (*Erodium cicutarium*), broom snakeweed (*Gutierrezia sarothrae*), common sunflower (*Helianthus annuus*), blazing star (*Mentzelia laevicaulis*), royal penstemon (*Penstemon speciosus*), sandberg bluegrass (*Poa sandbergii*), antelope bitterbrush (*Purshia tridentate*), tall tumblemustard (*Sisymbrium altissimum*), Barkworth squirreltail (*Sitanion hystrix*), Munro's globe mallow (*Sphaeralcea munroana*), medusahead (*Taeniatherum caput-madusae*), and spineless horsebrush (*Tetradymia canescens*) (Kaye 2002).

Potential Impacts

No occurrences of Snake River goldenweed were identified in the Energy Facility Survey Area or the Transmission Line Survey Area during 2009 and 2010 surveys; thus, no impacts are expected to occur to this species from construction or operation of the Energy Facility.

Laurent's milk-vetch

Natural History and Occurrence in Analysis Area

Laurent's milk-vetch (*Astragalus collinus var. laurentii*) is a federal species of concern and a state of Oregon listed threatened species. This perennial herb is restricted to areas in north central Oregon, around the headwaters of Rock, Willow, and Butler Creeks in Morrow County; Thirty-Mile Creek in southeast Gilliam County; and in the lower Umatilla Valley in northwest Umatilla County. There are currently less than 2,000 plants, and no sites are considered protected.

Laurent's milk-vetch occurs on dry slopes, in areas with loess deposits, occasionally with sandy or rock substrates, usually in the bluebunch wheatgrass-Idaho fescue palouse grassland or canyon communities. This species is found mostly on roadsides adjacent to wheatlands, or on canyons above streams and below farmlands. Associated species may include bluebunch wheatgrass, Sandberg wheatgrass, Idaho fescue, cheat grass, yarrow, and longleaf phlox (*Phlox longifolia*) (Kartesz 1994).

Potential Impacts

No occurrences of Laurent's milk-vetch were identified in the Energy Facility Survey Area or the Transmission Line Survey Area during 2009 and 2010 surveys; thus, no impacts are expected to occur to this species from construction or operation of the Carty Generating Station.

Robinson's onion

Natural History and Occurrence in Analysis Area

Robinson's onion (*Allium robinsonii*) is a federally listed species of concern but is not listed by the ODA. According to the United States Department of Agriculture, it occurs in Morrow and Gilliam Counties. It has been found along the Columbia River from Ferry County, northeastern Washington, to near the mouth of the John Day River in north-central Oregon, although it is possibly now extirpated from Oregon. This species flowers from April through May and occupies sand and gravel deposits along bottom and lower benches of the Columbia River at elevations ranging from 50 to 200 meters.

Potential Impacts

No occurrences of Robinson's onion were identified in the Energy Facility Survey Area or the Transmission Line Survey Area during 2009 and 2010 surveys; thus, no impacts are expected to occur to this species from construction or operation of the Carty Generation Station.

Q.6 DESCRIPTION OF MEASURES PROPOSED TO AVOID OR REDUCE ADVERSE IMPACTS TO SPECIES

OAR 345-021-0010(1)(q)(C) *For each species identified under 345-021-0010(1)(q)(A), a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact.*

Response: In compliance with OAR 345-021-0010, the following section discusses the possible means by which adverse impacts to state and federal listed species resulting from the construction and operation of the Carty Generating Station can be avoided or minimized.

Washington Ground Squirrel

In compliance with the ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415), every attempt shall be made to avoid impacts on Washington ground squirrel habitat resulting from construction and operation of the Carty Generating Station. A number of measures would be implemented that are designed to help avoid or minimize impacts on Washington ground squirrel that may result from construction and operation of the Carty Generating Station. These measures are described in detail in the Mitigation and Monitoring Plan (Exhibit P, Appendix P-3) and are also summarized below.

Avoidance/mitigation measures:

1. Site the permanent and temporary project features in a manner that avoids or minimizes impacts on Washington ground squirrel habitat, to the greatest extent possible: No permanent or temporary project features are sited within areas identified as supporting active Washington ground squirrel populations. The transmission line route would be sited along existing transmission corridors. Construction yards and laydown areas are located in previously disturbed areas, to the greatest extent feasible.

2. Conduct preconstruction surveys: Qualified professional biologists would assess the status of thy portion of the Washington ground squirrel colonies located within the Site Boundary during their active period prior to initiation of construction activities. Surveys will be conducted in all areas within the Site Boundary where previous occupation of squirrels has been documented and in the associated 785-foot buffer. If active squirrel areas are found outside of those areas identified in 2010 surveys (Figure Q-2), PGE will re-initiate consultations with ODFW and USFWS. In this instance, PGE would not begin construction of the Carty Generating Station or initiate any other disturbances in the vicinity of the active squirrel areas until appropriate mitigation and avoidance measures for the newly identified areas have been agreed to by ODFW and USFWS. While crews conduct surveys for Washington ground squirrel, they would also record all incidental observations of the five special status plant species that have the potential to be present in this region (Table Q-1).

3. Prohibit project-related vehicles, equipment, and personnel from entering areas outside of the proposed Energy Facility Site and other areas designated for disturbance: Flagging or fencing would be installed in order to demarcate a no disturbance buffer around the areas identified as being occupied by Washington ground squirrels (Figure Q-2). The no disturbance buffers would have a radius of 785 feet, unless another distance has been agreed to by ODFW and PGE (e.g., the north edge of Tower Road).

4. Restore habitat to original or improved condition: PGE would restore habitat and control noxious and invasive weeds as described in the Mitigation and Monitoring Plan and Revegetation and Noxious Weed Control Plan (Appendix P-3 and P-4, respectively).

5. Implement and enforce a project-wide speed limit: A 25-mile-per-hour speed limit would be implemented, and squirrel warning signs would be posted on all roads in areas near Washington ground squirrel–occupied habitat to minimize the likelihood of collisions with squirrels.

6. For impacts on habitat that could not be avoided or minimized, mitigation has been developed to compensate, using reliable methods, and in compliance with the ODFW habitat mitigation goals and standards, as described in the Wildlife and Habitat Mitigation and Monitoring Plan (Appendix P-3).

7. An incidental take permit would be applied for from ODFW if necessary to account for potential unavoidable impacts to Washington ground squirrels.

8. PGE would conduct on-site monitoring, as described in the Mitigation and Monitoring Plan (Exhibit P, Appendix P-3), in order to indentify post construction impacts on Washington ground squirrels and their habitat.

Q.6.1 Plants

The results of the plant surveys conducted in 2009 and 2010 and the database search (ORNHIC 2009, Figure Q-1) indicate that no state or federally listed plant species occur in the proposed generation facility site or within the transmission line corridor. Habitat identification during the 2009 and 2010 ground surveys indicate that the habitat types present on site are not ideal for the special status plant species potentially occurring in the area. No further targeted surveys for special status plant species would be conducted prior to construction; however, biologists trained to identify these species would record any new observations made during preconstruction surveys for Washington ground squirrel. If populations of these plant species are observed during squirrel surveys, PGE would re-initiate consultations with ODFW and USFWS. In this instance, PGE would not begin construction of the Carty Generation Station or initiate any other disturbances in the vicinity of these plants until appropriate mitigation and avoidance measures for the newly identified areas have been agreed to by ODFW and USFWS.

Q.7 FINDINGS THAT THE PROPOSED FACILITY WILL NOT LIKELY CAUSE A SIGNIFICANT REDUCTION IN THE LIKELIHOOD OF SURVIVAL OR RECOVERY OF THE LISTED PLANT SPECIES

OAR 345-021-0010(1)(q)(D) *For each plant species identified under 345-021-0010(1)(q)(A), a description of how the proposed facility, including any mitigation measures, complies with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3).*

OAR 345-021-0010(1)(q)(E) *For each plant species identified under 345-021-0010(1)(q)(A), if the Oregon Department of Agriculture has not adopted a protection and conservation program under ORS 564.105(3), a description of significant potential impacts of the proposed facility on the continued existence of the species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.*

OAR 345-022-0070(1) *For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction, operation, and retirement of the proposed facility, taking into account mitigation:*

a. Are consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3); or

b. If the Oregon Department of Agriculture has not adopted a protection and conservation program, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and

Response: There were no observed occurrences of state or federally listed plant species within the proposed facility analysis area, including areas near the proposed generating station or areas along the transmission line route. PGE, in consultation with ODA, has determined that these species do not occur within the Site Boundary. Therefore, the construction and operation of the proposed facilities are not likely to cause a significant reduction in the likelihood of survival or recovery of listed plant species.

Q.8 FINDINGS THAT THE PROPOSED FACILITY WILL NOT LIKELY CAUSE A SIGNIFICANT REDUCTION IN THE LIKELIHOOD OF SURVIVAL OR RECOVERY OF THE LISTED FISH AND WILDLIFE SPECIES

OAR 345-021-0010(1)(q)(F) *For each animal species identified under 345-021-0010(1)(q)(A), a description of significant potential impacts of the proposed facility on the continued existence of such species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.*

OAR 345-022-0070(2) *For wildlife species that the Oregon Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction, operation, and retirement of the proposed facility, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species.*

Response: In compliance with these requirements, Section Q.5 of this exhibit describes the significant potential impacts of the proposed facility on the continued existence of state and federal species and on the critical habitat of these species. The mitigation measures described in Section Q.6 were designed to avoid and/or minimize any adverse impacts to the listed wildlife species. Through utilization of these mitigation measures, the construction, operation, and maintenance of the proposed facility are unlikely to cause a significant reduction in the likelihood of survival or recovery of any listed species.

Q.9 MONITORING PROGRAM

OAR 345-021-0010(1)(q)(G) *Applicant's proposed monitoring program, if any, for impacts to threatened and endangered species.*

Response: Programs to monitor the potential impacts on the individual listed species are described in the Mitigation and Monitoring Plan, which has been developed in coordination with ODFW and USFWS for sensitive fish and wildlife species and with ODA for sensitive plant species.

Q.10 REFERENCES

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----------. December 15, 2010. Letter from USFWS La Grande Field Office to Ms. Sue Oliver, Energy Facility Siting Officer, Oregon Department of Energy. Subject: "Comments on the Wildlife and Habitat Monitoring and Mitigation Plan for the PGE Carty Generating Station located in Morrow and Gilliam Counties, Oregon (13420-2011-TA-0039).

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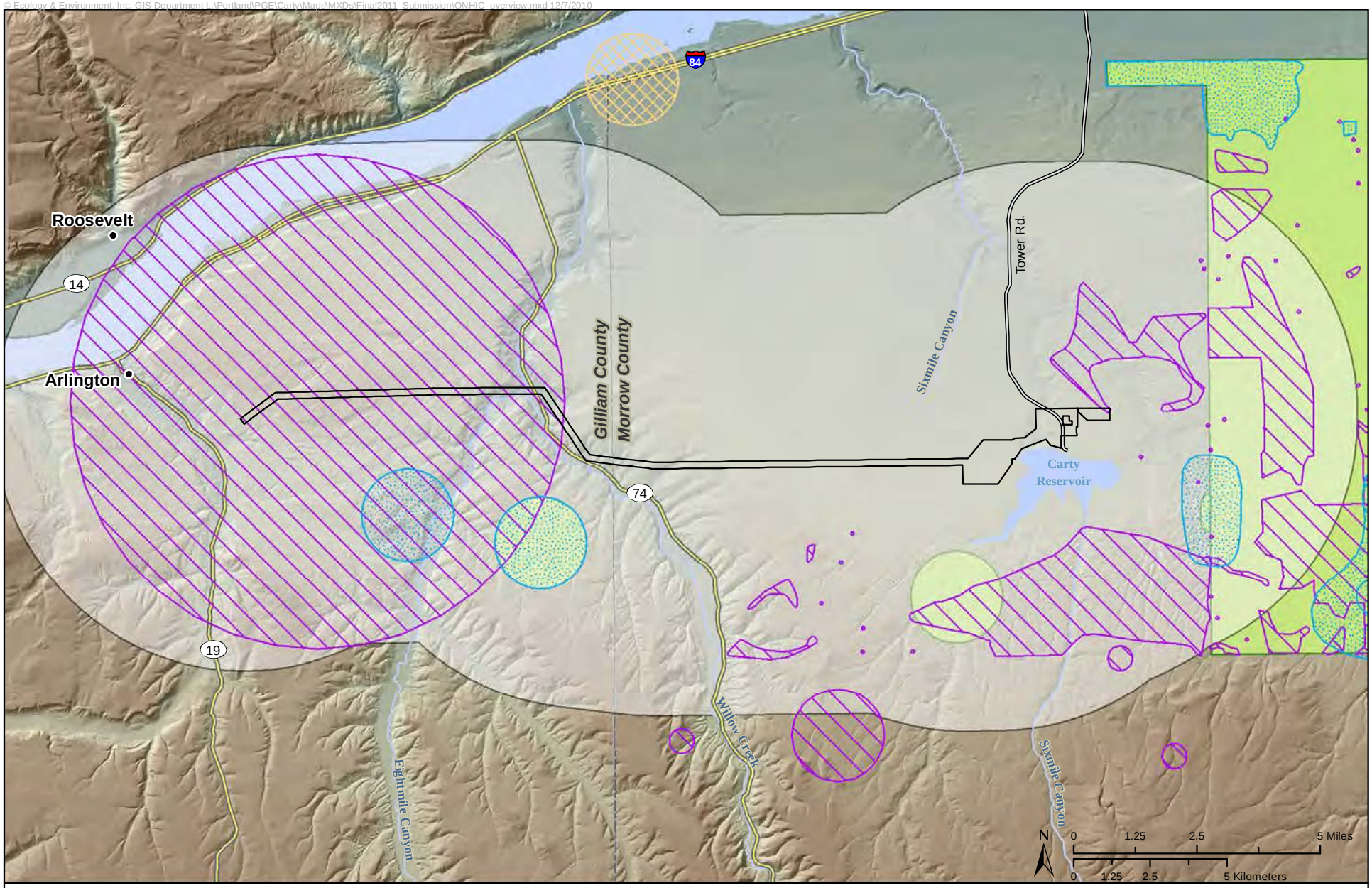

Site Boundary

T&E Data Search (5 Mile Radius)

Listed Endangered

Candidate for listing with enough information available for listing

Species of Concern

Sensitive-Vulnerable

Figure Q-1
Oregon Natural Heritage Information
PGE Carty Generating Station
Application for Site Certificate

Final 2011

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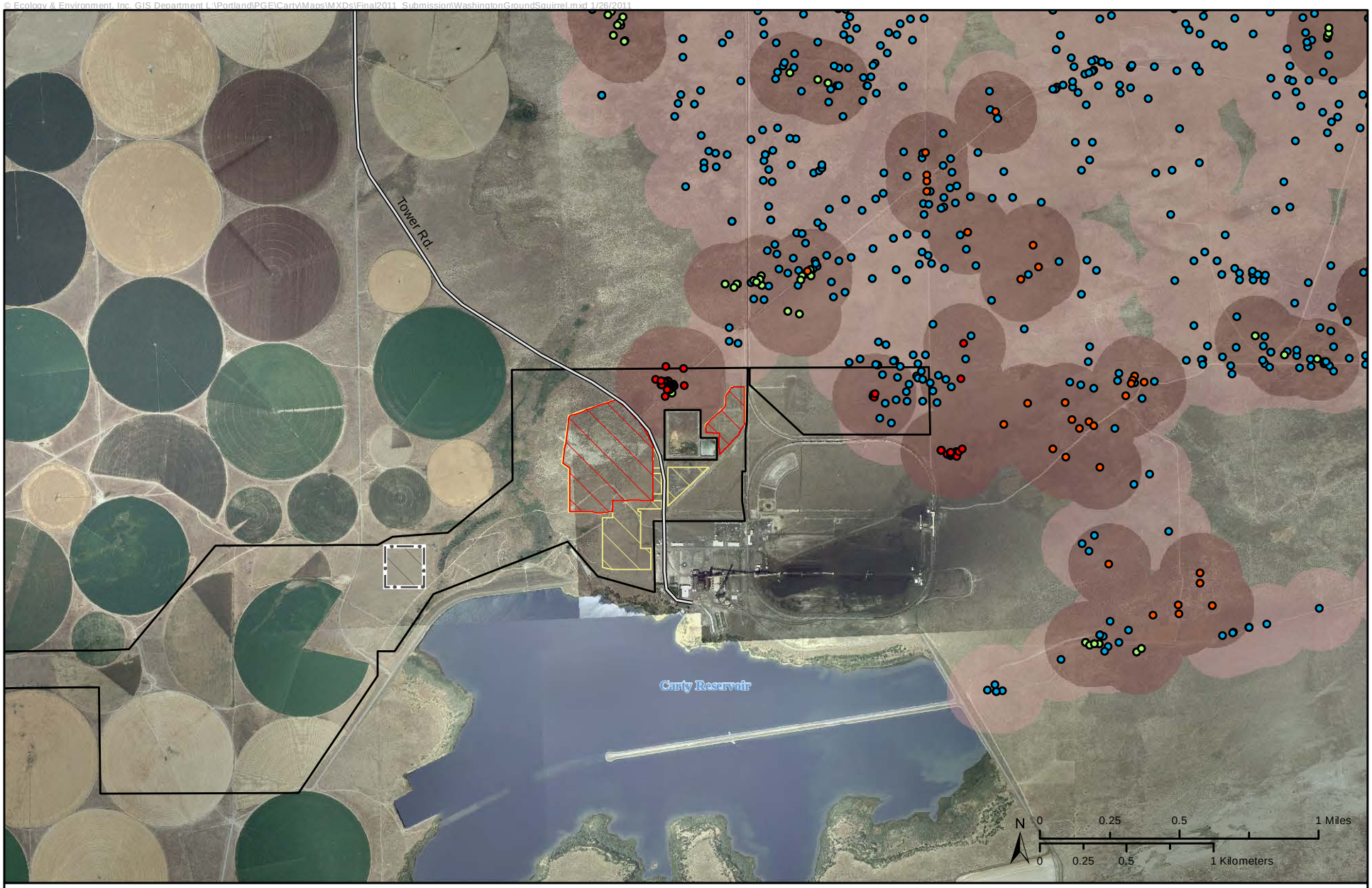


Site Boundary
Proposed Energy Facility Site
Temporary Construction Areas
Proposed Grassland Switchyard

WGS Evidence (Scat, Calls, or Burrows)*
2010
2009
2000-2008

Habitat Category, Habitat Type
1, Washington Ground Squirrel 2009-2010 Occupied Range (E&E, PGE, and TNC)
2, WGS Reported Range 2000-2008 (TNC and PGE)

*No WGS evidence found along transmission line corridor.

Source Data: Ecology and Environment Inc. (2009, 2010), PGE (2004, 2006, 2008, 2010), The Nature Conservancy (2000-2006, 2009)

Figure Q-2
Washington Ground Squirrel Survey and Analysis Data
PGE Carty Generating Station
Application for Site Certificate
Final 2011

APPENDIX Q-1

Agency Consultation and Response to NOI

Oregon
Theodore R. Kulongoski, Governor

Department of Fish and Wildlife
Wildlife Division
3406 Cherry Ave. NE
Salem, OR 97303
(503) 947-6300
FAX (503) 947-6330

October 8, 2009

Ms. Sue Oliver
Oregon Department of Energy
245 Main Street, Suite C
Hermiston, OR 97838

RE: Oregon Department of Fish and Wildlife's Comments on the Notice of Intent to Apply for a Site Certificate for the Carty Generating Station Project

Dear Sue:

Oregon Department of Energy (ODOE) has requested comments from Oregon Department of Fish and Wildlife (ODFW) on the Notice of Intent (NOI) to Apply for a Site Certificate for the Carty Generating Station Project. This letter contains: (1) ODFW contact information for the project; and (2) ODFW's consolidated comments on the NOI from our Headquarters' and Field Office staff.

A. Contacts

I will be the main contact person for ODFW for this Energy Facility Siting Council (EFSC) permitting process and my contact information is: Rose Owens, 3406 Cherry Ave. NE, Salem, OR 97303. My phone number is (503) 947-6085. I will be coordinating with ODFW staff in Salem Headquarters and in our Heppner Field Office (Steve Cherry, District Wildlife Biologist and Travis Shultz, District Wildlife Technician). Steve and Travis' address is: 54173 Hwy 74, PO Box 363, Heppner, OR 97836. Their phone number is: (541) 676-5230. I would appreciate if you would ask the Applicant to send me and the Heppner Field office each one hard copy of future EFSC process documents.

B. Comments on the NOI

General Comments

Please find below a listing of the most applicable statutes, administrative rules and policies administered by ODFW that would pertain to the siting of this proposed facility. ODFW will review and make recommendations for the proposed project based on the following applicable statutes and rules.

Oregon Revised Statutes

- Oregon Revised Statute (ORS) 496.012 Wildlife Policy
- ORS 506.036 Protection and Propagation of Fish
- ORS 496.171 through 496.192 Threatened and Endangered Wildlife and Fish Species. A listing of State and Federal threatened, endangered and candidate species can be found on ODFW's website at: http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp
- ORS 498.301 through 498.346 Screening and By-pass devices for Water Diversions or Obstructions
- ORS 506.109 Food Fish Management Policy
- ORS 509.140 Placing Explosives in Waters
- ORS 509.580 through 509.910 Fish Passage; Fishways; Screening Devices. A listing of requirements under ODFW's Fish Passage Program can be found on ODFW's website at: http://www.dfw.state.or.us/fish/passage/. A listing of requirements under ODFW's Fish Screening Program can be found on ODFW's website at: http://www.dfw.state.or.us/fish/screening/index.asp.

Oregon Administrative Rules

- OAR Chapter 635, Division 100 provides authority for adoption of the State sensitive species list and the Wildlife Diversity Plan, and contains the State list of threatened and endangered wildlife and fish species – a listing of State sensitive species can be found on ODFW's website at: http://www.dfw.state.or.us/wildlife/diversity/species/docs/SSL_by_category.pdf

- OAR Chapter 635, Division 415 (ODFW's Fish and Wildlife Habitat Mitigation Policy found on ODFW's website at: http://www.dfw.state.or.us/lands/mitigation_policy.asp) describes six habitat categories and establishes a mitigation goal and standards for each habitat category. This policy recognizes 6 distinct categories of wildlife habitat ranging from Category 1 (irreplaceable, essential, limited) to Category 6 (non-habitat). The policy goal for Category 1 habitat is no loss of either habitat quantity or quality via avoidance of impacts through development alternatives, or an ODFW recommendation of denial of the proposed development action if impacts cannot be avoided. Categories 2 - 4 are for essential or important but not irreplaceable habitats. Category 5 habitat is not essential or important habitat, but has high restoration potential. The application for a site certificate must identify the appropriate vegetation classifications and habitat category for all affected areas of the proposed project on mapping; provide the basis for each habitat category selection; and provide an appropriate mitigation plan; all subject to ODFW and ODOE review and comment. ODOE adopted this rule into OAR 345-022-0060 as an energy facility siting standard for Applicants to meet in order to obtain a site certificate.

- OAR Chapter 635, Division 425 contains requirements for in-water blasting. In the event that the project requires in-water blasting, an in-water blasting permit would be required. An application for an in-water blasting permit must include the information necessary to meet the requirements of ORS 509.140 and OAR 635-425-000 through 635-425-0050 and be submitted to ODFW for approval. An application for an in-water blasting permit must be submitted 90 days prior to the date of blasting. An In-water Blasting Permit Application form is available on the ODFW website at: http://www.dfw.state.or.us/lands/inwater/inwater_app.pdf.

- ODFW also provides technical review and recommendations on compliance with Oregon EFSC rules OAR 345-021-0010(1)(p) and (q) and 345-22-040, 060 and 070.

Specific Comments

1. ODFW recommends that the Application include maps and discussion that outlines vegetation classifications and habitat categorizations according to ODFW's Fish and Wildlife Habitat Mitigation Policy for the project area. This will help ODOE and ODFW identify potential fish and wildlife issues in areas of development across the project area.

2. ODFW would like more clarification on the Washington ground squirrel (WGS) surveys that have been and/or will be completed. ODFW recommends a two-survey system to determine presence of WGSs that includes two surveys

conducted in a perpendicular pattern during the same year. Surveys should take place in suitable habitat within 1,000 feet of all ground disturbing activities, as described in the Draft Biological Survey Work Plan, Protocol for Washington Ground Squirrel Surveys dated April 23, 2009 and provided to ODFW for review.

3. ODFW recommends that raptor nest surveys be completed within a two-mile radius of the Carty Generating Station site boundary and within one mile on each side of the power line corridor. ODFW also recommends that no construction occur within a half-mile of active raptor nests during the nesting season. ODFW further recommends that the Applicant show the locations of inactive nests that were located during preconstruction surveys and which have a potential to be utilized by raptor species of concern.

4. The NOI omits the following Oregon Special Status Species for the Columbia Basin: grasshopper sparrow, sage sparrow, long-billed curlew, loggerheaded shrike, Swainson's hawk, and white-tailed jackrabbit. Sagebrush lizards are listed in table J2, but the NOI states there would not be a survey conducted for them. ODFW recommends that surveys be completed for all these species as per the Draft Biological Survey Work Plan.

5. The Application or a separate Wildlife Monitoring and Mitigation Plan should clearly detail a monitoring plan for the project.

6. ODFW recommends that the Application or a separate Habitat Mitigation Plan include a mitigation plan that addresses the temporary and permanent loss of habitat as a result of the construction of the proposed facility. ODFW recommends that the habitat mitigation plan include provisions for monitoring as well as management activities, including habitat improvement, potential wildlife surveys or research activities.

7. ODFW recommends that the Application include more detailed information about the water usage needs for the Carty Generating Station and water right details for this water usage. ODFW also is interested in assuring that any water withdrawals for the Carty Generating Station are adequately screened according to ODFW's fish screening criteria.

Thank you for the opportunity to provide these comments. Please feel free to contact me at (503) 947-6085 if you have questions about these comments.

Sincerely,

Rose M. Owens

Rose Owens

cc: Steve Cherry, Travis Schultz – Heppner
Jill Zarnowitz – Salem

United States Department of the Interior

FISH AND WILDLIFE SERVICE
La Grande Field Office
3502 Highway 30
La Grande, Oregon 97850
Phone: (541) 962-8584 FAX: (541) 962-8581

Reply To: 8330.TA0105(09)
File Name: PGE Carty Generating Station and Transmission Line.doc
TS Number: 09-1036
Doc Type: Final

OCT 8 2009

Ms. Sue Oliver
Energy Facility Siting Officer
Oregon Department of Energy
Hermiston, OR 97838

Subject: Comments on the Notice of Intent for an energy facility site certificate for the PGE Carty Generating Station located in Morrow and Gilliam County, Oregon (13420-2009-TA-0105).

Dear Ms. Oliver:

The Fish and Wildlife Service (Service) has reviewed your September 4, 2009 request for comments on Portland General Electric Company's (PGE) proposed Carty Generating Station Project (Project), a natural gas-fired generating facility to be located in Morrow and Gilliam County, Oregon. The Service appreciates the opportunity for early involvement with this Project, as this provides a better opportunity to ensure the proposed energy facility site and transmission line will be located in the most appropriate locations to avoid impacts to key species and habitats, use the best methods to minimize effects to those species and habitats, and provide for compensatory mitigation for impacts to species and habitats that cannot be avoided. We previously provided comments to PGE, regarding the draft Biological Survey Work Plan for the Carty Generating Station, dated March 24, 2009 (attached), regarding Endangered Species Act (ESA) consultation requirements. The following provides the Service's comments and recommendations on the Notice of Intent (NOI) for this proposed Project.

Corridor Selection

The Project should utilize the existing 500-kV Boardman to Slatt transmission line to distribute power to customers (Option 1), where the land is already altered or cultivated. The new transmission line should only be developed and operated in lower quality habitats. Efforts should be expended to ensure the transmission alignment avoids areas occupied by ESA listed species and critical habitats, as well as candidate species and their habitats and key species of concern. If it is determined that listed species, candidate species, or key species of concern and/or their habitats are present, discuss Project construction, operation, and maintenance measures to avoid impacts to individuals and their habitats, and further minimize other project effects. After all efforts to avoid and minimize project effects to these species and habitats are

exhausted, conservation measures to compensate for unavoidable project effects should be discussed with the Service and other resource agencies *(i.e.*, Oregon Department of Fish and Wildlife [ODFW]).

Migratory Bird Treaty Act:

The proposed Project has the potential to impact migratory birds protected under the Migratory Bird Treaty Act (MBTA). Impacts to migratory birds could occur during all phases of the Project, including construction (loss of bird nests, loss of habitat), operations (habitat fragmentation, collision, electrocution), and maintenance (disturbance and/or destruction of bird nests). PGE, the applicant, and the Service should initiate efforts to identify and address Project-related issues associated with the MBTA.

Initial actions should include developing habitat characterization maps to define the migratory bird habitats and associated migratory bird species that will be impacted by project construction. Surveys to determine which migratory bird species are present may be necessary in each habitat impacted by the Project's various features and activities. Based on habitat and species survey information, the Project should collaboratively discuss and define measures to minimize project effects (e.g., construction timing restrictions during bird nesting periods for certain species and/or habitats). Construction, operation, and maintenance of the Project may still result in long-term and/or permanent impacts on migratory birds, as a result of habitat loss, electrocution, or collision. All of these potential project effects to migratory birds should be addressed within an Avian Protection Plan. In addition, to address loss of migratory bird habitats, the Project should work with the Service and other stakeholders to develop compensatory mitigation plans for these lost habitats.

Horn Butte Curlew ACEC:

For the eastern portion of Gilliam County, the transmission line corridor contains a large part of the Bureau of Land Management (BLM) Horn Butte Curlew Area of Critical Environmental Concern (ACEC). Designated for its long-billed curlew nesting habitat, a management plan was prepared in 1989 proposing land acquisition, livestock management, noxious weed control, and seasonal closure of the area to OHVs. Implementation of all planned actions except OHV management is ongoing. Other ODFW sensitive species include the Ferruginous hawk, Swainson's hawk, burrowing owl, and golden eagle. Additionally, the Washington ground squirrel, an Oregon endangered species and a federal candidate species, under the state and federal Endangered Species Acts, respectively, could inhabit areas within the Horn Butte ACEC.

Both ODFW and BLM protocols for the spatial buffers and restriction dates for the long-billed curlew, Ferruginous hawk, Swainson's hawk, burrowing owl, golden eagle, and Washington ground squirrel should be incorporated into the project proposal within the Horn Butte ACEC and surrounding potential habitat for these species.

Early Project Planning:

The following are initial Service recommendations/comments associated with early project planning:

General

- Who will the Federal nexus be for this project?
- What are the expected direct and indirect effects of the mentioned gas pipeline lateral (that will provide fuel for the Carty Generating Station) that will be proposed as a separate project. Will the gas pipeline/construction enter the Boardman Grasslands anywhere?
- Will there be any construction of new roads (provide miles)? If so, where will these roads be located?
- Facility and transmission line construction should occur outside the breeding season for migratory birds when practical.
- Use existing utility corridors and rights-of-ways to consolidate activities to reduce habitat loss, degradation, and fragmentation by new construction.
- Towers should be sited as close to existing roads/highways as practical.
- Disturbance of grassland/sagebrush to construct and maintain towers should be done in a manner that minimizes the destruction or alteration of the habitat.
- Conduct Washington ground squirrel surveys (consistent with ODFW protocols) within suitable habitat throughout a 1,000 foot buffer of ground disturbing activities. Mitigation measures such as corridor routing and infrastructure placement adjustments should be implemented to avoid impacts to this candidate species. Structures to discourage raptor perching/nesting on Project facilities should be used in areas that support Washington ground squirrels.
- Minimize ground disturbance and reseed/revegetate all temporarily disturbed areas as soon as is practicable. Use appropriate native vegetation.
- Birds that perch on transmission line poles/towers are likely to be at an increased risk of electrocution. Avian-safe design and modification standards for construction of the transmission line system should be followed (APLIC and USFWS 2005). Bird perch/nesting equipment on towers should be evaluated and maintained regularly.
- Conduct fixed point avian use surveys throughout the 1,000 foot development/transmission line corridor.
- Conduct raptor nest surveys to determine production and conservation measures necessary to maintain nest viability identified within the Project area.
- Identify all streams (Willow Creek?) that will require crossings and whether any listed species are present. Methods for stream and riparian crossings should be proposed that prevent harm to fish, wildlife, and their habitats.
- Prepare a weed control plan. Include surveying and mapping of invasive and noxious weeds, pre-construction treatment of the weeds, construction and operation equipment sanitization, and annual/seasonal post-construction treatment of the weeds. Minimize the impact of invasive noxious weeds on potential Washington ground squirrel habitat. Systematic and strategic detection surveys should be developed and conducted in a manner maximizing the likelihood of finding new patches of weeds before they expand.
- Prompt and appropriate habitat reclamation or rehabilitation should occur following a wildfire.
- A habitat mitigation plan should be devised to address impacts to sensitive wildlife habitats in the Project area. The applicant should seek assistance from ODFW to acquire wildlife habitat data and protocols for quantifying important wildlife habitat.

- The Service's Mitigation Policy (Federal Register 46 (15):7644 – 7663) is a good resource for project planning. The Service's mitigation strategy emphasizes a sequential series of steps to avoid project-related impacts, then minimize other project effects, followed by effective restoration, monitoring, and remediation. Finally, the Service Mitigation Policy addresses the need to provide compensatory mitigation for unavoidable project impacts. The Service therefore requests the Project to undertake a deliberative, careful planning process that fulfills the Service's Mitigation Policy.
- Minimize new road construction. All new temporary roads constructed and those used in a temporary manner should be decommissioned after project activity use. Any disturbed ground should be seeded with appropriate native vegetation. Public access to all maintenance roads should be restricted to prevent harassment of wildlife and overuse, which can result in impacts of erosion and sedimentation to habitat. Disturbance from high volume roads can lead to avoidance of otherwise suitable habitat or direct mortality of Washington ground squirrels.
- The applicant should monitor the effects of the transmission line and all infrastructure and maintenance activities associated with it, for a period of five years. This monitoring should focus on Washington ground squirrels and include two years of pre-construction monitoring, one year of construction monitoring, and two years of post-construction monitoring. Consult with ODFW in developing the project monitoring and evaluation plan.

Thank you for the opportunity to provide early Service comments on the NOI for an energy facility site certificate for the Carty Generating Station Project. If you have any questions, please contact Suzanne Anderson at the above address, by email at suzanne_anderson@fws.gov, or by phone at 541-962-8583.

Sincerely,

Gary S. Miller
Field Supervisor

cc:
Kevin Blakely, Oregon Department of Fish and Wildlife, Pendleton, Oregon
Mark Kirsch, Oregon Department of Fish and Wildlife, Pendleton, Oregon
Doug Young, Oregon Fish and Wildlife Office, Portland, Oregon

REFERENCES

Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service. 2005. Avian Protection Plan Guidelines. April 2005. 84 pp.

Attachment 1

Comments regarding the Biological Survey Work Plan for the Carty Generating Station, Boardman, OR.- May 26, 2009.

From: Suzanne Anderson and Jodie Delavan, USFWS, La Grande Field Office
To: Cameron Fisher, Ecology & Environment, Inc.

In your cover letter (dated March 24, 2009) you stated that you are in the early stages of evaluating two proposals for new generating and transmission facilities that could be located in the Boardman area. Please clarify whether there will be an additional proposal. The work plan appears to refer to only one proposal, which consists of the Carty power generating facility and the 18-mile transmission line.

When surveying for Washington ground squirrels (WGS), it is necessary that all individuals have a hearing frequency test to ensure that surveyors are able to hear the high pitched sound of a WGS alarm. Please verify if this will be part of your WGS survey protocol.

Page 4-2, 2nd to last paragraph says, "The objective is to survey all areas of potential suitable habitat for WGS within the Study Area or within 1,000 feet of the Study Area." Page ES-1 talks about a 250 and 350-foot buffer around the study area, depending on the species. Your Figure 4-1 depicts a 1000-foot buffer around the proposed footprint of the generating station and a 1000-foot total width for the transmission line. Please clarify the amount of area to be surveyed for WGS. Because WGS are a state-listed species, ODFW typically recommends that new structures are placed at least 1000 feet away from active WGS sites. The 250 and 350-foot buffers may not be consistent with this recommendation.

Depending on the weather, a 6 am start time for WGS surveys may need to be adjusted. You may need to start surveys later in the morning (8-9 am) when the air temperature warms up, making the squirrels more active. If you have not already, please coordinate with ODFW to follow their recommended survey protocol, including their timing recommendations.

WGS populations appear to be depressed this year. Therefore it is important to take into consideration those peripheral areas that would be inhabited if populations were at the high end of an oscillation cycle. There is a potential for squirrels to move into the area after you survey, especially if there is a long delay between the time you survey and the time you start implementing the project. The Service supports and commends your call to map old burrow holes that show strong signs of being WGS holes. We all know that just because WGS are not present doesn't mean they won't be in the future. However, we also recognize that there are other burrowing mammals in the vicinity that could, if we are not careful, be confused with WGS burrows.

When you describe the potential impacts of the proposed action, please consider that raptors will utilize the towers as nesting habitat which, in turn, could increase predation on WGS. In addition, birds that perch on power poles/towers are likely to be at an increased risk of electrocution. Avian-safe design and modification standards for construction of the power line system should be followed (Avian Power Line Interaction Committee 2006). Bird deflectors as well as perch/nesting equipment on towers should be evaluated. We recommend that you develop an avian protection plan and the following two documents put out by APLIC can help:

Mitigating bird collisions with powerlines, and Suggested practices for avian protection on powerlines.

If surveys are completed in 2010 and the project gets delayed, how many years will you consider your survey data useful? For example, if you find a suitable nest tree that is not being used in 2010 and the project is delayed five years, will there be an opportunity to see if the tree is occupied later?

Is there any pipeline construction involved in this project?

Thank you.

EXHIBIT R

SCENIC RESOURCES
OAR 3450021-0010(l)(r)

TABLE OF CONTENTS

R.1 INTRODUCTION R-1

R.2 SUMMARY R-1

R.3 APPLICABLE FEDERAL, TRIBAL, AND LOCAL PLANNING GUIDELINES AND PLANS R-2

R.4 POTENTIAL IMPACTS ON SCENIC AND AESTHETIC RESOURCES R-3

R.4.1 Visual Characteristics of the Existing Landscape Surrounding the Proposed Plant Site R-4

R.4.2 Visual Characteristics of the Existing Landscape Surrounding the Proposed Transmission Line Corridor R-4

R.4.3 Key Observation Points in the Vicinity of the Proposed Plant Site R-5

R.4.4 Key Observation Points along the Proposed Transmission Line Corridor R-5

R.4.5 Visual Characteristics of the Energy Facility R-5

R.4.6 Impacts on Scenic and Aesthetic Resources of the Proposed Energy Facility Site R-6

R.5 OPPORTUNITY FOR MITIGATION R-7

R.6 MAP R-7

R.7 MONITORING R-8

R.8 COMPLIANCE WITH REGULATORY GUIDELINES SUMMARY R-8

R.9 REFERENCES R-9

APPENDICES

R-1 Scenic Resources – Photographs

FIGURES

R-1 Landscape Character Units

R-2 Zone of Visual Influence

R.1 INTRODUCTION

OAR 345-021-0010(1)(r) *An analysis of significant potential impacts of the proposed facility, if any, on scenic resources identified as significant or important in local land use plans, tribal land management plans and federal land management plans for any lands located within the analysis area, providing evidence to support a finding by the Council as required by OAR 345-022-0080.*

Response: OAR 345-021-0010(1)(r) requires that the Application for Site Certificate for the Carty Generating Station include an analysis of scenic and aesthetic values that the federal and local land use planning agencies have documented as important. Under OAR 345-022-0080, the Energy Facility Siting Council must find that "the design, construction, operations, and retirement of the facility, taking into account mitigation, is not likely to result in significant adverse impact to scenic and aesthetic values identified as significant or important in applicable federal land management plans or in local land use plans in the analysis area." Analysis of the proposed energy facility included all facilities proposed for construction at the Carty Generating Station, as well as the related or supporting Grassland Switchyard and transmission line. Analysis also included potential effects of the construction activity on visual quality and aesthetics. A review of relevant federal, tribal, and local plans indicates that none of these plans identify any scenic or aesthetic values in the analysis area. However, the Oregon State Department of Transportation (ODOT) has classified a portion of State Route (SR) 74 as the Blue Mountain Scenic Byway, including a portion that crosses under the existing and the proposed transmission line. The proposed new transmission line would parallel the existing 500-kilovolt (kV) transmission line in this area.

Based on the analysis described in this section, the Carty Generating Station would have no significant adverse impact on documented important scenic and aesthetic values. The visual impact of the Carty Generating facility is relatively moderate and is located at least 13 miles from any population center. The Carty Generating Station Site Boundary would be set back approximately 8 miles from the Columbia River in an area currently utilized for energy generation and transmission. Public access is not permitted on Portland General Electric (PGE) land or Carty Reservoir for recreational activities.

PGE proposes to utilize the existing 500-kV Boardman to Slatt transmission line as well as construct a new 500-kV transmission line primarily within the existing right-of-way. By paralleling the existing Boardman to Slatt transmission line where it passes over and adjacent to the Blue Mountain Scenic Byway for a short distance, the new transmission line would only moderately increase the degree of visual impact.

R.2 SUMMARY

The proposed energy facility would have some impacts on visual resources but would not result in significant adverse impacts to visual quality within the 10-mile analysis area. The proposed

facility would be built in an area zoned for general industrial use (MG) and Exclusive Farm Use (EFU) that is already occupied by an existing energy facility. It is located approximately 13 miles southwest of Boardman, Oregon, near the existing Boardman Plant in Morrow County, Oregon.

The Carty Generating Station, including switchyard and evaporation ponds, would occupy approximately 90 acres. Visible features of the Carty Generating Station would comprise several large metal buildings, including the combustion turbine generator (CTG) buildings, steam turbine generator (STG) buildings, outdoor heat recovery steam generators (HRSGs), HRSG exhaust stacks, mechanical draft cooling towers, a water treatment building and water tanks, a control and administration building, and generators and auxiliary transformers. The buildings would range from 20 to 100 feet high and would be constructed with metal siding and roofs. Each HRSG would be a metal structure occupying a footprint of approximately 150 by 40 feet. Three insulated drums would be located on top of each HRSG at an elevation of approximately 100 feet. Each HRSG would connect to the back of a CTG building and would also connect to a steel exhaust stack approximately 200 feet tall and 19 feet in diameter. The Grassland Switchyard would occupy approximately 15 acres, of the overall 90 acres, within a fenced enclosure west of the Carty Generating Station structures. Potential visual impacts could be minimized by painting the buildings and structures to reduce visual contrast and, while keeping in mind security and safety, by shielding and directive devices for lighting. The Carty Generating Station would also include several lined evaporation ponds that would only be visible from elevated ground.

The proposed new transmission line would parallel the existing 500-kV Boardman to Slatt transmission line, and the proximity of the proposed line to the existing line would reduce the visual impacts from the new line. There is only one roadway crossing and one additional area where the transmission line can be seen. Both have limited observation opportunities because of the short duration of view. For this reason, travelers along the Blue Mountain Scenic Byway would have a limited view of the new transmission line, and it would be somewhat mitigated by the existing Boardman to Slatt transmission line. The new construction would take place within the existing transmission line corridor and would be similar to the type of towers used by the existing transmission line. In addition, roadway crossings are usually of short duration with the towers set back from the roadway as far as possible, thereby lessening the visual impact.

R.3 APPLICABLE FEDERAL, TRIBAL, AND LOCAL PLANNING GUIDELINES AND PLANS

OAR 345-021-0010(1)(r)(A) *A list of the local, tribal and federal plans that address lands within the analysis area.*

OAR 345-021-0010(1)(r)(B) *Identification and description of the scenic resources identified as significant or important in the plans listed in OAR 345-021-0010(1)(r)(A).*

Response: No applicable federal plans addressing scenic or aesthetic resources were identified pertaining to the 10-mile analysis area surrounding the proposed facility. The analysis area is outlined in Figure R-1. The Morrow County, Oregon, Comprehensive Plan does not identify any specific county scenic resources (Morrow County 1986).

Finding 1 of Part Five of the Gilliam County Comprehensive Land Use Plan, dated October 25, 2000, states that open space is a characteristic of Gilliam County and that no effort exclusively directed toward acquisition of additional open space is necessary. Finding 2 goes on to state that the rock outcroppings marking the rim and walls of steep canyon slopes are an important characteristic of the county's landscape (Gilliam County 2000).

ODOT has designated SR 74 as the Blue Mountain Scenic Byway, a portion of which is located in Gilliam County. The western portal is located at Heppner Junction off Interstate 84 between Arlington and Hermiston. The area crossed by the existing and the proposed transmission lines is identified as "the lowlands." The transmission line associated with the Carty Generation Station, a new 500-kV line, would cross a segment of SR 74 in close proximity to the existing Boardman to Slatt 500-kV transmission line. A second opportunity to view the transmission line is approximately 2 miles south of the point where the existing line crosses SR 74 and the transmission line runs adjacent to SR 74. Notably, Gilliam County's plans do not designate any significant areas of scenic or aesthetic value in the vicinity of SR 74.

R.4 POTENTIAL IMPACTS ON SCENIC AND AESTHETIC RESOURCES

OAR 345-021-0010(1)(r)(C) *A description of potential significant adverse impacts to the scenic resources identified in OAR 345-021-0010(1)(r)(B), including, but not limited to, potential impacts such as:*

(i) Loss of vegetation or alteration of the landscape as a result of construction or operation;

(ii) Visual impacts of facility structures or plumes;

Response: Although no significant or important scenic or aesthetic values are identified in federal or local plans, PGE conducted an analysis of existing aesthetic and scenic resources. Typical of a scenic and aesthetic resources study, a zone of visual influence (ZVI) was identified for evaluation purposes as an area extending up to 10 miles outward from the Energy Facility Site (See Figure R-2). The process for analyzing visual quality and scenic resources included the following steps:

1. Reviewing documentation for applicable federal, tribal, state, and local planning policies;

2. Reviewing the proposed site plans, aerial photographs, and maps of the area surrounding the proposed Carty Generating Station;

3. Nominating potential key observation points (KOPs) from site plans, aerial photographs, and maps;

4. Evaluating and photographing KOPs in the field;

5. Assessing visual sensitivity of the KOPs based on the type of user, the amount of use, the amount of public interest, and the adjacent land uses;

6. Determining scenic quality based on landform, vegetation, water, color, adjacent scenery, scarcity of the scenic resource, and existing cultural modifications; and

7. Identifying opportunities for mitigation of any impacts that may be caused by construction or operation of the facility.

Based on this analysis, the construction and operation of the Carty Generating Station would result in minimal visual or aesthetic impacts due to the geographical location of the site, topography that creates numerous valleys, adjacent industrial structures, and distance from populated areas.

Scenic and aesthetic resources analysis focused on the landscape character in the vicinity of the Carty Generating Station, visually sensitive areas, and KOPs. Analysis of these features was based on the Bureau of Land Management Visual Resource Management System.

R.4.1 Visual Characteristics of the Existing Landscape Surrounding the Proposed Plant Site

The Energy Facility Site is located in an area primarily comprising three landscape character units and in an industrial area. These landscape units consist of 1) relatively flat sagebrush rangeland, 2) commercial irrigated agricultural lands, and 3) a large reservoir. The Energy Facility Site is located within the Boardman Power Plant industrial area, which is adjacent to large commercial farms to the west and open sagebrush rangeland to the north, and east. Directly to the south of the Energy Facility Site lies Carty Reservoir, and additional rangeland and dry land farming areas are located south of the reservoir. The Energy Facility Site would be located next to the existing Boardman power generation plant but is not associated with it. The area where construction would occur is relatively flat sagebrush open land.

R.4.2 Visual Characteristics of the Existing Landscape Surrounding the Proposed Transmission Line Corridor

The proposed transmission line would be built adjacent to the existing 500-kV Boardman to Slatt transmission line. The terrain in this area is relatively flat and consists of commercial agricultural land in Morrow County and predominately sagebrush rangeland in Gilliam County. There are very few roads in the area of the transmission corridor except for SR 74. The landscape character of the land crossed by the transmission line is generally an irrigated valley associated with Willow Creek. In the area where the transmission line would cross Willow

Creek, the valley is bordered on two sides by relatively steep cliffs. The valley can be characterized as rural farmland. SR 74 is classified as a Scenic Byway and passes under the existing transmission line. The view of the new transmission line would be somewhat mitigated by the existing transmission line, the short duration of the view, and the more predominant views of the canyon walls, irrigated farmland, and associated structures and Willow Creek.

R.4.3 Key Observation Points in the Vicinity of the Proposed Plant Site

A KOP is identified as an area that is visually sensitive based on its volume of use, expectation for scenic views, and duration of view. KOPs are public viewing locations identified as most representative of visually sensitive locations for viewing the proposed facilities, and they focus the viewers' attention on a particular vantage point or panoramic vista. The analysis of KOPs included identification of potential viewing locations, using ZVI analysis and available mapping. These KOPs are then field-tested through site visitation and photo documentation. One potential KOP was identified and evaluated for visual sensitivity. Due to the relatively isolated location of the proposed energy facility, this KOP is located near the entrance to the existing Boardman Power Plant and proposed Carty Generating Station. The visual sensitivity was judged to be low because the majority of viewers traveling on the road are power plant employees, who would expect to see the Carty Generating Station. The proposed Carty Generating Station is located in an existing industrial area associated with an existing industrial use. Photograph 1 in Appendix R-1 displays this location.

R.4.4 Key Observation Points along the Proposed Transmission Line Corridor

A transmission line serving the proposed Carty Generation Station would be constructed adjacent to the existing Boardman to Slatt 500-kV transmission line. One SR 74 crossing was identified as an important KOP for the proposed transmission line. A second KOP was identified approximately 1.5 miles to the south, where the proposed transmission line would be adjacent to SR 74. Each of these areas was observed and photographed from both directions, as shown in images in Appendix R-1. The viewer sensitivity of these KOPs was judged to be low to moderate because of the limited duration of time that the transmission line would be in view.

R.4.5 Visual Characteristics of the Energy Facility

The energy facility would be constructed on a flat, open area, zoned as M-G and EFU, which is already occupied by an existing energy facility. Existing vegetation consists of grasses and sagebrush. The Carty Generating Station, including the switchyard and evaporation ponds, would occupy approximately 90 acres. Visible features of the Carty Generating Station would comprise several large metal buildings, including CTG buildings, STG buildings, outdoor HRSGs, HRSG exhaust stacks, mechanical draft cooling towers, a water treatment building and water tanks, a control and administration building, and generators and auxiliary transformers. The buildings would range from 20 to 100 feet high and would be constructed with metal siding and roofs.

Each HRSG would be a metal structure occupying a footprint of approximately 150 by 40 feet. Three insulated drums would be located on top of each HRSG at an elevation of approximately 100 feet. Each HRSG would connect to the back of a CTG building and would also connect to a steel exhaust stack approximately 200 feet tall and 19 feet in diameter (see Exhibit B for further details).

Phase 1 of construction would require approximately 25 acres of land adjacent to the Carty Generating Station for temporary construction facilities; an additional 15 acres would be required for Phase 2 of construction, resulting in a total of 40 acres of temporarily disturbed area once both phases of construction are complete. Up to four evaporation ponds, occupying approximately 58 acres, could be required; some of these evaporation ponds would be located within fenced areas, and some would be located outside the Carty Generating Station fenced area.

R.4.6 Impacts on Scenic and Aesthetic Resources of the Proposed Energy Facility Site

Although no federal, tribal, state, or county land management plans identify any significant visual or aesthetic sites within a 10-mile radius of the Carty Generating Station, PGE conducted an analysis to determine whether any scenic or aesthetic resources would be affected by the facility. The most prominent visible features of the proposed facility would be the two 200-foot tall exhaust stacks, which would be in high contrast to the natural flat sagebrush landscape.

Cooling tower dimensions are expected to be approximately 400 by 65 feet or 300 by 120 feet, with the top of the paneled structure approximately 40 feet above grade and top of the fan exhaust bell housing approximately 50 feet above grade. These facilities would be moderately visible. However, they would blend in with the existing industrial buildings already constructed on the site and would cause moderate visual contrast to the surrounding sagebrush landscape unit.

The vapor plumes emanating from cooling towers and exhaust stacks are expected to dissipate before they reach the skyline from most vantage points, limiting impact to the contrast between the light color of the plume and the skyline. The plume from the cooling tower of the Carty Generating Station might be visible from existing public road and highway, from Boardman airport, from agricultural facilities, from private residences, and from the existing power plant.

At night, the cooling tower plume might not be visible, depending on clarity and cloud cover. The period of maximum visual impact would be during clear, cold, and calm days. Based on meteorological records, cooler ambient temperatures that would tend to promote formation of a visual plume occur typically during the period from November through March. Cloud cover is often present in the winter months, which would tend to obscure the cooling tower plume and lessen its visual impact. Thus, the plume generated by the cooling towers is not expected to generate significant visual impact due to ambient weather conditions and cloud cover.

Lighting of the proposed facility would increase its visibility during dark hours. Exterior lighting would be necessary for safety and security, especially on the exhaust stacks. However,

with the exception of Federal Aviation Administration lighting on the exhaust stacks, most lighting would be shielded or directed to minimize visual impacts.

Visual impacts of the Carty Generating Station and associated Grassland Switchyard and transmission line would be moderate in sensitivity and contrast because the new line would be visually associated with existing lines and industrial facilities in the area (Appendix R-1).

Short-term impacts on visual quality from construction of the proposed facility would not be significant. Minor impacts could include the visibility of construction equipment such as cranes, scaffolding, etc. at times during the 18-month to 3-year construction period.

In summary, the proposed Carty Generating Station and its associated transmission line would add industrial features to an existing industrial development, creating moderate new visual impacts. Consequently, the proposed energy facility and the proposed transmission line represent a low impact to the visual quality of the Carty Generating Station area and the transmission line corridor.

R.5 OPPORTUNITY FOR MITIGATION

OAR 345-021-0010(1)(r)(D) *The measures the applicant proposes to avoid, reduce or otherwise mitigate any significant adverse impacts.*

Response: Proposed structures would be painted with low-glare paint, and colors would be chosen to best complement the surrounding landscape foreground and background colors. Except for lighting used for safety and Federal Aviation Administration warning, night lighting fixtures and mounting would be selected to guide light downward, helping to minimize lighting and illumination seen from off site.

R.6 MAP

OAR 345-021-0010(1)(r)(E) *A map or maps showing the location of the scenic resources described under OAR 345-021-0010(1)(r)(B).*

Response: Figure R-1 shows the location of the main landscape character units (scenic and aesthetic values) addressed in the present analysis. No protected scenic resource areas exist in the 10-mile visual analysis area.

R.7 MONITORING

OAR 345-021-0010(1)(r)(F) *The applicant's proposed monitoring program, if any, for impacts to scenic resources.*

Response: No significant adverse impacts would occur to scenic and aesthetic values identified as important in applicable federal or tribal land management plans and local land use plans. Therefore, no monitoring effort is proposed.

R.8 COMPLIANCE WITH REGULATORY GUIDELINES SUMMARY

The proposed Project would comply with all applicable regulatory guidelines concerning scenic and aesthetic resources, as discussed in OAR 345-021-0010(l)(r)(A), (B), (C), (D), (E) and (F).

OAR 345-021-0010(1)(r)(A) *A list of the local, tribal and federal plans that address lands within the analysis area.*

Response: No applicable federal or tribal plans addressing scenic or aesthetic resources were identified pertaining to the area surrounding the proposed facility. The county and local plans do not designate any significant areas from which the proposed plant or transmission lines would be visible. ODOT has classified a portion of SR 74 as the Blue Mountain Scenic Byway, which the proposed transmission line would pass over adjacent to the existing 500-kV Boardman to Slatt transmission line.

OAR 345-021-0010(1)(r)(B) *Identification and description of the scenic resources identified as significant or important in the plans listed in OAR 345-021-0010(1)(r)(A).*

Response: A review of relevant federal, tribal, and local plans indicates that none of these plans identify any scenic or aesthetic values in the analysis area. However, ODOT has classified a portion of SR 74 as the Blue Mountain Scenic Byway.

OAR 345-021-0010(1)(r)(C) *A description of potential significant adverse impacts to the scenic resources identified in OAR 345-021-0010(1)(r)(B), including, but not limited to, potential impacts such as:*

(i) Loss of vegetation or alteration of the landscape as a result of construction or operation;

Response: The proposed Energy Facility Site would occupy approximately 90 acres adjacent to flat, vacant land covered with grasses and sagebrush. No large trees would be removed from the site.

(ii) Visual impacts of facility structures or plumes;

Response: The most prominent feature of the proposed facility would be the two HRSG 200-foot exhaust stacks. Visual impact would be lessened because of the existing Boardman Plant, the low number of viewers (most viewers would be the employees of the Boardman or Carty facilities), and the short duration of the view.

The vapor plumes would have a moderate impact upon the view from Tower Road. Exhibit Z provides a detailed cooling tower plume assessment.

OAR 345-021-0010(1)(r)(D) *The measures the applicant proposes to avoid, reduce or otherwise mitigate any significant adverse impacts.*

Response: See Section R.4, Opportunity for Mitigation.

OAR 345-021-0010(1)(r)(E) *A map or maps showing the location of the scenic resources described under OAR 345-021-0010(1)(r)(B).*

See Figures R-1 and R-2.

OAR 345-021-0010(1)(r)(F) *The applicant's proposed monitoring program, if any, for impacts to scenic resources.*

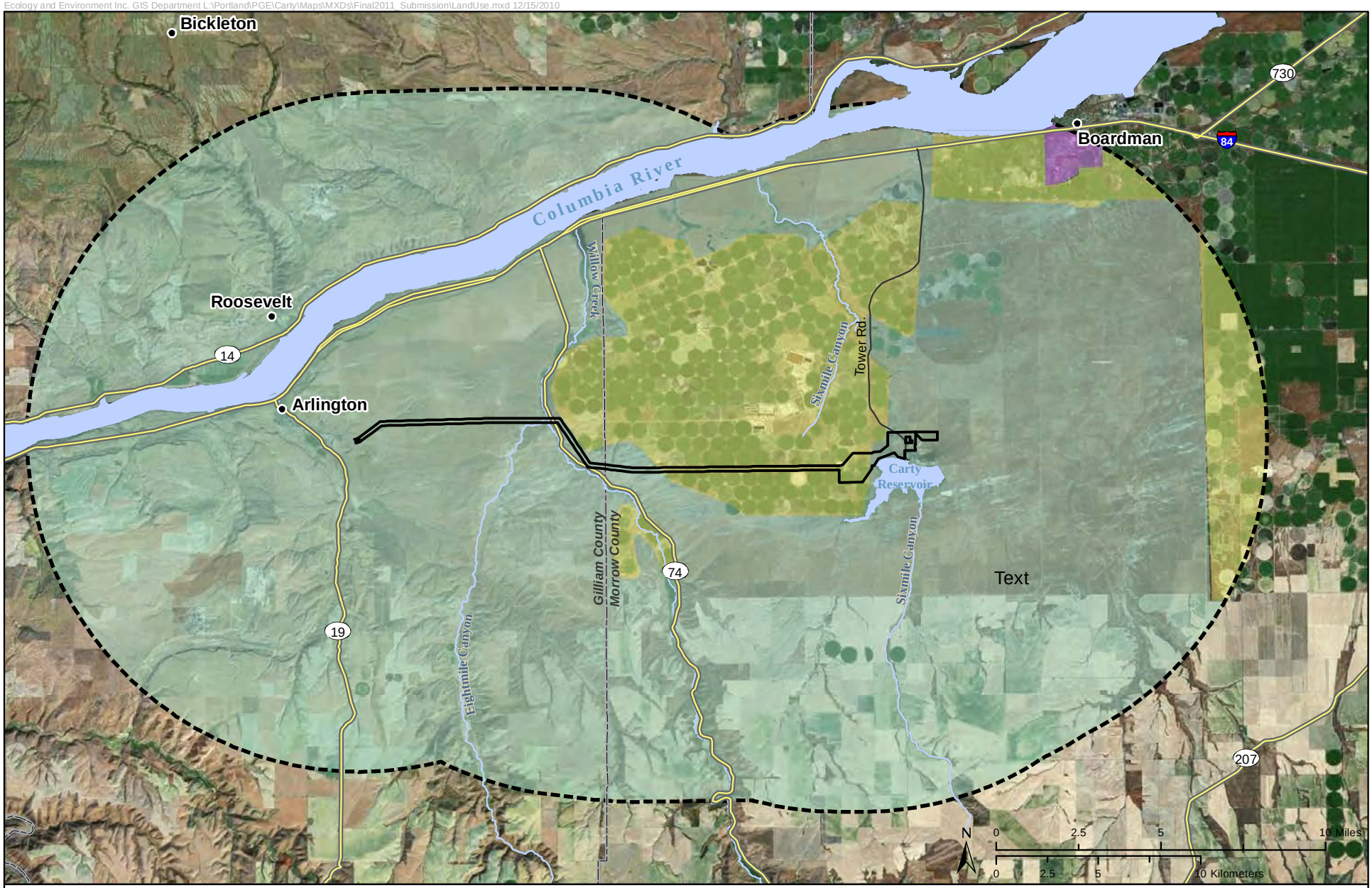
Response: Due to the lack of visual and aesthetic impacts, no monitoring program is proposed for the Project.

R.9 REFERENCES

Gilliam County. 2000. Draft Gilliam County Comprehensive Plan. Condon, Oregon.

Morrow County. 1986. Morrow County Comprehensive Land Use Plan. Heppner, Oregon.

Ecology and Environment Inc. GIS Department L:\Portland\PGE\Carty\Maps\MXDs\Final2011_Submission\LandUse.mxd 12/15/2010



Site Boundary
Slatt Substation
10 Mile Radius

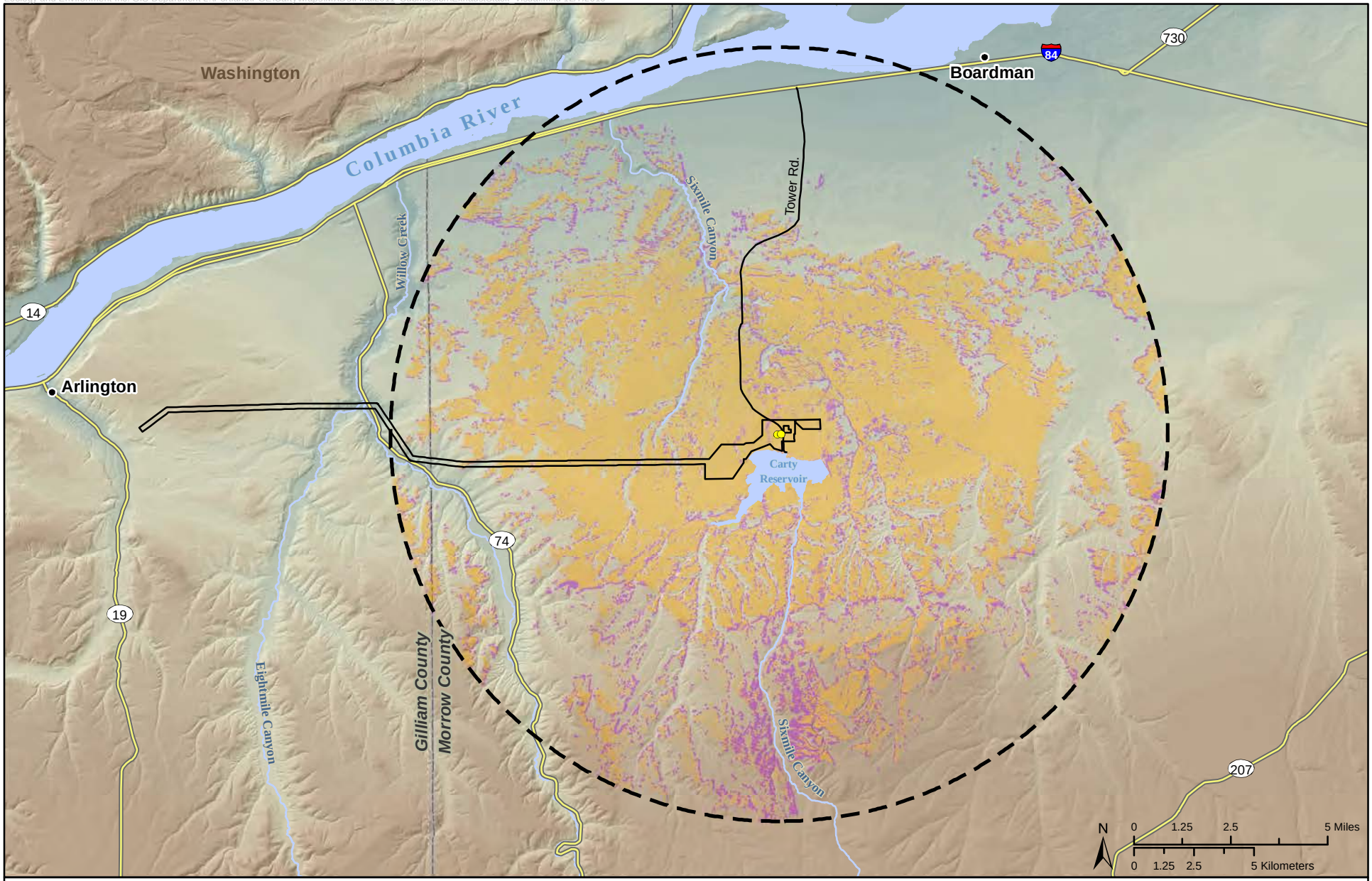
LandscapeCharacterUnits
Shrub/Scrub

Cultivated Crops
Developed
Open Water

Figure R-1
Landscape Character Units
PGE Carty Generating Station
Application for Site Certificate

Final 2011

Ecology and Environment Inc. GIS Department L:\Portland\PGE\Carty\Maps\MXDs\Final2011_Submission\ExhaustStack_Visual.mxd 12/7/2010



200 Foot Exhaust Stack
10 Mile Buffer of Stacks

Zone of Visual Influence
1 Stack Visible
2 Stacks Visible

Site Boundary

Figure R-2
Zone of Visual Influence
PGE Carty Generating Station
Application for Site Certificate

Final 2011

APPENDIX R-1

Scenic Resources - Photographs

APPENDIX R – 1

Scenic Resources Analysis Process

The process for analyzing visual quality and scenic resources included the following steps:

1. Reviewing documentation for applicable federal, tribal, state, and local planning policies
2. Reviewing the proposed project site plans, aerial photographs, and maps of the project area
3. Nominating potential key observation points (KOPs) from site plans, aerial photographs, maps and discussions with knowledgeable project individuals
4. Evaluating and photographing KOPs in the field
5. Assessing visual sensitivity of the KOPs based on: the type of user, the amount of use, the amount of public interest, and the adjacent land uses
6. Determining scenic quality based on: landform, vegetation, water, color, adjacent scenery, scarcity of the scenic resource, and existing cultural modifications
7. Identifying opportunities for mitigation if there are impacts caused by the project

The scenic resources analysis included the visual assessment and analysis of the Carty Generating Station. Analysis included evaluation of views of the project construction site and the associated transmission line. None of the KOPs proved to be significant therefore no mitigation was suggested. The following photographs are the KOPs that were evaluated.

Photo 1: KOP 5 - Proposed Energy Facility Site

Photo 2: KOP 1 - SR 74 Looking South at Existing PGE Transmission Line

Photo 3: KOP 2 - SR 74 Looking North at Existing PGE Transmission Line

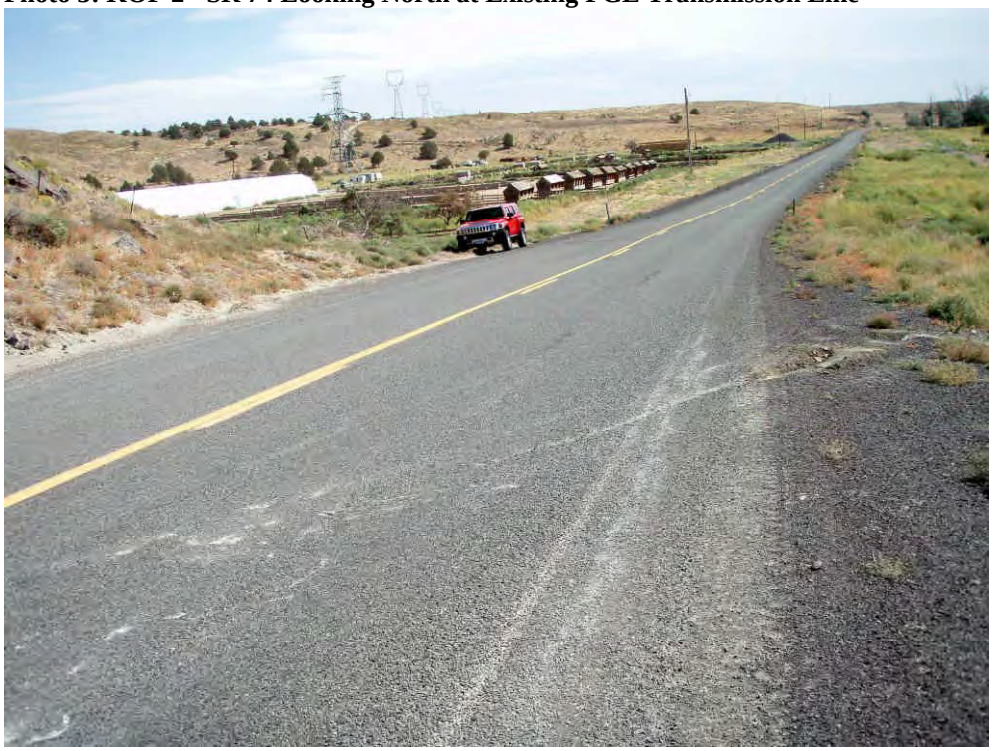


Photo 4: KOP 3 - SR 74 Looking South at Existing PGE Transmission Line

Photo 5: KOP 4 - SR74 Looking North at Existing PGE Transmission Line

EXHIBIT S

HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES
OAR 345-021-0010(1)(s)

TABLE OF CONTENTS

S.1 INTRODUCTION.....S-1

S.2 HISTORIC AND CULTURAL RESOURCES LISTED, OR POSSIBLY ELIGIBILE FOR LISTING, ON THE NATIONAL REGISTER OF HISTORIC PLACES.....S-1

S.3 ARCHAEOLOGICAL OBJECTS AND SITES ON PRIVATE LANDS WITHIN THE ANALYSIS AREA.....S-1

S.4 ARCHAEOLOGICAL OBJECTS AND SITES ON PUBLIC LANDS WITHIN THE ANALYSIS AREA.....S-2

S.5 SIGNIFICANT POTENTIAL IMPACTS OF CONSTRUCTION, OPERATION, AND RETIREMENT OF THE FACILITY ON HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES.....S-3

S.5.1 Methodology S-3
S.5.1.1 Records Review.....S-3
S.5.1.2 Field Surveys S-4
S.5.2 Survey and Inventory Results.....S-4
S.5.3 Measures Designed to Prevent Destruction of Historic, Cultural, and Archaeological Resources.....S-5
S.5.4 Permit Application S-6

S.6 PROPOSED MONITORING PROGRAM S-7

S.7 REFERENCES.....S-8

S.1 INTRODUCTION

OAR 345-021-0010(1)(s) *Information about historic, cultural, and archaeological resources providing evidence to support a finding by the Council as required by OAR 345-022-0090, including:*

Response: This exhibit summarizes information collected about historical, cultural, and archaeological resources within the Site Boundary for the proposed Portland General Electric (PGE) Carty Generating Station. The total size encompassed by the Site Boundary is approximately 2,400 acres. To identify historic, cultural, and archaeological resources within the Site Boundary, Archaeological Investigations Northwest, Inc. (AINW), conducted a records review followed by a field survey. The records review included the area within and near the Site Boundary, and the field survey was conducted within selected portions of the Site Boundary identified as the analysis area. The analysis area was approximately 780 acres and included the portions of the Site Boundary that would be impacted by the construction of the transmission line and the new power plant. The results of AINW's work are summarized below. A more detailed description of the methods and results of AINW's cultural resource survey and recommendations regarding the resources' eligibility for listing in the National Register of Historic Places (NRHP) can be found in the cultural resource technical report (Buchanan et al. 2009), which is submitted separately as a confidential document to prevent public disclosure of protected archaeological site location information.

S.2 HISTORIC AND CULTURAL RESOURCES LISTED, OR POSSIBLY ELIGIBILE FOR LISTING, ON THE NATIONAL REGISTER OF HISTORIC PLACES

OAR 345-021-0010(1)(s)(A) *Historic and cultural resources within the analysis area that have been listed, or would likely be eligible for listing, on the National Register of Historic Places;*

Response: There were no historic or cultural resources identified within the analysis area.

S.3 ARCHAEOLOGICAL OBJECTS AND SITES ON PRIVATE LANDS WITHIN THE ANALYSIS AREA

OAR 345-021-0010(1)(s)(B) *For private lands, archaeological objects, as defined in ORS 358.905(1)(a), and archaeological sites, as defined in ORS 358.905(1)(c), within the analysis area;*

Response: Within the analysis area, the Applicant identified five archaeological resources. All five are located on private land and fall under the definition of either archaeological object under ORS 358.905 (1) (a) or archaeological site under ORS 358.905(1)(c).

The following discussion describes the character of the identified archaeological resources. These discussions provide general information about the attributes of the archaeological resources used to make recommendations on their NRHP eligibility.

Isolates

The Oregon State Historic Preservation Office (SHPO) defines archaeological isolates, in part, as nine or fewer artifacts found in a given location that can be associated with a particular activity that occurred in the past (SHPO 2007). Archaeological isolates fall within the definition of archaeological objects. Two isolates were identified in the analysis area; both are single prehistoric artifacts. One isolate (09/1778-B2) was a single cryptocrystalline silicate flake found in a shovel test. The other isolate (09/1778-5A) was the distal end of a bifacially worked obsidian projectile point found on the ground surface. No further work is recommended at the isolate locations because they do not appear to be part of larger archaeological sites, and are recommended not eligible for listing in the NRHP as they are not likely to contribute information important in prehistory.

Sites

The Oregon SHPO defines archaeological sites, in part, as 10 or more artifacts found in a given location that can be associated with a particular activity that occurred in the past (SHPO 2007). There are three archaeological sites within the analysis area: a prehistoric archaeological site and two historic-period archaeological sites. The prehistoric archaeological site (35MW19) is a lithic scatter previously identified within the analysis area. Archaeological site 35MW19 was recorded as containing a few scattered lithic flakes and a stone knife fragment. The historic-period archaeological sites consist of remnants of the Heppner branch of the Oregon Railway and Navigation Company Railroad (Smithsonian Trinomial 35GM245, temporary number 09/1778-B3) and an early twentieth-century trash scatter (Smithsonian Trinomial 35GM246, temporary number 09/1778-3A). All that is left of the railroad is its crushed gravel ballast that formed a bed for its ties and rails, which were removed in 1974. The trash scatter is sparse and does not appear to be associated with significant historical events or persons.

S.4 ARCHAEOLOGICAL OBJECTS AND SITES ON PUBLIC LANDS WITHIN THE ANALYSIS AREA

OAR 345-021-0010(1)(s)(C) *For public lands, archaeological sites, as defined in ORS 358.905 (1)(c) , within the analysis area;*

Response: Although the majority of the analysis area is located on private lands, portions of the analysis area are located on public lands managed by the State of Oregon. No archaeological or historic resources were identified on state land.

S.5 SIGNIFICANT POTENTIAL IMPACTS OF CONSTRUCTION, OPERATION, AND RETIREMENT OF THE FACILITY ON HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

OAR 345-021-0010(1)(s)(D) *The significant potential impacts, if any, of the construction, operation, and retirement of the proposed facility on the resources described in paragraphs (A), (B), and (C) and a plan for protection of those resources that includes at least the following:*

S.5.1 Methodology

OAR 345-021-0010(1)(s)(D)(i) *A description of any discovery measures, such as surveys, inventories, and limited subsurface testing work, recommended by the State Historic Preservation Officer and the National Park Service of the U.S. Department of Interior for the purpose of locating, identifying, and assessing the significance of resources listed in paragraphs OAR 345-021-0010(1)(s)(A), OAR 345-021-0010(1)(s)(B), and OAR 345-021-0010(1)(s)(C).*

Response: AINW's methods for the cultural resource survey included a records review (S.5.1.1) and subsequent field surveys (S.5.1.2).

S.5.1.1 Records Review

AINW conducted a records review at the Oregon SHPO in Salem, reviewing reports and forms associated with previous archaeological and historical studies to determine if buildings, structures, districts, objects, or archaeological resources had been previously recorded within the Site Boundary and its vicinity. The literature review also included regional and local environmental histories, ethnographic studies, and documents pertaining to local Euroamerican history. The results of the records review, which are described in detail in AINW's technical report (Buchanan et al. 2009), are summarized here.

One previously recorded archaeological site is present within the analysis area. The archaeological site is 35MW19, also known as "The Northwestern Outlet Site." The archaeological site is a prehistoric lithic scatter that contained flakes and a stone tool (a knife). No documentary evidence was found to indicate that this archaeological site's eligibility for listing in the NRHP was previously determined.

Records at the Oregon SHPO identified three previous archaeological surveys within the analysis area and show that numerous archaeological resources have been identified in the local area.

S.5.1.2 Field Surveys

Following the records review, AINW conducted a pedestrian field survey and shovel testing within the analysis area portion of the Site Boundary. The pedestrian survey and shovel testing were conducted between October 28 and November 6, 2009. The archaeological field investigations were carried out in conformance with SHPO standards and guidelines (SHPO 2007). The archaeological pedestrian survey was performed by professional archaeologists walking parallel transects spaced 20 meters (m) (66 feet) apart. More closely spaced transects were used when archaeological resources were encountered and in the area of previously recorded archaeological site 35MW19.

During the pedestrian survey, areas where ground surface visibility was poor (less than 30%) and where environmental contexts suggested that archaeological resources might be present were designated as areas to shovel test due to their high probability of containing subsurface archaeological resources. Ninety shovel tests were excavated within the analysis area. If an artifact was found in a shovel test, additional shovel tests were excavated to determine whether the resources were isolated finds (nine or fewer artifacts) or archaeological sites (10 or more artifacts) and to delineate archaeological site boundaries as much as possible without excavating within the boundaries of a known archaeological site, which requires an archaeological excavation permit.

Field data collected by the archaeological survey crews indicated that no buildings or structures over 45 years in age were located within the analysis area.

S.5.2 Survey and Inventory Results

OAR 345-021-0010(1)(s)(D)(ii) *The results of surveys, inventories, and subsurface testing work recommended by the state and federal agencies listed in subparagraph (i), together with an explanation by the applicant of any variations from the survey, inventory, or testing recommended;*

Response: As a result of the records review and cultural resource fieldwork, five cultural resources were identified within the analysis area. These resources consist of two previously unrecorded archaeological isolates, two previously unrecorded archaeological sites, and one previously recorded archaeological site.

The previously recorded archaeological site, 35MW19, was recorded during a survey for the Carty Reservoir (Cole 1977). The archaeological site was described as containing scattered lithic flakes and a stone tool. Evidence of archaeological site 35MW19 was not relocated during the current pedestrian survey and shovel testing of the analysis area. Close interval pedestrian transects were walked throughout the recorded archaeological site boundaries, and 18 shovel tests were excavated close to the archaeological site. Because the archaeological site was not relocated during the current phase of work, the eligibility of the archaeological site cannot be evaluated at this time. Avoidance of the archaeological site area is recommended. No ground-

disturbing construction work should occur within the recorded boundary of the archaeological site. In addition, a buffer of 30 m (100 feet) around the periphery of the recorded site boundary should be staked and marked with ropes or flagging or marked with construction fencing to exclude construction or other ground-disturbing activities from the buffer area around the recorded archaeological site boundary as well as from the area within the recorded archaeological site boundary. Monitoring is recommended if impacts will occur near the site buffer, in the area between the 30-m (100-foot) buffer and the shovel tests excavated during the survey phase of work. Any existing roads that pass through the site may still be used, but the roads should not be improved or maintained, within the site buffer, if those improvements involve grading or other ground-disturbing activities.

The two archaeological isolates and two archaeological sites newly identified during the current phase of work are recommended not eligible for listing in the NRHP within the project analysis area. The two isolates are, by SHPO definition, not eligible for listing in the NRHP. The two archaeological sites were both historic-period resources (a railroad grade and a trash scatter).

The portion of the railroad grade (35GM245) within the project corridor along the proposed transmission line does not contribute to the potential significance of the resource, and project construction activities near the railroad grade, within the project analysis area, should proceed as planned. Additional evaluation work may be needed if portions of the railroad outside of the project analysis area would be impacted, in order to assess the potential significance of the railroad in that area.

Surface artifacts at the historic-period trash scatter archaeological site (35GM246) are both sparse and lacking in attributes that would make the site important in history. Based on analysis of context and character of the historic-period trash scatter, subsurface archaeological deposits are unlikely to be present, and therefore no further work is recommended.

The four newly recorded resources within the project analysis area are unlikely to contribute important information regarding the history and prehistory of the area. AINW recommends that they do not need to be avoided during construction or maintenance of the facility. If there are changes to the design plans, or if the project area expands into any new areas, additional archaeological surveys would be necessary to determine whether archaeological resources are present in the expanded areas.

S.5.3 Measures Designed to Prevent Destruction of Historic, Cultural, and Archaeological Resources

OAR 345-021-0010(1)(s)(D)(iii) *A list of measures to prevent destruction of the resources identified during surveys, inventories, and subsurface testing referred to in subparagraph (i) or discovered during construction; and*

Response: The Applicant will take reasonable measures to avoid physical damage or ground disturbing activity in the area of archaeological site 35MW19, which does not appear to have

been formally evaluated for NRHP eligibility. This avoidance area will include the defined resource boundaries and a buffer area of an additional 30 m (100 feet) beyond the recorded resource boundaries. This buffer area will be marked with temporary fencing or stakes with rope and/or flagging to prevent inadvertent impacts to the site. The size of the buffer may be revised for particular locations in coordination with the Oregon SHPO and the appropriate Tribe(s). If avoidance of the area between the shovel tests conducted during the survey phase of archaeological work and the 30-m (100-foot) buffer is not practicable, then archaeological monitoring of the construction or other ground disturbing activities will be implemented in this area near the site.

If any changes are made to the design plans or if the project area expands so that ground-disturbing construction will occur outside of the 780-acre analysis area surveyed for archaeological and historical resources, then additional surveys will be necessary. The project proponent will contract with a qualified archaeologist to conduct this work, if needed.

S.5.4 Permit Application

OAR 345-021-0010(1)(s)(D)(iv) *A completed copy of any permit applications submitted pursuant to ORS 358.920. Notwithstanding OAR 345-021-0000(4), the applicant shall include copies of the permit applications as part of the site certificate application. If the same information required by subparagraphs (i) through (iii) above is contained in the permit applications, then the applicant may provide cross-references to the relevant sections of the permit applications in substitution.*

Response: No permit applications have been submitted at this time. If the area of archaeological site 35MW19 cannot be avoided, the applicant will direct the site archaeologist to apply for necessary archaeological excavation permits from SHPO. Likewise, in the event that previously undiscovered archaeological sites or human remains are inadvertently disturbed during construction, additional work will be needed.

Inadvertent Discovery of Archaeological Resources

Construction activity within 30 m (100 feet) of an inadvertent archaeological discovery would stop immediately, as per ORS 358.920. The project proponent shall immediately notify a professional archaeologist. The consulting archaeologist would make a preliminary assessment of whether the archaeological material is potentially significant and recommend additional steps to mitigate the effect on the resource. This assessment and recommendation must be sent to Oregon SHPO for concurrence prior to commencement of any ground-disturbing activities. The Oregon SHPO may ask the project sponsor to retain a consulting archaeologist to assist in the development of a treatment plan for the resource, depending upon factors such as the nature of the discovery, the project scope, and the statutory jurisdiction.

Inadvertent Discovery of Human Remains

If human remains are inadvertently discovered during the planned project, and are not clearly modern, then there is a high probability that the remains are Native American, and therefore Oregon Revised Statute 97.740-.760 would apply. These statutes require immediate notification to the State Police, the SHPO, the Commission on Indian Services, and the appropriate Native American tribes. For the PGE Carty Generating Station project, the Legislative Commission on Indian Services has determined that the appropriate Native American tribes are the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of Warm Springs, the Confederated Tribes and Bands of the Yakama Indian Nation, and the Nez Perce Tribe. All parties involved should implement a culturally sensitive plan for the reburial of the remains. The remains and associated objects should not be disturbed, manipulated, or transported from the original location until a plan is developed in consultation with the parties named above. These actions will help ensure compliance with Oregon state law that prohibits any person from willfully removing human remains and/or objects of cultural significance from their original location (ORS 97.745).

S.6 PROPOSED MONITORING PROGRAM

OAR 345-021-0010(1)(s)(E) *The applicant's proposed monitoring program, if any, for impacts to historic, cultural, and archaeological resources during construction, operation and retirement of the proposed facility;*

Response: Monitoring of the area near site 35MW19 is proposed if any construction or ground-disturbing activities are expected to occur near the site, in the area between the shovel tests conducted during the survey phase of work and the delineated 30-m (100-foot) buffer around the recorded site boundaries. Such monitoring would be undertaken within the framework of an Archaeological Monitoring Protocol, which is defined below:

- The project proponent will be responsible for providing a qualified archaeological monitor for any ground-disturbing project construction activity that occurs within the area between the shovel tests excavated by AINW in 2009 and the delineated 30-m (100-foot) buffer around 35MW19. No ground-disturbance is permitting within the site boundaries or the 30-m (100-foot) buffer around the site.

- A qualified archaeological monitor is a person who meets the "qualified archaeologist" standards defined by ORS 390.235(6)(b) or who is supervised by a "qualified archaeologist." If the latter applies, the supervising qualified archaeologist must vouch for the work of the archaeological monitor and author or co-author the archaeological monitoring report provided at the end of construction monitoring.

- The archaeological monitor will keep a daily log of construction and monitoring activities. If intact archaeological materials are encountered during the monitoring, the

archaeological monitor will initiate procedures for Inadvertant Discovery of Archaeological Resources, as specified above.

- Artifacts will be examined and documented in the field and will not be collected unless authorized under the provisions of a SHPO permit, if one is obtained in the Inadvertant Discovery of Archaeological Resources process.

- If human remains are identified during the course of construction monitoring, the monitor will initiate the procedures for Inadvertent Discovery of Human Remains, as specified above.

- The project proponent is responsible for providing an archaeological monitoring report to the Oregon Department of Energy and the SHPO after construction work is completed. The report must detail the activities of the archaeological monitor and any inadvertent discoveries encountered, along with actions taken to address them.

S.7 REFERENCES

Buchanan, Brian, Jon Held, Sara Davis, and Terry Ozbun. 2009. Cultural Resource Survey of the PGE Carty Generating Station Project Gilliam and Morrow County, Oregon. Archaeological Investigations Northwest, Inc. Report No. 2434. Submitted to Ecology and Environment Inc., Portland, Oregon.

Cole, David L. 1977. Archaeological Research in the Carty and Pebble Springs Reservoir Areas in the Columbia Plateau of Oregon. University of Oregon, Museum of Natural History, Eugene. Submitted to Portland General Electric Company, Portland.

Oregon State Historic Preservation Office (SHPO). 2007. Guideline for Conducting Field Archaeology in Oregon. Oregon State Historic Preservation Office, Salem, Oregon.

EXHIBIT T

RECREATION
OAR 345-021-0010(1)(t)

TABLE OF CONTENTS

T.1 INTRODUCTION.....T-1

T.2 SUMMARY.....T-1

T.3 IMPORTANT RECREATIONAL OPPORTUNITIES AND FACILITIES IN THE ANALYSIS AREA.....T-2

T.3.1 State and Federal Recreational Opportunities and Facilities.....T-2
T.3.2 Morrow County Recreational Opportunities and Facilities.....T-4
T.3.3 Gilliam County Recreational Opportunities and Facilities.....T-4
T.3.4 Klickitat and Benton County Washington Recreational Opportunities and Facilities.....T-4
T.3.5 Cities of Boardman and Arlington Recreational Opportunities and Facilities....T-4
T.3.6 Informal Recreational Opportunities.....T-5

T.4 SIGNIFICANT POTENTIAL ADVERSE IMPACTS TO THE OPPORTUNITIES IDENTIFIED.....T-5

T.5 MITIGATION MEASURES.....T-7

T.6 MAP OF ANALYSIS AREA.....T-8

T.7 MONITORING PROGRAM.....T-8

T.8 REFERENCES.....T-8

APPENDICES

T-1 Recreational Facilities and Opportunities – Photographs of Facilities - Photo 1, Photo 2, and Photo 3

FIGURES

Figure T-1 Recreation Facilities and Opportunities

T.1 INTRODUCTION

OAR 345-021-0010(1)(t) *Information about the impacts the proposed facility would have on important recreational opportunities in the analysis area, providing evidence to support a finding by the Council as required by OAR 345-022-0100.*

Response: Recreational opportunities are present in several areas on the Columbia River. In Gilliam County, the Columbia River waterfront, including related fish and wildlife habitat, lies within the jurisdiction of the United States Army Corps of Engineers (Corps). The Corps has prepared and adopted a plan for the development of the river shore land (Gilliam County Comprehensive Land Use Plan 2000). There are no developed federal, state, or county recreational facilities within 5 miles of the Site Boundary. There is, however, a state-owned undeveloped portion of land approximately 10 miles from the Carty Generation Station, located between the Columbia River and Interstate (I)-84 and identified as the Arlington Park (Anderson 2009). Portland General Electric Company (PGE) has identified and consulted with the owner of this land, who confirmed that they have no plans for its development. In addition, the Port of Arlington has an RV park and a marina equipped for boat moorage up to 30 feet. The Boardman Park and Recreation District operates a marina and park along the Columbia River approximately 10 miles from the Carty Generating Station. It is highly unlikely that the proposed construction and operation of the Carty Generating Station would have significant adverse impacts on recreational facilities within a 5-mile (or even a 10-mile) radius of the Site Boundary.

T.2 SUMMARY

The Columbia River waterfront, including related fish and wildlife habitat, lies within the jurisdiction of the Corps. The Lewis and Clark Historic Trail, which is managed by the National Park Service, is located along the Columbia River approximately 5 miles from the proposed Carty Generating Station transmission line. The trail also parallels the Columbia River in the vicinity of Arlington, Oregon. The Port of Arlington has an RV park and a marina equipped for boat moorage up to 30 feet. Due to the difference in elevation and steep canyon walls along the Columbia River, the Carty Generating Station and its transmission line would not be visible from the river. The Blue Mountain Scenic Byway (State Route [SR] 74) was designated in 1989 under the National Scenic Byway Program. It traverses Morrow and Gilliam counties and is crossed by the existing Boardman to Slatt 500-kilovolt (kV) transmission line; within the same right-of-way (ROW) it would also be crossed by the proposed Carty Generating Station transmission line. Arlington State Park is an undeveloped 191-acre site located along I-84, approximately 2 miles east of Arlington, Oregon. A portion of the Oregon Historical Trail passes through Morrow and Gilliam counties approximately 6 to 7 miles south of the proposed Carty Generating Station and transmission line. Despite its name, the Oregon Historical Trail is

not a true hiking trail. With much of the original route now in the hands of various private and public entities, access to trail segments depends upon the permission of the landowner.

Outside of the 5-mile analysis area, Boardman City Park is located approximately 10 miles northeast of the proposed Project[1] site. Wilsons Willow Run Golf Course is a nine-hole executive length golf course located in Boardman, Oregon, approximately 8 miles north of the Carty Generating Station. Crow Butte State Park is located in Benton County, Washington, approximately 10 miles from the Carty Generating Station and consists of 275 acres within a 1,300-acre island in the Columbia River. The next nearest park is Plymouth Park, constructed by the Corps, located approximately 25 miles east of the proposed Carty Generating Station. This 112-acre park is located in Benton County in the town of Plymouth, Washington. The Umatilla National Wildlife Refuge is managed by the Oregon Department of Fish and Wildlife and is located approximately 8 miles north of the Energy Facility Site, on land owned by the Corps.

The proposed energy facility would not adversely impact any identified existing recreation facilities within the 5-mile analysis area and would cause no loss of recreational use. The proposed facility would not detract from recreational opportunities generally available in the vicinity, such as fishing, waterfowl hunting, hiking, cycling, and boating.

Hunting and other recreational activities are not currently allowed in the Energy Facility Site or Carty Reservoir.

T.3 IMPORTANT RECREATIONAL OPPORTUNITIES AND FACILITIES IN THE ANALYSIS AREA

OAR-345-021-0010 (1)(t)(A) *A description of important recreational opportunities in the analysis area considering the criteria in OAR 345-022-0100 including information on the factors listed in OAR 345-022-0100(1).*

Response: The following recreational opportunities and facilities were identified within or near the analysis area.

T.3.1 State and Federal Recreational Opportunities and Facilities

The Columbia River waterfront, including related fish and wildlife habitat, lies within the jurisdiction of the Corps. The Lewis and Clark Historic Trail, managed by the National Park Service, is located on the Columbia River approximately 5 miles from the proposed Carty Generating Station transmission line. The Port of Arlington has an RV park and a marina equipped for boat moorage. Plymouth Park is owned and operated by the Corps, approximately 25 miles east of the proposed Carty Generating Station. This 112-acre park is located in Benton

[1] In this document, "Project" refers to the Carty Generating Station, plus all related or supporting facilities, such as the associated transmission line.

County in the town of Plymouth, Washington. It offers both a day use area and a campground that is suitable for RV camping or tent camping. The day use area offers picnic tables, barbecue grills, a swimming beach, a boat launch, and fishing. Both the day use area and the campground at Plymouth Park are open from April 1 to October 31.

A portion of the Oregon Historical Trail passes through Morrow and Gilliam Counties approximately 4 to 6 miles south of the Carty Generating Station near the proposed transmission line. Arlington Park is an undeveloped 191-acre site located between the Columbia River Highway (I-84) and the Columbia River, approximately 2 miles east of Arlington, Oregon and within 5 miles of the proposed transmission line associated with the Carty Generating Station. Conversations with Jim Anderson of Oregon State Parks indicate that there are no plans to develop the property (Anderson 2009). However it is likely that fishermen currently informally use the area.

The closest developed state park to the Carty Generating Station is Crow Butte State Park, located on the north side of the Columbia River in Benton County, Washington, approximately 10 miles from the proposed Carty Generating Station. It consists of 275 acres within a 1,300-acre island on the Columbia River in Benton County, Washington. The park provides 20 picnic sites, three picnic shelters, 50 full hookup camp sites, group camping for a maximum of 60 individuals, a trailer dump station, 750 feet of unguarded beach, three boat ramps, a boat basin, a bathhouse, and a two-bay shop/office. The park is situated adjacent to the historic Lewis and Clark Trail and is also adjacent to the Umatilla National Wildlife Refuge. Crow Butte State Park was originally developed by the Corps and then transferred to the State of Washington. Most recently, it has been managed by the Port of Benton, who leased the park from the Corps in 2007. Activities at the park include boating, camping, fishing, picnicking, sightseeing, swimming, water skiing, windsurfing, and bird watching.

The next closest state park to the proposed Carty Generating Station is Hat Rock State Park, located approximately 30 miles east of the proposed facility. This park is located off of U.S. Highway 730, 9 miles east of Umatilla, Oregon on the shore of Lake Wallula near McNary Dam on the Columbia River. According to the Oregon State Parks website, Hat Rock was the first distinctive landmark passed by the Lewis and Clark Expedition on their journey down the Columbia and is one of the few remaining sites not underwater. The park is an oasis surrounded by rolling sagebrush hills and outcroppings of basalt. A boat ramp provides access to the lake, which is noted for walleye, sturgeon, and other fish. Waterskiing, jet skiing, swimming, and boating are popular. The park has its own pond stocked with rainbow trout and provides year-round habitat for waterfowl.

J. S. Burres is a 13.2-acre state park located along the John Day River over 20 miles to the southwest of the proposed Carty Generating Station and transmission line. It is under a long-term lease to the federal Bureau of Land Management (BLM). The Prineville BLM office oversees the site and refers to it by the name of Cottonwood Park.

T.3.2 Morrow County Recreational Opportunities and Facilities

The Columbia River Heritage Trail is a 12-mile, non-motorized recreational trail that roughly parallels the Columbia River in Morrow County. This trail is owned by various government agencies, as well as private landowners/corporations. It currently connects the cities of Irrigon and Boardman, Oregon. Future plans include expansion to a 25-mile trail from Umatilla to Gilliam County. The Morrow County Comprehensive Plan does not specifically address open space but expects other plan policies to ensure that it is incorporated in county planning. The county has not identified a need for open space or specific areas where it would be desirable (Morrow County 1986). However, Recreation Policy 14 states that unique areas and potential recreation sites that meet specific recreational needs shall be protected or acquired. The Morrow County Parks Master Plan 1998–2018 focuses on existing parks, such as Anson Wright Park and Cutsforth Park, neither of which is located close to the proposed Carty Generating Station (Oregon Public Affairs Research Consultants 1997).

T.3.3 Gilliam County Recreational Opportunities and Facilities

There are no developed recreational facilities in Gilliam County within the 5-mile analysis area of the proposed Carty Generating Station.

T.3.4 Klickitat and Benton County Washington Recreational Opportunities and Facilities

Brooks Memorial State Park is located approximately 30 miles northwest from the analysis area in Klickitat County, Washington. Brooks Memorial State Park is a 700-acre, year-round camping park located between the barren hills of the south Yakima Valley and the lodgepole pine forests of the Simcoe Mountains. The park provides a variety of natural environments.

T.3.5 Cities of Boardman and Arlington Recreational Opportunities and Facilities

The Boardman Park and Recreation District owns and operates the 227-acre multi-use Boardman Marina Park, which is located on West Marina Drive in Boardman, Oregon, approximately 10 miles from the proposed Carty Generating Station. Of the park's 227 acres, approximately 60 acres are developed for active recreation, with the remaining 167 acres preserved for natural habitat. The marina park provides a boat harbor with launch facilities, public and private moorage, a restroom/shower/laundry facility, a dockside holding tank dump station, and a fish cleaning facility (see Appendix T-1, Photo 1). The park's day use recreation area includes 63 paved full-service RV campsites, 3 miles of walking paths, picnic tables, playground equipment, softball fields, basketball courts, horseshoe pits, and a swimming area (See Appendix T-1, Photo 2). The park also includes such amenities as children's playgrounds, an outdoor arts theater, indoor and outdoor group gathering facilities, and hiking and biking trails.

Arlington, Oregon, is a small town located in the northern part of Gilliam County, near the eastern entrance to the Columbia River Gorge. While Arlington has no official city recreational facilities, the Columbia River offers opportunities for windsurfing, swimming, and boating.

Hunting is another popular county recreational activity in this area. The Port of Arlington has an RV park and a marina equipped for boat moorage up to 30 feet (see Appendix T-1 Photo 1).

T.3.6 Informal Recreational Opportunities

Fishing, hunting, water-skiing, boating, camping, sailing, hiking, and cycling are possible recreational activities within and around the analysis area. This stretch of the Columbia River is also part of the historic Lewis and Clark Trail.

The Oregon Trail passes through Morrow and Gilliam County. Despite its name, the Oregon Trail is not a true hiking trail. With much of the original route now in the hands of various private and public entities, access to many trail segments depends upon the permission of the land owner.

Blue Mountain Scenic Byway is located on SR 74. It crosses the analysis area at the proposed transmission line route and is adjacent to the proposed transmission line in one other small area.

No hunting or fishing is allowed on or around Carty Reservoir.

T.4 SIGNIFICANT POTENTIAL ADVERSE IMPACTS TO THE OPPORTUNITIES IDENTIFIED

OAR 345-021-0010(1)(t)(B) *A description of significant potential adverse impacts to the opportunities identified in OAR 345-021-0010(1)(t)(A) including, but not limited to, potential impacts such as:*

(i) Direct or indirect loss of an opportunity as a result of construction or operation;

Response: There would be no significant adverse impacts on future recreational opportunities and facilities as a result of the proposed energy facility construction or operation. The site for the proposed energy facility is adjacent to the existing Boardman Power Plant. There is little potential for development of recreational opportunities or facilities in this area. No aspect of the proposed facility would preclude formal or informal recreational opportunities outside of the Site Boundary, based on local and state recreational plans.

(ii) Noise resulting from facility construction or operation;

Noise sources at the proposed generating project would include the turbines and generators, the heat recovery system, the transformers and the cooling towers. Construction of the proposed generating facility would involve the operation of a range of construction equipment including trucks, earth-moving equipment and diesel powered equipment. The estimated maximum noise contribution due to construction at a distance of five miles from the Site is 35 A-weighted decibels (dBA). Construction activities would occur during daylight hours and, as such, would

have little impact on recreational receptors. Also construction activities are listed as exempt from the rules of OAR 340-035-0035(1) by OAR 340-035-0035(5).

The closest sensitive recreation area is the Wilsons Willow Run Golf Course, a nine-hole, executive length golf course located in Boardman, Oregon approximately 8 miles east of the proposed Carty Generating Station. Refer to Exhibit X for a detailed noise analysis. The energy facility site and facility operation noise levels at this site are predicted to meet the applicable limits established by the Oregon Department of Environmental Quality. Therefore, it is not anticipated that recreational opportunities in the analysis area would be disturbed by noise from the proposed facility.

No informal recreational opportunities such as fishing, hunting, and boating are located within audible range of the facility. The facility would be sited in an existing industrial area. The noise levels from the new facility are predicted to meet the applicable limits established by the State of Oregon. Therefore, no significant impacts on recreational opportunities are expected from the proposed facility. Exhibit X provides a detailed noise level impact assessment.

(iii) Increased traffic resulting from facility construction or operation;

Response: The increases in traffic as a result of facility construction would not significantly adversely impact access to recreational opportunities in the analysis area. Traffic increases as a result of construction of the energy facility site would occur primarily at the I -84 and Tower Road interchange. Significant recreational opportunities and facilities are not available near these roads; therefore, the traffic impact resulting from construction and operation of the facility would not adversely affect recreational opportunities.

A more detailed discussion of traffic as a result of facility construction and operation is provided in Exhibit U.

(iv) Water use during facility construction or operation;

Response: Water would be drawn from Carty Reservoir, utilizing the existing intake structure currently providing water to the Boardman Plant. This water would be used for cooling water, cooling tower makeup water, service water, and the preparation of de-mineralized water. Potable water for the permanent staff would be obtained from the existing Boardman Plant potable water system, with an expected usage of approximately 800 to 1,000 gallons per day. Potable water is supplied to the existing Boardman facility by a well located approximately 750 feet northwest of the existing Boardman facility. No significant adverse impacts are expected because water would not be drawn from water features used for recreation.

(v) Wastewater resulting from facility construction or operation;

Response: Wastes produced during operation of the Carty Generating Station would consist of heat recovery steam generator (HRSG) blowdown, neutralized demineralized water treatment wastes, sanitary wastes, cooling tower blowdown, combustion turbine water wash wastes, stormwater, and solid waste. HRSG blowdown would be necessary to maintain the required water chemistry in the boiler condensate water and steam to meet the steam purity requirements for admitting steam to the steam turbine. HRSG blowdown would be cooled by mixing with

service water, and the resultant wastewater stream used in the cooling tower as part of the cooling tower makeup water requirements. Wastes from the treatment of service water to produce high purity demineralized water would adjusted to a neutral pH, if required, and would also be sent to the cooling tower for use as cooling tower makeup water.

In the type of construction design that would be used in the proposed facility, cooling tower blowdown is required to maintain the proper water chemistry in the circulating water that flows between the condenser and the cooling tower. The evaporation of water in the cooling process leaves behind any solids or other chemicals that do not evaporate, and a small blowdown stream is used to remove some of the water with a higher concentration of solids or chemicals and replace it with better quality water. During average plant full load operating conditions, cooling tower blowdown is expected to be approximately 200 gallons per minute. Cooling tower blowdown would be returned to Carty Reservoir or routed to one or more evaporation ponds. Details of evaporation ponds and Carty Reservoir are available in Exhibit V.

Stormwater from building roofs and other impervious surfaces within the energy facility site would be collected in retention swales, held in a storm water retention pond or ponds, if needed, and allowed to evaporate or seep into the ground. Any stormwater potentially contaminated with oil would first pass through an oil water separator to remove the oil or would be contained for testing and sampling, before being sent to either the evaporation pond(s) or the stormwater retention pond(s). During construction, stormwater best management practices would be employed.

No significant adverse effects are expected because no wastewater or stormwater generated in the course of construction or operation of the facility would be discharged to water bodies used for recreation.

(vi) Visual impacts of facility structures, including cooling tower or other plumes, if any;

Response: The stacks would not be visible by recreational users on the Columbia River. The facility would not create significant new visual intrusions on recreational uses within the analysis area. See Exhibit R for a more detailed visual impact assessment.

(viii) Visual impacts from air emissions resulting from facility construction or operation, including, but not limited to, impacts on Class 1 visual resources as described in OAR 340-031-0120;

Response: The air emissions from the proposed energy facility would comply fully with air quality regulations established by the State of Oregon Department of Environmental Quality and the U.S. Environmental Protection Agency.

T.5 MITIGATION MEASURES

OAR 345-021-0010(1)(t)(C) *A description of any measures the applicant proposes to avoid, reduce or otherwise mitigate the significant adverse impacts identified in OAR 345-021-0010(1)(t)(B).*

Response: The proposed energy facility would not have a significant adverse impact on recreational opportunities and facilities in the analysis area. No mitigation measures are proposed.

T.6 MAP OF ANALYSIS AREA

OAR 345-021-0010(1)(t)(D) *A map of the analysis area showing the locations of important recreational opportunities identified in OAR 345-021-0010(1)(t)(A).*

Response: Figure T-1 shows the analysis area for recreational opportunities and facilities. Appendix T-1 shows three typical recreation facilities within an approximately 10-mile radius of the Project.

T.7 MONITORING PROGRAM

OAR 345-021-0010(1)(t)(E) *The applicant's proposed monitoring program, if any, for impacts to important recreational opportunities.*

Response: Because operation and construction of the proposed energy facility would have no significant adverse impact on the recreational opportunities and facilities in the analysis area, no monitoring program is proposed.

T.8 REFERENCES

Anderson, Jim. August, 31 2009. Personal Communication. Park Ranger, Oregon State Parks. Telephone conversation with Frank Groznik. Ecology and Environment, Inc., Portland, Oregon.

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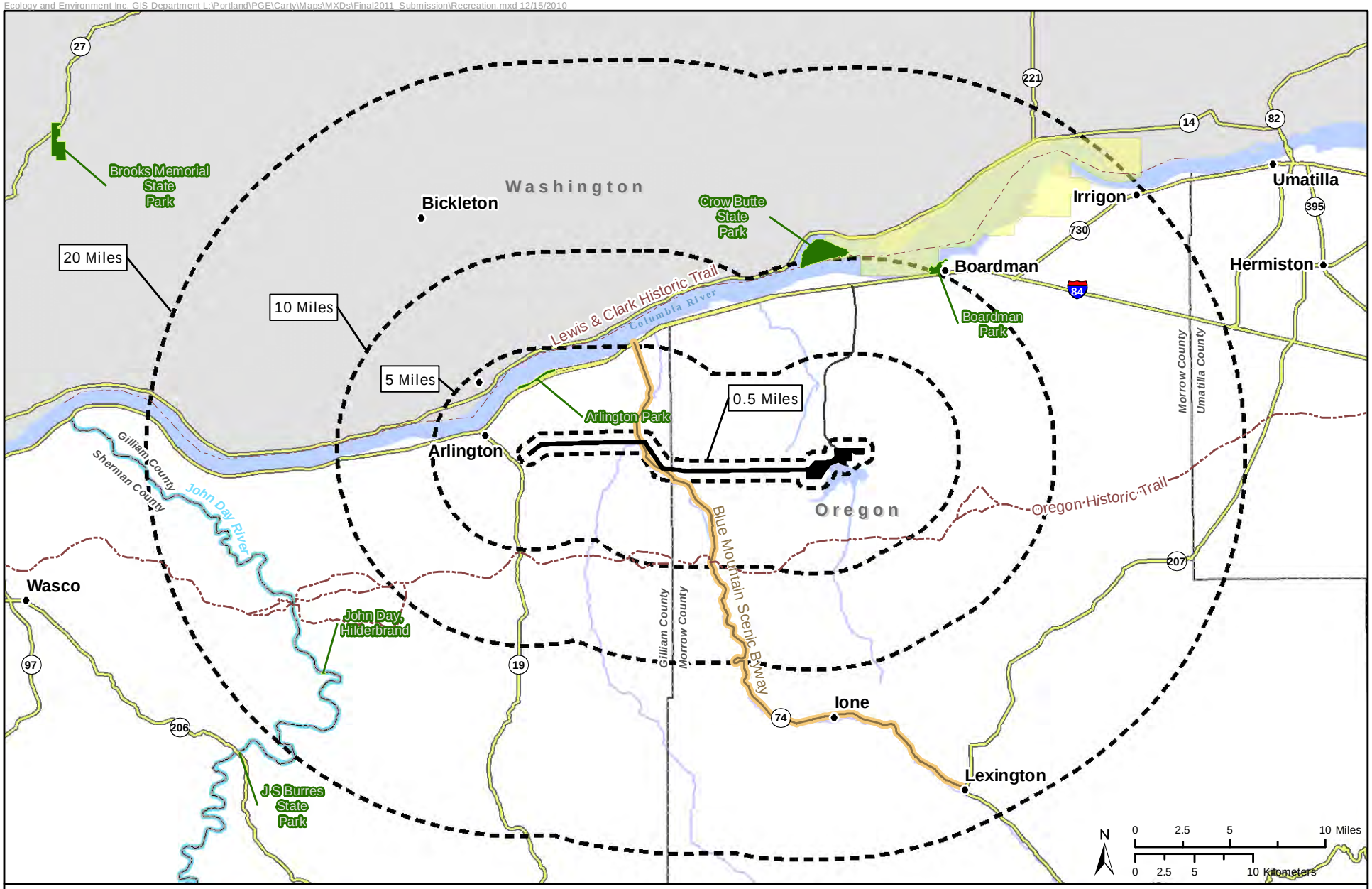

Figure T-1
Recreation Facilities and Opportunities
PGE Carty Generating Station
Application for Site Certificate

Sources: Oregon BLM, The Nature Conservancy, US National Atlas (ESRI), USDA, NPS, USFWS

Final 2011

APPENDIX T-1

Recreational Facilities and Opportunities – Photographs of Facilities –

Photo 1, Photo 2, and Photo 3

Photo 1 Boardman Marina and Park

Photo 2 Boardman RV Park

Photo 3 Port of Arlington Marina and RV Park

EXHIBIT U

PUBLIC SERVICES
OAR 345-021-0010(1)(u)

TABLE OF CONTENTS

U.1 INTRODUCTION U-1

U.2 IMPORTANT ASSUMPTIONS USED TO EVALUATE POTENTIAL IMPACTS U-2

U.3 PUBLIC AND PRIVATE PROVIDERS IN THE ANALYSIS AREA U-3
U.3.1 Sewage Collection and Treatment U-3
U.3.2 Water Supplies U-6
U.3.3 Storm Water U-6
U.3.4 Solid Waste U-6
U.3.5 Police and Fire U-7
U.3.6 Health Care U-11
U.3.7 Public Education U-12
U.3.8 Housing U-13
U.3.9 Traffic U-14

U.4 EVIDENCE THAT ADVERSE IMPACTS ARE UNLIKELY TO BE SIGNIFICANT U-16
U.4.1 Evidence Regarding Adverse Impacts U-16
U.4.1.1 Sewage Collection and Treatment U-16
U.4.1.2 Water Supply U-16
U.4.1.3 Solid Waste U-17
U.4.1.4 Police and Fire U-18
U.4.1.5 Education U-18
U.4.1.6 Health Care U-19
U.4.1.7 Housing U-19
U.4.1.8 Traffic U-19
U.4.1.9 Socioeconomic Impacts U-20
U.4.2 Mitigation Measures U-21
U.4.2.1 Traffic U-21
Recommendations U-23

U.5 MONITORING PROGRAMS U-23

U.6 REFERENCES U-24

APPENDICES

U-1 Traffic Impact Analysis

FIGURES

U-1 Public and Private Service Providers, PGE Carty Generating Station

LIST OF TABLES

Table U-1 Public Services Analysis Area Communities U-2

Table U-2 Service Providers for the Analysis Area U-4

Table U-3 Summary of Police and Fire Services U-8

Table U-4 Summary of State Police Services U-9

Table U-5 Enrollment Summary of the School Districts in the Analysis Area U-13

Table U-6 Permanent Housing Supply and Availability in the Analysis Area U-13

Table U-7 Geographic Breakdown of Boardman Plant Employee Housing Locations U-14

U.1 INTRODUCTION

OAR 345-021-0010(1)(u) *The application for site certificate for the proposed Carty Generating Station must contain information about significant potential adverse impacts of construction and operation of the proposed facility on the ability of communities in the analysis area to provide the services listed in OAR 345-022-0110, providing evidence to support a finding by the Council as required by OAR 345-022-0110.*

Response: Under OAR 345-022-0110, the Energy Siting Facility Council (EFSC) must find that the construction and operation of the facility, taking into account mitigation, is not likely to result in significant adverse impact to the ability of communities within the analysis area to provide the following governmental services: sewers and sewage treatment, water, stormwater drainage, solid waste management, housing, traffic safety, police and fire protection, health care and schools. The analysis area for public service impacts is 10 miles outside the Site Boundary (as per OAR 345-001-0010 (57). The Site Boundary and the analysis area boundary are shown on Exhibit U-1. Portland General Electric Company (PGE) will continue to identify and consult with the providers of the public services listed in OAR 345-022-0110 as needed throughout the Site Certificate Application process.

For this exhibit, the analysis area boundary includes Morrow County, Oregon, for the proposed facility itself and Gilliam County, Oregon, for a portion of the proposed transmission line. The geographic analysis area boundary also extends across the Columbia River into Klickitat and Benton counties in Washington.

For analysis purposes, only Oregon communities were considered for potential impacts to public services. This consideration is based on the fact that although Washington communities are in close geographic proximity to the project, the geographic distance does not consider the physical barrier of the Columbia River. The nearest physical Columbia River crossing is using Route 82 between Umatilla, Oregon, and Plymouth, Washington. This crossing is beyond a 20-mile radius of the project. In addition, service providers in Washington would not be expected to travel this extended distance to serve the project area because ample service providers exist in Oregon communities.

Notwithstanding, the following contacts were made to the Planning Departments of Benton County, Washington and Klickitat County Washington:

- Notice of Intent was mailed to Mike Shuttleworth, Benton County Planning Manager, September 4, 2009. Follow-up conversation was conducted with Shuttleworth on November 12, 2009. Shuttleworth indicated that an assessment of very limited impact to public services was acceptable to the County.

- Notice of Intent was mailed to Curt Dreyer, Klickitat County Planning Director, September 4, 2009. Follow-up conversation was conducted with Dreyer on November 16, 2009. Mr.

Dreyer noted during this conversation that the project was unlikely to affect public services and that the corresponding area in the vicinity of Boardman has a very low population density, except for the unincorporated town of Roosevelt. He noted that there are no public service providers based in that area other than rural fire districts (voluntary) and schools in Roosevelt and Bickleton. He also noted that some very important communication facilities are located above Roosevelt (emergency, law enforcement, tribal, etc.) but did not indicate a need for additional research based on this information.

The jurisdictions located within the 10-mile boundary of the analysis area are provided in Table U-1.

Table U-1 Public Services Analysis Area Communities

Communities within 5 miles	Population	Communities within 10 miles	Population
Arlington, OR	524*	Alderdale, WA	Noted within Klickitat County total
		Bickleton, WA	113 (Census Designated Place)**
		Roosevelt, WA	79 (Census Designated Place **
		Paterson, WA	Noted within Benton County total
Cecil, OR (unincorporated)	Within Morrow County total*	Blalock, OR (unincorporated) (11 miles)	Within Morrow County total
		Boardman, OR	2,855
		Rock Creek, OR (unincorporated) (11 miles)	Within Morrow County total

* Center for Population Research April 1, 2000, US Census
** www.factfinder.gov, US Census accessed November 19, 2009

The April 1, 2000, population by census of Gilliam County is 1,915, for Morrow County 10,995, for Benton County 5,894, and for Klickitat County, 19,161 (U.S. Census 2000).

As described below, the proposed construction and operation of the Carty Generating Station would have minimal adverse impacts on public services. This analysis has evaluated impacts on public services, and balanced mitigation measures have been proposed if there is a potential for significant adverse impacts.

U.2 IMPORTANT ASSUMPTIONS USED TO EVALUATE POTENTIAL IMPACTS

OAR 345-021-0010(1)(u)(A) *The important assumptions the applicant used to evaluate potential impacts;*

Response: To assess the impact of new development on public services, it is necessary to establish the level of service currently provided to communities and to project how the level of

service would change as a result of the natural background population growth, in addition to the proposed facility under evaluation. One way to establish the level of service is to compare the current operating service levels to a set of public service standards. Regional or local standards for public services are not available for the analysis area. Therefore, system capacities and operating service levels are described and used to estimate the level of service. Given the minimal public services the proposed facility would need, it was assumed that the facility would not adversely impact a particular service system if the system were currently operating below capacity. Moreover, if a system was reported to be operating at capacity and the public service provider had plans for system expansion in the future, it was assumed that the proposed facility would not adversely impact the system.

U.3 PUBLIC AND PRIVATE PROVIDERS IN THE ANALYSIS AREA

OAR 345-021-0010(1)(u)(B) *Identification of the public and private providers in the analysis area that would likely be affected.*

Response: Table U-2 identifies the public service and utility providers for the communities in the analysis area that provide the essential governmental services listed in OAR 345-022-0110. The following is a description of the public service providers within the communities in the analysis area.

U.3.1 Sewage Collection and Treatment

Construction: A site sanitation service provider would be contracted to provide and service portable toilets for the construction crew during construction.

Operational: The proposed facility would be staffed by less than 30 personnel over a 24-hour period. The increased sanitary waste generated by the additional personnel, estimated to be approximately 800 to 1,000 gallons per day (gpd), is within the current excess capacity of the existing Boardman Plant sanitary waste system, which currently uses only 5 percent of its 20,000-gpd capacity. The Carty Generating Station, once constructed, would utilize the existing Boardman Plant sanitary waste treatment system.

No significant adverse impacts are expected.

Table U-2 Service Providers for the Analysis Area

Jurisdiction	Gilliam County, OR	City of Arlington, OR	Morrow County, OR	City of Boardman, OR	Klickitat County, WA
Sewage Collection and Treatment	Arlington and Condon: City system; unincorporated areas on septic[1]	City of Arlington	Heppner, Irrigon, Boardman each on individual City system. Septic system for all other areas[2]	City of Boardman[3]	N/A (managed through individual City jurisdictions)
Water/Wastewater Supply	Arlington and Condon: City system; unincorporated areas on wells[4]				
Storm Water Drainage					
Solid Waste	Private haulers contract with Arlington Landfill to pick up trash. City of Arlington has own service[5]		Provider is dependent on the location[6]: Zone 1, Sanitary Disposal Inc. Zone 2, Heppner Garbage Disposal	Sanitary Disposal of Hermiston[7]	Horsethief Landfill (closed in 1994) Roosevelt Regional Landfill (still open)[8]
Police	Gilliam County Sheriff's Office[9]		Morrow County Sheriff's Office[10]	City of Boardman[11]	Klickitat County Sherriff's Office[12]
Fire	North Gilliam Rural Fire Protection District/Arlington Rural Fire Protection District[13]		Boardman Rural Fire Protection District[14]		Fire Districts 1-15 depending on geographic region Additional provisions for the cities of Goldendale, Bingen and White Salmon[15]
Health Care	Good Shepherd Community Hospital (Hermiston)[16] Mid-Communities Medical Center (The Dalles) Pioneer Memorial Hospital and Clinic (Heppner) Irrigon Medical Clinic (Irrigon) Oregon Health Sciences University (OHSU) facility (Condon)				Public Hospital District #1 of Klickitat County, WA[17]
Education	Arlington School District 3		Morrow County School District[18]		Trout Lake School District R-400 Glenwood School District 401 White Salmon Valley School District 405-17 Lyle School District 406 Klickitat School District 402 Centerville School District 215 Wishram School District 94 Roosevelt School District 403[19]
	Ione School District[20]				

Table U-2 Service Providers for the Analysis Area

NOTES:

[1] Source: Anderson, Susie, October 14, 2009, Personal Communication. Planning Director, Gilliam County Oregon. Telephone Conversation with Robin Scholetzky, Ecology and Environment, Inc.

[2] Source: Putman, Sandi, November 13, 2009, Personal Communication. Management Assistant. Morrow County Oregon. Telephone Conversation with Robin Scholetzky, Ecology and Environment, Inc.

[3] Source: City of Boardman. 2004-2009. *Official City website,* City of Boardman, Public Works Department. http://www.cityofboardman.com/works.html (Accessed: October 5, 2009)

[4] Source: Anderson, Susie, October 14, 2009, Personal Communication. Planning Director, Gilliam County Oregon. Telephone Conversation with Robin Scholetzky, Ecology and Environment, Inc.

[5] Source: Anderson, Susie, October 14, 2009, Personal Communication. Planning Director, Gilliam County Oregon. Telephone Conversation with Robin Scholetzky, Ecology and Environment, Inc.

[6] Morrow County Solid Waste Management Ordinance, April 19, 2006

[7] Source: City of Boardman. 2004-2009. *Official City website,* City of Boardman, Public Works Department. http://www.cityofboardman.com/works.html (Accessed: October 5, 2009)

[8] Source: Hopkinson, Tim. October 9, 2009. Personal Communication. Solid Waste Director, Klickitat County, WA. Telephone Conversation with Robin Scholetzky, Ecology and Environment, Inc.

[9] Source: Gilliam County. *Official County website. www.co.gilliam.or.us. Accessed October 5, 2009.*

[10] Source: Morrow County. *Official County website. www.morrowcountyoregon.com. Accessed October 5, 2009.*

[11] Source: City of Boardman. 2004-2009. *Official City website,* City of Boardman, Public Works Department. http://www.cityofboardman.com/works.html (Accessed: October 5, 2009)

[12] Source: Klickitat County. Official County website. www.klicitatcounty.org. Accessed October 8, 2009.

[13] Source: Koppock, Shannon. August 10, 2009. Personal Communication. Fire Services Coordinator, North Gilliam County Rural Fire Protection District. Telephone Conversation with Robin Scholetzky, Ecology and Environment, Inc. Portland, Oregon.

[14] Source: Morrow County. *Official County website. www.morrowcountyoregon.com. Accessed October 5, 2009.*

[15] Source: Municipal Research and Service Center of Washington. www.mrsc.org. Accessed November 18, 2009.

[16] Source: Good Shepherd Health Care System website. www.gshealth.org. Accessed November 18, 2009

[17] Source: Klickitat County http://www.kvhealth.net/default.html

[18] Source: Danielson, Phyllis. August 6, 2009. Personal Communication. Assistant Superintendent, Morrow County School District. Telephone Conversation with Robin Scholetzky, Ecology and Environment, Inc. Portland, Oregon.

[19] Source: Education Service District 112, website: http://www.esd112.org/schooldistricts/klickitat_county.html. Accessed October 9, 2009.

[20] Source: Osteheller, Karl. October 5, 2009. Personal Communication. Principal and Superintendent, Ione School District. Telephone Conversation with Robin Scholetzky, Ecology and Environment, Inc. Portland, Oregon.

U.3.2 Water Supplies

Water would be drawn from Carty Reservoir, utilizing the existing intake structure currently providing water to the Boardman Plant. This water would be used for cooling water, cooling tower makeup water, service water, and the preparation of de-mineralized water. Potable water for the permanent staff would be obtained from the existing Boardman Plant's potable water system, with an expected usage of approximately 800 to 1,000 gpd. Potable water is supplied to the existing Boardman facility by a well located approximately 750 feet northwest of the existing Boardman facility.

No significant adverse impacts are expected because water would not be drawn from community water systems.

U.3.3 Storm Water

Stormwater run-off would be collected and conveyed by retention swales to a stormwater retention pond or ponds (if needed) and allowed to evaporate or infiltrate the surface. During construction, stormwater best management practices would be utilized. Preliminary consultation regarding potential impacts to stormwater drainage has been completed with the Morrow County Planning Department. Morrow County has indicated that an approved National Pollutant Discharge Elimination System (NPDES) Permit and Oregon Department of Environmental Quality (DEQ) standards would be sufficient for the County (McLane August 18, 2009).

No significant adverse effects are expected because stormwater would not be collected by community stormwater collection systems.

U.3.4 Solid Waste

Construction: PGE intends to minimize waste and would recycle as much material as possible at the site. Solid waste that is not recycled would be transported to an approved landfill and is expected to have a minimal impact on the local community. The nearest approved landfill is the Finley Buttes Regional Landfill, located approximately 10 miles east of the proposed Carty Generating Station.

Operation: Solid waste generated during operation would not impact communities in the analysis area. The facility is expected to be a conditionally exempt Small Quantity Generator of Hazardous Waste (see Exhibit E).

Morrow County's Planning Director indicated that either landfill location (Finleys Butte or the Columbia Ridge Landfill in Arlington) would likely be available for solid waste disposal (McLane, October 1, 2009).

No significant adverse impacts are expected because of the small volume of waste that would be generated as a result of the Carty Generating Station operations.

U.3.5 Police and Fire

Due to an increase of construction personnel traveling to the project[1] site and potentially living in the area, there may be a short-term impact on local law enforcement and fire agencies.

PGE intends to consult with the following entities regarding potential impacts on law enforcement services and fire protection services:

- Oregon State Police,
- Morrow County Sheriff's Office,
- Gilliam County Sheriff's Office,
- Boardman Rural Fire Protection District,
- North Gilliam Rural Fire Protection District/Arlington Rural Fire Protection District, and
- South Gilliam Rural Fire Protection District/Condon Rural Fire Protection District.

No significant adverse impacts are expected.

The following is a description of the current levels of police and fire service available to the communities in the analysis area. An inventory of the personnel and services provided to each of the communities in the analysis area is summarized in Table U-3.

Oregon State Police

The Oregon State Police are responsible for primary law enforcement for State facilities, such as state roads. State police facilities in the Morrow County area are staffed by two state police trooper shifts—one from 6am to 4pm and a second from 4pm to 2am. A single trooper staffs the day shift, and two troopers staff the night shift. Due to budget shortfalls, there is no trooper service from 2am to 6 am. The service area includes all of Morrow County and some of Umatilla County. For Morrow County, the State Police work out of the Pendleton Area Command, with a worksite in Hermiston and a trooper at Heppner (Sherman, August 7, 2009).

For the state police located in the Gilliam County area, there is one trooper who serves a 40-hour per week schedule. This schedule alternates between day shift and night shift. The State Police have mutual aid agreements with the respective County Sheriffs offices. These agreements position the Sheriff's Offices as the primary law enforcement agency, with the state police providing backup as needed. For Gilliam County, the state police are located in The Dalles, and the patrol trooper is based in Arlington (Sherman, August 7, 2009). Table U-4 provides a summary of state police services.

[1] In this document, "Project" refers to the Carty Generating Station, plus all related and supporting facilities, such as the associated transmission line.

Table U-3 Summary of Police and Fire Services

Service	Provider	Staffing	Services
Police	Morrow County Sheriff's Department[1]	3 Criminal officers: 2 criminal detectives and 1 detective sergeant 2 Administrative officers: 1 sheriff and 1 police officer 8 patrol positions 2 boats for patrolling the Columbia River (seasonal) 1 Off Highway Vehicle program (seasonal)	Primary Response / Marine Patrol/Off Highway Vehicle Program
	Gilliam County Sheriff's Office[2]	5 Total staff: 1 Sheriff 4 Patrol officers/detectives Sheriff's Office contracts with Sherman County for marine patrol 2 Officers on staff at all times 6 Patrol vehicles and 1 4-wheel drive pick-up	Primary Response
	City of Boardman Police Department[3]	Chief of Police, 1 Lieutenant, 1 Detective Sergeant, 5 Officers, 1 Non-sworn, and 2 reserve officers.	Mutual Aid/Primary response
Fire	North Gilliam Rural Fire Protection District/Arlington Rural Fire Protection District[4]	All volunteer district and is located in Arlington Oregon. There are currently 11 volunteers on roster	Mutual Aid/Primary response
	South Gilliam Rural Fire Protection District/Condon Rural Fire Protection District[5]	All volunteer district with 14 volunteers	Mutual Aid/Primary response
	Boardman Rural Fire Protection District	Six full time firefighters and one Fire Chief There are three additional stations, all manned by volunteers: (approximately 40 volunteers)	Primary response

[1] Myren August 7, 2009
[2] Bettencourt August 10, 2009
[3] City of Boardman 2004-2009
[4] Koppock August 10, 2009
[5] Koppock August 10, 2009

Table U-4 Summary of State Police Services

Jurisdiction	Service	Police	
		Staffing	Services
State of Oregon	Oregon State Police	Morrow County area: 1 Trooper for the day shift and 2 Troopers for the night shift.	Responsible for patrolling State facilities (US 84)
		Gilliam County area: 1 Trooper with a 40 hour week-shift varies between day and night.	Mutual Aid / Secondary Response agreements with County Sheriffs offices.

Source: Sherman August 7, 2009

Morrow County

Morrow County 911

Emergency dispatch services for Morrow County are provided directly by the County. Morrow County operates a 24-hour 911 dispatch center for fire, police, and medical emergencies (Morrow County, County website).

Morrow County Sheriff's Office

The Morrow County Sheriff's Office is headquartered in Heppner, Oregon. There are presently substations in both Boardman and Irrigon. The Morrow County Sheriff's Office provides police services to some 12,000 residents of Morrow County, which covers an area of approximately 2,065 square miles (Myren, August 7, 2009).

The Morrow County Sheriff's Office provides contract law enforcement services and code enforcement to the cities of Heppner and Irrigon (http://www.morrowcountyoregon.com/sheriff/index.html).

The Sheriff's Office is familiar with the construction of natural gas–powered plants in the area, as there have been two construction projects for two other gas-fueled electric plants. Based on experiences with other construction projects, the Sheriff's Office expects to see an increase in call volume for all types of calls. The Sheriff's office will be available to assist the City of Boardman Police Department during construction times, by assisting with transportation and traffic assistance as needed (Myren, August 7, 2009).

The Sheriff's Office has mutual aid agreements with each of the surrounding counties: Gilliam, Wheeler, Grant, and Umatilla in Oregon, and Benton County in Washington (Myren, August 7, 2009).

Boardman Rural Fire Protection District

The Boardman Rural Fire Protection District employs six full time firefighters and one Fire Chief. The office is located at Boardman Rural Fire District #1, in Boardman, Oregon. There are three additional stations, manned by approximately 40 volunteers (Ellis, August 7, 2009). These station areas are located throughout the District as follows:

- Station #2 is located on PGE property, in close proximity to the Boardman Plant;
- Station #3, Threemile Canyon Farms, is located on Threemile Canyon Road; and
- Station #7 is currently under construction. This new facility will be located at the far southeast corner of the District, at the intersection of Highway 207 and Buttercreek Road.

Ambulance services for the District are provided by Morrow County Health District (Ellis, August 7, 2009).

Gilliam County

Gilliam County's 9-1-1 service is facilitated by the Tri-County Communications Dispatch, located in Condon, Oregon. Tri-County Communications Dispatch covers Gilliam, Sherman, and Wheeler Counties. Tri-County provides dispatch services for various fire, ambulance, and law enforcement agencies in the tri-county area (Gilliam County 2009).

Gilliam County Sheriff's Office

The Gilliam County Sheriff's Office is located in Condon, Oregon. The Sheriff's Office provides the primary police services for Gilliam County. As noted in Table U-3, Summary of Police and Fire Services, this office has a full-time staff of five. The office maintains two officers on-duty at all times, and each officer is responsible for a variety of detective, patrol, and administrative duties. The Sheriff's Office has no formal mutual aid agreements with surrounding jurisdictions (Bettencourt August 10, 2009).

Gilliam County Fire Districts

All fire districts in Gilliam County are volunteer-based. There are four separate districts (North Gilliam Rural Fire Protection District, South Gilliam Rural Fire Protection District, Arlington Rural Fire Protection District, and Condon Rural Fire Protection District). These districts share resources and volunteer staff as follows: North Gilliam with the City of Arlington, and South Gilliam with the City of Condon (Koppok August 10, 2009).

North Gilliam Rural Fire Protection District/Arlington Fire District

The North Gilliam Rural Fire Protection District is also an all-volunteer district and is located in Arlington, Oregon. There are currently 11 volunteers on roster, five of whom live in Arlington

full time. The District has mutual aid agreements with Morrow, Umatilla, and Sherman Counties; the remainder of Gilliam County; and the Bureau of Land Management. The District shares its seven trucks and facilities with the Arlington Fire District; however, the Arlington Fire District has one additional truck as part of the fleet (Koppok August 10, 2009).

South Gilliam Rural Fire Protection District/Condon Rural Fire District

The South Gilliam Rural Fire Protection District is located in Condon, Oregon. The District utilizes 14 volunteers and has nine trucks. Condon Rural Fire Protection District has nine volunteers and two engines. The two districts share all volunteers and facilities (Koppok August 10, 2009).

District sites are noted on Exhibit U, Map 1—North Gilliam Rural Fire Protection District/Arlington Fire District and South Gilliam Rural Fire Protection District/Condon Rural Fire District.

City of Boardman

City of Boardman Police Department

The City of Boardman Police Department is responsible for all law enforcement activities within the City of Boardman. The Department contains 11 staff officers, consisting of a Chief of Police, a Lieutenant, a Detective Sergeant, five officers, one non-sworn, and two reserve officers.

U.3.6 Health Care

The closest hospital to the proposed generating facility is the Good Shepherd Community Hospital in Hermiston, Oregon, which provides Trauma Level III services. Staff from the Good Shepherd Hospital noted that under typical circumstances, neither construction nor operation would adversely impact the hospital's ability to provide health care services for the community (Ettesvold, December 28, 2009). In emergency situations, the Morrow County Health District's Emergency Medical Services will provide emergency medical services. In addition, Oregon Health and Science University (OHSU) has a facility—the Gilliam County Medical Center—in Condon that serves Gilliam County.

Morrow County Health District was established in 1994 by the County's voters to ensure continued support of medical services in the area. The health district is composed of a hospital and medical clinic in Heppner, a medical clinic in Irrigon, and home health, hospice and emergency medical services throughout the county. The district also subsidizes Columbia River Community Health Services in Boardman.

Preliminary consultation with Mike Blauer, Executive Director for the Morrow County Public Health District, indicated that future conversations based on the ongoing development of the facility would be necessary to determine any impacts to service levels (Blauer, August 7, 2009).

In a medical emergency, south Morrow County residents are transported to Pioneer Memorial Hospital in Heppner, where Trauma Level IV services are available. If necessary, patients can be flown via helicopter or fixed-wing aircraft to higher levels of trauma care in Bend, Oregon; Portland, Oregon; or Walla Walla, Washington. Patients in the north end of the County can be transported to Trauma Level III services in Hermiston, or to higher level care centers if needed (Morrow County Health District website, accessed November 18, 2009).

U.3.7 Public Education

The influx of construction workers for the proposed facility could result in some families moving to the area, and permanent employees required to operate the generating station could also impact local schools. However, as noted below, no significant adverse effects are expected, as capacity exists in each of the potentially affected school districts. As needed, PGE expects to consult with the Morrow County School District. School enrollment and capacity data for public schools in the analysis area are summarized in Table U-5.

Morrow County School District

The Morrow School District serves three jurisdictions: Boardman, Heppner and Irrigon. The boundaries of the District follow that of Morrow County. In recent years, the School District has experienced an increase in growth. As a direct result of this growth, Windy River Elementary and Irrigon Elementary were constructed as part of a bond measure in 2001 (Danielson October 5, 2009,Dirksen August 6, 2009) and (Danielson August 6, 2009).

Since the construction, the Boardman area continues to experience growth as forecasted, while less growth has been experienced in the Irrigon area. In response to this growth pattern, the District adjusted the grades served at Irrigon Elementary from 5th and 6th to 4th through 6th. Additionally, the District has retained the potential to purchase additional property in the City of Boardman in the future, should the need for additional school capacity arise. Overall, the District has capacity if needed (Dirksen August 6, 2009) and (Danielson August 6, 2009).

Arlington School District

In contrast to the growth experienced in the Morrow School District, the Arlington School District has actually decreased in enrollment based on a comparison of the 2003–2004 enrollment and the 2007–2008 enrollment.

Ione School District

Ione School District began serving students in 2004–2005. This School District manages one school, which serves a K–12 population for the City of Ione and surrounding areas. The Ione School is a Charter School, meaning that it can receive students from either the Morrow or Arlington School Districts. Since inception, the school has undergone a small amount of growth (Ostheller, October 2, 2009).

Table U-5 Enrollment Summary of the School Districts in the Analysis Area

School District	2003-2004 Enrollment	2007-2008 Enrollment	2009-2010
Arlington School District			
Total District[1] and[2]	162	110	
Morrow School District[3]			
Total District	2273	2262	2259
Ione School District			
Total District[4]	Not applicable	154	PENDING

[1] Source: 2003-2004 and 2007-08 Oregon School Directories
[2] Source: 2003-2004 and 2007-08 Oregon School Directories
[3] Source: Danielson, October 5, 2009
[4] Source: Ostheller, October 2, 2009

U.3.8 Housing

Housing Units/Vacancy Rate

The 2000 US Census notes that there are a total of 6,266 housing units in communities within the analysis area. Gilliam County contained 1,043 units, with 224 as vacant units, for a 21.5% vacancy rate, and Morrow County contained 4,276 units, with 500 vacant, for an 11.7% vacancy. The average vacancy rate for the communities is approximately 14 percent. Housing availability and supply in the analysis area is described in Table U-6.

PGE expects that temporary workers will either live in their existing community within the region or obtain temporary housing in the region.

Table U-6 Permanent Housing Supply and Availability in the Analysis Area

City	Total Housing Units	Vacancy Rate
Morrow County, OR	4,276 units	11.7%
Boardman Oregon	947 units	9.9%
Gilliam County, OR	1,043 units	21.5%
TOTAL	6,266 units	

Source: Community Profiles from the US Census, 2000 (DP-1)

Current Employee Demographic

In an effort to estimate the potential housing locations of future employees, this analysis uses the current employee demographic information as an indicator. Currently, there are 114 employees at the existing Boardman Plant. The majority of these employees live in Hermiston or in Boardman.

Assuming a similar distribution, the communities of Hermiston, Boardman and Irrigon would provide the majority of the housing for the permanent employees. Table U-7 provides the geographic breakdown of the Boardman Plant employee housing locations.

Table U-7 Geographic Breakdown of Boardman Plant Employee Housing Locations

Community	Number	Percentage
Stanfield	3	3%
Hermiston	42	37%
Boardman	20	18%
Heppner	5	4%
Ione	11	10%
Lexington	1	1%
Echo	1	1%
Arlington	6	5%
Irrigon	15	13%
Adams	1	1%
Pendleton	1	1%
Umatilla	3	3%
Madras	1	1%
St. Helens	1	1%
Ephrata	1	1%
Moses Lake	1	1%
Kennewick	1	1%
TOTAL	114	100%

Source: Communication with Becky Gardner, PGE, August 31, 2009. Communication to Ray Hendricks, Portland General Electric.

U.3.9 Traffic

The estimated construction personnel would have a limited impact on the congestion of Interstate (I)-84, Highways 74 and 19, and Tower Road. PGE would meet and work with construction workers and local residents to promote highway safety awareness and minimize the effect of increased traffic during the construction period. The estimated 20 personnel required during operation of the Carty Generating Station would have minimal impact. Consultation regarding potential impacts to traffic safety is planned with the following entities:

- Morrow and Gilliam County Public Works,
- Morrow and Gilliam County Sheriff's Office, and
- Oregon Department of Transportation.

A Traffic Impact Analysis was prepared for the proposed Carty Generating Station site (see Appendix U-1). The traffic-related impacts of the completed project as well as the impacts of the peak construction phases are addressed within the report. With the identified mitigation, the proposed development is not expected to have a significant impact on the adjacent roadway traffic operations during the construction phase or during operation.

ADVERSE IMPACT TO THE ABILITY OF PROVIDERS TO PROVIDE SERVICES

OAR 345-021-0010(1)(u)(C) *Exhibit U shall include a description of any likely adverse impact to the ability of the providers identified in OAR 345-021-0010(1)(u)(B) to provide the services listed in OAR 345-022-0110.*

Response:

In general, Morrow County has experienced incremental growth. Economic development has been generated by the Port of Morrow, the Boardman Coal Plant, and Threemile Canyon Farms. In addition, there is an industrial base in Tri-Cities, Washington, that has contributed to the residential growth in Boardman and Heppner, Oregon.

The proposed Carty Generating Station would impose no new demand on local utility providers for either construction-related or operation-related needs. As described, the facility would be supplied with process, cooling, and potable water in conjunction with the Boardman Plant, a separate, yet adjacent facility that has ample capacity to provide these services. Potable water for the permanent staff would be obtained from the existing Boardman Plant potable water well. Stormwater run-off would be collected and conveyed by retention swales to a stormwater retention pond or ponds and allowed to evaporate or infiltrate the surface.

It is anticipated that a peak of approximately 350 construction workers, with an average construction work force of approximately 245, would be needed during the construction period to build the proposed Carty Generating Station. Water for construction activities would be drawn from Carty Reservoir, utilizing the existing intake structure currently providing water to the Boardman Plant (see Exhibit O). A specialist contractor would install and service chemical toilets at the construction site. Local law enforcement agencies could be minimally affected by additional calls due to the addition of a construction work force to the area.

Construction personnel would likely rely on available community housing and/or lodging because of the location of the Carty Generating Station; some personnel may be able to commute from their permanent residences.

Construction workers from outside the region would be utilized as needed. However, PGE expects the existing industrial base/skilled labor in the region to be an important component to the labor used on the Carty Generating Station.

In general, it is not anticipated that workers would bring their families because of the short duration of the work. The addition of a small number of temporary residents to the analysis area is expected to marginally increase demand for water supply, sewerage service, health care, and police and fire services.

The proposed energy facility would create about 20 to 30 full-time jobs over the course of the lifetime of the facility. The new jobs would pay considerably above the average wage and would likely be attractive to current residents. It is expected that new employees would already reside in the analysis area. Creation of the new jobs would have a minimal effect on the demand for local services.

U.4 EVIDENCE THAT ADVERSE IMPACTS ARE UNLIKELY TO BE SIGNIFICANT

OAR 345-021-0010(1)(u)(D) *Evidence that adverse impacts described in OAR 345-021-0010(1)(u)(C) are not likely to be significant, taking into account any measures Applicant proposes to avoid, reduce or otherwise mitigate the impacts shall be include in Exhibit U.*

Response: The following subsection, Section U.4.1 outlines the evidence regarding adverse impacts.

U.4.1 Evidence Regarding Adverse Impacts

Limited in-migration is expected to occur as a result of the construction or operation of the proposed facility. It is expected that residents from the local communities would fill the 20 to 30 full-time, plant operation jobs. The proposed facility is not expected to result in significant long-term population increases.

U.4.1.1 Sewage Collection and Treatment

As described above, very little sanitary sewage would be generated by operation of the proposed energy facility. The sanitary collection and treatment would be managed by the Boardman Plant's existing sanitary sewage system. The estimated 800 to 1,000 gpd generated would be well within the capacity of the Boardman Plant system, which can handle over 20,000 gpd. As a result, operation of the facility itself would not significantly impact the public systems.

It is expected that permanent employees would be hired from the local area. Therefore, the facility would neither measurably increase the local population nor increase demand on local sewage collection and treatment systems. During construction, a contractor would provide chemical toilet service.

U.4.1.2 Water Supply

Process and Cooling Water and Domestic Water Supply

Water would be drawn from Carty Reservoir, utilizing the existing intake structure currently providing water to the Boardman Plant. The use of water from this private source for cooling water, cooling tower makeup water, service water, and the preparation of de-mineralized water would provide for very limited impacts, with no impacts to community water systems. Potable water for the permanent staff will be obtained from the existing Boardman Plant potable water system, with an expected usage of approximately 800 to 1,000 gpd. This potable water is supplied to the existing Boardman facility by a well located approximately 750 feet northwest of the existing Boardman facility.

Storm Water

Stormwater run-off would be collected and conveyed by retention swales to a stormwater retention pond or ponds and allowed to evaporate or infiltrate the surface. During construction, stormwater best management practices would be utilized. After consultation with Morrow County, the County Planning Department noted that State regulations would apply and DEQ would function as the regulating body (McLane, October 1, 2009).

PGE has submitted a NPDES Stormwater Discharge Permit (General Permit 1200-C) required for construction activities, and contractors would comply with the requirements of the permit. A copy of the submitted permit application and letter from DEQ stating that it anticipates being able to issue the permit once a Site Certificate is issued are available in Exhibit I, Appendix I-2. This would mitigate for any potential adverse impacts regarding construction. In addition, no significant adverse effects are expected during the operation of the facility because stormwater will not be collected by community stormwater collection systems. For specific permit information, see Exhibit E.

U.4.1.3 Solid Waste

Construction Waste

Construction wastes from the proposed energy facility would mainly consist of pallets, wood packing, steel banding, steel cutoffs, cardboard packing, wood cutoffs, concrete waste, and office refuse. PGE intends to minimize waste and recycle material to the maximum extent practicable at the site. Therefore, without a significant permanent population and a limited construction period, the proposed energy facility would not compromise the capacity of the solid waste handling facilities in the area.

Operating Waste

Solid waste that is not recycled would be transported to an approved landfill and is expected to have a minimal impact on the local community. The nearest approved landfill is the Finley Buttes Regional Landfill, located approximately 10 miles east of the proposed Carty Generating Station. There is an additional landfill in Arlington—the Columbia Ridge Landfill, located in Arlington. Either landfill is expected to be available for use by the applicant.

Solid waste generated during operation would not impact communities in the analysis area. The facility is expected to be a conditionally exempt Small Quantity Generator of hazardous waste. See Exhibit E for associated permit data. For additional information regarding the solid waste provisions, see Exhibit V.

No significant adverse impacts are expected because of the small volume of waste that would be generated as a result of the Carty Generating Station operations.

U.4.1.4 Police and Fire

The proposed energy facility would require approximately 20 to 30 full-time employees, who are expected would be hired from the local area. As a result, there may be only a very small population increase attributed to the proposed facility; therefore, the facility would not have a potential significant adverse impact on local police and fire protection services.

Police

The proposed energy facility would place an insignificant demand on local police services. The new facility, with the exception of some of the evaporation ponds, would be fenced within an industrial area with a gated entrance and would operate 24 hours a day with personnel on site at all times, thereby minimizing opportunities for theft and vandalism. Police protection, provided by the Morrow County Sheriff's Department and the Oregon State Police, is adequate to serve the proposed facility. The fact that most of the construction workers are likely to live in the area already is expected to provide a stability that would not result in a significant increase in calls for law enforcement during the construction period.

Fire

The proposed energy facility would be constructed with hydrants, in addition to sprinkler and deluge systems. Facility employees would be trained in emergency first aid procedures. The proposed energy facility would provide all fire protection equipment and facilities in accordance with the Oregon Fire Code.

The Boardman Rural Fire Protection District has an existing facility, Station #2, located outside of the PGE coal plant. This station is located on PGE-owned property under an agreement with PGE. The Fire District constructed the building and the building houses equipment owned by the Fire District, which can be used by the PGE Fire Brigade.

In addition to the Fire District, the Boardman Plant has a number of fire-trained personnel on staff, which form a private Fire Brigade for the PGE facility. The Fire Brigade has been in use since the Boardman Plant first began operation.

The proximity of Station #2, coupled with the existing PGE Boardman Plant Fire Brigade, would provide adequate fire protection resources.

The construction would not significantly impact the Boardman Rural Fire Department's ability to provide service to the community.

U.4.1.5 Education

Operational: As the proposed energy facility would only require approximately 20–30 full time employees, most expected to be hired from the local community, no significant numbers of new households would be created. Therefore, there would be no significant increase in the student

population. In addition, the school districts (Boardman, Ione and Arlington) in the analysis area are operating either within (Boardman and Ione) or well under (Arlington) capacities. Therefore, even if employees with school-age children were hired from outside the area, this would not adversely impact the education systems in the analysis area.

Construction: The workforce population is not expected to include many families. Therefore, temporary increases in the analysis area population due to construction workers' families living in the area over a 27-month period of earthmoving and equipment operation, and 33 months' total expected construction schedule, are likely to be negligible. However, if trends reverse themselves and the influx of construction workers result in some families moving to the area, findings from the existing capacities in the Morrow County, Ione, and Arlington School Districts illustrate that each District has available capacity for the school children of construction workers.

U.4.1.6 Health Care

For information regarding hospitals in the vicinity of the proposed facility, see Section U.3.6, above. As noted in Section U.3.6, no impacts are expected, due to the number and proximity of available health care facilities in the region.

U.4.1.7 Housing

Construction. It is expected that temporary housing for construction workers would follow a similar strategy that is currently utilized when the Boardman Plant requires additional shifts for biannual maintenance. This strategy involves utilizing existing trailer housing in Boardman and surrounding communities. Construction workers would also include members of the existing community and would therefore live in proximity to the Carty Generating Station.

Operational. The demand for permanent housing in the analysis area is not anticipated to increase significantly because the proposed generating project would require only about 20 to 30 full-time employees. It is expected that most of these employees would be hired from the local community. Given the substantial vacancy in housing, the local community of Boardman, Oregon, would be able to adequately provide housing for these permanent workers.

U.4.1.8 Traffic

A Traffic Impact Analysis was performed to identify the potential effects of the proposed facility on traffic operations and roadway facilities in the analysis area (see Appendix U-1). This analysis concluded that the Carty Generating Station can be developed while maintaining acceptable levels of service and safety on surrounding roadways.

A summary of the report findings is presented below:

U.4.1.9 Socioeconomic Impacts

Employment

The proposed energy facility would result in the creation of approximately 20 to 30 permanent jobs.

Typical operations will consist of approximately 20–30 daily staff members, with a day shift of about 15-20 staff and an evening staff of about 5 people to perform general operation and maintenance duties. Annual maintenance would increase the staffing on-site to about 50 for a duration of about two weeks every year. Residents of the local community would fill these jobs, to the greatest extent practicable. The number of new permanent jobs that would be created as a result of the operation of the proposed facility is considered to be moderate and would not significantly increase demand on local services. The new jobs created would provide a positive impact to the local economy.

Construction is expected to last approximately three years for each block:

Block 1: 2013 2nd quarter notice to proceed; 2016 1st quarter construction completion (33 months)

Block 2: 2016 3rd quarter notice to proceed; 2019 2nd quarter construction completion (33 months)

The average construction work force would be approximately 245 workers, with a peak of approximately 350 workers. Of the total construction work force, the applicant expects that about 50–75 workers would be drawn from outside the region. The remaining 225–275 are anticipated to be drawn from the regional labor pool. Total construction costs are expected to be approximately $250,000,000.

The temporary construction jobs created by the proposed energy facility would contribute to the local economy through the purchase of goods and services by the temporary construction work force during their stay in the area.

Economic Activity

As noted above, the proposed facility would create up to a peak of approximately 350 temporary construction jobs and approximately 20 to 30 permanent jobs. These employees are expected to purchase goods and services locally. In addition, the proposed facility itself would require the purchase of goods and services from local and regional businesses, including facility maintenance services, office equipment, and business services. The project would provide a continual source of energy to the State and to the region. All of this would result in a net inflow of dollars into the local economy that would have a beneficial effect beyond that of the immediate new employees.

Construction and Operation

Although the construction activity period is limited, the positive economic impacts to the region are important to reference. During construction, materials would be purchased from the region as much as practicable. Construction worker–related spending is also expected to provide additional income to the region.

Economic impacts based on operation are less significant on an annual basis, but can be expected over the life of the facility (30+ years).

Tax Revenues

Over time, the proposed energy facility would become a major new source of tax revenue to local government. This injection of additional tax revenues would contribute to the provision of improved roads, quality education, police, fire, and other municipal needs that would benefit the entire community, particularly because of the limited demands of the proposed generating facility on existing public services. Since the facility is expected to have a 30-year useful life, it would be a significant source of local tax revenues for years to come.

Other Economic and Community Benefits

In addition to the direct impacts of economic activity and increased tax base resulting from the Carty Generating Station, the project would likely have additional benefits as well, including:

- Diversification of energy sources within the region;
- Additional employment in a rural area of Oregon with little impacts to public services; and
- Diversification of the rural economy in Morrow and Gilliam counties, with an emphasis on higher wage industrial and related development

U.4.2 Mitigation Measures

The proposed facility would result in no significant adverse impacts to the public service and utility providers within the analysis area. Therefore, no mitigation is required for the majority of publicly provided services.

U.4.2.1 Traffic

The findings of the Traffic Impact Analysis (Appendix U-1) indicate that the Carty Generating Station can be safely constructed, with provision of the recommendations listed below.

Existing Traffic Conditions

- The weekday peak hours at the interchange ramp terminals were observed to occur from 6:10 a.m. to 7:10 a.m. and from 4:40 p.m. to 5:40 p.m.

- All of the analysis intersections and critical movements operate acceptably during the weekday am. and pm. peak hours.

- No safety deficiencies or crash patterns were identified at any of the analysis intersections.

Year 2015 Background Traffic Conditions

- Under 2015 background conditions, all analysis intersections are forecast to continue to operate acceptably during the weekday am. and pm. peak hours.

Year 2015 Total Traffic Conditions (with proposed development)

- PGE plans to construct the Carty Generating Station, which would employ approximately 20–30 daily staff. To provide a conservative analysis, the proposed development is estimated to generate approximately 25 trip ends during the am and pm peak hours of a typical weekday.

- Under year 2015 total traffic conditions, all analysis intersections are forecast to continue to operate acceptably during the weekday am and pm peak hours.

Construction Phase Peak Operations

- The total construction period is estimated to last approximately 27 months and may begin as early as 2013, depending upon completion of the review and approval process.
- At the height of the construction period, approximately 350 workers would be employed at the site.
- During the weekday am peak hour, the westbound interchange ramp terminal is forecast to operate at a volume to capacity (v/c) ratio of 0.90. The 95th percentile queuing in this direction may reach 300 feet, which would not provide the recommended deceleration distance between the back of the queue and the I-84 mainline.
    - A 30-percent reduction in forecast construction worker traffic volumes during the weekday am peak hour would reduce the v/c ratio to 0.77 and reduce the 95th percentile queue to acceptable lengths.

- The existing geometry of the interchange ramp terminals is not adequate for a WB-67 design vehicle to maneuver through the interchange.

Recommendations

Based on the findings of the traffic analysis, the Carty Generating Station could be safely constructed with provision of the recommendations listed below.

- The westbound ramp terminal operations during the weekday am peak period can operate safely and efficiently assuming the provision of one of the following mitigation options:

  Option #1 – Reduce Peak Hour Traffic Volumes

  - During the peak of the construction, a staggering of shift start times or the implementation of ride sharing or busing programs would have the potential to significantly reduce the total number of construction worker vehicle trips through the westbound ramp terminal. A 30 percent reduction of the estimated weekday am peak hour construction worker trips would provide adequate mitigation to the off-ramp and provide sufficient stopping distance for exiting vehicles. Any additional reduction in trips beyond 30 percent would result in improved operations and additional deceleration distance along the off-ramp.

  Option #2 – Install Temporary Traffic Control

  - Utilize a temporary traffic signal or manual traffic control during the two peak construction months to prioritize westbound left-turning vehicles at the westbound ramp terminal during the weekday am peak hour.

- Assuming the Love's Travel Stop is developed as planned and Oregon Department of Transportation (ODOT)/Morrow County require geometric improvements at the ramp terminals to accommodate a WB-67 design vehicle, the ramp terminal deficiency will likely be addressed as it relates to the proposed Carty project. However, if the Love's Travel Stop project is stopped or delayed, or the Carty construction project occurs first, then it is recommended that PGE work with ODOT and Morrow County to determine the appropriate level of improvements necessary to accommodate the construction and daily operations design vehicles.

- Consideration has been given to bringing oversized and overweight loads to the construction site using existing rail facilities or via barge to nearby docking facilities on the Columbia River. These can then be transported to the site using multiple axle rigs specifically designed for heavy loads.

U.5 MONITORING PROGRAMS

OAR 345-021-0010(1)(u)(E) *Applicant's proposed monitoring program, if any, for impacts to the ability of communities in the vicinity to provide the services listed in OAR 345-022-0010 shall be included in Exhibit U.*

Response: Because there are no long-term significant adverse impacts of construction and operation of the proposed facility on the ability of communities in the analysis area to provide services assessed, there are no monitoring programs planned.

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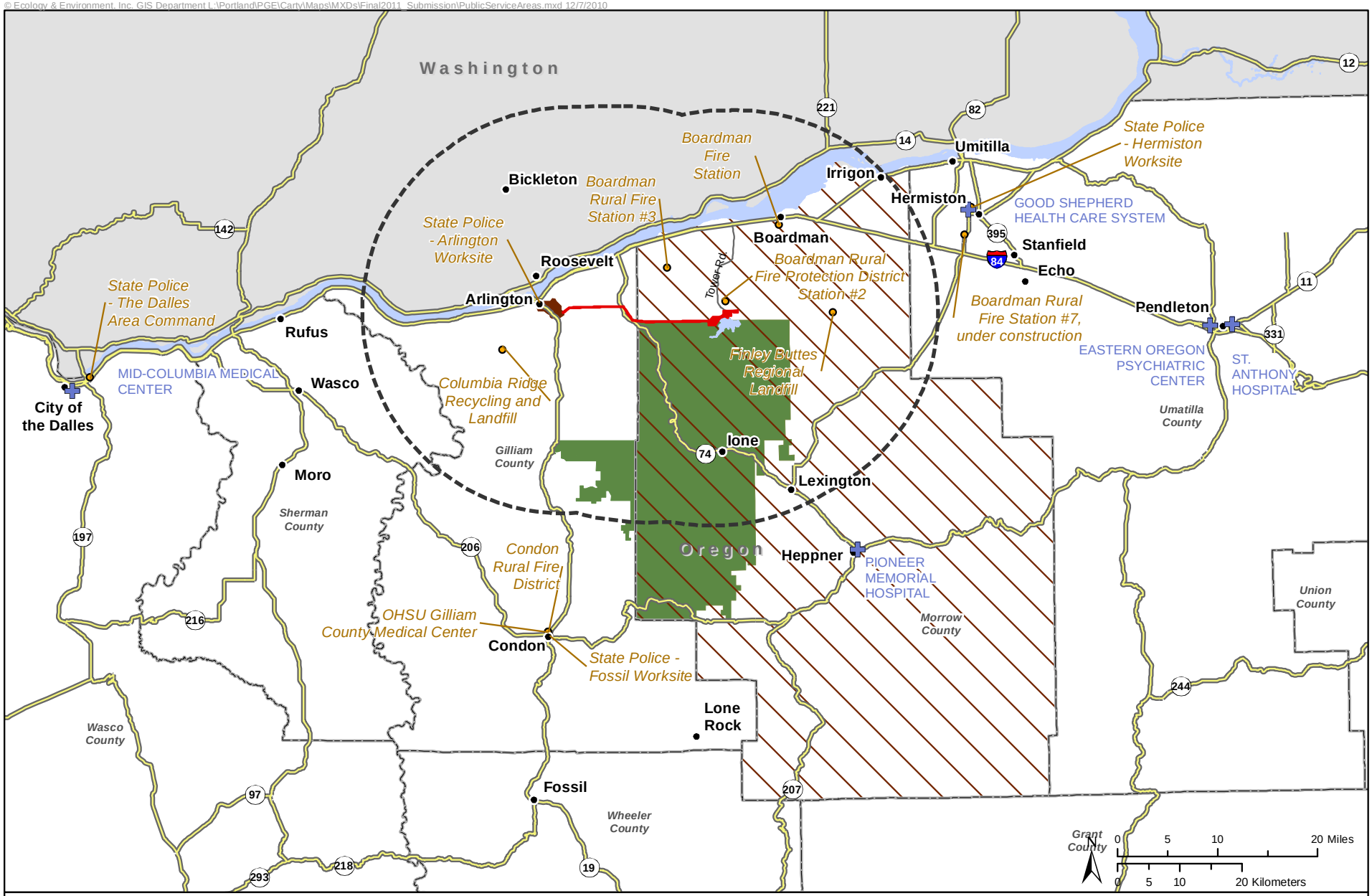


Figure U-1
Public and Private Service Providers
PGE Carty Generating Station
Application for Site Certificate

*The Ione School District is a Charter School District and can receive students from other school districts, including the Morrow County School District.

Final 2011

APPENDIX U-1

Traffic Impact Analysis

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

December 28, 2009 Project #: 10415.0

Robin Scholetzky, AICP, LEED AP
Eric White, PE
Ecology and Environment, Inc.
333 SW 5th Ave Ste 608
Portland OR 97204

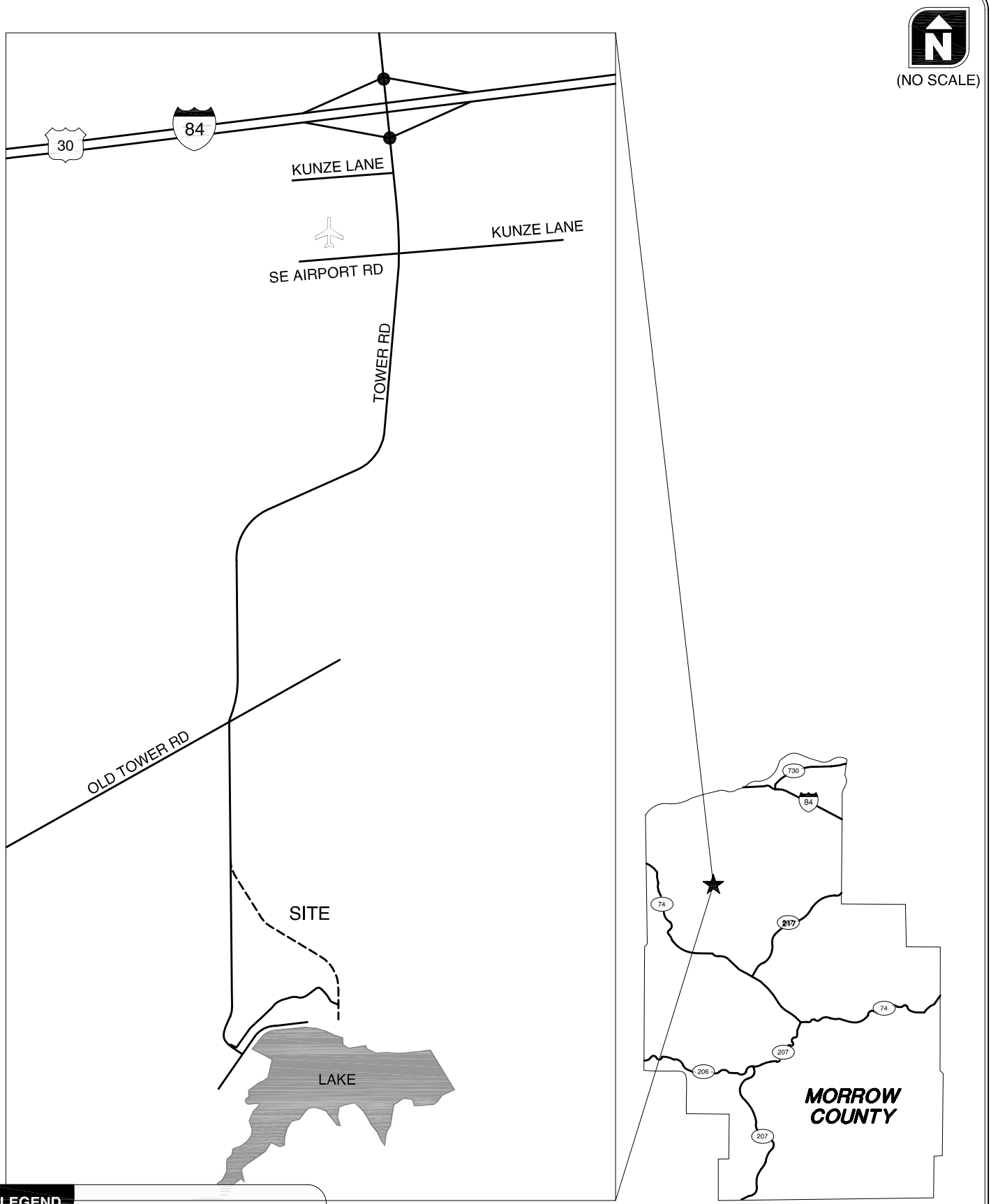
RE: Traffic Impact Analysis Letter for the Proposed PGE Carty Generating Station - Morrow County, Oregon

Dear Robin,

This letter summarizes our assessment of the potential traffic-related impacts associated with the Portland General Electric Company (PGE) Carty Generating Station site located in Morrow County, Oregon. A site vicinity map is provided in Figure 1. The traffic-related impacts of the completed project as well as those impacts during the peak construction phases are addressed within this Traffic Impact Analysis (TIA) letter report. Based on existing traffic operations and the estimated daily operations trip generation, the proposed development is not expected to have a significant impact on the adjacent roadway traffic operations upon buildout. During the construction phase, the traffic impacts of the increased heavy vehicle trips and roadway network adequacy are addressed in further detail herein.

SCOPE OF THE REPORT

This analysis determines the transportation-related impacts associated with the proposed PGE Carty Generating Station project. The study scope and overall study area for this project were selected based on a review of the local transportation system and conversations with the project team, Morrow County, and Oregon Department of Transportation (ODOT) staff. The report addresses the following transportation issues:



SITE VICINITY MAP
MORROW COUNTY, OREGON

FIGURE 1

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- Existing year 2009 traffic conditions during the weekday a.m. and p.m. peak hours;
- Forecast year 2015 background traffic conditions during the weekday a.m. and p.m. peak hours (this does not include the construction traffic or the site-generated traffic, but does include general growth and planned developments in the region);
- Forecast year 2015 total traffic conditions with full buildout of the project during typical weekday a.m. and p.m. peak hours (this includes full buildout daily operations due to site-generated traffic); and,
- Analysis of construction phase of proposed project to address heavy vehicle operations, peak traffic flows, transportation network geometry, safety, and efficiency.

Based on our review of the surrounding road network, previous traffic analyses, and conversations with Morrow County staff [1], the following study roadways and intersections were included as part of the transportation analysis:

- Tower Road / I-84 Interchange Eastbound Ramp Terminal (Exit Number 159)
- Tower Road / I-84 Interchange Westbound Ramp Terminal (Exit Number 159)
- Tower Road south of I-84

Data Collection

The following data were collected to support the operations and safety analysis for this study:

- 16-hour mid-week turn movement counts conducted at each of the eastbound and westbound ramp terminals at the Tower Road/I-84 interchange.
- 24-hour mid-week tube counts conducted along Tower Road south of I-84.

Operations Parameters

All level-of-service (LOS) analyses will be performed based on procedures outlined in the 2000 *Highway Capacity Manual*, published by the Transportation Research Board (Reference 1).

Operating Standard

As defined in Morrow County's updated 2009 Transportation Plan System Plan (TSP) (Reference 2), acceptable traffic operations are achieved if the intersection level-of-service (LOS) at unsignalized intersections operate at LOS D or better within the Urban Growth Boundary (UGB),

[1] A scoping memorandum was prepared and submitted to ODOT and Morrow County. *A copy of the approved TIA Scoping Memorandum is provided in Attachment "A."*

and LOS C or better outside of the UGB. The state highway standard as set forth by ODOT in the *Oregon Highway Plan* (Reference 3) requires that the study intersections at the ramp terminals operate at a maximum volume-to-capacity ratio of 0.70.

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and geometric characteristics of the roadways within the study area. Kittelson & Associates, Inc. (KAI) staff visited and inventoried the site and surrounding study area in October 2009. At that time, KAI collected information regarding adjacent land uses, existing traffic operations, and transportation facilities in the study area.

Site Conditions and Adjacent Land Uses

The proposed site is currently undeveloped and located adjacent to the existing Boardman Plant located approximately 13 miles southwest of Boardman off of Tower Road. Access to the site is proposed via the existing privately owned roadway located off of Tower Road [2].

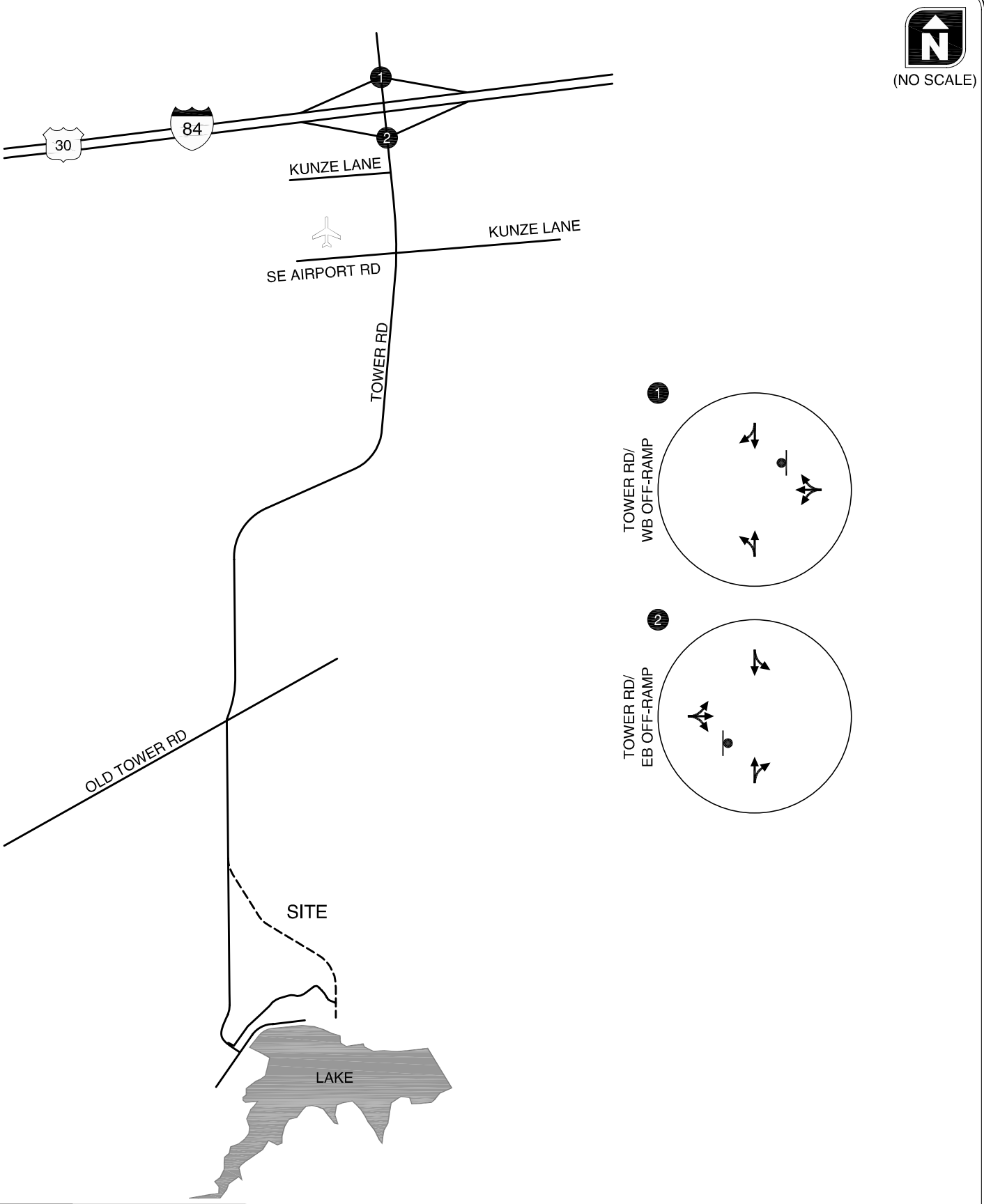
Existing Transportation Facilities

Table 1 summarizes the existing transportation facilities and roadways in the study area. The intersection lane configurations and traffic control devices are illustrated in Figure 2.

Table 1
Existing Transportation Facilities and Roadway Designations

Roadway	Classification	Cross Section	Posted Speed	Sidewalk?	Bicycle Lanes?	Median?	On-Street Parking?
Interstate Highway I-84 (Columbia River State Highway #2)	Inter-State Highway (Expressway)	4-Lane Divided	65 mph	No	No	Yes	No
Tower Road	Minor Arterial	2-Lane	55 mph	No	No	No	No
Kunze Lane	Major Collector	2-Lanes	45 mph	No	North side only	No	No

[2] The proposed access will connect with a section of Tower Road that is privately owned.



EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES MORROW COUNTY, OREGON

FIGURE **2**

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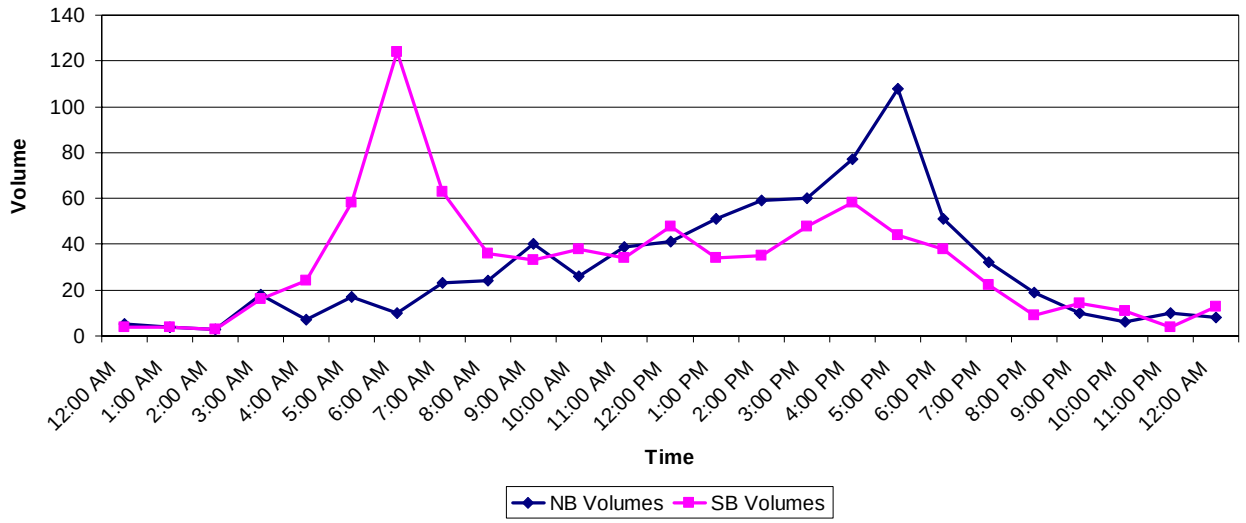
Existing Traffic Operations

Manual turning movement traffic counts were conducted at each of the study intersections during a typical weekday in October 2009. The distribution of traffic volumes over a 24-hour period is illustrated below in Exhibit 1.

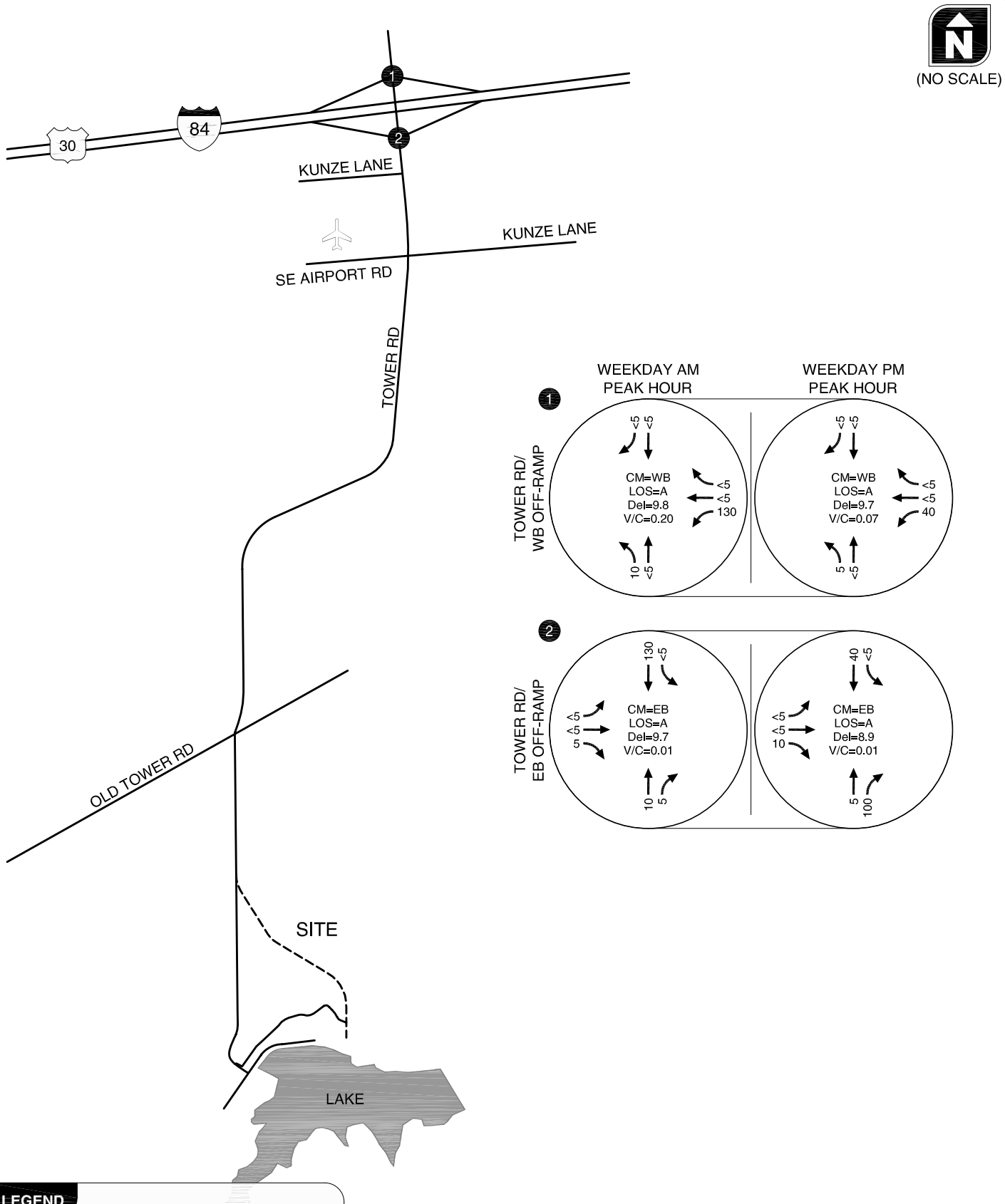
Exhibit 1
24-hour Traffic Volumes along Tower Road south of I-84 Interchange Ramps
(October 14, 2009)



As shown in Exhibit 1, the peak flows of traffic along Tower Road (south of I-84) were observed to occur at approximately 6:00 a.m. and 5:00 p.m. This is consistent with the current work hours of the existing Boardman Plant, and the peak traffic flows coincide with the shift changes. Per conversations with the project team, the Boardman Plant is on 12-hour shifts 7 days per week from 7:00 a.m. to 7:00 p.m. The majority of the other maintenance support operates on 10-hour shifts between 7:00 a.m. and 5:00 p.m. Monday through Thursday and the traffic volume peaking characteristics are reflected above in Exhibit 1.

The 16-hour turning movement counts were analyzed to identify the peak traffic volumes at the interchange ramps. The morning peak hour was observed to occur from 6:10 to 7:10 a.m. and the afternoon peak hour was observed to occur from 4:40 to 5:40 p.m., consistent with the tube count volumes along Tower Road. The turning movement counts were summarized and rounded to the nearest five vehicles per hour as shown in Figure 3. *Attachment "B" includes the traffic count data.*

For operational analysis purposes, 30HV were calculated in accordance with procedures presented in ODOT's *Analysis Procedures Manual* (APM) (Reference 4). Several Automatic Traffic Recorders in the vicinity of the I-84/Tower Road interchange were reviewed for historical volume trends. It should be noted that ATR 25-008 (Boardman Junction) located nearest to the study intersections was installed June 2007 and five years of data are not available at this location. Similarly, ATR 30-027 located at Echo was installed in June 2007 and only one year of data is



LEGEND

CM = CRITICAL MOVEMENT
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE
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EXISTING TRAFFIC CONDITIONS
WEEKDAY AM AND PM PEAK HOURS
MORROW COUNTY, OREGON

FIGURE **3**

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available. Finally, ATR 11-009 located at the Heppner Junction was also reviewed and only two years of data were available (installed January 2006). With the limited available data, ATR 25-008 at Boardman Junction was used to estimate the seasonal adjustment based on its proximity to the I-84/Tower Road interchange. This value was estimated by dividing the percentage of average daily traffic of the peak month of traffic flow (August) by the percentage of average daily traffic during the month in which traffic counts were collected (October). The calculation is shown below:

$$\frac{\text{Peak Month (August)} = 116\%}{\text{Traffic Counts (October)} = 110\%} = 1.05$$

Therefore, traffic volumes from the October 2009 counts were increased by a factor of 1.05 to develop the 30 HV.

As shown in Figure 3, both study intersections operate acceptably during the a.m. and p.m. peak hour analysis periods. *Attachment "C" contains the existing traffic operations worksheets.*

Safety Analysis

The crash history at each study intersection was reviewed in an effort to identify potential safety issues. Crash records were obtained from ODOT for the five-year period from January 1, 2004 through December 31, 2008. As shown in Table 2, no crashes were reported during the study period at the study intersections.

Table 2
Segment Crash History (January 1, 2004 – December 31, 2008)

Intersection	Collision Type				Severity			Total	Crash Rate[2]
	Rear-End	Turning	Angle	Other	PDO[1]	Injury	Fatal		
Tower Road/ I-84 EB Ramp	0	0	0	0	0	0	0	0	0.00
Tower Road/ I-84 WB Ramp	0	0	0	0	0	0	0	0	0.00
Tower Road/ Kunze Lane	0	0	0	0	0	0	0	0	0.00

[1] PDO – Property Damage Only.
[2] Crash Rate = Crashes per million vehicle miles traveled.

Segment crashes were also investigated along Tower Road in the vicinity of the site. Table 3 summarizes the segment crash data also obtained from ODOT.

Table 3
Segment Crash History (January 1, 2004 – December 31, 2008)

Segment	Collision Type				Severity			Total	Crash Rate[2]
	Rear-End	Turning	Angle	Other	PDO[1]	Injury	Fatal		
Tower Road (between I-84 and 7.13 Miles south)	0	1	1	2	2	2	0	4	0.20

[1] PDO – Property Damage Only.
[2] Crash Rate = Crashes per million vehicle miles traveled.

As shown in Table 3, there are no discernible safety trends that would necessitate mitigation. The crash rate for this segment per million vehicle miles traveled is below the statewide average crash rate for minor arterials in rural cities of 1.23 [3].

The crash data is included in Attachment "D".

[3] As reported in *Statewide Crash Rate Tables* published by ODOT's Transportation Data Section Crash Analysis and Reporting Unit in July 2007.

TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis identifies how the study area's transportation system will operate upon full build-out of the proposed Carty Generating Station. The following analyses are provided within this section:

- Forecast year 2015 background traffic conditions (includes regional growth and in-process planned developments during the buildout year, but does not include traffic from the proposed development) during the weekday a.m. and p.m. peak hours;

- Forecast year 2015 total traffic conditions (includes background traffic growth and the forecast site-generated traffic upon buildout of the site) during the weekday a.m. and p.m. peak hours;

- Analysis of construction phase of proposed project to address peak construction worker trips (peak traffic flows), heavy vehicle operations, and transportation network geometry. The construction phase is anticipated to occur sometime between 2012 and 2015 for a duration of approximately 27 months.

The impact of traffic generated by the proposed development was examined during typical weekday a.m. and p.m. peak hours in the year of build-out (Year 2015).

Year 2015 Background Traffic Conditions

The background traffic analysis identifies how the study area's transportation system will operate in the buildout year of the proposed development without the traffic from the proposed development. The purpose of this analysis is to establish a basis of comparison for future conditions. As such, the background traffic analysis includes traffic growth from developments in the area plus general growth in the region, but does not include the traffic from the proposed development.

In-Process Developments

Based on information provide by Morrow County, the Love's Travel Stop and County Store (identified below) is a pending development within the study area. While there are currently some on-going land use issues involving this project, it has been included in this analysis as an in-process development given its significance and impact to the I-84/Tower Road interchange.

- **Love's Travel Stop and Country Store**

  A Traffic Impact Analysis Report was prepared by USKH in July 2009 documenting the estimated weekday p.m. peak hour trip generation and the transportation impacts of the proposed development. The development will be located along Tower Road between I-84 and Kunze Lane and will include a total of 24 vehicle/truck fueling stations, a convenience mart, fast food facilities, and truck maintenance facilities. The estimated trip generation

for the site as described in the report is approximately 322 trips during the weekday p.m. peak hour (161 in, 161 out). Although no a.m. analysis was provided, the same trip generation as the weekday p.m. estimate was analyzed for the weekday a.m. peak hour [4]. *Attachment "E" contains the Love's Travel Stop in-process traffic volumes.*

Regional Growth

To account for regional growth, a background growth rate was calculated using the historical trends method described in the APM. Traffic data from ODOT's Future Traffic Volume Table was collected at mile point 163.86 along the Columbia River Highway No. 2 (I-84) (0.3 miles west of Boardman Interchange) The annual growth rate calculation is shown below:

[(18,500 AADT / 12,800 AADT)-1] / [20 years] = **0.022**

As shown in the calculation above, the annual growth rate is calculated to be 2.2 percent. A 2.5 percent annual growth rate was assumed in the analysis to remain conservative, and was applied to traffic volumes at the study intersections. This growth rate is also consistent with the growth rate identified along I-84 in the Morrow County 2005 TSP. The year 2015 background traffic operations include the anticipated traffic from the in-process development as well as general regional growth in traffic volumes and are shown in Figure 4. As shown, each of the study intersections is forecast to continue to operate acceptably. *Attachment "E" contains the year 2015 background traffic operations worksheets.*

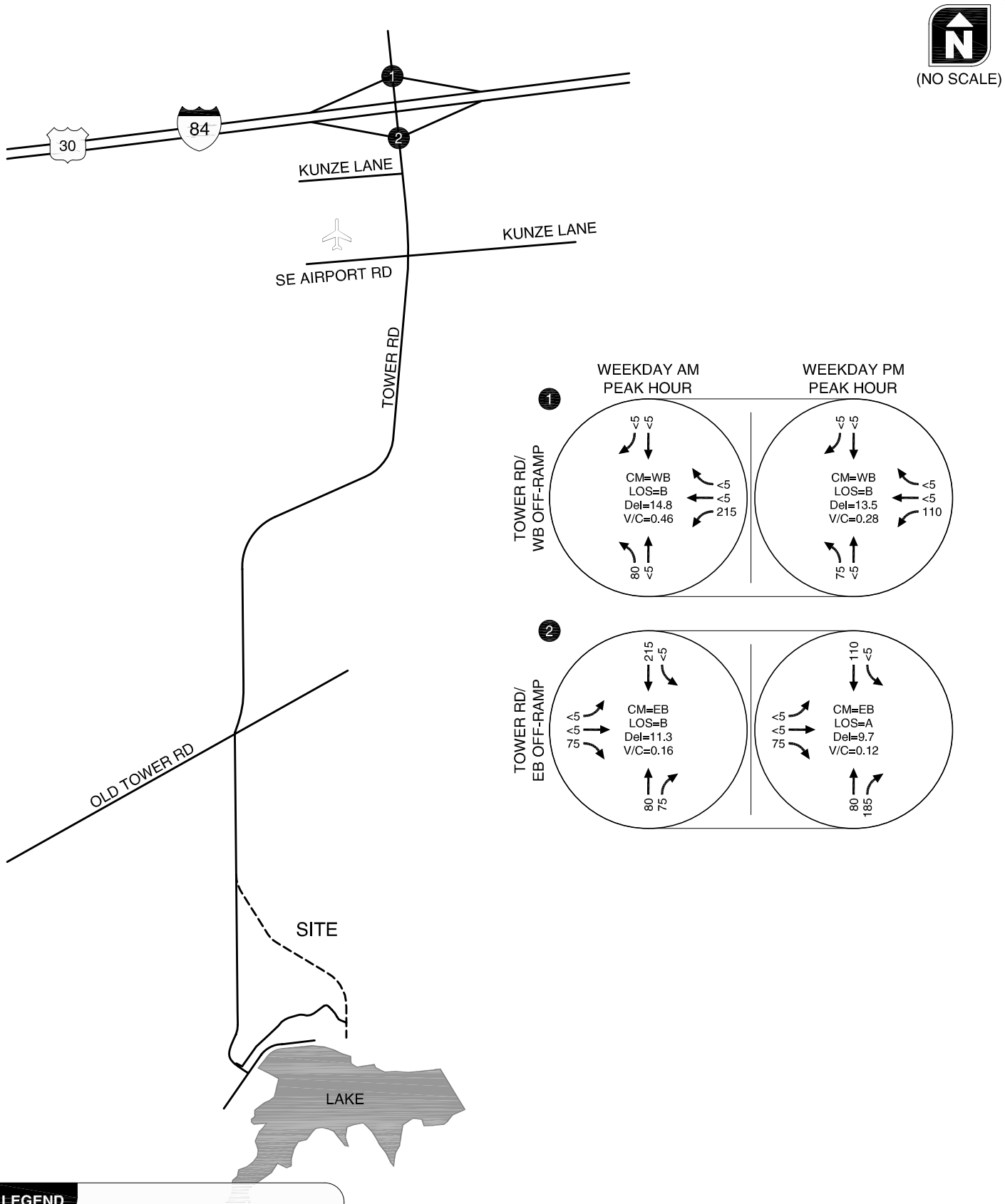
Year 2015 Total Traffic Conditions

The total traffic analysis identifies how the study area's transportation system will operate in the buildout year with the completed proposed development traffic on the transportation system. As such, the year 2015 total traffic analysis includes traffic growth from developments in the area, general growth in the region, and includes forecast traffic from the proposed development.

Proposed Development plan

PGE is proposing to construct a new electrical generating facility and transmission line located primarily in Morrow County. A portion of the transmission line will be located in Gilliam County. The proposed Carty Generating Station will be a combined-cycle generating plant fueled by natural gas. The proposed site is adjacent to the existing PGE Boardman Plant located approximately 13 miles southwest of Boardman off of Tower Road via I-84. Access to the site is proposed via a new private driveway connection to a private segment of Tower Road. A vicinity map is shown in Figure 1.

[4] The ITE reference manual, *Trip Generation, 8th Edition,* was reviewed to identify an appropriate a.m. trip generation rate for this land use. Based upon similar land uses, the trip generation rates for the weekday a.m. peak hour period are similar, and slightly less than the weekday p.m. peak hour rates for a development of this nature. Applying the same trip generation during the weekday a.m. period as the weekday p.m. ensures a conservative analysis.



LEGEND

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YEAR 2014 BACKGROUND TRAFFIC CONDITIONS
WEEKDAY AM AND PM PEAK HOURS
MORROW COUNTY, OREGON

FIGURE 4

The following sections summarize the expected operational characteristics of the surrounding roadway network during typical daily operations of the new Carty Generating Station facility.

Analysis Area and Study Intersections

The transportation impact analysis study area will encompass the area noted in the Application for Site Certificate as the "Energy Facility Site". This area includes the Carty Generating Station, associated facilities, and a surrounding area. It does not include the area associated with the transmission line for the following reasons:

- The transmission line is expected to utilize existing utility right of way.
- The transmission line construction and operation will result in very limited traffic to the area.

The Energy Facility Site boundary is shown in Attachment "F".

Daily Operations (Post Construction)

Once constructed and operational, the proposed Carty Generating Station will have a fairly consistent operational pattern. Based on preliminary estimates obtained by the development team, the plant will operate under the following characteristics:

- Typical operations will consist of approximately 20-30 daily staff members, with an average day shift of about 20 staff and an average evening staff of about 5 people to perform general operation and maintenance duties. Annual maintenance would increase the staffing on-site to about 50 for a duration of about two weeks every year.
- The generating facility will be run by natural gas supplied via a pipeline. As such, the plant is not expected to generate consistent numbers of daily inbound or outbound truck shipments of fuel.
- It is anticipated that the plant will have two tanker delivery trucks per week and one semi-truck delivery per day.
- Expected delivery vehicles and visitor cars to average about 6 or 7 per day with office waste disposal using a once a week pick-up.
- The facility will be accessed via an unmanned security gate with cameras and intercom which will be operable from within the facility.

Based on the information summarized above, a detailed transportation impact analysis (per Morrow County standards) is not required for the actual daily plant operations as the site is not anticipated to generate more than 400 daily trips (County Code Section 4.170.D.9).

A sensitivity analysis was conducted to verify that the daily operations of the built PGE Carty Generating Station would not significantly impact the operations at the I-84 interchange ramps.

As described above, typical daily operations may utilize 20-30 staff members. As a conservative approach, this analysis assumes 25 individual passenger car trips to and from the site during each of the morning and evening peak hours. The estimated site-generated trips are illustrated below in Table 4.

Table 4
Estimated Site Generated TRips
During the Weekday AM and PM Peak Hours

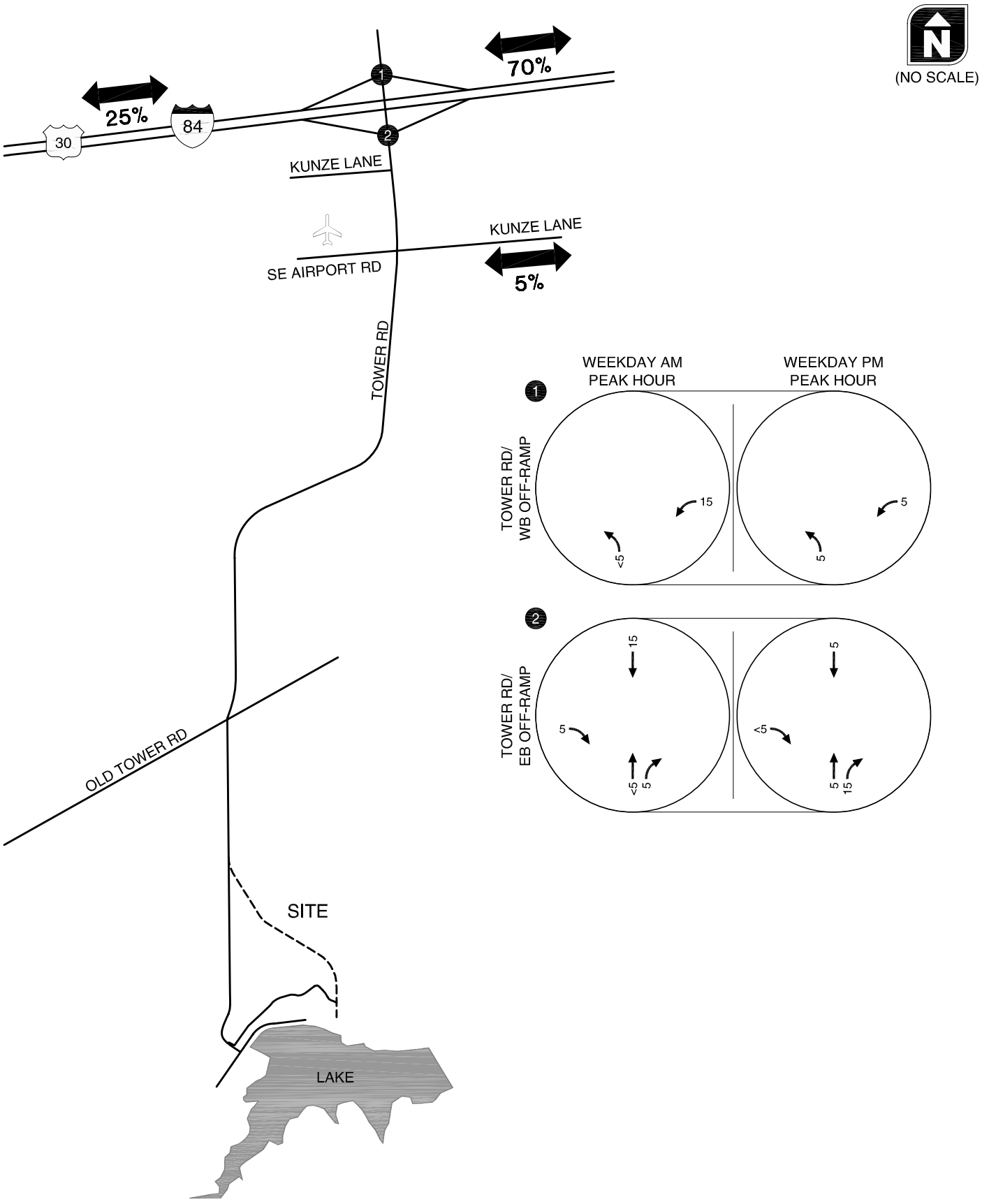
Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	Total	In	Out	Total	In	Out
PGE Carty Generating Station	25	20	5	25	5	20

The estimated trip generation shown in Table 4 and the estimated trip distribution pattern is summarized in Figure 5. The trip distribution pattern was developed based on existing employee commute patterns from the Boardman Plant. As a result, it is expected that approximately seventy-five percent of construction-related trips will originate east of the I-84/Tower Road interchange, and approximately twenty-five percent from the west. The forecast volumes shown in Figure 5 were added to the background volumes shown in Figure 4 to arrive at the 2015 total traffic volumes shown in Figure 6.

As shown in Figure 6, each of the study intersections is forecast to continue to operate acceptably during 2015 total traffic conditions. *Attachment "F" contains the year 2015 total traffic operations worksheets.*

A transportation assessment of the construction period in addition to the completed project was also prepared in addition to 2015 total traffic conditions to support the application process. This assessment includes an evaluation of Tower Road and the I-84 interchange, focusing on the ability to adequately accommodate construction traffic from an operations and safety perspective.

The following section summarizes the expected operational characteristics of the surrounding roadway network during the construction phase of the project.



ESTIMATED TRIP DISTRIBUTION PATTERN AND SITE GENERATED TRIPS
WEEKDAY AM AND PM PEAK HOURS
MORROW COUNTY, OREGON

FIGURE 5

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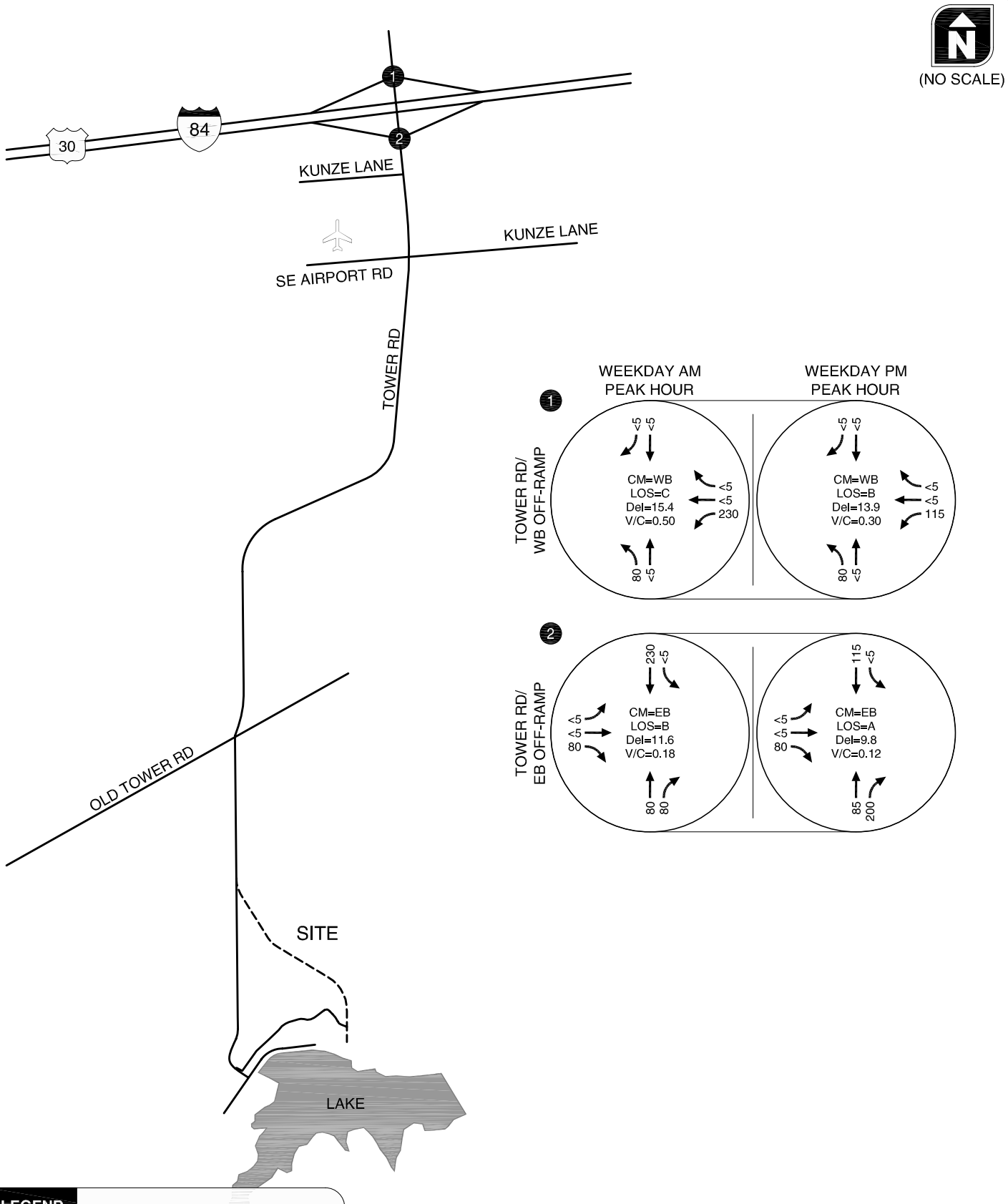

LEGEND

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YEAR 2014 TOTAL TRAFFIC CONDITIONS
WEEKDAY AM AND PM PEAK HOURS
MORROW COUNTY, OREGON

FIGURE 6

Construction Phase Daily Operations

The Carty Generating Station project will be a sizable facility capable of producing up to 900 megawatts of electrical power. It is expected that construction worker and truck traffic will be an important element to address in the application and approval process. As such, Kittelson & Associates, Inc. has worked with the project team to obtain a preliminary breakdown of the staffing levels during the construction period. Estimates of pertinent information obtained include the following:

- The total construction period is estimated to last approximately 27 months and may begin as early as 2012 depending upon completion of the review and approval process.
- At the height of the construction period, approximately 350 workers will be employed at the site.
- Tower Road via I-84 will be the only transportation access utilized during the construction period.
- The construction period will see frequent (up to 40 per day) large trucks and some oversized loads.
- Alternative modes will also be used for delivery: heavy loads will be brought by rail using existing lines and by barge to nearby docking facilities on the Columbia River and transported to site using multiple axle rigs specifically designed for heavy loads.

Per conversations with the project team the peak construction months are expected to occur approximately 1-year following the official start with a maximum number of workers set at approximately 350. A traffic analysis for this peak construction is provided herein.

Peak Construction Traffic Operations

As described above, a higher number of vehicle trips are expected to travel to and from the site during the construction phase than during post-construction daily operations. During the peak construction period, a maximum of approximately 350 day-shift workers are anticipated to be working on-site during a typical workday. Based on experience at other large construction sites, a 1.2 vehicle occupancy rate is anticipated by PGE for workers traveling to and from the site during construction phase. A traffic operations analysis was conducted for this peak of construction, considering vehicle occupancy, to identify the *reasonable worst-case* potential peak hour impacts of the construction phase traffic on the I-84 interchange ramps.

As such, this analysis assumes a worst-case of 292 trips to the site during the morning peak hour, and 292 trips from the site during the evening peak hour. Based on this conservative trip generation approach, the estimated site-generated trips are illustrated below in Table 5.

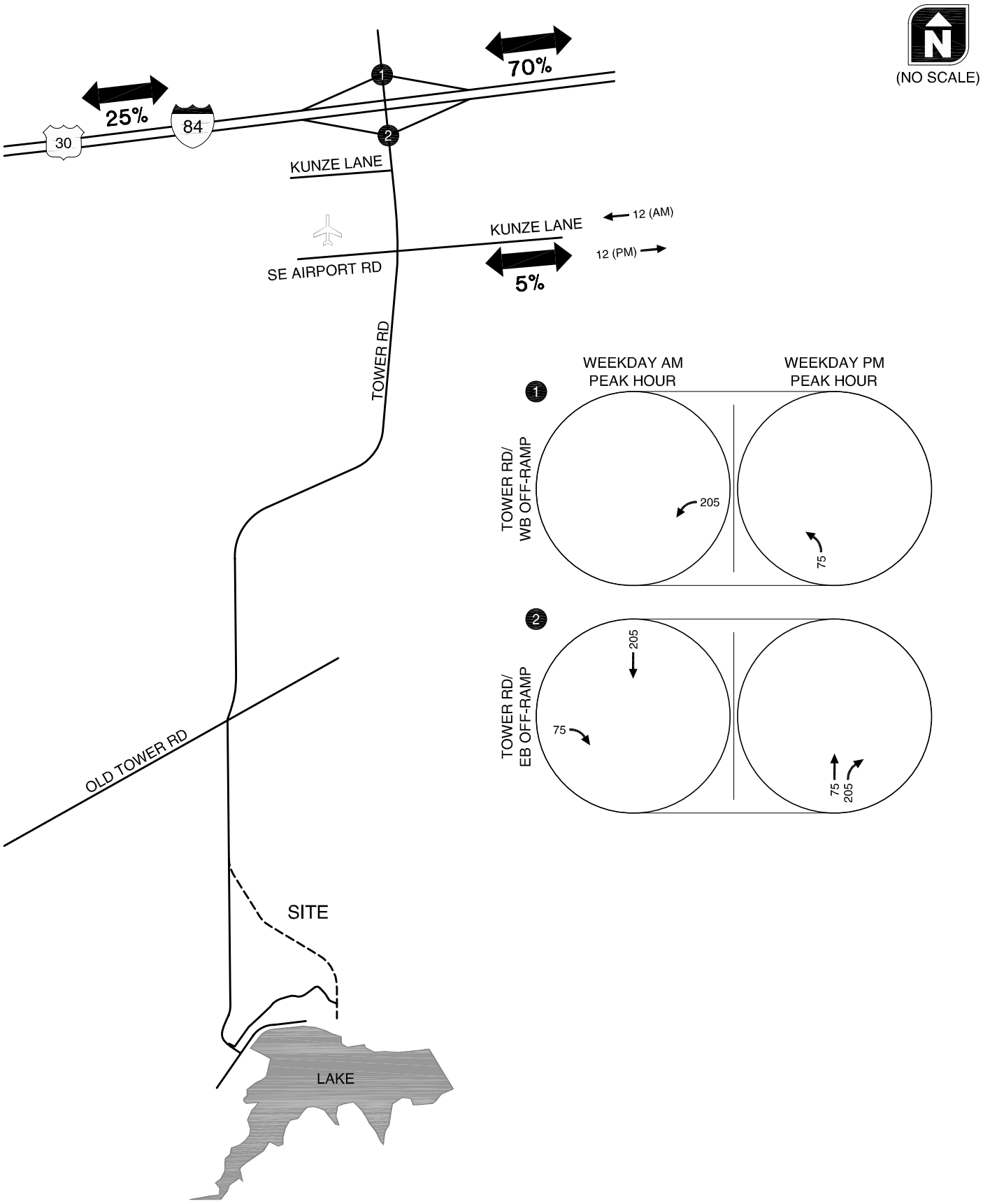
Table 5
Estimated Construction Phase Trips
During the Weekday AM and PM Peak Hours

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	Total	In	Out	Total	In	Out
PGE Carty Generating Station	292	292	0	292	0	292

The estimated trip distribution pattern is summarized in Figure 7. The trip distribution pattern was developed based on a review of existing housing opportunities located within the region. From this analysis, approximately seventy-five percent of construction-related trips will originate east of the I-84/Tower Road interchange, and approximately twenty-five percent from the west.

The forecast volumes shown in Figure 7 were added to the background volumes shown in Figure 4 to arrive at the peak construction phase traffic operations shown in Figure 8. *Attachment "G" contains the peak construction total traffic operations worksheets.*

As shown in Figure 8, the westbound left turn at the north ramp terminal is forecast to operate at a volume-to-capacity (v/c) ratio of 0.90 during the weekday a.m. peak hour, exceeding the 0.70 v/c threshold established by ODOT. It should be reiterated that the analysis is rooted in a number of conservative assumptions and includes the peak of the construction phase. Regardless, the forecast traffic conditions will be temporary (traffic operations are forecast to be well within the 0.70 threshold under buildout and daily operations conditions, as summarized in *2015 Total Traffic Conditions*). As such, mitigation recommendations at this intersection are based on safety and queuing along the westbound off-ramp during the weekday a.m. peak hour.



ESTIMATED TRIP DISTRIBUTION PATTERN AND SITE GENERATED TRIPS
PEAK CONSTRUCTION PERIOD - WEEKDAY AM AND PM PEAK HOURS
MORROW COUNTY, OREGON

FIGURE 7

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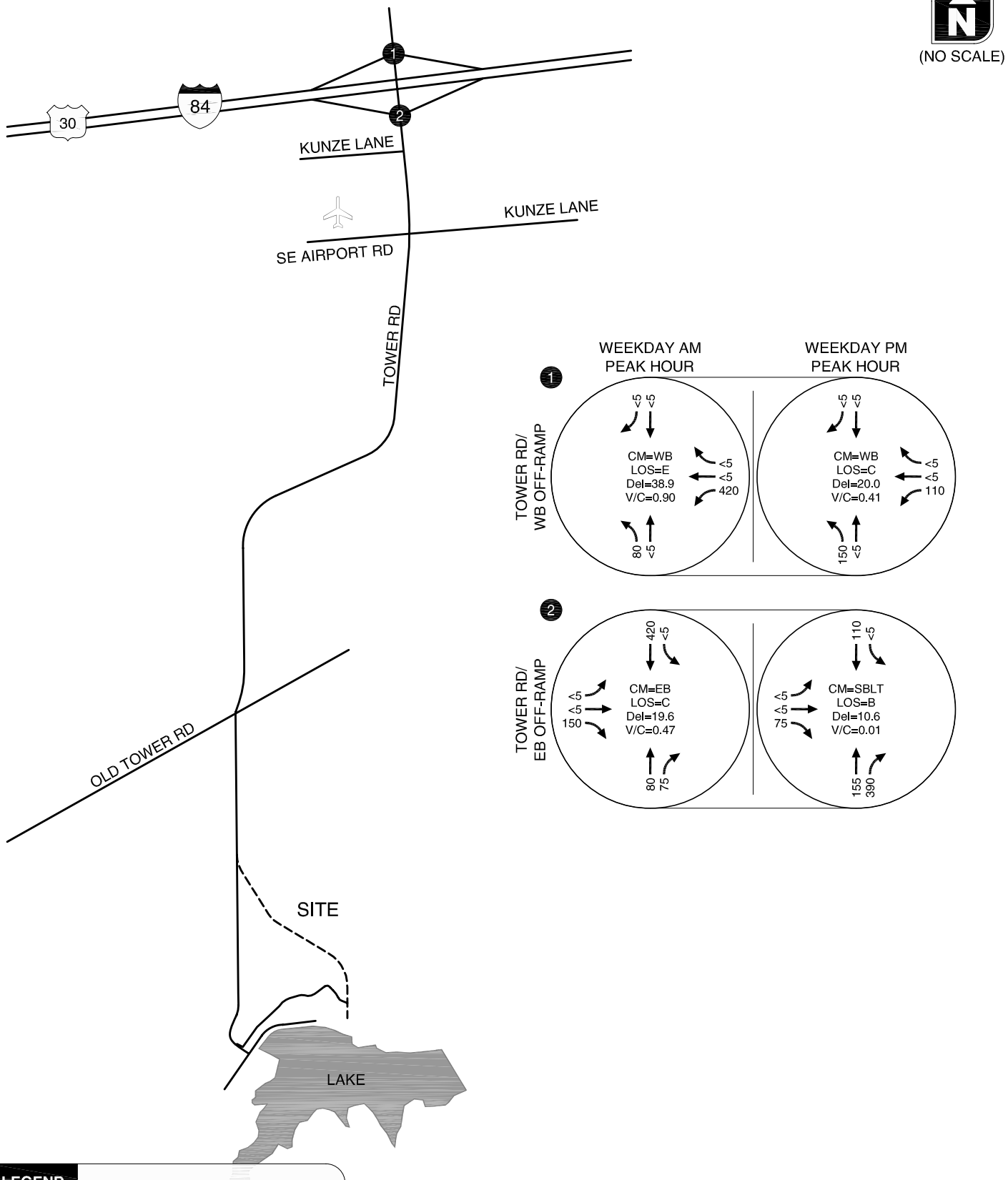

LEGEND

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PEAK CONSTRUCTION FORECAST TRAFFIC OPERATIONS
WEEKDAY AM AND PM PEAK HOURS
MORROW COUNTY, OREGON

FIGURE **8**

Exhibit 2 shows the westbound approach to Exit 159, approaching Tower Road. The approximate length of the off-ramp is 900 feet between Tower Road and the I-84 mainline, and a queuing analysis was conducted to identify the amount of storage available under the proposed construction trip generation scenario.

Exhibit 2
I-84 Westbound, Tower Road Exit No. 159

Based on ODOT's safe deceleration rate for interchange off-ramps of 6.5 feet/second[2] (*Oregon Highway Plan,* Reference 3), and the posted speed limit of 65 miles per hour on I-84, approximately 700 feet of off-ramp clear distance should be available between the back of the queue approaching Tower Road and the I-84 mainline to maintain safe stopping distance [5]. With a total off-ramp length of 900 feet, the 95th percentile queue should therefore not exceed 200 feet to maintain 700 feet of clear distance. A summary of the weekday a.m. peak hour 95th percentile queuing analysis is presented below in Table 6.

Table 6
95th Percentile Queuing Analysis Summary:
I-84 Westbound Off-Ramp, Construction Phase AM Peak Hour

Total Inbound Trips	Total Westbound Left Turns	v/c ratio	95th Percentile Queue (feet)	Remaining Ramp Length (feet)	Sufficient Remaining Ramp Length (>700 feet)?
292	~420	0.90	300	600	no

[5] *Stopping distance = 1.075*(speed^2)/(deceleration rate)* per AASHTO guidelines (Reference 5)

As shown in Table 6, the westbound interchange ramp terminal is forecast to operate at a v/c of 0.90 during the weekday a.m. peak hour. However, to meet the safety recommendations set forth by the *Oregon Highway Plan*, the required stopping distance for a 65 mph facility is not met by approximately 100 feet.

Peak Construction Traffic Operations Mitigation

Based on this analysis, the operations at the westbound ramp terminal should be mitigated during the weekday a.m. peak hour to ensure safe and efficient operations. Implementation of one of the following mitigation options will allow for acceptable operations at this intersection:

Option #1 – Reduce Peak Hour Traffic Volumes

During the peak of construction, vehicle trip reduction strategies could be implemented as part of Option #1. These strategies may include a simple staggering of the construction shift start times so that not everybody is expected to arrive at the construction site at the same time in the morning. Other strategies may include the implementation of ridesharing initiatives or busing programs that would provide transportation to/from the site. Regardless of the strategy, a peak hour reduction of vehicle trips on the order of approximately 30% would be necessary to mitigate the operational and queuing impacts at the I-84/Tower Road interchange. An operations summary is provided below in Table 7 illustrating this option.

Table 7
95th Percentile Queuing Analysis Summary:
I-84 Westbound Off-Ramp, Mitigated Construction Phase AM Peak Hour

Total Inbound Trips	Reduction in Trips	AM Peak Hour Inbound Trips	Total Westbound Left Turns	v/c ratio	95th Percentile Queue (feet)	Remaining Ramp Length (feet)	Sufficient?
292	30%	205	358	0.77	200	700	yes

As shown in Table 7, a stagger in shift start times or other programs (ridesharing/busing) that reduce weekday a.m. peak hour trips to the site by approximately 30% would provide adequate mitigation to the off-ramp and provide sufficient stopping distance for exiting vehicles. Any additional reduction in trips beyond 30% would result in improved operations and additional deceleration distance along the off-ramp. This reduction may be achieved through other incentive programs or more aggressive staggering of the shift start times to further spread the arrival of vehicles.

Attachment "H" contains the queuing summary worksheets and the peak construction mitigated total traffic operations worksheets.

Option #2 – Install Temporary Traffic Control

During the peak of the construction, the contractor may utilize manual temporary traffic control at the westbound ramp terminal during the weekday a.m. peak hour to accommodate the inbound vehicle demand.

A temporary traffic signal or traffic control officers would direct traffic at the westbound off-ramp, giving priority to the westbound left-turners. Due to the small amount of conflicting traffic along Tower Road, it is not anticipated that southbound traffic will experience significant delay during this temporary control, and the westbound movement is expected to operate safely and efficiently.

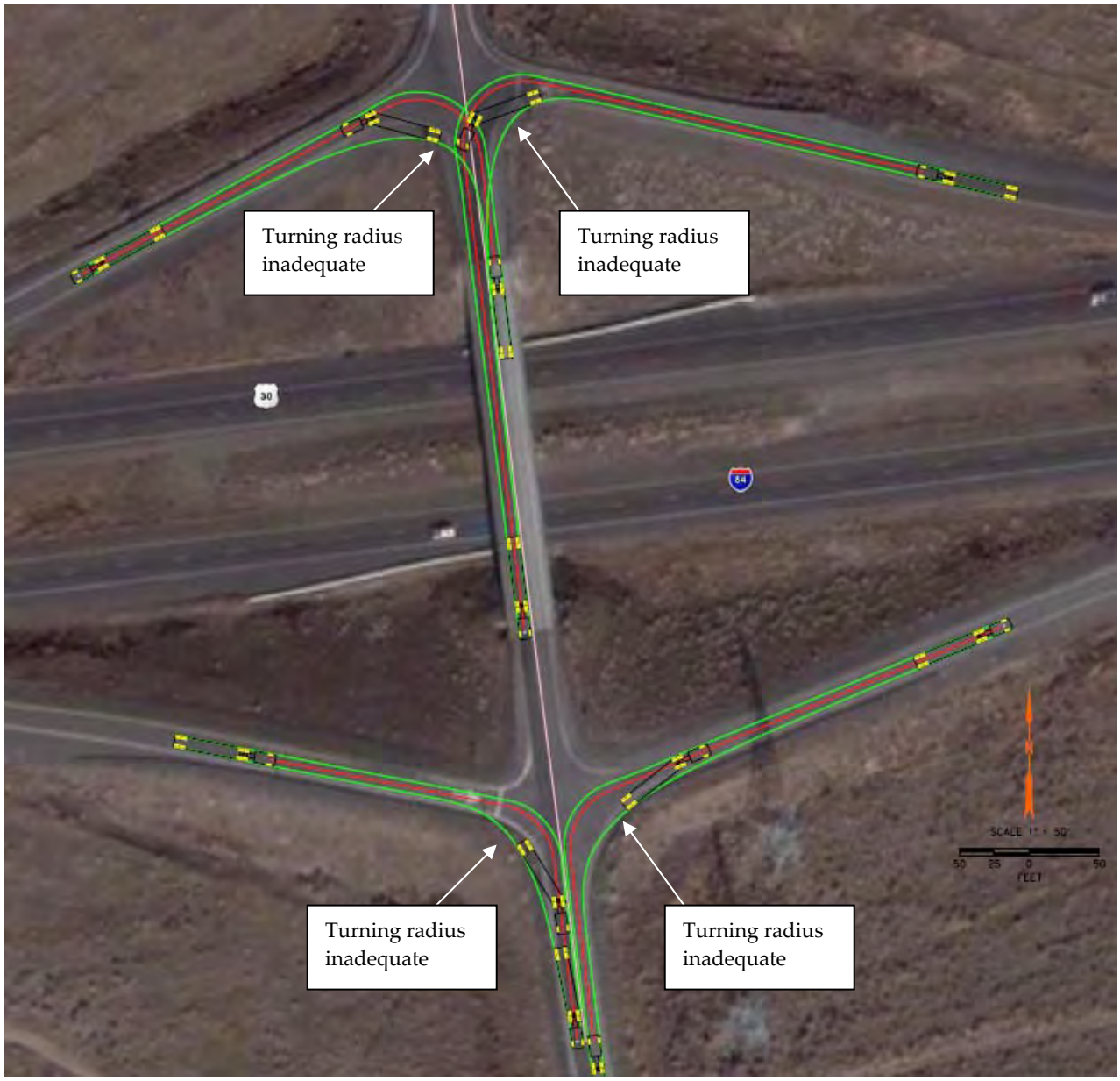
Geometric Considerations

Per conversations with the project team, the construction process will likely involve large trucks bringing materials to the site. Although the majority of these trucks won't be arriving during peak construction worker traffic flow periods, this issue has been addressed in this report based on a known geometric constraint at the existing I-84/Tower Road ramp terminals. A recent transportation impact study prepared as part of the proposed Love's Travel Stop and Country Store described the need to improve the interchange ramp terminals to accommodate the largest size of truck that would potentially frequent the Love's Travel Stop. Based on follow up work prepared by ODOT Region 5 staff, it was determined that the existing I-84/Tower Road ramp terminals are insufficient to accommodate the largest standard truck type (WB-67). This deficiency is illustrated in Exhibit 3 and shows inadequate shoulder and turning radii at both the eastbound and westbound ramp terminals.

Assuming the Love's Travel Stop is developed as planned, and ODOT/Morrow County require geometric improvements at the ramp terminals to accommodate a WB-67 design vehicle; the ramp terminal deficiency will likely be addressed as it relates to the proposed Carty project. However, if the Love's Travel Stop project is stopped, delayed, or the Carty construction project occurs first, then it is recommended that PGE work with ODOT and Morrow County to determine the appropriate level of improvements necessary to accommodate the construction and daily operations design vehicles.

With regard to oversized loads, it is expected that the construction process will necessitate the delivery of several over-dimensional items such as turbines and heat recovery systems. Although the specifics are not yet known, it is anticipated that the majority of the over-dimensional items will arrive at the construction site via the existing rail line that leads to the neighboring Boardman Plant. For those over-dimensional items cannot be delivered to the site via the rail line, the remaining items will then need to be delivered via truck. Given that these items typically require the use of specially designed over-sized trailers, a formal routing plan and delivery plan is expected to be developed by the contractor in conjunction with ODOT and Morrow County for these deliveries.

Exhibit 3
Geometric Constraints at the I-84 Interchange Ramps



1 Source: ODOT Region 5

CONCLUSIONS AND RECOMMENDATIONS

Based on existing traffic operations and the estimated daily operations trip generation, the proposed development is not expected to have a significant impact on the adjacent roadway traffic operations upon buildout. During the construction phase, the traffic impacts of the increased heavy vehicles trips and roadway network adequacy at the interchange ramp terminals are addressed in the report and summarized below.

Existing Traffic Conditions

- The weekday peak hours at the interchange ramp terminals were observed to occur from 6:10 a.m. to 7:10 a.m. and from 4:40 p.m. to 5:40 p.m.
- All of the study intersections and critical movements operate acceptably during the weekday a.m. and p.m. peak hours.
- No safety deficiencies or crash patterns were identified at any of the study intersections.

Year 2015 Background Traffic Conditions

- Under 2015 background conditions, all study intersections are forecast to continue to operate acceptably during the weekday a.m. and p.m. peak hours.

Year 2015 Total Traffic Conditions (with proposed development)

- Portland General Electric plans to construct the Carty Generating Station, which will employ a maximum of 20-30 daily staff. To provide a conservative analysis, the proposed development is estimated to generate approximately 25 trip ends during the a.m. and p.m. peak hours of a typical weekday.
- Under year 2015 total traffic conditions, all study intersections are forecast to continue to operate acceptably during the weekday a.m. and p.m. peak hours.

Construction Phase Peak Operations

- The total construction period is estimated to last approximately 27 months and may begin as early as 2012 depending upon completion of the review and approval process.
- At the height of the construction period, approximately 350 workers will be employed at the site.
- During the weekday a.m. peak hour, the westbound interchange ramp terminal is forecast to operate at a v/c ratio of 0.90. The 95th percentile queuing in this direction may reach 300 feet, which would not provide the recommended deceleration distance between the back of the queue and the I-84 mainline.

- A thirty percent reduction in forecast construction worker traffic volumes during the weekday a.m. peak hour would reduce the v/c ratio to 0.77 and reduce the 95th percentile queue to acceptable lengths.

- The existing geometry of the interchange ramp terminals is not adequate for a WB-67 design vehicle to adequately maneuver through the interchange.

Recommendations

Based on the findings of the traffic study, the proposed PGE Carty Generating Station can be safely constructed with provision of the recommendations listed below.

- The westbound ramp terminal operations during the weekday a.m. peak period can operate safely and efficiently assuming the provision of one of the following mitigation options:

  Option #1 – Reduce Peak Hour Traffic Volumes

  - During the peak of the construction, a staggering of shift start times or the implementation of ride sharing or busing programs has the potential to significantly reduce the total number of construction worker vehicle trips through the westbound ramp terminal. A 30% reduction of the estimated weekday a.m. peak hour construction worker trips would provide adequate mitigation to the off-ramp and provide sufficient stopping distance for exiting vehicles. Any additional reduction in trips beyond 30% would result in improved operations and additional deceleration distance along the off-ramp.

  Option #2 – Install Temporary Traffic Control

  - Utilize a temporary traffic signal or manual traffic control during the two peak construction months to prioritize westbound left-turning vehicles at the westbound ramp terminal during the weekday a.m. peak hour.

- Assuming the Love's Travel Stop is developed as planned and ODOT/Morrow County require geometric improvements at the ramp terminals to accommodate a WB-67 design vehicle; the ramp terminal deficiency will likely be addressed as it relates to the proposed Carty project. However, if the Love's Travel Stop project is stopped, delayed, or the Carty construction project occurs first, then it is recommended that PGE work with ODOT and Morrow County to determine the appropriate level of improvements necessary to accommodate the construction and daily operations design vehicles.

- Consideration should be given to bringing oversized and overweight loads to the construction site using existing rail facilities or via barge to nearby docking facilities on the Columbia River. These can then be transported to site using multiple axle rigs specifically designed for heavy loads.

We trust this letter adequately addresses the transportation impacts of the proposed PGE Carty Generating Station upon buildout and during construction phases. If you have any questions or comments, please give us a call at (503) 228-5230.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Matt Hughart, AICP
Senior Planner

Marc Butorac, PE, PTOE
Principal Engineer

12/28/09

Expires: 12/31/11

References

1. Transportation Research Board. *Highway Capacity Manual*. 2000.

2. Morrow County. *2009 Transportation System Plan*. July 2009.

3. The Oregon Department of Transportation. *Oregon Highway Plan*. 1999.

4. The Oregon Department of Transportation. *Analysis Procedures Manual*. 2007.

5. American Association of State Highway and Transportation Officials. *A Policy on Geometric Design of Highways and Streets*. 2004.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

PGE Carty Generating Station Attachments

A. Transportation Impact Analysis Scoping Memorandum

B. Traffic Count Data

C. Existing Traffic Operations Worksheets

D. Crash Data

E. In-Process Traffic and 2015 Background Traffic Operations Worksheets

F. 2015 Total Traffic Operations Worksheets

G. Peak Construction Total Traffic operations Worksheets

H. Peak Construction Mitigated Total Traffic operations Worksheets

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Attachment A
Transportation Impact Analysis Scoping Memorandum

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

MEMORANDUM

Date:	October 8, 2009	Project #: 10415.0
To:	Carla McLane, Morrow County Tom Kuhlman, ODOT Region 5	
From:	Matt Hughart, AICP	
Cc:	Robin Scholetzky/Eric White, Ecology and Environment, Inc. Marc Butorac, Kittelson & Associates, Inc.	
Project:	Carty Generating Station Project	
Subject:	Transportation Impact Analysis Scoping	

This memorandum outlines the proposed Carty Generating Station project for the purposes of scoping a transportation impact analysis (TIA) to support the Application for Site Certificate (ASC). The Application is comprised of a number of topic-specific "exhibits". The TIA will provide data toward Exhibit U, Public Services and Exhibit K, Land Use. The ASC will be submitted to the Oregon Department of Energy (DOE) for review by the Energy Facility Siting Council (EFSC) and their designated review body. The Site Certificate Application requirements for energy facilities are formalized in the Oregon Administrative Rules (OAR) Chapter 345. It is expected that a Project Order will be distributed by the Department of Energy in late October. The Project Order will include a list of requirements to be included in the ASC. This memorandum is meant as an initial outreach toward verification that all applicable reviewing agencies are in agreement with the following project assumptions described herein, prior to us commencing the study.

As needed, the TIA will also provide documentation for submittal to local jurisdiction(s) per any Morrow or Gilliam County land use review process, which will happen after distribution of an approved Project Order.

PROPOSED DEVELOPMENT PLAN

Portland General Electric (PGE) is proposing to construct a new electrical generating facility and transmission line located primarily in Morrow County. A portion of the transmission line will be located in Gilliam County. The proposed Carty Generating Station will be a combined-cycle generating plant fueled by natural gas. The proposed site is adjacent to the existing PGE coal-fired generating plant located approximately 13 miles southwest of Boardman off of Tower Road via I-84. Access to the site is proposed via a new private driveway connection to Tower Road.

The following sections summarize the expected operational characteristics of the surrounding roadway network during the construction phase of the project and during typical daily operations of the new Carty Generating Station facility.

Construction Phase Daily Operations

The Carty Generating Station project will be a sizable facility capable of producing up to 900 megawatts of electrical power. Given the magnitude and scale of such a project, it is expected that construction worker and truck traffic will be an important element to address in the application and approval process. As such, Kittelson & Associates, Inc. is currently working with the project team to obtain a preliminary breakdown of the staffing levels during the construction period. Estimates of pertinent information obtained to date include the following:

- The total construction period is estimated to last approximately 22 months and may begin as early as 2011 depending upon completion of the review and approval process.
- At the height of the construction period, approximately 430-450 workers will be employed at the site.
- Tower Road via I-84 will be the only transportation access utilized during the construction period.
- The construction site will employ frequent (up to 40 per day) large trucks and some oversized loads during the construction process. As available, details regarding truck weight will be included in the analysis.
- Alternative modes will also be used for delivery: heavy loads will be brought by rail using existing lines and by barge to nearby docking facilities on the Columbia River and transported to site using multiple axle rigs specifically designed for heavy loads. It is expected there will be 10 loads brought by barge and transported to site by this method. There will also be an estimated 100 oversized loads transported by truck from other locations to the site.

Daily Operation (Post Construction)

Once constructed and operational, the proposed Carty Generating Station will have a fairly consistent operational pattern. Based on preliminary estimates obtained by the development team, the plant will operate under the following characteristics:

Typical operations will consist of approximately 20-25 daily staff members, with a day shift of about 13-15 staff and an evening staff of about 3 people to perform general operation and maintenance duties. Annual maintenance would increase the staffing on-site to about 50 for a duration of about two weeks every year.

- The generating facility will be run by natural gas supplied via a pipeline. As such, the plant is not expected to generate consistent numbers of daily inbound or outbound truck shipments of fuel.

- It is anticipated that the plant will have two tanker delivery trucks per week and one semi-truck delivery per day.
- Expected delivery vehicles and visitor cars to average about 6 or 7 per day with office waste disposal using a once a week pick-up.
- The facility will be accessed via an unmanned security gate with cameras and intercom which will be operable from within the facility.

TRANSPORTATION ANALYSIS ASSUMPTIONS

Based on the information summarized above, a detailed transportation impact analysis (per Morrow County standards) is not required for the actual daily plant operations as the site is not anticipated to generate more than 400 daily trips (County Code Section 4.170.D.9). However, given the size and magnitude of the construction effort, it is recommended that a transportation assessment of the construction period be prepared to support the application process. This assessment would include an evaluation of Tower Road and the I-84 interchange, focusing on their ability to adequately accommodate construction traffic from an operations and safety perspective.

This section summarizes all transportation analysis assumptions associated with construction of the proposed site, including analysis years and study intersections.

Analysis Area and Study Intersections

For Exhibit U, Public Services, the required Analysis Area ((OAR 345-001-0010(57) (b)) will encompass a 10-mile area beyond the site boundary. However, the transportation impact "analysis area" does not include the area associated with the transmission line for the following reasons:

- The transmission line is expected to utilize existing utility right of way.
- The transmission line construction and operation will result in very limited traffic to the area.

The Energy Facility Site boundary is shown in Attachment "A" at the conclusion of this memorandum.

Per conversations with the project team, the primary roadway affected by the proposed project is Tower Road. Based on our review of the surrounding road network and previous traffic analyses in the vicinity of this particular site location, it is proposed that the following study roadways and intersections be included as part of the transportation analysis:

- Tower Road south of I-84
- Tower Road / I-84 Interchange Eastbound Ramp Terminal (Exit Number 159)
- Tower Road / I-84 Interchange Westbound Ramp Terminal (Exit Number 159)
- I-84 mainline

Data Collection

The following data will be collected to support the operations and safety analysis for this study.

- 16-hour traffic counts will be conducted at each of the eastbound and westbound ramp terminals at the Tower Road/I-84 interchange.
- 24-hour tube counts will be conducted along Tower Road just south of I-84.

Analysis Years

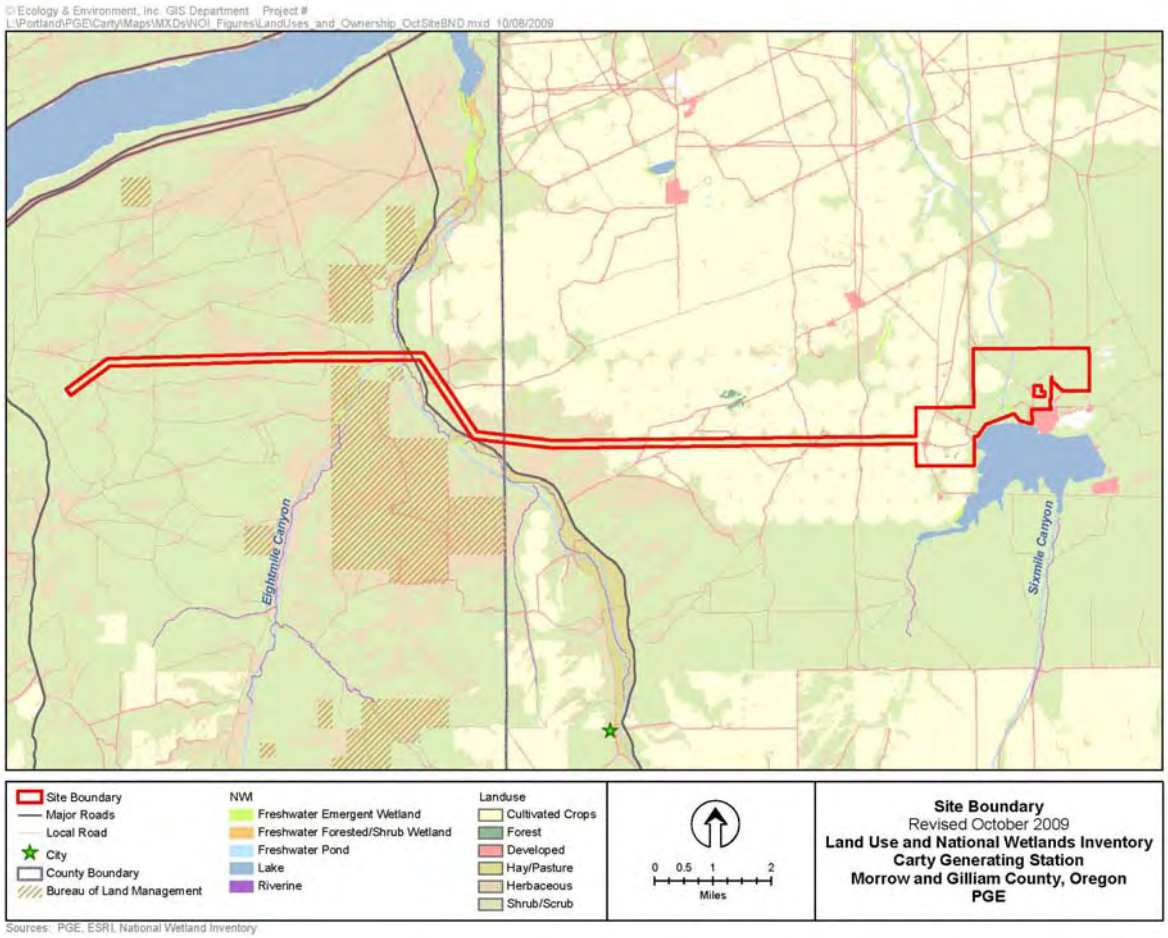
An existing conditions analysis documenting existing facilities, traffic conditions (volume, operations, and queuing) will be conducted for 2009 conditions. Per conversations with the project team, construction is expected to occur between 2011 and 2014. As such, an analysis of 2014 construction traffic activities will be included in the study effort. This includes estimates of trip generation, roadway geometry, and safety analysis.

Operations Parameters

All level-of-service (LOS) analyses will be performed based on procedures outlined in the 2000 *Highway Capacity Manual*, published by the Transportation Research Board.

CONCLUSIONS

We formally request that Morrow County and ODOT provide written confirmation regarding the proposed project assumptions and methodology as soon as possible so that we may proceed with the analysis. If you have any questions, please call us at (503) 228-5230.

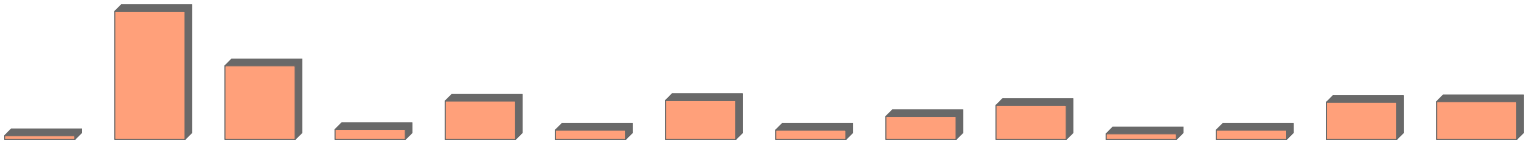

© Ecology & Environment, Inc. GIS Department Project #
L:\Portland\PGE\Carty\Maps\MXDs\NOI_Figures\LandUses_and_Ownership_OctSiteBND.mxd 10/08/2009
Eightmile Canyon
Sixmile Canyon
Site Boundary
Major Roads
Local Road
City
County Boundary
Bureau of Land Management
NWI
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Riverine
Landuse
Cultivated Crops
Forest
Developed
Hay/Pasture
Herbaceous
Shrub/Scrub
0 0.5 1 2
Miles
Site Boundary
Revised October 2009
Land Use and National Wetlands Inventory
Carty Generating Station
Morrow and Gilliam County, Oregon
PGE
Sources: PGE, ESRI, National Wetland Inventory

Attachment B
Traffic Count Data

LOCATION: Tower Rd
SPECIFIC LOCATION: 10 ft from Kunze Ln
CITY/STATE: Boardman, OR

QC JOB #: 10459403
DIRECTION: NB
DATE: Oct 14 2009

Start Time	Bikes	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	2	1	5
1:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	4
2:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	3
3:00 AM	0	**10**	3	0	0	0	0	0	0	**4**	0	0	0	1	18
4:00 AM	0	2	0	0	1	0	0	0	0	2	0	0	1	1	7
5:00 AM	0	10	1	0	2	0	0	0	0	2	0	0	1	1	17
6:00 AM	0	2	5	0	1	0	0	0	1	0	0	0	0	1	10
7:00 AM	0	7	4	1	3	0	0	0	**3**	1	1	0	0	3	23
8:00 AM	0	2	0	0	4	0	0	0	3	3	1	0	**6**	**5**	24
9:00 AM	**3**	6	**10**	**2**	3	**2**	0	**1**	3	2	0	0	5	3	**40**
10:00 AM	0	2	3	1	**5**	2	0	1	2	4	**2**	0	4	0	26
11:00 AM	0	6	9	1	5	2	**1**	0	2	3	1	**1**	4	4	39
12:00 PM	0	11	7	1	2	0	1	2	1	2	1	0	**6**	7	41
1:00 PM	**1**	10	6	1	4	**3**	3	3	**6**	3	0	0	6	5	51
2:00 PM	0	14	10	2	4	2	11	1	5	2	1	**4**	2	1	59
3:00 PM	0	20	6	1	6	0	11	1	1	4	0	4	1	5	60
4:00 PM	1	28	11	2	2	2	7	0	3	3	**2**	2	6	**8**	77
5:00 PM	0	**53**	**19**	0	**13**	0	**13**	2	2	3	0	0	1	2	**108**
6:00 PM	0	9	11	**4**	1	0	11	**4**	2	1	0	2	4	2	51
7:00 PM	1	8	8	0	3	1	5	0	0	0	0	0	4	2	32
8:00 PM	0	3	2	0	2	0	0	0	2	**5**	0	0	3	2	19
9:00 PM	0	1	0	0	1	1	0	0	0	2	0	1	1	3	10
10:00 PM	0	1	0	0	0	0	0	0	1	1	0	1	1	1	6
11:00 PM	0	2	2	0	0	0	0	0	0	3	0	0	2	1	10
Day Total	6	207	119	16	62	15	63	15	37	55	9	15	60	61	740
Percent	0.8%	28.0%	16.1%	2.2%	8.4%	2.0%	8.5%	2.0%	5.0%	7.4%	1.2%	2.0%	8.1%	8.2%	



AM Peak	9:00 AM	3:00 AM	9:00 AM	9:00 AM	10:00 AM	9:00 AM	11:00 AM	9:00 AM	7:00 AM	3:00 AM	10:00 AM	11:00 AM	8:00 AM	8:00 AM	9:00 AM
Volume	3	10	10	2	5	2	1	1	3	4	2	1	6	5	40
PM Peak	1:00 PM	5:00 PM	5:00 PM	6:00 PM	5:00 PM	1:00 PM	5:00 PM	6:00 PM	1:00 PM	8:00 PM	4:00 PM	2:00 PM	12:00 PM	4:00 PM	5:00 PM
Volume	1	53	19	4	13	3	13	4	6	5	2	4	6	8	108

Comments:

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

LOCATION: Tower Rd
SPECIFIC LOCATION: 10 ft from Kunze Ln
CITY/STATE: Boardman, OR

QC JOB #: 10459403
DIRECTION: NB
DATE: Oct 15 2009

Start Time	Bikes	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	4	1	0	0	0	0	0	0	1	0	0	1	1	8
1:00 AM	0	0	0	0	0	0	0	0	1	**4**	0	0	1	0	6
2:00 AM	0	1	0	0	0	0	0	0	1	1	0	0	2	3	8
3:00 AM	**1**	**13**	3	**1**	0	0	0	0	1	0	0	0	3	1	23
4:00 AM	0	3	0	0	1	0	0	0	0	2	0	0	3	0	9
5:00 AM	0	4	1	0	2	0	0	0	0	3	0	0	3	2	15
6:00 AM	0	2	0	0	0	0	0	**1**	0	3	0	0	0	1	7
7:00 AM	0	10	3	0	3	0	0	0	2	2	0	0	5	1	26
8:00 AM	0	2	4	0	3	0	0	1	1	3	**1**	0	**6**	4	25
9:00 AM	0	6	**7**	0	0	0	0	1	**4**	1	1	**1**	6	5	**32**
10:00 AM	0	2	4	0	**4**	0	0	0	1	3	1	1	4	**8**	28
11:00 AM															
12:00 PM															
1:00 PM															
2:00 PM															
3:00 PM															
4:00 PM															
5:00 PM															
6:00 PM															
7:00 PM															
8:00 PM															
9:00 PM															
10:00 PM															
11:00 PM															
Day Total	1	47	23	1	13	0	0	3	11	23	3	2	34	26	187
Percent	0.5%	25.1%	12.3%	0.5%	7.0%	0.0%	0.0%	1.6%	5.9%	12.3%	1.6%	1.1%	18.2%	13.9%	
AM Peak	3:00 AM	3:00 AM	9:00 AM	3:00 AM	10:00 AM			6:00 AM	9:00 AM	1:00 AM	8:00 AM	9:00 AM	8:00 AM	10:00 AM	9:00 AM
Volume	1	13	7	1	4			1	4	4	1	1	6	8	32
PM Peak Volume															

Comments:

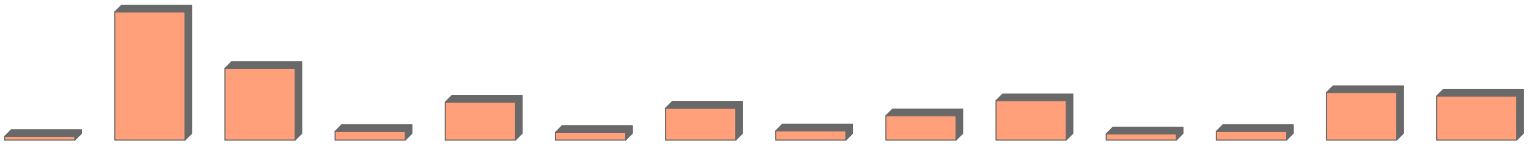
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

SUMMARY - Tube Count - Vehicle Classification Data

LOCATION: Tower Rd
SPECIFIC LOCATION: 10 ft from Kunze Ln
CITY/STATE: Boardman, OR

QC JOB #: 10459403
DIRECTION: NB
DATE: Oct 14 2009 - Oct 15 2009

Start Time	Bikes	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
Grand Total	7	254	142	17	75	15	63	18	48	78	12	17	94	87	927
Percent	0.8%	27.4%	15.3%	1.8%	8.1%	1.6%	6.8%	1.9%	5.2%	8.4%	1.3%	1.8%	10.1%	9.4%	



Comments:

Report generated on 11/6/2009 2:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Quality Counts
TRANSPORTATION DATA COLLECTION

LOCATION: Tower Rd
SPECIFIC LOCATION: 10 ft from Kunze Ln
CITY/STATE: Boardman, OR

QC JOB #: 10459403
DIRECTION: SB
DATE: Oct 14 2009

Start Time	Bikes	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	2	1	4
1:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	3	0	4
2:00 AM	0	1	0	0	0	0	0	0	1	1	0	0	0	0	3
3:00 AM	0	10	1	0	0	0	0	0	0	0	0	0	4	1	16
4:00 AM	0	18	2	0	1	0	0	0	0	1	0	0	1	1	24
5:00 AM	**2**	31	13	1	4	0	0	0	0	0	1	0	2	4	58
6:00 AM	0	**63**	**34**	2	**16**	0	0	0	0	**4**	1	0	3	1	**124**
7:00 AM	1	22	17	**3**	5	**2**	0	0	2	2	2	0	2	5	63
8:00 AM	0	4	5	3	5	1	0	**2**	**4**	2	1	0	**5**	4	36
9:00 AM	0	5	4	0	2	2	0	1	2	3	**3**	0	5	6	33
10:00 AM	0	3	5	1	8	1	0	2	4	3	0	**1**	5	5	38
11:00 AM	0	3	4	1	4	2	0	1	0	3	0	0	5	**11**	34
12:00 PM	**2**	2	5	1	5	**12**	0	**2**	**5**	1	**1**	0	4	8	48
1:00 PM	1	4	5	1	3	3	**1**	1	3	**4**	0	1	4	3	34
2:00 PM	0	3	5	**2**	4	0	0	0	0	2	0	**3**	3	**13**	35
3:00 PM	0	11	**9**	2	2	3	1	2	2	1	0	0	3	12	48
4:00 PM	0	**13**	6	1	9	10	0	1	3	1	0	1	3	10	**58**
5:00 PM	0	6	3	2	4	11	1	1	1	4	0	2	3	6	44
6:00 PM	0	6	2	1	**12**	3	0	0	0	1	0	0	2	11	38
7:00 PM	0	2	0	0	1	4	0	0	1	2	0	0	**5**	7	22
8:00 PM	0	2	0	0	0	0	0	0	1	3	0	0	1	2	9
9:00 PM	0	3	1	0	0	0	0	1	0	3	0	2	2	2	14
10:00 PM	0	1	1	0	0	0	1	0	0	3	1	0	2	2	11
11:00 PM	1	0	2	1	0	0	0	0	0	0	0	0	0	0	4
Day Total	7	213	126	22	85	54	4	14	29	44	10	10	69	115	802
Percent	0.9%	26.6%	15.7%	2.7%	10.6%	6.7%	0.5%	1.7%	3.6%	5.5%	1.2%	1.2%	8.6%	14.3%	

AM Peak	5:00 AM	6:00 AM	6:00 AM	7:00 AM	6:00 AM	7:00 AM		8:00 AM	8:00 AM	6:00 AM	9:00 AM	10:00 AM	8:00 AM	11:00 AM	6:00 AM
Volume	2	63	34	3	16	2		2	4	4	3	1	5	11	124
PM Peak	12:00 PM	4:00 PM	3:00 PM	2:00 PM	6:00 PM	12:00 PM	1:00 PM	12:00 PM	12:00 PM	1:00 PM	12:00 PM	2:00 PM	7:00 PM	2:00 PM	4:00 PM
Volume	2	13	9	2	12	12	1	2	5	4	1	3	5	13	58

Comments:

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

LOCATION: Tower Rd
SPECIFIC LOCATION: 10 ft from Kunze Ln
CITY/STATE: Boardman, OR

QC JOB #: 10459403
DIRECTION: SB
DATE: Oct 15 2009

Start Time	Bikes	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	4	2	1	3	0	0	0	0	0	0	0	1	2	13
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
2:00 AM	0	2	0	0	1	0	0	2	0	**4**	0	0	0	3	12
3:00 AM	0	9	0	0	0	0	0	1	0	3	0	0	1	4	18
4:00 AM	**1**	20	2	0	1	0	0	1	0	1	0	0	2	4	32
5:00 AM	0	33	4	1	3	0	0	2	2	2	**2**	0	2	3	54
6:00 AM	1	**53**	**30**	2	**14**	1	**1**	1	1	4	2	0	3	4	**117**
7:00 AM	0	13	15	**3**	7	1	0	1	0	2	2	0	**5**	4	53
8:00 AM	0	9	10	0	13	0	0	**4**	2	4	0	0	4	4	50
9:00 AM	0	12	3	1	5	**2**	0	0	1	1	0	0	3	7	35
10:00 AM	0	4	5	0	4	1	0	2	**3**	2	1	**1**	2	**8**	33
11:00 AM															
12:00 PM															
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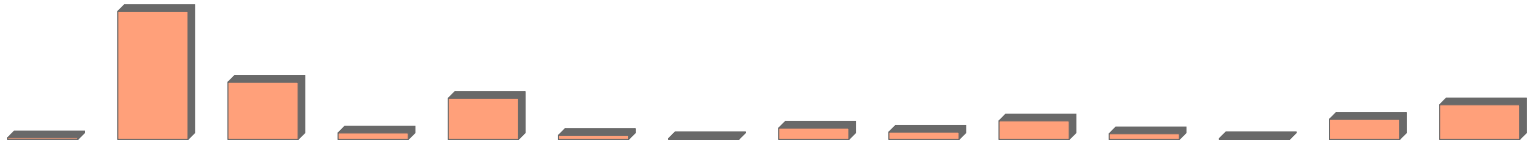
6:00 PM															
7:00 PM															
8:00 PM															
9:00 PM															
10:00 PM															
11:00 PM															
Day Total	2	159	71	8	51	5	1	14	9	23	7	1	25	43	419
Percent	0.5%	37.9%	16.9%	1.9%	12.2%	1.2%	0.2%	3.3%	2.1%	5.5%	1.7%	0.2%	6.0%	10.3%	
AM Peak	4:00 AM	6:00 AM	6:00 AM	7:00 AM	6:00 AM	9:00 AM	6:00 AM	8:00 AM	10:00 AM	2:00 AM	5:00 AM	10:00 AM	7:00 AM	10:00 AM	6:00 AM
Volume	1	53	30	3	14	2	1	4	3	4	2	1	5	8	117
PM Peak Volume															



Comments:

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

SUMMARY - Tube Count - Vehicle Classification Data

LOCATION: Tower Rd
SPECIFIC LOCATION: 10 ft from Kunze Ln
CITY/STATE: Boardman, OR

QC JOB #: 10459403
DIRECTION: SB
DATE: Oct 14 2009 - Oct 15 2009

Start Time	Bikes	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
Grand Total	9	372	197	30	136	59	5	28	38	67	17	11	94	158	1221
Percent	0.7%	30.5%	16.1%	2.5%	11.1%	4.8%	0.4%	2.3%	3.1%	5.5%	1.4%	0.9%	7.7%	12.9%	

Comments:

Report generated on 11/6/2009 2:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Quality Counts
TRANSPORTATION DATA COLLECTION

Type of peak hour being reported: User-Defined

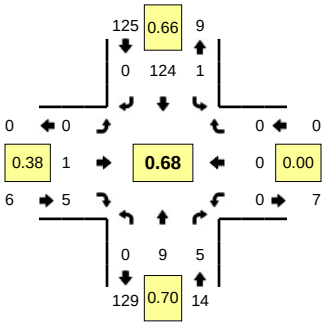
Method for determining peak hour: Total Entering Volume

LOCATION: Tower Rd -- I-84 EB Ramps

QC JOB #: 10459401

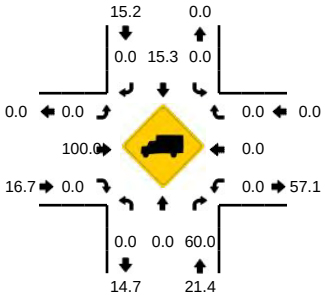
CITY/STATE: Boardman, OR

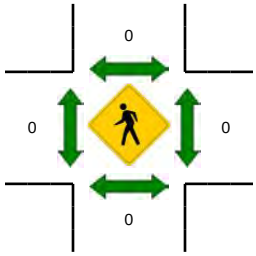
DATE: 10/14/2009

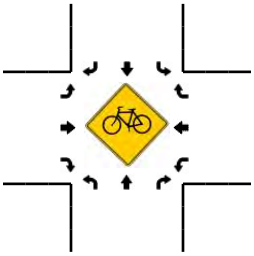


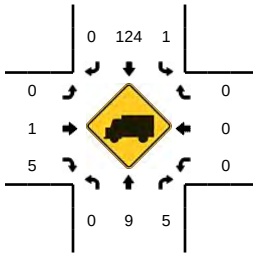
Peak-Hour: 6:10 AM -- 7:10 AM

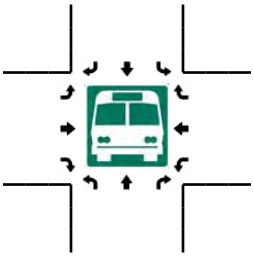
Peak 15-Min: 6:30 AM -- 6:45 AM











5-Min Count Period Beginning At	Tower Rd (Northbound)			Tower Rd (Southbound)			I-84 EB Ramps (Eastbound)			I-84 EB Ramps (Westbound)			Total	Hourly Totals
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
6:00 AM	0	0	0	0	7	0	0	0	0	0	0	0	7	
6:05 AM	0	0	0	0	3	0	0	0	0	0	0	0	3	
6:10 AM	0	0	0	0	5	0	0	0	0	0	0	0	5	
6:15 AM	0	2	0	0	15	0	0	0	0	0	0	0	17	
6:20 AM	0	0	0	0	15	0	0	0	0	0	0	0	15	
6:25 AM	0	2	0	0	12	0	0	0	1	0	0	0	15	
6:30 AM	0	1	0	1	11	0	0	0	0	0	0	0	13	
6:35 AM	0	1	1	0	21	0	0	0	1	0	0	0	24	
6:40 AM	0	1	0	0	14	0	0	1	0	0	0	0	16	
6:45 AM	0	1	0	0	5	0	0	0	2	0	0	0	8	
6:50 AM	0	0	1	0	7	0	0	0	0	0	0	0	8	
6:55 AM	0	0	1	0	7	0	0	0	1	0	0	0	9	140
7:00 AM	0	0	1	0	3	0	0	0	0	0	0	0	4	137
7:05 AM	0	1	1	0	9	0	0	0	0	0	0	0	11	145
7:10 AM	0	0	3	0	0	0	0	0	1	0	0	0	4	144
7:15 AM	0	1	2	0	3	0	0	0	0	0	0	0	6	133
7:20 AM	0	0	1	0	4	0	0	0	0	0	0	0	5	123
7:25 AM	0	2	0	0	3	0	0	0	0	0	0	0	5	113
7:30 AM	0	2	3	0	9	0	0	0	0	0	0	0	14	114
7:35 AM	0	0	0	0	4	0	0	0	0	0	0	0	4	94
7:40 AM	0	0	0	0	9	0	0	1	1	0	0	0	11	89
7:45 AM	0	0	1	0	6	0	0	0	0	0	0	0	7	88
7:50 AM	0	0	1	0	2	0	0	0	0	0	0	0	3	83
7:55 AM	0	1	1	0	2	0	0	0	0	0	0	0	4	78

Peak 15-Min Flowrates	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
All Vehicles	0	12	4	4	184	0	0	4	4	0	0	0	212
Heavy Trucks	0	0	4	0	28	0	0	4	0	0	0	0	36
Pedestrians		0			0			0			0		0
Bicycles													
Heavy Trucks													
Buses													

Comments:

Report generated on 11/9/2009 12:27 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: User-Defined

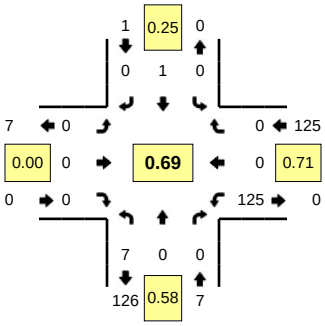
Method for determining peak hour: Total Entering Volume

LOCATION: Tower Rd -- I-84 WB Ramps

QC JOB #: 10459402

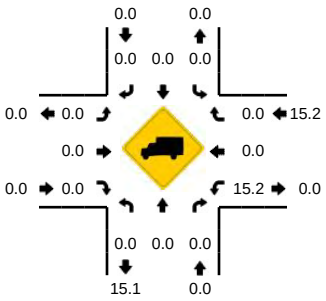
CITY/STATE: Boardman, OR

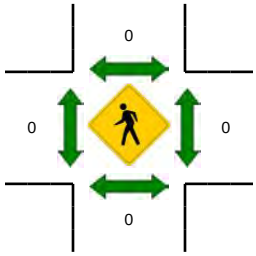
DATE: 10/14/2009

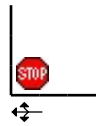


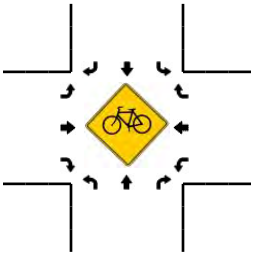
Peak-Hour: 6:10 AM -- 7:10 AM

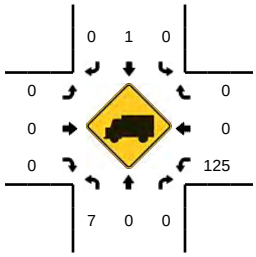
Peak 15-Min: 6:30 AM -- 6:45 AM

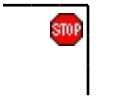


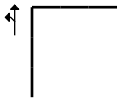


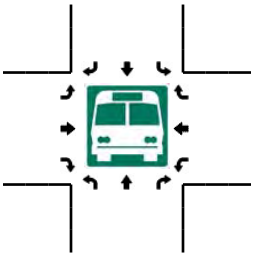












5-Min Count Period Beginning At	Tower Rd (Northbound)			Tower Rd (Southbound)			I-84 WB Ramps (Eastbound)			I-84 WB Ramps (Westbound)			Total	Hourly Totals
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
6:00 AM	0	0	0	0	0	0	0	0	0	8	0	0	8	
6:05 AM	0	0	0	0	0	0	0	0	0	2	0	0	2	
6:10 AM	0	0	0	0	0	0	0	0	0	8	0	0	8	
6:15 AM	2	0	0	0	0	0	0	0	0	13	0	0	15	
6:20 AM	0	0	0	0	0	0	0	0	0	17	0	0	17	
6:25 AM	1	0	0	0	0	0	0	0	0	12	0	0	13	
6:30 AM	1	0	0	0	1	0	0	0	0	11	0	0	13	
6:35 AM	1	0	0	0	0	0	0	0	0	20	0	0	21	
6:40 AM	1	0	0	0	0	0	0	0	0	13	0	0	14	
6:45 AM	1	0	0	0	0	0	0	0	0	8	0	0	9	
6:50 AM	0	0	0	0	0	0	0	0	0	5	0	0	5	
6:55 AM	0	0	0	0	0	0	0	0	0	6	0	0	6	131
7:00 AM	0	0	0	0	0	0	0	0	0	4	0	0	4	127
7:05 AM	0	0	0	0	0	0	0	0	0	8	0	0	8	133
7:10 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	126
7:15 AM	1	0	0	0	0	0	0	0	0	2	0	0	3	114
7:20 AM	0	0	0	0	0	0	0	0	0	5	0	0	5	102
7:25 AM	2	0	0	0	0	0	0	0	0	3	0	0	5	94
7:30 AM	2	0	0	0	0	0	0	0	0	9	0	0	11	92
7:35 AM	0	0	0	0	0	0	0	0	0	5	0	0	5	76
7:40 AM	0	0	0	0	0	0	0	0	0	7	0	0	7	69
7:45 AM	0	0	0	0	0	0	0	0	0	6	0	0	6	66
7:50 AM	0	0	0	0	0	0	0	0	0	3	0	0	3	64
7:55 AM	1	0	0	0	0	0	0	0	0	1	0	0	2	60

Peak 15-Min Flowrates	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
All Vehicles	12	0	0	0	4	0	0	0	0	176	0	0	192
Heavy Trucks	0	0	0	0	0	0	0	0	0	28	0	0	28
Pedestrians		0			0			0			0		0
Bicycles													
Heavy Trucks													
Buses													

Comments:

Report generated on 11/9/2009 12:27 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: User-Defined

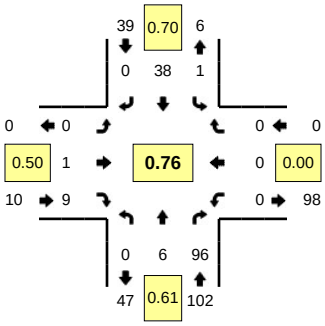
Method for determining peak hour: Total Entering Volume

LOCATION: Tower Rd -- I-84 EB Ramps

QC JOB #: 10459401

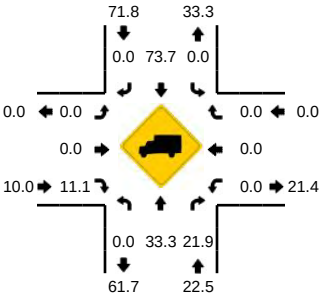
CITY/STATE: Boardman, OR

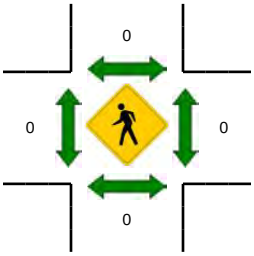
DATE: 10/14/2009

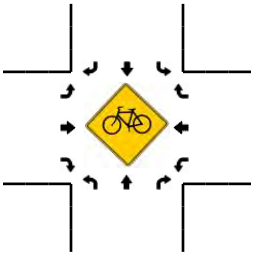


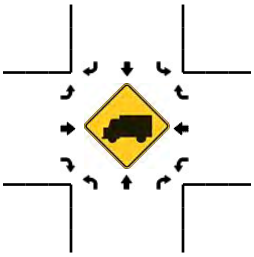
Peak-Hour: 4:40 PM -- 5:40 PM

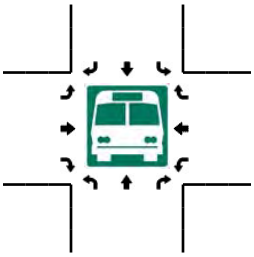
Peak 15-Min: 5:25 PM -- 5:40 PM











5-Min Count Period Beginning At	Tower Rd (Northbound)			Tower Rd (Southbound)			I-84 EB Ramps (Eastbound)			I-84 EB Ramps (Westbound)			Total	Hourly Totals
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4:10 PM	0	0	7	0	5	0	0	0	1	0	0	0	13	120
4:15 PM	0	1	8	0	5	0	0	0	0	0	0	0	14	132
4:20 PM	0	0	0	0	3	0	0	0	0	0	0	0	3	126
4:25 PM	0	0	1	1	4	0	0	0	0	0	0	0	6	119
4:30 PM	0	1	4	0	5	0	0	0	0	0	0	0	10	119
4:35 PM	0	0	7	0	1	0	0	0	1	0	0	0	9	116
4:40 PM	0	2	6	0	4	0	0	0	2	0	0	0	14	116
4:45 PM	0	1	5	0	4	0	0	0	0	0	0	0	10	120
4:50 PM	0	0	7	1	1	0	0	0	0	0	0	0	9	122
4:55 PM	0	0	6	0	8	0	0	0	3	0	0	0	17	133
5:00 PM	0	0	5	0	2	0	0	0	0	0	0	0	7	129
5:05 PM	0	1	4	0	2	0	0	1	1	0	0	0	9	121
5:10 PM	0	0	11	0	3	0	0	0	1	0	0	0	15	123
5:15 PM	0	0	5	0	4	0	0	0	1	0	0	0	10	119
5:20 PM	0	0	7	0	3	0	0	0	0	0	0	0	10	126
5:25 PM	0	1	4	0	3	0	0	0	0	0	0	0	8	128
5:30 PM	0	0	9	0	3	0	0	0	1	0	0	0	13	131
5:35 PM	0	1	27	0	1	0	0	0	0	0	0	0	29	151
5:40 PM	0	0	12	0	1	0	0	0	1	0	0	0	14	151
5:45 PM	0	0	2	0	3	0	0	0	0	0	0	0	5	146
5:50 PM	0	0	9	0	3	0	0	0	1	0	0	0	13	150
5:55 PM	0	0	7	0	2	0	0	0	0	0	0	0	9	142
6:00 PM	0	1	4	1	2	0	1	0	0	0	0	0	9	144
6:05 PM	0	0	2	0	2	0	0	0	1	0	0	0	5	140

Peak 15-Min Flowrates	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
All Vehicles	0	8	160	0	28	0	0	0	4	0	0	0	200
Heavy Trucks	0	4	28	0	20	0	0	0	0	0	0	0	52
Pedestrians		0			0			0			0		0
Bicycles													
Railroad													
Stopped Buses													

Comments:

Report generated on 11/20/2009 9:16 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: User-Defined

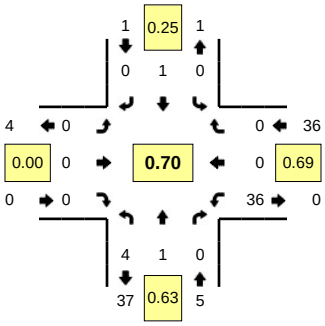
Method for determining peak hour: Total Entering Volume

LOCATION: Tower Rd -- I-84 WB Ramps

QC JOB #: 10459402

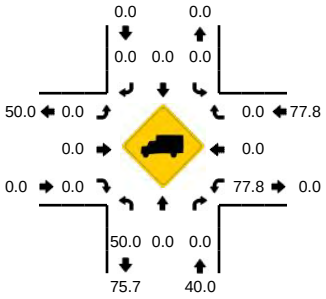
CITY/STATE: Boardman, OR

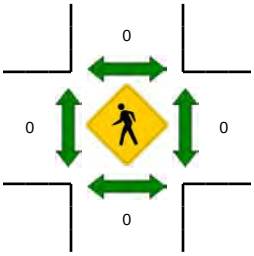
DATE: 10/14/2009

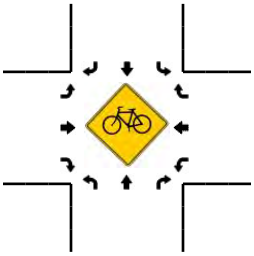


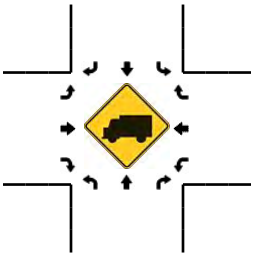
Peak-Hour: 4:40 PM -- 5:40 PM

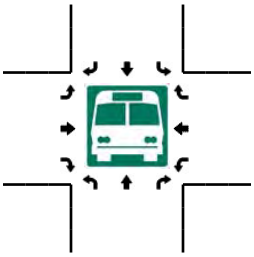
Peak 15-Min: 4:45 PM -- 5:00 PM











5-Min Count Period Beginning At	Tower Rd (Northbound)			Tower Rd (Southbound)			I-84 WB Ramps (Eastbound)			I-84 WB Ramps (Westbound)			Total	Hourly Totals
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4:10 PM	0	0	0	0	0	0	0	0	0	5	0	0	5	59
4:15 PM	1	0	0	0	0	0	0	0	0	4	0	0	5	63
4:20 PM	0	0	0	0	0	0	0	0	0	2	0	0	2	58
4:25 PM	0	0	0	0	0	0	0	0	0	7	0	0	7	60
4:30 PM	1	0	0	0	0	0	0	0	0	3	0	0	4	58
4:35 PM	0	0	0	0	0	0	0	0	0	3	0	0	3	55
4:40 PM	1	0	0	0	0	0	0	0	0	2	0	0	3	54
4:45 PM	0	1	0	0	0	0	0	0	0	5	0	0	6	56
4:50 PM	0	0	0	0	1	0	0	0	0	1	0	0	2	53
4:55 PM	0	0	0	0	0	0	0	0	0	7	0	0	7	56
5:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	3	53
5:05 PM	1	0	0	0	0	0	0	0	0	1	0	0	2	49
5:10 PM	0	0	0	0	0	0	0	0	0	3	0	0	3	47
5:15 PM	0	0	0	0	0	0	0	0	0	4	0	0	4	46
5:20 PM	0	0	0	0	0	0	0	0	0	4	0	0	4	48
5:25 PM	1	0	0	0	0	0	0	0	0	3	0	0	4	45
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	2	43
5:35 PM	1	0	0	0	0	0	0	0	0	1	0	0	2	42
5:40 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	40
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	3	37
5:50 PM	0	0	0	0	0	0	0	0	0	3	0	0	3	38
5:55 PM	0	0	0	0	0	0	0	0	0	2	0	0	2	33
6:00 PM	2	0	0	0	0	0	0	0	0	2	0	0	4	34
6:05 PM	1	0	0	0	0	0	0	0	0	3	0	0	4	36

Peak 15-Min Flowrates	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
All Vehicles	0	4	0	0	4	0	0	0	0	52	0	0	60
Heavy Trucks	0	0	0	0	0	0	0	0	0	40	0	0	40
Pedestrians		0			0			0			0		0
Bicycles													
Railroad													
Stopped Buses													

Comments:

Report generated on 11/20/2009 9:16 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Attachment C
Existing Traffic
Operations Worksheets

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday AM Peak Hour

Scenario Report

Scenario:	am
Command:	am
Volume:	am
Geometry:	am
Impact Fee:	Default Impact Fee
Trip Generation:	am
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Tower Rd / I-84 WB Ramps	A	9.8	0.201	A	9.8	0.201	+ 0.000 D/V
# 2 Tower Rd / I-84 EB Ramps	A	9.7	0.009	A	9.7	0.009	+ 0.000 D/V

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 9.4 Worst Case Level Of Service: A[9.8]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0	0 0 1	0	0	0 0	0	0	0 1! 0	0
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	9	1	0	0	1	1	0	0	0	131	1	1
Growth Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	1	0	0	1	1	0	0	0	131	1	1
User Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.69 0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
PHF Volume:	13	1	0	0	1	1	0	0	0	190	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	13	1	0	0	1	1	0	0	0	190	1	1
Critical Gap Module:												
Critical Gp:	4.1 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.6	6.7	6.4
FollowUpTim:	2.2 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	3 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		30	30	1
Potent Cap.:	1632 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		952	837	1046
Move Cap.:	1632 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		947	831	1046
Volume/Cap:	0.01 xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		0.20	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	7.2 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	946	xxxxx	
SharedQueue:	0.0 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0.8	xxxxx	
Shrd ConDel:	7.2 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	9.8	xxxxx	
Shared LOS:	A	*	*	*	*	*	*	*	*	A	*	
ApproachDel:	xxxxxx		xxxxxx		xxxxxx					9.8		
ApproachLOS:	*		*		*					A		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #1 Tower Rd / I-84 WB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	0%			0%			0%			15%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Tower Rd / I-84 EB Ramps

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: A[9.7]

Street Name:	Tower Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	0	9	5	1	131	0	1	1	5	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	9	5	1	131	0	1	1	5	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
PHF Volume:	0	13	7	1	193	0	1	1	7	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	13	7	1	193	0	1	1	7	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	6.6	6.7	6.4	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	3.7	4.2	3.5	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	21	xxxx	xxxxx	212	216	193	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1515	xxxx	xxxxx	743	656	812	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1515	xxxx	xxxxx	743	656	812	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.01	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	775	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	9.7	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	A	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			9.7			xxxxxx		
ApproachLOS:	*			*			A			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #2 Tower Rd / I-84 EB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	21%			15%			17%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday PM Peak Hour

Scenario Report

Scenario:	pm
Command:	pm
Volume:	pm
Geometry:	pm
Impact Fee:	Default Impact Fee
Trip Generation:	pm
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Tower Rd / I-84 WB Ramps	A	9.7	0.069	A	9.7	0.069	+ 0.000 D/V
# 2 Tower Rd / I-84 EB Ramps	A	8.9	0.012	A	8.9	0.012	+ 0.000 D/V

Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 8.9 Worst Case Level Of Service: A[9.7]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0	0 0	1	0	0 0	0	0	0 0	1!	0
Volume Module: >> Count Date: 14 Oct 2009 << 4:40 PM to 5:40 PM												
Base Vol:	5	1	0	0	1	0	0	0	0	40	1	1
Growth Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
Initial Bse:	5	1	0	0	1	0	0	0	0	40	1	1
User Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
PHF Adj:	0.70 0.70	0.70		0.70 0.70	0.70		0.70 0.70	0.70		0.70 0.70	0.70	
PHF Volume:	7	1	0	0	1	0	0	0	0	57	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	7	1	0	0	1	0	0	0	0	57	1	1
Critical Gap Module:												
Critical Gp:	4.5 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		7.2	7.3	7.0
FollowUpTim:	2.6 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		4.2	4.7	4.0
Capacity Module:												
Cnflict Vol:	3 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		18	19	1
Potent Cap.:	1403 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		835	746	898
Move Cap.:	1403 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		832	743	898
Volume/Cap:	0.01 xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		0.07	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	7.6 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		xxxx	831	xxxxx
SharedQueue:	0.0 xxxx	xxxxx	xxxxx	xxxx xxxx	xxxxx	xxxxx	xxxx xxxx	xxxxx	xxxxx	0.2	xxxxx	
Shrd ConDel:	7.6 xxxx	xxxxx	xxxxx	xxxx xxxx	xxxxx	xxxxx	xxxx xxxx	xxxxx	xxxxx	9.7	xxxxx	
Shared LOS:	A	*	*	*	*	*	*	*	*	A	*	
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			9.7		
ApproachLOS:	*			*			*			A		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #1 Tower Rd / I-84 WB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	40%			0%			0%			78%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Tower Rd / I-84 EB Ramps

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: A[8.9]

Street Name:	Tower Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module: >> Count Date: 14 Oct 2009 << 4:40 PM to 5:40 PM												
Base Vol:	0	6	101	1	40	0	1	1	9	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	6	101	1	40	0	1	1	9	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	0	8	133	1	53	0	1	1	12	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	8	133	1	53	0	1	1	12	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.8	xxxx	xxxxx	6.5	6.6	6.3	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.8	xxxx	xxxxx	3.6	4.1	3.4	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	141	xxxx	xxxxx	130	196	53	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1106	xxxx	xxxxx	846	685	993	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1106	xxxx	xxxxx	845	685	993	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.01	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	939	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.0	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	8.9	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	A	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			8.9			xxxxxx		
ApproachLOS:	*			*			A			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2009 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #2 Tower Rd / I-84 EB Ramps

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	23%			72%			10%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		
Pedestrian Walk Speed: 4.00 feet/sec												
LaneWidth:	12 feet			12 feet			12 feet			12 feet		
Time Period: 0.25 hour												

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Attachment D
Crash Data

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Tower Road @ Kunze Lane

January 1, 2004 through December 31, 2008

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Tower Road @ I-84 (Hwy 002) Eastbound Ramp Terminal

January 1, 2004 through December 31, 2008

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Tower Road @ I-84 (Hwy 002) Westbound Ramp Terminal

January 1, 2004 through December 31, 2008

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Tower Rd begin 200 feet south of EB Ramp I-84 continue 7.13 miles south

January 1, 2004 through December 31, 2008

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2008														
NON-COLLISION	0	0	1	1	0	0	0	1	0	1	0	0	0	1
2008 TOTAL	0	0	1	1	0	0	0	1	0	1	0	0	0	1
YEAR: 2007														
TURNING MOVEMENTS	0	0	1	1	0	0	1	1	0	1	0	0	0	0
2007 TOTAL	0	0	1	1	0	0	1	1	0	1	0	0	0	0
YEAR: 2004														
NON-COLLISION	0	1	0	1	0	1	0	1	0	1	0	0	0	1
TURNING MOVEMENTS	0	1	0	1	0	2	1	1	0	1	0	0	0	0
2004 TOTAL	0	2	0	2	0	3	1	2	0	2	0	0	0	1
FINAL TOTAL	0	2	2	4	0	3	2	4	0	4	0	0	0	2

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

MORROW COUNTY

Tower Rd begin 200 feet south of EB Ramp I-84 continue 7.13 miles south
January 1, 2004 through December 31, 2008

SER# / INVEST	SPEC	ALC	DRUG	SCHL	WORK	DATE / DAY / TIME	MILEPNT / DIST FROM / INTERSECT	COUNTY ROADS / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00049	Y	N	N			7/24/2008		TOWER	STRGHT		N	Y	CLR	OVERTURN	01	NONE 0	STRGHT											01
NO RPT						Thu	600	OH002	S	(NONE)	UNKNOWN	N	DRY	NCOL		PRVTE	S N										000		00
						2P			07			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		083	000		01
										(02)													OR>25					
00063	Y	N	N			9/22/2004	999.99	TOWER	ALLEY		N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											01
COUNTY						Wed	370	KUNZE LN	S	(NONE)	STOP SIGN	N	DRY	TURN		PRVTE	S N										001		00
						3P			03			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	21	M	OR-Y		051,047	000		01
										(02)													OR<25					
																		02	PSNG	INJA	23	M			000	000		00
															02	FARM 0	TURN-L											
																PRVTE	W N									000		00
																TRUCK		01	DRVR	NONE	41	M	OR-Y		000	000		00
																							OR<25					
00032	N	N	N	N	N	5/17/2004	999.99	TOWER	CURVE		N	Y	CLR	OVERTURN	01	NONE 0	STRGHT											27
COUNTY						Mon	300	OH002	S	(NONE)	NONE	N	DRY	NCOL		PRVTE	S N										000		00
						9A			01			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	19	F	OR-Y		016,081,083	000		27
										(02)													OR<25					
00058	N	N	N			9/24/2007	999.99	TOWER	ALLEY		N	N	CLR	S-1TURN	01	NONE 0	STRGHT											06
NO RPT						Mon	600	OH002	S	(NONE)	UNKNOWN	N	DRY	TURN		PRVTE	N S										031		00
						4P			05			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y		030	000		06
										(02)													OR<25					
															02	NONE 1	TURN-L											
																PRVTE	N E									019		00
																SEMI TOW		01	DRVR	NONE	49	M	OR-Y		000	000		00
																							OR>25					

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP ANOTHER VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF-ROAD
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS--RAG	DISREGARDED R-A-G TRAFFIC SIGNAL.
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST CLOTHING NOT VISIBLE
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (CITATION ISSUED)
33	RECKLESS	RECKLESS DRIVING (CITATION ISSUED)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1TURN	FROM OPPOSITE DIRECTION - ONE TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	FAILED TO DIM LIGHTS (UNTIL 4/1/97) / INATTENTION (AFTER 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING, EXITING PARKED POSITION WITH INSUFFICIENT CLEARANCE OR OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY (VEHICLE IS DELIBERATELY TRAVELING ON WRONG SIDE)
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAYON RD	STANDING OR LYING IN ROADWAY
073	DIS POL	DISREGARDING POLICE (ELUDING)
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	PED INV	PEDESTRIAN INVOLVED (NON-PEDESTRIAN ACCIDENT)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	BIKE INV	TRICYCLE-BICYCLE INVOLVED
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE (OCCUPANTS ONLY)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BARS OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING (ON BRIDGE AND APPROACH)
047	BR ABUT	BRIDGE ABUTMENT (APPROACH ENDS)
048	BR COLMN	BRIDGE PILLAR OR COLUMN (EVEN THOUGH STRUCK PROTECTIVE GUARD RAIL FIRST)
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, ROCKS OFF OR ON ROAD, FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	SPEED BUMP, OTHER BUMP, POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	HOLE	CHUCKHOLE IN ROAD, LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ F MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY OTHER MOVING OR FLYING OBJECT
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTH ACDT	ACCIDENT RELATED TO ANOTHER SEPARATE ACCIDENT
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE (ON PAR OR REPORT)
093	CELL-POL	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL-WTN	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	UNKNOWN TYPE OF FIXED OBJECT
101	OTHER OBJ	OTHER OR UNKNOWN OBJECT, NOT FIXED
104	OUTSIDE V	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS AND/OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS AND/OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR/TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE
125	SHLDR	SHOULDER GAVE WAY

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

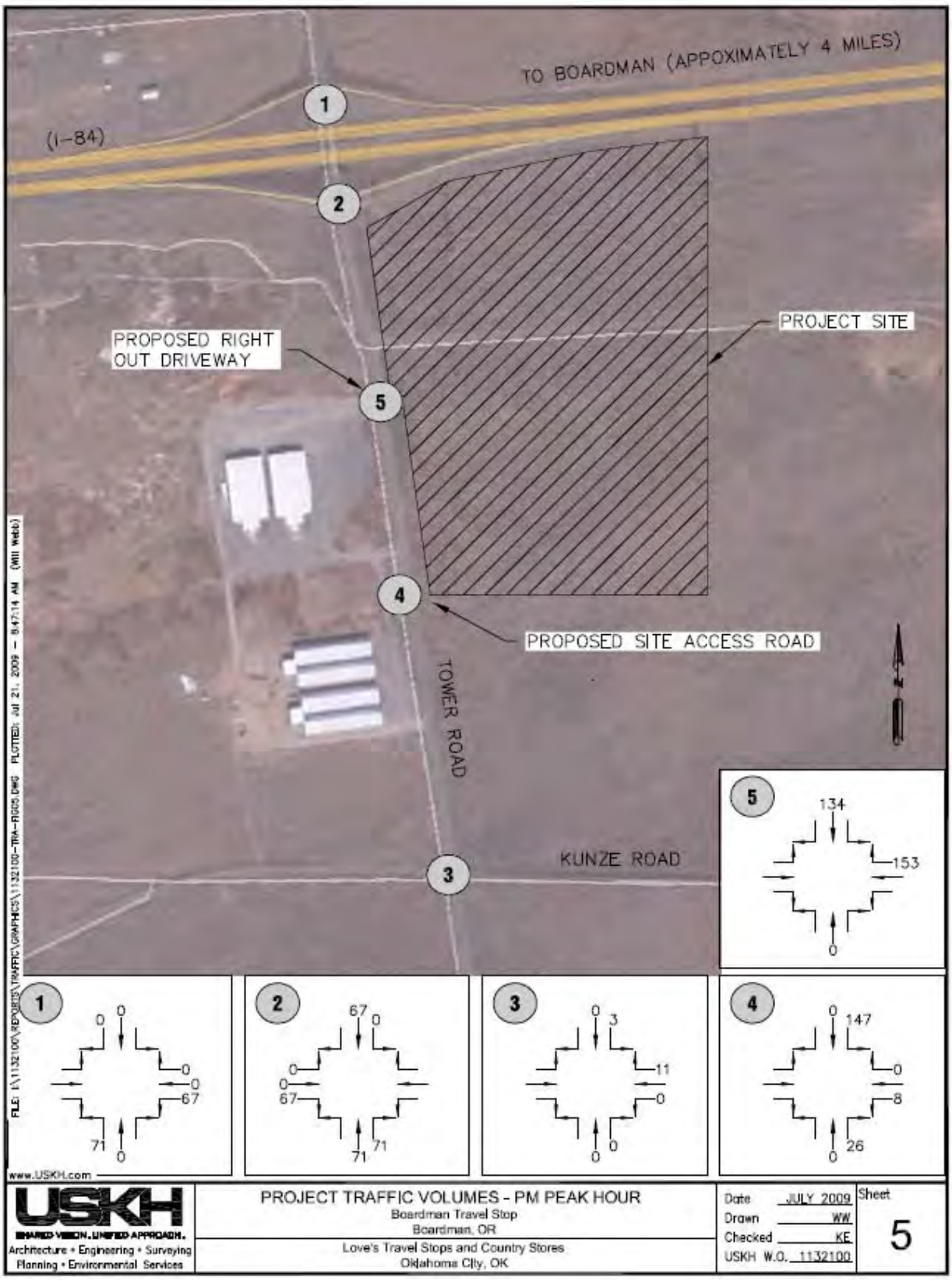
CODE	SHORT DESC	LONG DESCRIPTION
01	PSNGR CAR	PASSENGER CAR, PICKUP, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, MOTOR SCOOTER, OR MOTOR BICYCLE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

Attachment E
In-Process Traffic and
2015 Background Traffic
Operations Worksheets

Figure 5 – Project Trip Distribution and Assignment - PM Peak Hour



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Carty Genrating Station - Morrow County, Oregon
Year 2014 Background Traffic Conditions, Weekday AM Peak Hour

Scenario Report

Scenario:	am
Command:	am
Volume:	am
Geometry:	am
Impact Fee:	Default Impact Fee
Trip Generation:	am
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2014 Background Traffic Conditions, Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Tower Rd / I-84 WB Ramps	A	10.0	0.227	B	14.8	0.458	+ 4.796 D/V
# 2 Tower Rd / I-84 EB Ramps	A	9.9	0.011	B	11.3	0.154	+ 1.426 D/V

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2014 Background Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 12.6 Worst Case Level Of Service: B[14.8]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0 0 0	1	0	0 0 0	0	0	0 0 1!	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	9	1	0	0	1	1	0	0	0	131	1	1
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	10	1	0	0	1	1	0	0	0	147	1	1
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
in-process:	71	0	0	0	0	0	0	0	0	67	0	0
Initial Fut:	81	1	0	0	1	1	0	0	0	214	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
PHF Volume:	118	2	0	0	2	2	0	0	0	311	2	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	118	2	0	0	2	2	0	0	0	311	2	2
Critical Gap Module:												
Critical Gp:	4.1 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.6	6.7	6.4
FollowUpTim:	2.2 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	3 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		239	240	2
Potent Cap.:	1632 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		721	639	1046
Move Cap.:	1632 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		679	590	1046
Volume/Cap:	0.07 xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		0.46	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.2 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	7.4 xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	680	xxxxx
SharedQueue:	0.2 xxxx	xxxxx	xxxxx	xxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.4	xxxxx
Shrd ConDel:	7.4 xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	14.8	xxxxx	
Shared LOS:	A	*	*	*	*	*	*	*	*	B	*	
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			14.8		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Carty Genrating Station - Morrow County, Oregon
Year 2014 Background Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Tower Rd / I-84 EB Ramps

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: B[11.3]

Street Name:	Tower Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	1	0	0 1 0	0	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	0	9	5	1	131	0	1	1	5	0	0	0
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	0	10	6	1	147	0	1	1	6	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
in-process:	0	71	71	0	67	0	0	0	67	0	0	0
Initial Fut:	0	81	77	1	214	0	1	1	73	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
PHF Volume:	0	119	113	2	315	0	2	2	107	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	119	113	2	315	0	2	2	107	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	6.6	6.7	6.4	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	3.7	4.2	3.5	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	232	xxxx	xxxxx	494	551	315	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1263	xxxx	xxxxx	509	422	692	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1263	xxxx	xxxxx	508	422	692	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.15	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	681	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.6	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	11.3	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			11.3			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

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Carty Generating Station - Morrow County, Oregon
Year 2014 Background Traffic Conditions, Weekday PM Peak Hour

Scenario Report

Scenario:	pm
Command:	pm
Volume:	pm
Geometry:	pm
Impact Fee:	Default Impact Fee
Trip Generation:	pm
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2014 Background Traffic Conditions, Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Tower Rd / I-84 WB Ramps	A	9.7	0.078	B	13.5	0.274	+ 3.779 D/V
# 2 Tower Rd / I-84 EB Ramps	A	9.0	0.014	A	9.7	0.115	+ 0.798 D/V

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 11.0 Worst Case Level Of Service: B[13.5]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0 0 0	1	0	0 0 0	0	0	0 0 1!	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 4:40 PM to 5:40 PM												
Base Vol:	5	1	0	0	1	1	0	0	0	40	1	1
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	6	1	0	0	1	1	0	0	0	45	1	1
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
in-process:	71	0	0	0	0	0	0	0	0	67	0	0
Initial Fut:	77	1	0	0	1	1	0	0	0	112	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
PHF Volume:	109	2	0	0	2	2	0	0	0	160	2	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	109	2	0	0	2	2	0	0	0	160	2	2
Critical Gap Module:												
Critical Gp:	4.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.2	7.3	7.0
FollowUpTim:	2.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.2	4.7	4.0
Capacity Module:												
Cnflict Vol:	3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	223	224	2
Potent Cap.:	1402	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	624	562	898
Move Cap.:	1402	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	584	515	898
Volume/Cap:	0.08	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.27	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	585	xxxxx
SharedQueue:	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.1	xxxxx
Shrd ConDel:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.5	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			13.5		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Carty Generating Station - Morrow County, Oregon
Year 2014 Background Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Tower Rd / I-84 EB Ramps

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: A[9.7]

Street Name:	Tower Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	1	0	0 1 0	0	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 4:40 PM to 5:40 PM												
Base Vol:	0	6	101	1	40	0	1	1	9	0	0	0
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	0	7	114	1	45	0	1	1	10	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
in-process:	0	71	71	0	67	0	0	0	67	0	0	0
Initial Fut:	0	78	185	1	112	0	1	1	77	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	0	102	243	1	147	0	1	1	101	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	102	243	1	147	0	1	1	101	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.8	xxxx	xxxxx	6.5	6.6	6.3	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.8	xxxx	xxxxx	3.6	4.1	3.4	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	345	xxxx	xxxxx	374	496	147	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	910	xxxx	xxxxx	611	464	879	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	910	xxxx	xxxxx	611	463	879	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.12	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	862	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx	xxxxx	9.7	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	A	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			9.7			xxxxxx		
ApproachLOS:	*			*			A			*		

Note: Queue reported is the number of cars per lane.

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Attachment F
2015 Total Traffic
Operations Worksheets

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2014 Total Traffic Conditions, Weekday AM Peak Hour

Scenario Report

Scenario:	am
Command:	am
Volume:	am
Geometry:	am
Impact Fee:	Default Impact Fee
Trip Generation:	am
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2014 Total Traffic Conditions, Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Tower Rd / I-84 WB Ramps	A	10.0	0.227	C	15.4	0.490	+ 5.441 D/V
# 2 Tower Rd / I-84 EB Ramps	A	9.9	0.011	B	11.6	0.170	+ 1.716 D/V

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2014 Total Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 13.2 Worst Case Level Of Service: C[15.4]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0 0	0 0	0	1 0	0 0	0	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	9	1	0	0	1	1	0	0	0	131	1	1
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	10	1	0	0	1	1	0	0	0	147	1	1
Added Vol:	1	0	0	0	0	0	0	0	0	14	0	0
in-process:	71	0	0	0	0	0	0	0	0	67	0	0
Initial Fut:	82	1	0	0	1	1	0	0	0	228	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
PHF Volume:	119	2	0	0	2	2	0	0	0	331	2	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	119	2	0	0	2	2	0	0	0	331	2	2
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.6	6.7	6.4
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	242	243	2
Potent Cap.:	1632	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	719	637	1046
Move Cap.:	1632	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	676	587	1046
Volume/Cap:	0.07	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.49	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	676	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.8	xxxxx
Shrd ConDel:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	15.4	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			15.4		
ApproachLOS:	*			*			*			C		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Year 2014 Total Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Tower Rd / I-84 EB Ramps

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: B[11.6]

Street Name:	Tower Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	1 0	0 1	0	0 0	0 0	1!	0 0	0 0	0	0 0
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	0	9	5	1	131	0	1	1	5	0	0	0
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	0	10	6	1	147	0	1	1	6	0	0	0
Added Vol:	0	1	4	0	14	0	0	0	5	0	0	0
in-process:	0	71	71	0	67	0	0	0	67	0	0	0
Initial Fut:	0	82	81	1	228	0	1	1	78	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
PHF Volume:	0	121	119	2	336	0	2	2	114	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	121	119	2	336	0	2	2	114	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	6.6	6.7	6.4	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	3.7	4.2	3.5	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	239	xxxx	xxxxx	519	578	336	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1255	xxxx	xxxxx	492	407	673	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1255	xxxx	xxxxx	491	406	673	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.17	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	664	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.6	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	11.6	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			11.6			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2014 Total Traffic Conditions, Weekday PM Peak Hour

Scenario Report

Scenario:	pm
Command:	pm
Volume:	pm
Geometry:	pm
Impact Fee:	Default Impact Fee
Trip Generation:	pm
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2014 Total Traffic Conditions, Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Tower Rd / I-84 WB Ramps	A	9.7	0.078	B	13.9	0.291	+ 4.205 D/V
# 2 Tower Rd / I-84 EB Ramps	A	9.0	0.014	A	9.8	0.118	+ 0.849 D/V

Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2014 Total Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 11.2 Worst Case Level Of Service: B[13.9]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0 0 0	1	0	0 0 0	0	0	0 0 1!	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 4:40 PM to 5:40 PM												
Base Vol:	5	1	0	0	1	1	0	0	0	40	1	1
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	6	1	0	0	1	1	0	0	0	45	1	1
Added Vol:	5	0	0	0	0	0	0	0	0	4	0	0
in-process:	71	0	0	0	0	0	0	0	0	67	0	0
Initial Fut:	82	1	0	0	1	1	0	0	0	116	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
PHF Volume:	117	2	0	0	2	2	0	0	0	166	2	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	117	2	0	0	2	2	0	0	0	166	2	2
Critical Gap Module:												
Critical Gp:	4.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.2	7.3	7.0
FollowUpTim:	2.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.2	4.7	4.0
Capacity Module:												
Cnflict Vol:	3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	237	238	2
Potent Cap.:	1402	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	611	550	898
Move Cap.:	1402	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	570	502	898
Volume/Cap:	0.08	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.29	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	571	xxxxx
SharedQueue:	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.2	xxxxx
Shrd ConDel:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.9	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			13.9		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Year 2014 Total Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Tower Rd / I-84 EB Ramps

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: A[9.8]

Street Name:	Tower Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	1	0	0 1 0	0	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 4:40 PM to 5:40 PM												
Base Vol:	0	6	101	1	40	0	1	1	9	0	0	0
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	0	7	114	1	45	0	1	1	10	0	0	0
Added Vol:	0	5	14	0	4	0	0	0	1	0	0	0
in-process:	0	71	71	0	67	0	0	0	67	0	0	0
Initial Fut:	0	83	199	1	116	0	1	1	78	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	0	109	261	1	153	0	1	1	103	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	109	261	1	153	0	1	1	103	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.8	xxxx	xxxxx	6.5	6.6	6.3	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.8	xxxx	xxxxx	3.6	4.1	3.4	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	370	xxxx	xxxxx	395	526	153	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	888	xxxx	xxxxx	594	446	873	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	888	xxxx	xxxxx	594	445	873	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.00	0.12	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	856	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	9.8	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	A	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			9.8			xxxxxx		
ApproachLOS:	*			*			A			*		

Note: Queue reported is the number of cars per lane.

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Attachment G
Peak Construction Total
Traffic Operations
Worksheets

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday AM Peak Hour

Scenario Report

Scenario:	am
Command:	am
Volume:	am
Geometry:	am
Impact Fee:	Default Impact Fee
Trip Generation:	am
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Tower Rd / I-84 WB Ramps	A	10.0	0.227	E	38.9	0.893	+28.966 D/V
# 2 Tower Rd / I-84 EB Ramps	A	9.9	0.011	C	19.6	0.461	+ 9.712 D/V

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Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 33.6 Worst Case Level Of Service: E[38.9]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0 0 0	1	0	0 0 0	0	0	0 0 1!	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	9	1	0	0	1	1	0	0	0	131	1	1
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	10	1	0	0	1	1	0	0	0	147	1	1
Added Vol:	0	0	0	0	0	0	0	0	0	204	0	0
in-process:	71	0	0	0	0	0	0	0	0	67	0	0
Initial Fut:	81	1	0	0	1	1	0	0	0	418	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
PHF Volume:	118	2	0	0	2	2	0	0	0	606	2	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	118	2	0	0	2	2	0	0	0	606	2	2
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.6	6.7	6.4
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	239	240	2
Potent Cap.:	1632	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	721	639	1046
Move Cap.:	1632	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	679	590	1046
Volume/Cap:	0.07	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.89	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	679	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.4	xxxxx
Shrd ConDel:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	38.9	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	*	E	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			38.9		
ApproachLOS:	*			*			*			E		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Tower Rd / I-84 EB Ramps

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: C[19.6]

Street Name:	Tower Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	1	0	0 1 0	0	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	0	9	5	1	131	0	1	1	5	0	0	0
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	0	10	6	1	147	0	1	1	6	0	0	0
Added Vol:	0	0	0	0	204	0	0	0	73	0	0	0
in-process:	0	71	71	0	67	0	0	0	67	0	0	0
Initial Fut:	0	81	77	1	418	0	1	1	146	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
PHF Volume:	0	119	113	2	615	0	2	2	214	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	119	113	2	615	0	2	2	214	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	6.6	6.7	6.4	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	3.7	4.2	3.5	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	232	xxxx	xxxxx	794	851	615	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	1263	xxxx	xxxxx	337	281	465	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	1263	xxxx	xxxxx	337	281	465	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.01	0.46	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	461	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	2.5	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	19.6	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	C	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			19.6			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday PM Peak Hour

Scenario Report

Scenario:	pm
Command:	pm
Volume:	pm
Geometry:	pm
Impact Fee:	Default Impact Fee
Trip Generation:	pm
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Tower Rd / I-84 WB Ramps	A	9.7	0.078	C	20.0	0.400	+10.243 D/V
# 2 Tower Rd / I-84 EB Ramps	A	9.0	0.014	B	10.6	0.115	+ 1.699 D/V

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Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 13.0 Worst Case Level Of Service: C[20.0]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0	0	0 0 0	1	0	0 0 0	0	0	0 0 1!	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 4:40 PM to 5:40 PM												
Base Vol:	5	1	0	0	1	1	0	0	0	40	1	1
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	6	1	0	0	1	1	0	0	0	45	1	1
Added Vol:	73	0	0	0	0	0	0	0	0	0	0	0
in-process:	71	0	0	0	0	0	0	0	0	67	0	0
Initial Fut:	150	1	0	0	1	1	0	0	0	112	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
PHF Volume:	214	2	0	0	2	2	0	0	0	160	2	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	214	2	0	0	2	2	0	0	0	160	2	2
Critical Gap Module:												
Critical Gp:	4.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.2	7.3	7.0
FollowUpTim:	2.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.2	4.7	4.0
Capacity Module:												
Cnflict Vol:	3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	432	432	2
Potent Cap.:	1402	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	461	418	898
Move Cap.:	1402	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	400	346	898
Volume/Cap:	0.15	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.40	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	401	xxxxx
SharedQueue:	0.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.9	xxxxx
Shrd ConDel:	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	20.0	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			20.0		
ApproachLOS:	*			*			*			C		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #10415
Carty Generating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Tower Rd / I-84 EB Ramps

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[10.6]

Street Name:	Tower Rd						I-84 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	1	0	0 1 0	0	0	0 0 1!	0	0	0 0 0	0	0
Volume Module: >> Count Date: 14 Oct 2009 << 4:40 PM to 5:40 PM												
Base Vol:	0	6	101	1	40	0	1	1	9	0	0	0
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	0	7	114	1	45	0	1	1	10	0	0	0
Added Vol:	0	73	204	0	0	0	0	0	0	0	0	0
in-process:	0	71	71	0	67	0	0	0	67	0	0	0
Initial Fut:	0	151	389	1	112	0	1	1	77	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	0	198	511	1	147	0	1	1	101	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	198	511	1	147	0	1	1	101	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.8	xxxx	xxxxx	6.5	6.6	6.3	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	2.8	xxxx	xxxxx	3.6	4.1	3.4	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	710	xxxx	xxxxx	604	860	147	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	639	xxxx	xxxxx	448	285	879	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	639	xxxx	xxxxx	448	284	879	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	0.00	0.01	0.12	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	10.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	842	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	10.6	xxxx	xxxxx	xxxxx	9.9	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	B	*	*	*	A	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			9.9			xxxxxx		
ApproachLOS:	*			*			A			*		

Note: Queue reported is the number of cars per lane.

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Attachment H
Peak Construction
Mitigated Total Traffic
Operations Worksheets

Project Name:	Carty Generating Station
Project #:	10415
Analysis Scenario:	Peak Construction - AM Peak Hour
Analysis Period:	0.25 (peak 15 minute analysis)
Analyst:	DFA
Date:	December 21, 2009

V = flow rate for movement
C = capacity of movement
Q = 95th percentile queue (veh)
S = storage need (ft)

# of Int:	3
Veh. Length (ft):	25

* Queue length calculated using Equation (17-37) presented in *Highway Capacity Manual 2000*.

		WB LT											
I-84 WB Ramp / Tower Road (100%)	**V**	666											
	C	679											
	Q	**15.0**											
	S	**400**											

Kittelson & Associates, Inc. - Project #10415
Carty Genrating Station - Morrow County, Oregon
Peak Construction Total Traffic Conditions, Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Tower Rd / I-84 WB Ramps

Average Delay (sec/veh): 22.2 Worst Case Level Of Service: D[25.7]

Street Name:	Tower Rd						I-84 WB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0 0		0 0 0	1 0		0 0 0	0 0		0 0	1! 0	0
Volume Module: >> Count Date: 14 Oct 2009 << 6:10 AM to 7:10 AM												
Base Vol:	9	1	0	0	1	1	0	0	0	131	1	1
Growth Adj:	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Initial Bse:	10	1	0	0	1	1	0	0	0	147	1	1
Added Vol:	0	0	0	0	0	0	0	0	0	144	0	0
in-process:	71	0	0	0	0	0	0	0	0	67	0	0
Initial Fut:	81	1	0	0	1	1	0	0	0	358	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
PHF Volume:	118	2	0	0	2	2	0	0	0	519	2	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	118	2	0	0	2	2	0	0	0	519	2	2
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.6	6.7	6.4
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	239	240	2
Potent Cap.:	1632	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	721	639	1046
Move Cap.:	1632	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	679	590	1046
Volume/Cap:	0.07	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.77	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	679	xxxxx
SharedQueue:	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	7.3	xxxxx
Shrd ConDel:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	25.7	xxxxx
Shared LOS:	A	*	*	*	*	*	*	*	*	*	D	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			25.7		
ApproachLOS:	*			*			*			D		

Note: Queue reported is the number of cars per lane.

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EXHIBIT V

SOLID WASTE AND WASTEWATER
OAR 345-021-0010(1)(v)

TABLE OF CONTENTS

V.1 INTRODUCTION V-1
V.2 SUMMARY V-1
V.3 TYPES OF WASTE V-2
V.3.1 Solid Waste V-2
V.3.2 Wastewater V-3
V.4 DESCRIPTION OF STRUCTURES AND SYSTEMS V-5
V.4.1 Structures and Systems for Solid Waste V-6
V.4.2 Structures and Systems for Wastewater and Storm Water V-6
V.5 CONSUMPTIVE WATER USE REDUCTION V-15
V.6 PLANS FOR RECYCLING AND REUSE V-16
V.6.1 Recycling During Construction V-16
V.6.2 Recycling During Operations V-17
V.6.3 Recycling During Retirement V-17
V.7 ADVERSE IMPACTS OF WASTE DISPOSAL AND EVIDENCE THAT ADVERSE IMPACTS WOULD BE MINIMAL V-18
V.7.1 Impacts During Project Construction V-18
V.7.2 Impacts During Project Operation V-18
V.7.3 Impacts During Project Retirement V-19
V.8 PROPOSED MONITORING PROGRAM V-19

LIST OF TABLES

Table V-1[1] Anticipated Wastewater Volumes V-4
Table V-2 Potential Wastewater Discharge Scenarios V-8
Table V-3 Estimated Carty Reservoir Water Use V-9
Table V-4 Carty Reservoir Quality V-12

Table V-5 Quantity and Quality of Anticipated Wastewater Streams V-13

LIST OF FIGURES

Figure V-1 Comparison of Geologic and Hydrogeologic Units

Figure V-2 Geologic Cross Section A-A'

V.1 INTRODUCTION

OAR 345-021-0010(1)(v) *Information about the applicant's plans to minimize the generation of solid waste and wastewater and to recycle or reuse solid waste and wastewater, providing evidence to support a finding by the Council as required by OAR 345-022-0120.*

Response: Before issuing a site certificate, the Energy Facility Siting Council (EFSC) must determine that the Portland General Electric Company (PGE) plans to minimize the generation of solid waste and wastewater at the Carty Generating Station and its related or supporting facilities and to recycle and reuse wastes as much as reasonably practicable. Furthermore, EFSC must determine that PGE's plans for storage, transportation, and disposal of wastes are likely to result in minimal adverse impacts on the environment and the area around the proposed energy facility site.

This exhibit identifies the estimated volumes and types of waste that would be produced during construction, operation, and retirement of the Carty Generating Station; the structures and systems PGE would operate to handle the wastes; how PGE would reduce, recycle, and reuse waste; and how PGE would mitigate adverse impacts. Exhibit O contains information regarding water uses, losses, and water use permits. Refer to Exhibit B for a description of the Carty Generating Facility; refer to Exhibit C for a description of the location of the Carty Generating Station.

V.2 SUMMARY

The Carty Generating Station would produce both liquid and solid waste. All the process wastewater produced during facility operations would be reused, returned to Carty Reservoir or sent to lined evaporation ponds. Project construction and retirement would produce larger quantities of solid waste than facility operation. Solid waste would be recycled/reused as much as practicable, with the balance disposed in a solid waste landfill. None of the waste disposal practices employed during construction, operation, or retirement of the proposed energy facility would have a significant adverse impact on the environment. Exhibit U contains information regarding potential adverse impacts of solid waste and wastewater to specific public service providers; Exhibit V focuses on potential adverse impacts to the environment and the area around the Carty Generating Station.

V.3 TYPES OF WASTE

OAR 345-021-0010(1)(v)(A) *A description of the major types of solid waste and wastewater that construction, operation and retirement of the facility are likely to generate, including an estimate of the amount of solid waste and wastewater.*

Response:

V.3.1 Solid Waste

Solid Waste Produced During Construction

During the construction of the Project, a variety of non-hazardous, inert wastes would be generated. Solid waste would consist of domestic refuse, office waste, packaging materials (e.g., pallets, cardboard, packing paper, steel banding), steel cut-offs, and construction materials (e.g., concrete waste, wood, plastic, glass, erosion control materials, and miscellaneous debris). It is estimated that about 5 tons per month of solid waste would be produced during construction. Significant construction is estimated to be approximately 27 months for each block. Waste could include oil rags, spent batteries, and equipment and vehicle maintenance solvents and oils. Hazardous and non-hazardous chemicals, including those used to clean piping systems and the heat recovery steam generators (HRSGs), would be managed appropriately.

Solid Waste Produced During Operation

Approximately 20 tons per year of refuse would be produced at the Carty Generating Station during operation of a single block during normal operation (40 tons per year for two blocks). Solid waste would consist of office and maintenance waste. Hazardous waste could include oil rags, spent batteries, fluorescent lights and equipment, and vehicle maintenance solvents and oils. It is not expected that the Carty Generating Station would produce any solid wastes classified as "special wastes" other than batteries, fluorescent lights, and used oils. It is likely that the proposed Carty Generating Station facility would be classified as a Conditionally Exempt Generator, meaning that less than 220 pounds per month of hazardous waste would be produced by both blocks of the Carty Generating Station.

In addition to the domestic solid waste, additional solid waste would be generated from the water pretreatment system. The primary source of the solid waste would be silt from the raw water supply. If lined evaporation ponds are utilized, the solids that would accumulate in the evaporation ponds would be an assortment of sparingly soluble salts that precipitate as the water concentrates in the ponds. These would include carbonate salts (calcium, magnesium, etc.); sulfate salts (calcium, magnesium, etc.); chloride salts (calcium, magnesium, etc.); and silica compounds. Some hydroxide salts may precipitate, including metal hydroxides that may form in the ponds. Lastly, there would be suspended solids that are not soluble in the evaporation ponds. This would include silt and other debris that enters the ponds with the wastewater or is blown into the ponds from surrounding areas. Approximately 40,000 tons of solids would be generated in the evaporation ponds throughout the ponds' life. These solids are not expected to

be hazardous. Solids are not anticipated to accumulate at a rate that would require removal during the 30-year life of the plant and could be used as fill when the plant is decommissioned. However, if it becomes necessary at some time to remove solids, those solids will be managed appropriately. Although it is possible that the solids could be found to be suitable for use as fill when the plant is decommissioned, the cost of disposing of the solids at a landfill has been included in the decommissioning cost estimate in Exhibit W.

Solid Waste Produced By Retirement

Project retirement and restoration would result in scrap metal, piping, concrete, fence materials, power lines, equipment, and solids from evaporation and stormwater ponds. Exhibit W provides an estimate of quantities of materials that would be removed from the site during retirement.

V.3.2 Wastewater

Wastewater Produced During Construction

During construction of the Carty Generating Station, wastewater would result from sanitary waste, stormwater, testing and commissioning of water supply systems, hydrostatic testing, flushing of the water supply pipelines, washing equipment and vehicles, and washing concrete trucks after delivery of concrete loads. The amount of wastewater produced would vary depending on the number of construction workers and weather conditions. Disposal of wastewater produced during construction is discussed in Section V.4.2.

Wastewater Produced During Operation

During operation, the Carty Generating Station would produce sanitary sewage, cooling tower blowdown, HRSG blowdown, demineralized water production wastes (from the reverse osmosis unit and neutralization tank), combustion turbine water wash wastes, plant and equipment drain wastes, service water (evaporative cooling), multimedia filtration backwash, and stormwater. Table V-1 provides estimates of the amount of wastewater produced from each source for annual average conditions and summer conditions during operation of the Carty Generating Station. Amounts of wastewater shown in Table V-1 are based on the volumes shown in Figures O-1 and O-2. All estimates are based on a permanent staff of approximately 20 to 30 people and two blocks of combined cycle generation. The volume of stormwater would be dependent on weather conditions. Table V-1 also provides information regarding disposal structures and systems, which are discussed in Section V.4.2.

Table V-1[1] Anticipated Wastewater Volumes

Source of Waste Water	Under Annual Average Conditions, gallons per day[2]	Under Summer Conditions, gallons per day[2]	Disposal Systems and Structures
Sanitary Sewage	800–1440	800–1440	Routed to existing Boardman Plant sanitary waste treatment system during operation; portable toilets during construction and existing Boardman Plant sanitary system once permanent connection is made.
HRSG Blowdown	118,000	152,000	Used for cooling tower makeup water in Carty Generating Station, not directly discharged.
Reverse Osmosis Wastewater from Demineralized Water Production	32,000	43,000	Used for cooling tower makeup water in Carty Generating Station, not directly discharged
Combustion Turbine Water Wash Wastes	6,000 gallons per year	6,000 gallons per year	Lined evaporation ponds or trucked off site for processing and disposal
Cooling Tower Blowdown	262,000	450,000	Lined evaporation ponds, or returned to Carty Reservoir.
Neutralization Tank Waste	10,000	13,000	Lined evaporation ponds or returned to Carty Reservoir
Plant and Equipment Drains	72,000	72,000	Lined evaporation ponds, or returned to Carty Reservoir.
Service Water – Evaporative Cooling Blowdown	0	9,000	Lined evaporation ponds, or returned to Carty Reservoir.
Multi-media Filtration Backwash	13,000	25,000	Lined evaporation ponds, or returned to Carty Reservoir.

Notes:
[1]Anticipated waste water volumes are based on two blocks of combine cycle generation.
[2] Unless otherwise noted.
[3] Some waste streams are reused at Carty Generating Station and not part of plant wastewater discharge

Cooling tower blowdown is required to maintain the proper water chemistry in the water that circulates between the condenser and the cooling towers. The evaporation of water in the cooling process leaves behind any solids such as minerals or metals or other constituents of the water that do not evaporate, and a small blowdown stream is used to remove some of the water with a higher concentration of solids and replace it with water with lower concentrations of solids. As indicated in Table V-1, there are multiple waste streams from other operations at the Carty Generating Station that would be used as cooling tower makeup. Cooling tower blowdown would be discharged to Carty Reservoir or to lined evaporation ponds. Each disposal option is discussed further in Section V.4.

HRSG blowdown is necessary to maintain the required water chemistry in the boiler condensate water and steam to meet the steam purity requirements for admitting steam to the Steam Turbine

Generators. HRSG blowdown would be collected in a sump and cooled by mixing with service water, and the resultant wastewater stream pumped to the cooling tower as part of the cooling tower makeup water requirements.

Non-chemical wastes from the treatment of service water to produce high purity demineralized water (reverse osmosis) are also sent to the cooling tower for use as cooling tower makeup water. Reject water from the reverse osmosis process would contain an increased ionic content but would not contain any added chemicals. This water plus neutralization tank waste, plant and equipment drain waste, multimedia filtration backwash, and evaporative cooling blowdown would be sent to Carty Reservoir or to lined evaporation ponds; each potential disposal option is further discussed in Section V.4.

To maintain combustion turbine generator (CTG) efficiency, the compressor section of the CTG would be periodically water-washed to remove any fouling of the compressor blades. Off-line water washing occurs when the CTG is not in operation and the water from the wash is collected in a holding tank. The wash water would contain a detergent used to aid in cleaning and any substances washed from the compressor blades. The wash water waste would be tested to determine constituent concentrations and either disposed of in one or more lined evaporation ponds or trucked off site for processing and disposal in an approved facility. Evaporation ponds are further discussed in Section V.4; off-site disposal would occur at a separately permitted and operated waste disposal facility.

Stormwater from building roofs and other impervious surfaces within the Carty Generating Station would be collected in retention swales and, if needed, in a stormwater retention pond or ponds, and allowed to evaporate or seep into the surface. Any stormwater that could be contaminated with oil would first pass through an oil/water separator to remove the oil or would be contained for testing and sampling before being sent to either the lined evaporation pond(s) or being discharged to grade to flow to the stormwater retention swales and/or pond(s).

Wastewater Produced by Retirement

Wastewater produced by retirement of the facility would include stormwater, sanitary waste, and washing equipment and vehicles.

V.4 DESCRIPTION OF STRUCTURES AND SYSTEMS

OAR 345-021-0010(1)(v)(B) *A description of any structures, systems and equipment for management and disposal of solid waste, wastewater and storm water.*

Response:

V.4.1 Structures and Systems for Solid Waste

Construction

During construction, solid waste that cannot be recycled would be collected in roll-off bins and trucked to an approved landfill. The closest landfill is Finley Buttes Regional Landfill, located approximately 10 miles east of the proposed Carty Generating Station; the location of this landfill is shown on Figure U-1. During construction workers would keep recyclable material separated from the solid waste stream; recyclable material would be stored, and delivered periodically, by PGE or a contractor, to an appropriate recycling facility. It is not expected that any special disposal permits would be required during construction. Generation of construction waste would be minimized through use of detailed estimates of material needed and efficient construction practices.

Operation

During operation, refuse would be collected in a roll-off bin and picked up weekly by a contractor. Ultimate disposal of refuse would take place at a solid waste landfill; the closest landfill is Finley Buttes Regional Landfill. Recyclable material would be separated from the solid waste stream following PGE's existing company-wide waste minimization plan, stored, and delivered periodically to a recycling facility. Used oil, lead-acid, and nickel-cadmium batteries would be stored in an approved manner and recycled. Silt removed from the raw water through a combination of filtration, flocculation, and clarification and sludge waste from the evaporation ponds would be disposed of at a suitable disposal facility if required prior to plant retirement.

Retirement

Waste produced during retirement of the facility would result from disassembling all major plant components and removing them from the site for reuse, scrap material, or disposal at an approved facility. Foundations and remaining structures would then be demolished or broken up and placed on site in locations where the material would not interfere with restoration of the site to a useful, non-hazardous condition. PGE proposes to recycle solid waste to the greatest extent practicable to minimize the amount requiring landfill disposal. Materials not suitable for recycle or for on-site disposal would be transported to an approved facility. PGE would obtain EFSC's approval of a final retirement plan that protects the public health, safety, and the environment.

V.4.2 Structures and Systems for Wastewater and Storm Water

Construction

Portable toilets would be used during construction of the Project, and sanitary sewage would be managed and transported to a licensed sewage treatment plant by a contractor. The American National Standards Institute calls for one portable toilet per 10 workers for a 40-hour work week. For a peak construction crew of approximately 430 workers, approximately 43 portable toilets

would be required. The existing Boardman Plant sanitary waste system may also be used for a portion of workers once the permanent connection to the Boardman Sanitary Waste system is installed and operational.

Wastewater generated during testing and commissioning of the water supply systems, hydrostatic testing and flushing of the water lines, washing equipment and vehicles, and washing concrete trucks after delivery of concrete loads would be treated with an oil/water separator and managed to prevent off-site discharge. Wastewater would be tested to determine the concentrations of the constituents present and either disposed of in stormwater retention swales, placed in the lined evaporation ponds, or trucked off site for processing and disposal in an approved facility. Construction wastewater may be sent to lined evaporation ponds if there is a significant amount that cannot be handled by other proposed methods. Significant amounts of construction wastewater would not be generated until later phases of construction to support commissioning activities; therefore, the lined evaporation ponds, if needed, would be constructed prior to commissioning activities, but concurrently with construction of the Carty Generating Station.

Stormwater would be collected in stormwater retention swales. PGE would manage stormwater and other surface water discharges in conformance with its National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge General Permit #1200-C.[1]

Operation

Structures and systems for wastewater and stormwater include the Boardman Sanitary Waste System, Carty Reservoir, lined evaporation ponds, and stormwater retention swales. Each system is discussed in subsequent sections. PGE has included returning water to Carty Reservoir and sending it to lined evaporation ponds as potential structures and systems because PGE is still evaluating which combination of disposal methods would best meet plant and permit requirements; therefore, PGE is including both options to be considered by EFSC for site certification. During detailed design, the optimal disposal option will be determined and selected. The criteria that will be considered in selecting the optimum disposal option include emphasizing re-use of wastewater; minimizing impacts to Carty Reservoir water quality and associated impacts to the current irrigation and refill operations of Carty Reservoir, and the potential that additional wastewater treatment systems could be incorporated into the design, as well as balancing cost while considering these criteria. Table V-2 provides the potential wastewater discharge ranges for each potential scenario.

[1] Construction stormwater would not be discharged to "waters of the United States" because none are present in the vicinity of the Carty Generating Station. Moreover, construction stormwater would not be discharged to any surface water features that might constitute "waters of the state." Nonetheless, PGE would apply to register under the 1200-C permit in the event that the Oregon Department of Environmental Quality determines that the permit is needed to ensure protection of any such surface features or groundwater.

Table V-2 Potential Wastewater Discharge Scenarios

Scenario	Flow Rate to Carty Reservoir, gallons per day	Flow Rate to Lined Evaporation Ponds, gallons per day
Two Blocks without Wastewater Treatment and Full Discharge to Carty Reservoir	357,000[1]	0
Two Blocks without Wastewater Treatment and Discharge to Reservoir and Lined Evaporation Ponds	Partial Flow	Partial Flow
Two Blocks with Wastewater Treatment and Full Discharge to Lined Evaporation Ponds	0	179,000[2]

Notes:
1. Based on 248 gallons per minute shown on Figure O-1.
2. Based on one-half of 248 gallons per minute shown on Figure O-1 because a wastewater treatment system would be installed if both blocks were discharged to evaporation ponds which would reduce the flow to the evaporation ponds.

Boardman Sanitary Waste System

During operation of the Carty Generating Station, sanitary waste would be conveyed to the existing Boardman Plant sanitary waste facility. The anticipated amount of sanitary sewage/wastewater is well within the capacity of the existing Boardman sanitary waste system, which has a total capacity of over 20,000 gallons per day (gpd). The Boardman sanitary waste system has a design capacity for the original construction crew of the Boardman Plant; currently approximately 5 % of the capacity is used. The system is regulated by the Oregon Department of Environmental Quality (DEQ) under the Boardman Water Pollution Control Facility permit.

Exhibit B contains information regarding this shared facility and how the Carty Generating Station would continue operating should the Boardman Plant be decommissioned. Existing sanitary lagoons are jointly owned by PGE and the co-owners of the Boardman Plant. Under the Agreement for Construction, Ownership, and Operation of the Number One Boardman Station on Carty Reservoir dated as of October 15, 1976, between PGE, Idaho Power Company, and Pacific Northwest Generating Company, PGE has the right to construct and operate on Carty Reservoir additional generating units and to utilize those facilities of the Boardman plant that may be used in common with the new generating units, including, but not limited to, the reservoir, pumping facilities, pipelines from the Columbia River, roads, railroad spurs, docks, parking lots, fencing, and transmission facilities[2]. A copy of said agreement is included as Appendix B-1 to the ASC.

The sanitary waste system at the Boardman Plant has been underutilized; therefore, a leak test or reconditioning of the liners will be required prior to use by the Carty Generating Station. As required by the Boardman Plant Water Pollution Control Facilities (WPCF) permit, sanitary wastewater shall be disinfected with chlorine when discharges to the third cell of the sewage lagoons occur. A minimum of 1.0 milligrams per liter (mg/L) of chlorine residual shall be

[2] See Section 19 of the Agreement for Construction, Ownership and Operation of the Number One Boardman Station on Carty Reservoir dated as of October 15, 1976.

maintained after 60 minutes' contact time, according to the Boardman WPCF permit. PGE has installed a continuous chlorine monitor at the discharge point between the second cell and the third cell. There has never been any discharge from the second cell to the third cell as a result of Boardman operations, even during initial construction; therefore, PGE does not anticipate that discharge from the second to the third cell would take place with the addition of sanitary wastewater from the Carty Generating Station.

Carty Reservoir

Carty Reservoir was constructed by PGE under Permit R-6276 as a water storage and cooling pond for heat resulting from Boardman Plant operations. Storage of water in Carty Reservoir is authorized under a separate water right for reservoir storage that is fully developed and certificated (see Certificate 86056 authorizing storage of 38,300 acre-feet of water diverted from the Columbia River.) At its current build out, Carty Reservoir has a maximum surface area of approximately 1,450 acres and contains approximately 38,000 acre feet of water (12 billion gallons) at a maximum pool elevation of 677 feet above mean sea level (MSL). The average pool elevation for the reservoir since 1990 has been approximately 667 to 668 feet above MSL. At this elevation, the reservoir surface area is approximately 1,100 acres and contains approximately 26,000 acre-feet of water (8.5 billion gallons). As shown in Table V-3, the estimated annual average use of water from Carty Reservoir would be approximately 14,500 acre-feet/year, with the inclusion of the Carty Generating Station. Uses include the Boardman Coal Plant, irrigation, [leakage and evaporation,] and the Carty Generating Station.

Table V-3 Estimated Carty Reservoir Water Use

Water User	Annual Average Use, acre-feet/year
Boardman Coal Plant	400
Irrigation	1,800
Carty Reservoir Seepage and Evaporation	8,600
Carty Generating Station, two blocks	3,700
Total	**14,500**

Seepage occurs from the reservoir at an estimated rate of 2,700 acre-feet/year (1,700 gallons per minute [gpm]). Approximately 323 acre-feet/year of this seepage is collected by a seepage collection system and returned to the reservoir. Seepage that is not collected and pumped back to the reservoir infiltrates into the ground.

Based on construction summary reports for Carty Reservoir the reservoir was excavated through surface alluvium sediments, the Elephant Mountain basalt flow, the Rattlesnake Ridge interbed within the Elephant Mountain basalt flow, and the upper portion of the Pomona basalt flow. Figure V-1 depicts data presented in the DEQ *1995 Report on Hydrogeology, Groundwater Chemistry and Land Uses in the Lower Umatilla Basin Groundwater Management Area* (1995 DEQ Report) and provides a comparison of geologic and hydrogeologic units.

Seepage from the Carty Reservoir occurs in the alluvium in combination with the upper portion of the Elephant Mountain basalt flow (the alluvium sediments and the pervious vesicular, fractured, brecciated, and weathered basalt flow top are hydraulically connected as one aquifer) and a lower shallow aquifer consisting of the Elephant Mountain basalt flow combined with the upper portion of the Pomona basalt flow (lower aquifer).

Figure V-2 is a regional geologic map and cross section A-A' from the 1995 DEQ Report; the figure indicates several natural breaches into the Pomona basalt that could allow hydraulic connection between the Carty seepage and sediments in Sixmile Canyon. The natural breaches that could allow hydraulic connection are located at a distance of approximately 4 miles. Groundwater flow rates for the alluvium in combination with the upper portion of the Elephant Mountain basalt flow range from 0.06 to 3.0 feet per day; rates for the lower shallow aquifer range from 0.0003 to 0.3 feet per day. With an assumed rate of 2.0 feet per day and a distance of 4 miles to a connection to Sixmile Canyon, it could take 29 years for the seepage water to reach this portion of the canyon. Once seepage reached this point, it would need to travel an additional 5 miles to the Columbia River through more permeable alluvial aquifer. With an assumed hydraulic conductivity of 5 feet per day, the travel time along this lower portion of Sixmile Canyon could be approximately 15 years, for a total travel time to the Columbia River of 44 years. Lower portions of Sixmile Canyon are likely more heavily influenced by agricultural runoff than seepage from Carty Reservoir. Additionally, water in Carty Reservoir originates from the Columbia, little change is anticipated in the quality of the water contained in the reservoir after discharges from the Carty Generating Station occur, and the flow of seepage from the reservoir is negligible compared to the flow of the Columbia River. Potential impacts to Carty Reservoir from the operation of the Carty Generating Station are evaluated in this section and indicate that there would be very little change in the quality of water in Carty Reservoir.

Carty Reservoir would be a shared facility between the Boardman Plant and the Carty Generating Station; the reservoir is jointly owned by PGE and the Boardman co-owners. As discussed above, PGE has the right to construct and operate on Carty Reservoir additional generating units and to use the Carty Reservoir, among other Boardman Plant facilities, for the benefit of such additional generating units..

Impacts to reservoir water quality were calculated based on the assumption that the entire wastewater stream from two blocks would be sent to the reservoir. Table V-4 presents the estimated reservoir quality after 30 days and 60 days and compares those concentrations to the current reservoir permit requirements. The values in Table V-4 were calculated on the following basis:

- A Microsoft Excel spreadsheet was developed to model the Carty Reservoir operation.

- The model was developed under the assumption that water is withdrawn and discharged from/to Carty Reservoir over the set daily period (30/60 days) with no corresponding makeup to Carty Reservoir during that period.

- The volume of water consumption and wastewater production was based on the annual average water balances included with this document and tabulated in Table V-1 that have the potential to be returned to Carty Reservoir (i.e., waste streams that will be reused internally were not included in the evaluation since they will not be discharged to the reservoir). The Boardman Plant's water use from Carty Reservoir is considered to be essentially a net zero since the intent is to identify the impact from the Carty Generating Plant only, and the Boardman Plant uses once-through cooling, returning the water to the reservoir with no change to the water quality other than heat.

- The Initial Reservoir Quality was established from Reservoir water quality data provided from 1981 to 2008.

- The quality of the Columbia River water makeup was based on data provided in Table V-4.

- The wastewater from the proposed Carty Generating Station is primarily cooling tower blowdown. Based on the concept of evaporative cooling, the estimated temperature of the wastewater from the Carty Generating Station will not be a concern.

Table V-4 Carty Reservoir Quality

	Initial Reservoir Quality	Expected Wastewater Quality	Columbia River Quality	Reservoir Quality After 30 Days	Reservoir Quality After 60 Days	Current Reservoir Permit Requirements
Calcium, mg/l CaCO3	63	562	46	63	64	< 500
Magnesium, mg/l CaCO3	90	813	23	91	92	<250
Sodium, mg/l CaCO3	87	781	16	88	89	<1000
Potassium, mg/l CaCO3	7	61	2	7	7	N/A
M-Alkalinity, mg/l	148	183	75	148	148	<500
Sulfate, mg/l CaCO3	47	608	12	48	48	<200
Chloride, mg/l CaCO3	44	393	5	44	45	<100
Nitrate, mg/l CaCO3	0.2	1.5	0.1	0.2	0.2	<45
Silica, mg/l	3.1	23.	3.1	3.1	3.2	N/A
Conductivity	444	3993	181	449	453	N/A
TDS, mg/l	261	2347	114	264	266	<1000
Fluoride, mg/l	0.6	5.4	0.5	0.6	0.6	<1
Iron, mg/l	0.11	0.99	<0.1	0.11	0.11	N/A
Copper, mg/l	0.006	0.054	0.002	0.006	0.006	<0.1
Zinc, mg/l	0.012	0.108	0.005	0.012	0.012	<0.1
Arsenic, mg/l	0.005	0.045	0.001	0.005	0.005	<1
Boron, mg/l	0.10	0.90	0.07	0.10	0.10	<0.5
Cadmium, mg/l	<0.001	<0.002	<0.001	<0.001	<0.001	<0.01
Chromium, mg/l	0.001	0.008	<0.001	0.001	0.001	<0.05
Mercury, mg/l	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.01

Values in Table V-4 are based on the two waste streams that would be entering Carty Reservoir from the Carty Generating Station. Cooling tower blowdown is the primary waste stream, with an average annual condition flow rate of 182 gpm. The second waste stream is from the wastewater collection sump (low volume waste) with an average annual condition flow rate of 66 gpm, resulting in a total flow rate of 248 gpm. Table V-5 provides a comparison of the quality of the low volume waste to that of the cooling tower blowdown for annual and summer conditions. The column "Combined Waste Water" in Table V-5 is the same as the column "Expected Wastewater Quality" in Table V-4.

Table V-5 Quantity and Quality of Anticipated Wastewater Streams

	Discharge Annual Average			Discharge Summer Maximum		
	Low Volume Wastes	Cooling Tower Blowdown	Combined Wastewater	Low Volume Wastes	Cooling Tower Blowdown	Combined Wastewater
Flow Rate, gpm	66	182	248	81	313	394
Ca, mg/L $CaCO_3$	57	744	562	62	746	604
Mg, mg/L $CaCO_3$	83	1077	813	89	1080	874
Na, mg/L $CaCO_3$	80	1034	781	86	1036	839
K, mg/L $CaCO_3$	6	81	61	7	81	66
M-Alkalinity, mg/L	136	200	183	146	200	189
SO_4, mg/L $CaCO_3$	43	812	608	46	814	655
Cl, mg/L $CaCO_3$	40	521	393	43	522	423
NO_3, mg/L $CaCO_3$	0.1	1.9	1.5	0.2	1.9	1.6
SiO_2, mg/L	2	31	23	3	31	25
Conductivity	408	5288	3993	438	5301	4299
TDS, mg/L	240	3109	2347	257	3116	2527
Fluoride, mg/L	0.6	7.1	5.4	0.6	7.2	5.8
Iron, mg/L	0.10	1.31	0.99	0.11	1.31	1.06
Copper, mg/L	0.006	0.071	0.054	0.006	0.072	0.058
Zinc, mg/L	0.011	0.143	0.108	0.012	0.143	0.116
Arsenic, mg/L	0.005	0.060	0.045	0.005	0.060	0.048
Boron, mg/L	0.09	1.19	0.90	0.10	1.19	0.97
Cadmium, mg/L	<0.0001	<0.0003	<0.0002	<0.0001	<0.0003	<0.0003
Chromium, mg/L	0.001	0.010	0.008	0.001	0.010	0.008
Mercury, mg/L	<0.0002	<0.0006	<0.0005	<0.0002	<0.0006	<0.0005

After 30 days, Carty Reservoir would increase in total hardness by less than 1 mg/L. During this time, replenishing the reservoir with approximately 400 acre-feet would return the water quality back to its original concentration prior to any discharge from the Carty Generating Station.

During a 60-day period, sending the wastewater from Carty Station would increase the reservoir's overall hardness concentration by less than 3 mg/L. This would require approximately 800 acre-feet of Columbia River water to replenish the reservoir to the same concentration prior to any discharge from the Carty Generating Station.

The model assumes there is no makeup to the reservoir during the discharge periods; estimated Carty Reservoir water use on an annual basis is shown in Table V-3. Currently, the Carty Reservoir operates eight months of the year (March–October) with makeup from the Columbia River to maintain the water level, and four months with no makeup (November–February). In September and October, the reservoir level is normally lowered to allow irrigation usage to purge water from the reservoir. During this period, river water is made up to the reservoir in sufficient quantity to replace the normal water usage plus the irrigation water and to provide additional capacity (storage) for the four months of operation with no makeup.

The 30- and 60-day period estimates above indicate that the trend is minimal impact to Carty Reservoir's water quality even assuming that all wastewater from Carty Generating Station (two

blocks) is sent to the reservoir and there is no river water makeup (i.e., from November to February). However, river water makeup from the Columbia River would continue to be pumped to the reservoir to help maintain and/or slightly improve water quality. Consequently, there is no anticipated cumulative degradation of the reservoir's quality from the two combined cycle blocks. Additionally, the minimal effects of the wastewater discharges on the water quality of the reservoir show that it is not sensitive to changing river water quality, wastewater quality, wastewater quantity, or other conditions. Carty Reservoir would remain well within the permit's water quality requirements. Periodic grab samples of Carty Reservoir will be analyzed to ensure permit compliance.

It is expected that blowdown and process waters discharged to Carty Reservoir would be discharged under a WPCF permit. A copy of the WPCF permit application can be found in Exhibit E, Appendix E-2.

Lined Evaporation Ponds

PGE has proposed locations for up to four lined evaporation ponds, with a total evaporative surface capacity of up to approximately 50 acres and a total structure surface area of 58 acres as part of this ASC. This capacity is adequate for the total wastewater from a single block with no wastewater treatment, assuming that all wastewater is sent to the evaporation ponds. For two blocks, a wastewater treatment system could be added at a later date to reduce the quantity of wastewater and maintain the approximately 50-acre evaporative surface size of the evaporation ponds. The actual size and/or number of evaporation ponds constructed would depend on the amount of wastewater that is designed to be released to the evaporation ponds and the amount that would be returned to Carty Reservoir. The evaporation ponds are sized to hold 390 acre-feet of water and provide a 30-year pond life based on a net ambient evaporation rate of 48 inches per year and a pond depth of 8 feet. The evaporation rate is consistent with reported lake evaporation rates for this area. The pond size was calculated using an evaporation pond sizing program that accounts for the design criteria noted above, as well as pond geometry, impact to evaporation rate based on accumulating salt content in the ponds, desired pond life (30 years), and storage volume for accumulated solids. PGE does not anticipate solids accumulating in an amount that would require removal during the life expectancy of the facilities. The solids are anticipated to be non-hazardous and are expected to be buried on site during decommissioning. Each pond has a unique shape to fit the constraints of the construction site, but in general the ponds are approximately 10 to 15 acres in size, with a water-side slope of 3:1. Constructing 50 evaporative surface acres of evaporation ponds in the proposed arrangement would disturb 67 acres and 58 of those acres would be permanently disturbed.

As currently proposed, each pond would be lined with a 40-mil smooth synthetic liner. The liner would be anchored in a "U" anchor trench approximately 1 foot deep and 1.5 feet wide, set back a minimum of 3 feet from the crest of the evaporation ponds. A high density polyethylene pipe filled with concrete would be placed at the toe of each evaporation pond to hold down the liner. Detailed drawings of the evaporation ponds can be found in the Erosion and Sediment Control Plan provided in Exhibit I, Appendix I-2, as part of the NPDES permit application.

In designing the proposed facility, PGE is incorporating strategies to minimize the generation of wastewater, including re-use of water streams for other processes within the facility, to the greatest extent practicable. As stated previously, four lined evaporation ponds would provide adequate capacity for the total wastewater from a single block without wastewater treatment, assuming that all wastewater is sent to the evaporation ponds. As the design process progresses, the potential to discharge a portion or all of the wastewater to Carty Reservoir, and the potential that additional wastewater treatment systems would be incorporated into the design, could result in a decrease in the total number and/or size of evaporation ponds. The evaporation ponds currently included in the design are intended to provide maximum flexibility, in the event that future conditions require limits (temporary or otherwise) to the amount of wastewater discharged to Carty Reservoir. The timing of construction of evaporation ponds will depend on a number of factors, including the timing of the construction for Blocks 1 and 2, any future changes to discharges to Carty Reservoir from the Boardman Plant, and other conditions that may affect water levels in Carty Reservoir. It is possible that much smaller evaporation ponds will be sufficient.

It is expected that blowdown and process waters discharged to the lined evaporation ponds would be discharged under a WPCF permit. A copy of the WPCF permit application can be found in Exhibit E, Appendix E-2.

Stormwater Retention Swales

PGE would construct the Carty Generating Station to prevent stormwater from leaving the Energy Facility Site. This would be achieved by grading the site and installing stormwater retention swales and, if needed, a stormwater retention basin. Detailed design of the stormwater swales and basin have not been completed, but given the low annual precipitation, high evaporation rate, and potential for infiltration, significant stormwater accumulation is not anticipated.

Retirement

Wastewater produced during retirement of the Project would be managed by PGE in accordance with the conditions of its WPCF permit, and PGE would obtain EFSC's approval of a final retirement plan that protects the public health, safety, and the environment.

V.5 CONSUMPTIVE WATER USE REDUCTION

OAR 345-021-0010(1)(v)(C) *A description of any actions or restrictions proposed by the applicant to reduce consumptive water use during construction and operation of the facility.*

Response: Consumptive water uses[3] of the Project would include cooling tower evaporation and drift, sanitary wastewater discharge to the Boardman sanitary waste system, evaporation of wastewater from lined evaporation ponds, evaporation of cooling water, and miscellaneous non-recoverable losses from the HRSG. PGE proposes to reduce the amount of consumptive water use by sending cooling tower blowdown, plant and equipment drain wastewater, evaporative cooling blowdown, and multimedia filtration backwash to Carty Reservoir, where it would eventually be re-used. Discharge of water to the lined evaporation ponds would only be used if there was not another use for this water. In addition, some internal plant wastewater streams are of adequate quality to be used as cooling tower makeup, and this water would be reused in the Carty Generating Plant cooling cycle instead of being discharged. Under average annual conditions, the amount of wastewater sent to the lined evaporation ponds could go from approximately 360,000 gpd to zero gpd by returning it to Carty Reservoir. In addition, the cooling tower would be provided with drift eliminators located below the fans and above the cooling media to capture water particles and reduced drift to levels that are commercially feasible.

The report *Consumptive Water Use for U.S. Power Production* estimates that in the Western United States consumptive water use for thermoelectric plants is 0.38 gallons per kilowatt hour (kWh). Based on a net electrical output of 760 megawatt hours (MWh), an assumed 9% loss during transmission, and assuming all water withdrawn from Carty Reservoir is lost to consumptive water use (2,294 gpm) (i.e., sent to lined evaporation ponds rather than Carty Reservoir), the consumptive water use of the Carty Generating Station would be 0.18 gallons per kWh. Additional sources cite typical consumption for a combined cycle closed loop cooling system as approximately 196 gallons per MWh; the total consumption for the Carty Generating Station would be approximately 163 gallons per MWh. In both cases, the consumptive water use at Carty Generating Station is anticipated to be below industry standards.

V.6 PLANS FOR RECYCLING AND REUSE

OAR 345-021-0010(1)(v)(D) *The applicant's plans to minimize, recycle or reuse the solid waste and wastewater described in OAR 345-021-0010(1)(v)(A).*

Response:

V.6.1 Recycling During Construction

Recyclable materials would be separated from the solid waste stream produced during construction of the proposed energy facility. Recyclable materials would likely include scrap metals, lumber, batteries, mercury-containing lights, used oil, paper, cardboard, and other packing materials. Recyclable materials would be stored on site until sufficient quantities

[3] Water consumption or consumptive water use is water lost to the environment by evaporation, transpiration, or incorporation into the product.

existed to make recycling economic, and then sent or sold for recycling. Used oil would be recycled through one of several specialist firms providing this service in Oregon or Washington. Aluminum cans, glass bottles, and office waste paper would be recycled using a local disposal service in the area. As stated in Section V.4.1, generation of construction waste would be minimized through the use of detailed estimates of material needs and efficient construction practices.

PGE's ability to reuse or recycle wastewater would depend on the chemical characteristics of the wastewater. Non-contaminated wastewater generated from hydrostatic testing, stormwater, and flushing of lines may be collected and used as dust suppression.

V.6.2 Recycling During Operations

Internal recycling of aqueous streams would be employed to increase water use efficiency at the Carty Generating Station. The proposed energy facility would be equipped with a recirculating cooling system. Water would be recycled approximately 10 to 12 times in the cooling system before being discharged. Wastewater from various processes such as HRSG blowdown and reject water from the demineralized water reverse osmosis unit would be reused as cooling system makeup water, subsequently reducing the raw water makeup flow.

Where possible, wastewater generated at the Carty Generating Station would be reused. The excess wastewater would be sent back to Carty Reservoir, where it would be reused, and/or sent to lined evaporation ponds. The amount of wastewater that would be sent back to Carty Reservoir would be relatively small, so the impact on the reservoir's water quality would be negligible, as demonstrated in Section V.4.2.

Recyclable materials would be separated from the solid waste stream produced during operation. Recyclable materials would likely include aluminum cans, bottles, waste paper, used oil, mercury-containing lamps, and lead-acid and nickel-cadmium batteries. Operation of the Carty Generating Station is not expected to produce significant quantities of scrap metal, lumber, or cardboard. Recyclable material would be separated from the solid waste stream, stored, and delivered periodically to a recycling facility. PGE would contract with a firm for recycling its waste oil and lead-acid batteries. Aluminum cans, bottles, and office waste paper would be recycled by the local disposal service.

V.6.3 Recycling During Retirement

Wastes produced during retirement would either be disposed of or recycled using approved methods and technologies used at that time and in accordance with a retirement plan approved by EFSC.

V.7 ADVERSE IMPACTS OF WASTE DISPOSAL AND EVIDENCE THAT ADVERSE IMPACTS WOULD BE MINIMAL

OAR 345-021-0010(1)(v)(E) *A description of any adverse impact on surrounding and adjacent areas from the accumulation, storage, disposal and transportation of solid waste, wastewater and stormwater during construction and operation of the facility.*

OAR 345-021-0010(1)(v)(F) *Evidence that adverse impacts described in OAR 345-021-0010(i)(v)(E)*[4] *are likely to be minimal, taking into account any measures the applicant proposes to avoid, reduce or otherwise mitigate the impacts.*

Response:

V.7.1 Impacts During Project Construction

The majority of sanitary sewage from the project construction site would be trucked to a sewage treatment plant. The sanitary sewage would be treated together with municipal domestic wastewater and discharged in accordance with the treatment plant's discharge permit conditions. Since no sanitary waste would remain on site, and it would be treated in accordance with treatment plant permits, adverse impacts would be minimal. Some sanitary sewage may be processed in the existing Boardman Plant sanitary sewage system at a level well within the existing system's capacity. Solid waste that cannot be recycled would be trucked to a landfill. Trucking waste to the landfill during construction would cause a temporary increase in truck traffic; however, because the increase in traffic is temporary and would use existing roads, the adverse impacts are minimal. Stormwater run-off during construction would not be discharged to waterways. A variety of erosion and sediment control measures and good housekeeping practices to avoid, reduce, or mitigate impacts on surrounding or adjacent lands, as a result of stormwater, would be implemented during construction. Potential erosion and sediment controls include silt fences, aggregate entrances, natural buffer strips, and revegetation of affected areas. No significant adverse environmental impacts would occur as a result of stormwater from the project construction site.

V.7.2 Impacts During Project Operation

Sanitary sewage from the proposed energy facility would be routed to the existing Boardman Plant sanitary sewage system. The existing Boardman Plant septic system has a remaining capacity of 19,000 gpd, which is significantly more than the 800 to 1440 gpd estimated for the Carty Generating Station. The system is regulated by DEQ under the Boardman Plant Water Pollution Control Facility permit; therefore, sanitary waste is expected to have no adverse impacts on surrounding or adjacent areas or groundwater quality.

[4] Rules adopted in May 2007 state, "Evidence that adverse impacts described in (D) are likely… ." Adverse impacts, however, are actually described in Section (E). This has been reflected in the summarized rule.

Carty Generating Station wastewater would be discharged to Carty Reservoir and/or to lined evaporation ponds. Because the ultimate disposition of discharge water would not cause a significant change in the reservoir water quality, or cause it to exceed limits established by the Boardman Plant Site Certificate, no significant adverse impact on the environment would be expected. If required, evaporation ponds would be constructed at the Carty Generating Station to accept excess wastewater in the event that the wastewater reuse options described previously are not available. The lined evaporation ponds would be constructed in accordance with state requirements for such ponds to mitigate any impact to the local environment.

PGE would implement a series of best management practices, including containment of materials, use of oil-water separators, covering areas to limit exposure of materials, spill prevention and response procedures, preventative maintenance, and employee education. Waste storage areas would be screened from view. Given the small amount of waste and the small number of trips required for its disposal, there would be limited impact on surrounding and adjacent areas from transportation of wastes to landfills or recycling facilities. The adverse environmental effects of solid waste disposal at a properly designed and permitted landfill would be minimal.

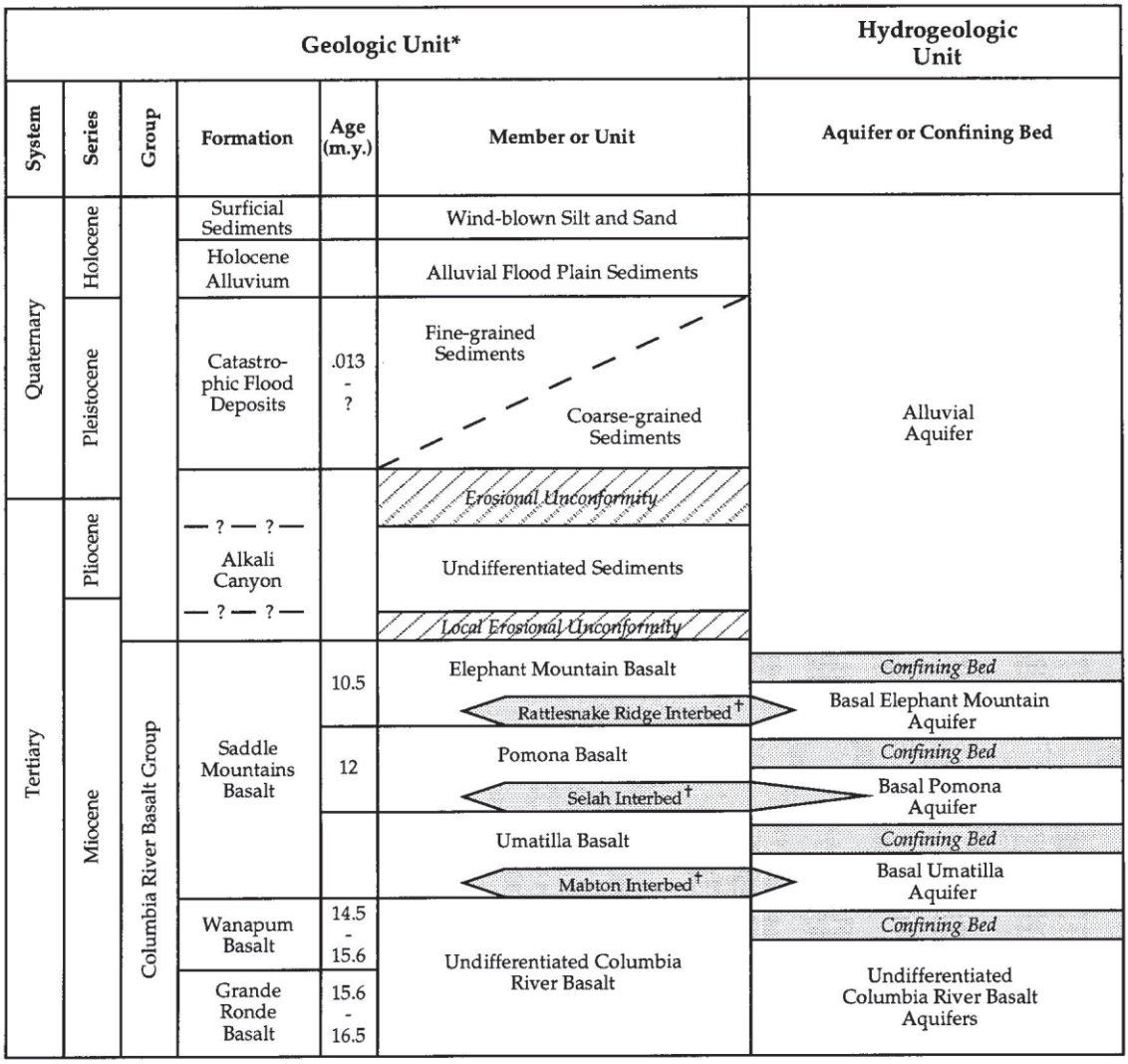
V.7.3 Impacts During Project Retirement

Wastes produced during retirement would be either disposed of or recycled using approved methods and technologies available at that time and in accordance with a retirement plan approved by EFSC.

V.8 PROPOSED MONITORING PROGRAM

OAR 345-021-0010(1)(v)(G) *The applicant's proposed monitoring program, if any, for minimization of solid waste and wastewater impacts.*

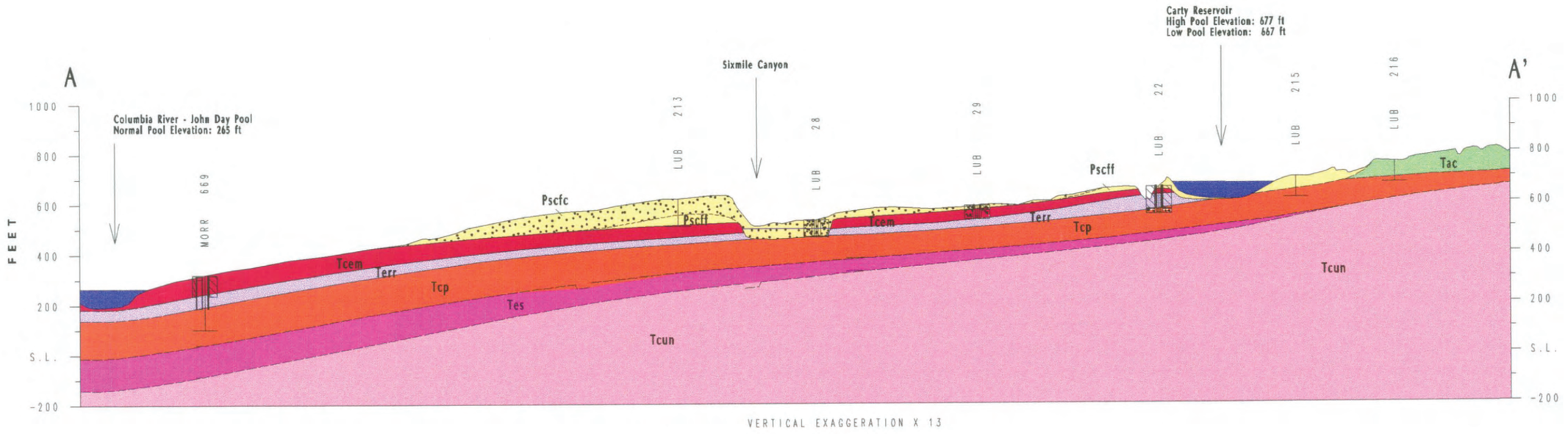
Response: The discharge of blowdown and process water to the lined evaporation ponds or Carty Reservoir and sanitary waste disposal at the Boardman Plant sanitary waste facility would be monitored in accordance with the requirements of the appropriate WPCF permits issued for the applicable facility. Disposal of solid waste from the proposed energy facility would have minimal adverse environmental effects and would be disposed of at a permitted facility; therefore, no monitoring program is proposed.



*Modified from Tolan and others, 1989 †Ellensburg Formation

Source: Hydrology, Groundwater Chemistry and Land Uses in the Lower Umatilla Basin Groundwater Management Area, 1995.

ecology and environment, inc. Global Environmental Specialists Portland, Oregon	PGE CARTY GENERATING STATION Morrow & Gilliam County, Oregon APPLICATION FOR SITE CERTIFICATE FINAL 2011	Figure V-1 COMPARISON OF GEOLOGIC AND HYDROGEOLOGIC UNITS Date: 1-10-11 | Drawn by: AES | 10:002784PG0501\fig V-2



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Source: Hydrology, Groundwater Chemistry and Land Uses in the Lower Umatilla Basin Groundwater Management Area, 1995.

PGE CARTY GENERATING STATION
Morrow & Gilliam County, Oregon

APPLICATION FOR SITE CERTIFICATE
FINAL 2011

Figure V-2
GEOLOGIC CROSS SECTION A-A′

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