United Power Corporation

P.O. Box 1916
Discovery Bay, CA 94505

Phone: (925) 634-1550
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e-mail: bmokeeffe@sbcglobal.net

September 1, 2011

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Re: Submittal of Notification of Intent and Pre-Application Document for Bryant Mountain Pumped Storage Hydroelectric Project, FERC Project No. 13680

Dear Ms. Bose,

This is to notify the Federal Energy Regulatory Commission (FERC) that Bryant Mountain, LLC (Applicant) intends to file for an original license for the proposed Bryant Mountain Pumped Storage Hydroelectric Project, FERC Project No. 13680 (Project). United Power Corporation is the major partner of Bryant Mountain LLC and is responsible to prepare the license application.

The required information for the Notification of Intent (NOI) and the Pre-Application Document (PAD) are attached with this submittal. Copies of NOI and PAD are being mailed to all state and federal agencies related with the project and stakeholders as listed in section 8 of the NOI.

The applicant was issued a Preliminary Permit on September 24, 2010 to conduct a feasibility study of the potential of a hydroelectric pumped storage facility near the town of Malin in Klamath County in Oregon. The applicant has evaluated the feasibility and economic potential for the proposed project. The first phase of the licensing process is the preparation of the pre-application document which is included with this submittal and also being sent to state agencies and interested stakeholders.

Bryant Mountain, LLC respectfully petitions the FERC to license the Bryant Mountain Pumped Storage Project using the Traditional Licensing Process (TLP). The applicant believes that the default Integrated Licensing Process (ILP) would not be beneficial to stakeholders of the project financially and would not serve their best interests. The TLP would be more appropriate, cost effective and efficient method for proceeding with the licensing of this project.

Pursuant to CFR 18 Section 5.3, the following considerations are being noted:

(A) Likelihood of Timely Issuance

The ILP is an intensive process that involves scoping under the National Environmental Policy Act (NEPA), study plan development, dispute resolution, study plan implementation, and application development. The ILP imposes a stringent timeline on the licensing process and unnecessarily places significant demand on state agencies and stakeholders to meet rigid deadlines. Any failure to meet the deadline could set the project back to several months or years and even cancellation of the project. Because of the foregoing impediments the Applicant believes the TLP would allow both the applicant and resource agencies to complete the licensing process in a more timely manner.

(B) Complexity of the Resource Issues

The Applicant believes that the TLP would better facilitate the licensing process forward than the ILP. Resource issues of this project are minimal being an off-stream project compared to other projects of this scale. Likelihood of significant disputes with agencies and stakeholders are minimal and the TLP would allow focusing on the issue resolution more effectively than burdened with additional pre-resolution requirements under the ILP.

(C) Level of Anticipated Controversy

The Applicant believes that the requirements can be met in a timely manner and meet the requirements of Federal Power Act and anticipate low level of controversy based on the responses and information from stakeholders.

(D) Relative Costs of the TLP compared to the ILP

The Applicant believes that the TLP would be more economical and cost effective for this project than ILP. The licensing process would proceed at significantly reduced costs and alleviate labor intensive scoping of the project and burden on resource agencies.

(E) The Amount of Available Information and Potential for Significant Disputes over Studies

The Applicant is committed to conduct necessary studies regarding effective evaluation of all relevant issues and anticipates no significant disputes over studies.

(F) Other Factors Believed by the Applicant to be Pertinent

1. The Applicant believes that the default ILP would not serve the stakeholders best interests and the TLP would be more cost effective and efficient process for proceeding with the license application.

2. As required by the FERC regulation, the applicant is providing a copy of the submittal to all stakeholders as listed in Section 8 of the attached NOI.

The Applicant respectfully requests to grant the TLP in the licensing of this project. As provided in 18CFR Section 5.3 of the regulations, all comments on this request must be filed with the FERC within 30 days of the filing date (September 1, 2011) and must reference FERC Project No. 13680. Respondents may submit comments electronically (www.ferc.gov) or by sending an original and eight copies to the following address:

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St NE
Washington, DC 20426

Finally, as required under 18CFR Section 5.3 of the FERC's regulations, the applicant will publish notice of this request in the appropriate newspaper and file a copy of this notice with the FERC upon publication.

If you have any questions or comments, please contact Bart O'Keeffe at 925-634-1550 or bmokeeffe@sbcglobal.net.

Sincerely,

Bart O'Keeffe
President
United Power Corporation

Encl: Notification of Intent and Pre-Application Document for the Bryant Mountain Pumped Storage Hydroelectric Project

NOTIFICATION OF INTENT

BRYANT MOUNTAIN PUMPED STORAGE

HYDROELECTRIC PROJECT

FERC PROJECT NO. 13680

This Notice of Intent (NOI) is submitted to the Federal Energy Regulatory Commission pursuant to Section 5.5 of the Commission's regulations, and in response to Paragraph 6 of the Preliminary Permit issued to the Bryant Mountain LLC for the Bryant Mountain Pumped Storage Project, FERC Project No. 13680.

(1) The potential applicant name and address:

Bryant Mountain LLC
P.O. Box 1916
Discovery Bay, CA 94505
Phone (925) 634-1550

(2) The Project Number

13680

(3) The license expiration date:

None assigned

(4) Statement Intention:

It is the intent of the applicant to file an application for an original license for the proposed Bryant Mountain Pumped Storage Project. The proposed schedule for completion of the application is September 1, 2013.

(5) *The type of principal project works licensed, if any, such as dam, and reservoir, powerhouse or transmission lines.*

Currently existing on the site are the following facilities owned by others:

Three steel transmission lines, two electrical substations (the Malin Substation and the Capt. Jack Substation), an irrigation canal, a reservoir (Pope Reservoir) and various water wells.

To be added with the proposed Bryant Mountain Pumped storage Project are the following facilities:

An upper reservoir with dam, a lower reservoir with dam connected by a tunnel, A five unit powerhouse and transmission line. Additional details on the existing and proposed facilities are presented in the accompanying PAD document.

Also adjacent to the pumped storage facility is a large wind farm to be built by others.

(6) The location of the project by state, county nearby towns and stream.

State:	Oregon
County:	Klamath
Nearby Towns:	Klamath Falls (35 miles, Pop. 19,900)
	Malin (5 miles, Pop 500)
Stream:	USBR “D” Canal

(7) The installed plant capacity:

The installed capacity at the proposed Bryant Mountain Pumped Storage Powerhouse is 12, 500 kilowatts.

(8) The names and address of the people and organizations listed in this paragraph have a significant interest in the Bryant Mountain Pumped Storage Project and will be provided with a copy of this Notice Of Intent and the accompanying Pre-Application Document.

(8)(i) Counties:

Klamath County Board of Commissioners
305 Main Street
Klamath Falls, OR 97601-6332

Klamath County Economic Development Association
P.O. Box 1777
Klamath Falls OR 97601

(8)(ii) Other Political Subdivisions:

Klamath Irrigation District

Klamath Irrigation District
6640 K.I.D. Lane
Klamath Falls, OR 97603-9658

Malin Irrigation District
2446 North Canal Road
Malin, OR 97632

Klamath Water and Power Agency

Hollie Cannon, Executive Director
Klamath Water and Power Agency
735 Commercial Street, Suite 4000
Klamath Falls, OR 96701

(8)(iii) Governmental Agencies

U.S. Bureau of Reclamation

Susan Fry, Area Manager
U.S. Bureau of Reclamation
660 Washburn Way
Klamath Falls, OR 97603-9365

Michael Connor, Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington D.C. 20240

U.S. Bureau of Land Management

Ed Shepard, Site Director
Oregon State Office
U.S. Bureau of Land Management
333 S.W. 1st Ave.
Portland, OR 97204

Don Planner
U.S. Bureau of Land Management
Klamath Falls Resource Area
2795 Anderson Road, Bldg 25
Klamath Falls, Oregon 97603

Director
Oregon State Office
U.S. Bureau of Land Management

1849 C Street, Room 3238
Washington D.C. 20240-0001

Bob Abbey, Director
U.S. Bureau of Land Management
1849 C Street NW, MIB 6566
Washington D.C. 20240

Katy Coba, Director
Oregon State Office
U.S. Bureau of Land Management
635 Capitol Street NE
Salem, OR 97301-2532

U.S. Federal Energy Regulatory Commission

Patrick Regan, Regional Engineer
Federal Energy Regulatory Commission
805 SW Broadway, Ste 550
Portland, OR 97205

U.S. Geological Survey

Vic Hines
U.S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025

U.S. Environmental Protection Agency

Regional Administrator, Region 10
U.S. Environmental Protection Agency
1200 6th Avenue, Ste 900
Seattle, WA 98101

U.S. Army Corps of Engineers

Kevin Brice
Deputy District Engineer for Project Management
U.S. Army Corps of Engineers
P.O. Box 2946
Portland, OR 97208-2946

Wetlands Regulatory Program

U.S. Army Corps of Engineers
P.O. Box 2946
Portland, OR 97208-2946

Bonneville Power Administration

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 98208-3621

U.S. Fish and Wildlife Service

Field Supervisor
U.S. Fish and Wild Life Service
1936 California Avenue
Klamath Falls, OR 97601

Regional Director
U.S. Fish and Wildlife Service
911 NE 11th Avenue
Portland, OR 97232-4181

Regional Director
U.S. Fish and Wildlife Service
2800 Cottage Way, Ste. W-2606
Sacramento, CA 95825-1846

U.S. Forest Service

Mary Wagoner, Regional Engineer
U.S. Forest Service
Pacific Northwest Region
P.O. Box 3623
Portland, OR 97208-3623

National Park Service

Regional Director
National Park Service
1111 Jackson Street Ste. 700
Oakland, CA 94607

National Oceanic and Atmospheric Administration

Administrator
National Oceanic and Atmospheric Administration

1401 Constitution Avenue, Room 6217
Washington D.C. 20230

Blane Bellerud
NOAA / National Marine Fisheries Service
1202 NE Lloyd Blvd, Suite 1100
Portland, OR 97232

Federal Emergency Management Agency

Director
Federal Emergency Management Agency
500 C Street SW
Washington D.C.20472

U.S. Federal Environmental Protection Agency

Administrator
U.S. Federal Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington D.C. 20460

John Bregar
U.S. Federal Environmental Protection Agency
1200 Sixth Avenue
Seattle WA 98101

Advisory Council on Historic Preservation

Executive Director
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue, NW, Ste 803
Washington D.C. 20004

U.S. Department of Interior

Office of Environmental Quality
U.S. Department of Interior
911 NE 11th Avenue
Portland, Oregon 97232

Department of the Interior
Office of Environmental Affairs
Room 2340 MIB
1849 C Street NW
Washington D.C. 20240

Lands and Minerals Adjudication Section (OR936.1)

Bureau of Land Management
P.O. Box 2965
Portland, OR 97208-2965

Oregon State Office of the Governor

Ted Kulongoski, Governor
Office of the Governor
900 Court Street NE, Room 254
Salem, OR 97301-4047

Oregon Members of the Legislatures

Wayne Kinney
Office of Senator Wyden
131 NW Hawthorne Ave. Suite 107
Bend, OR 97701

John Snider
Congressman Greg Walden
843 East Main St. No. 400
Medford, OR 97504

Jeff Merkly
Office of Senator Merkley
107 Russell Senate Office Building
Washington D.C. 20520

Oregon Office of the Attorney General

John Kroger, Attorney General
Office of the Attorney General
1162 Court Street NE
Salem, Oregon 97301

Oregon Water Resources Department

Mary S.Grainey
Oregon Water Resources Department
725 Summer Street N.E. Ste A
Salem, OR 97301

Oregon State Parks and Recreation Department

Roger Roper, Heritage
Oregon State Parks and Recreation Department
725 Summer Street NE, Ste. C
Salem Oregon 97301

Tim Wood, Director
Oregon State Parks and Recreation Department
725 Summer Street NE, Ste. C
Salem Oregon 97301

Oregon Department of Energy

Tom Stoop
Oregon Department of Energy
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Salem, OR 97301-9915

Oregon Public Utility Commission

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Public Utility Commission
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Salem, Oregon 97310

Oregon State Marine Board

Paul Donheffner, Director
Oregon State Marine Board
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Oregon Department of Environmental Quality

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Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

Steve Kirk
Oregon Department of Environmental Quality
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Bend, OR 97701

Oregon Department of Fish and Wildlife

Ken Homolka
Oregon Department of Fish and Wildlife
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Ted G. Wise
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Bend, OR 97702

Oregon Department of Forestry

David Morman, Director
Oregon Department of Forestry
2600 State Street
Salem, OR 97310

Oregon Department of Land Conservation and Development

Richard Whitman, Director
Oregon Department of Land Conservation and Development
635 Capitol Street NE, Ste 150
Salem, OR 97301-2540

Northwest Power and Conservation Council

Joan Dukes, Council Member
Northwest Power and Conservation Council
851 SW Sixth Avenue, Suite 1020
Portland, OR 97204

(8)(v) Affected Indian Tribes

Stanley Speaks, Director
Bureau of Indian Affairs
911 NE 11th Avenue
Portland, OR 97132

Director
Bureau of Indian Affairs
1849 C Street NW, MS 2624 MIB
Washington D.C. 20240

Chairman

Klamath General Council
P.O. Box 346
Chiloquin, OR 97624-0436

Chairman
Quartz Valley Reservation
P.O. Box 24
Fort Jones, CA 96032

(8)(vi) Other Interested People and Organizations

David O'Keeffe
1325 Gwinn Street E.
Monmouth, OR 97361-1575

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Reno, NV 89521

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Fredericksburg, VA 22401

Mark Singleton, Executive Director
American White Water
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Cullowhee, NC 28723

Rupak Thapaliya, National Coordinator
Hydropower Reform Coalition
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Washington, D.C. 20005

Steve Pedery, Conservation Director
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Portland, Oregon 97217-4145

Jeremy Jirak, Wildlife Biologist
National Resources Conservation Service
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Klamath Falls, OR 97601

Darrel Samuels, President
Klamath Basin Audubon Society
P.O. Box 354
Klamath Falls, OR 97601

Danette Watson
Klamath Watershed Council
Oregon State University Extension Service
3328 Vandenburg Rd.
Klamath Falls OR 97603

The Nature Conservancy
226 Pine Street
Klamath Falls, OR 97601

Klamath Riverkeepers
Panamnik Building
38150 Highway 96
Orleans. CA 97624

(8)(e) The Bryant Mountain LLC requests to be designated as the Commission's non-Federal Representative for the purposes of consultation under Section 7 of the Endangered Species Act and the joint agency regulations there under. The Bryant Mountain LLC also requests authorization to initiate consultation under Section 106 of the National Historic Preservation Act and its implementing regulations of 36 CFR 800.2©(4).

BRYANT MOUNTAIN
PUMPED STORAGE
HYDROELECTRIC PROJECT

FERC PROJECT NO. 13680

Pre-Application Document

Prepared By:
United Power Corporation
P.O. Box 1916
Discovery Bay, CA 94505

On behalf of:
Bryant Mountain, LLC
September 2011

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1.0 INTRODUCTION

Bryant Mountain LLC is filing the Notice of Intent (NOI) and Pre-Application Document (PAD) with the Federal Energy Regulatory Commission (FERC) for the proposed Bryant Mountain Pumped Storage Hydroelectric Project, FERC Project no. 13680. The project is a 1,250 MW pumped storage hydroelectric plant located in Klamath County, Oregon on privately owned lands and lands owned by Bureau of Land Management (BLM).

Bryant Mountain filed for a preliminary permit for this project on March 1, 2010. FERC issued the preliminary permit on September 24, 2010 and this permit will expire on September 1, 2013. The Commission (FERC) expects that Bryant Mountain LLC will carry out prefiling consultation and study development leading to the development of a license application.

This document initiates the Traditional Licensing Process (TLP) pursuant to Commission's regulations. The request for using the TLP is included in the transmittal letter. The permittee reached out to several stakeholders and state agencies to ascertain potential impacts associated with this project. The permittee believes that the Integrated Licensing Process (ILP) would not the best interests of the stakeholders and TLP would be more appropriate and efficient process for licensing the project.

This document describes physical features of the project, location, and environmental interaction with the development of the project. It also documents proposals for future investigations, studies, and operation of the project. The detail features of the project may change based on data obtained from future investigations.

1.1 PURPOSE

The purpose of the PAD is to provide preliminary project details, project boundary, immediate impact area, and environmental impacts to stakeholders and state and federal agencies. The document follows requirements of 18 CFR Sections 5.5 and 5.6 and is organized as shown on the Table of Contents.

2,0 PROJECT LOCATION, FACILITIES AND OPERATION

2.1 Name and Address of Contact Persons

2.1.1 Project Location:

State	Oregon
County	Klamath
Nearby Town	Klamath Falls
Body of Water	Upper Klamath Lake
	USBR “D” Canal

2.1.2 Primary Contact Person

Mr. Bart M. O’Keeffe
United Power Corporation
P.O. Box 1916
Discovery Bay, California 94505
bmokeeffe@sbcglobal.net

2.1.2 Secondary Contact Person

Mr. David W. O’Keeffe
United Power Corporation
1325 Gwinn Street E
Monmouth, Oregon 97361-1575
DWOKeeffe@Netscape.net

2.2 Maps, Drawings and Photographs.
(Refer to Tabs)

2.3 Description of Proposed Project Facilities and Components

Project Location

The site selected for the Bryant Mountain Pumped Storage Project is located in Klamath County, Oregon, some forty miles southeast of the town of Klamath Falls (population 66,000), some three miles northeast of the town of Malin (population (500), and approximately two miles north of the California-Oregon border,

The project is further located within:

T41S, R12E, Sections 1, 2, 11, 12, 14, 21, 22. and 23
T40S, R12E, Sections 25, 26, 35 and 36
T40S, R13E, Sections 30, 31 and 32
T41S, .R13E, Sections 5, 6, 7, 8, and 18

This project may be found on the USGS 7-1/2' quads for Malin and for Bryant Mountain.

This location was selected because it has all of the prerequisites required for a successful pumped storage facility. These include: (1) an adequate dependable water supply, (2) significant changes in topography within a short distance, (3) accessible to large electrical transmission lines, and (4) located in an area of minimal environmental constraints. Each of these items is discussed briefly in the following paragraphs.

The project will be a 1,250 Megawatt pumped storage facility. This quantity of electricity will provide power for some 1,250,000 homes any where it may be needed in the regions served by the Pacific Northwest - Pacific Southwest Intertie.

Following the general pumped storage concepts, the project will have an upper reservoir and a lower reservoir. A tunnel will connect the two reservoirs, with a powerhouse located at the lower end of the tunnel. During periods of low demand (midnight hours) surplus economical electricity will be used to drive the reversible pump-turbines in the powerhouse. These pumps will move water from the lower reservoir into the upper reservoir. During periods of peaking high demand water is released from the upper reservoir, through the generators in the powerhouse into the lower reservoir producing valuable needed peaking electricity for consumption. This mode of operation will be generally followed on a daily schedule with some modifications for weekends and holidays.

The project is immediately adjacent to a proposed wind turbine facility. The pumped storage facility and the wind turbine facility will directly compliment and support each other. The wind turbine facility will produce variable quantities of electricity when the wind is available. The pumped storage facility transforms this variable electricity to high demand reliable electricity, always available on demand.

2.3.1 Transmission Lines

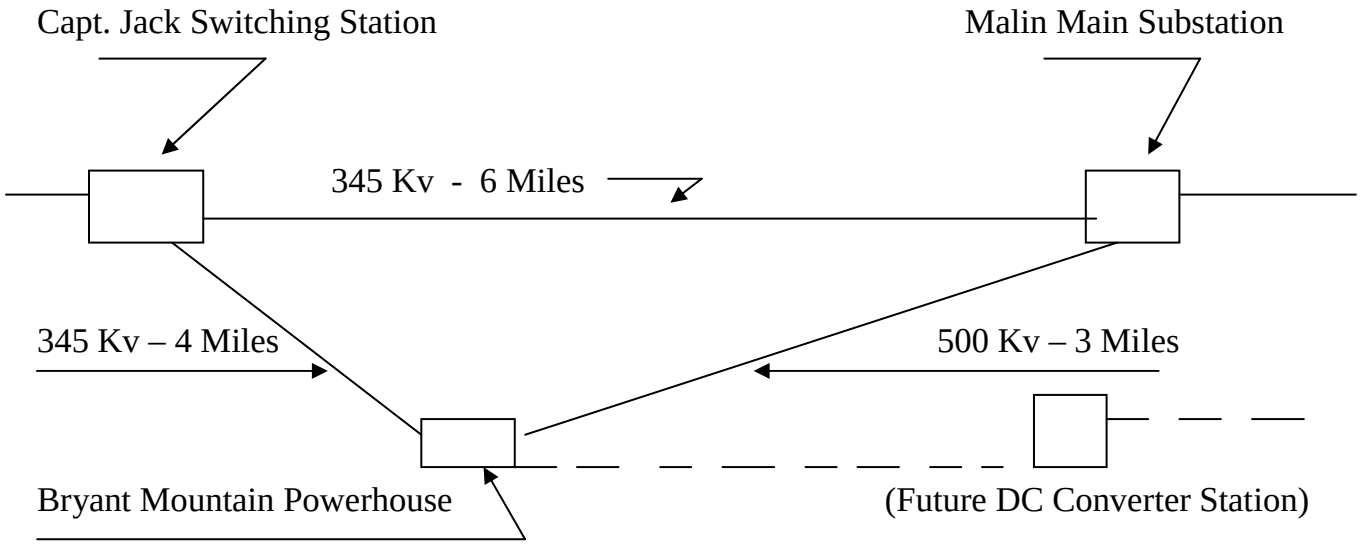
The proposed Bryant Mountain Pumped Storage Facility lies immediately adjacent to the high voltage transmission corridor occupied by the Pacific Southwest Intertie. The transmission corridor contains lines of both 500,000 volts and 345,000 volts. Located three miles south of the project along this transmission corridor is the Malin Main Substation; a major substation on the Pacific Southwest Intertie. Transmission lines from the project will be either 500,000 volts or 345,000 volts and may join the Pacific Southwest Intertie at the Malin Substation.

An alternative routing could be to join the Pacific Southwest Intertie at the Captain Jack switching station located 4 miles northwest of the project. The transmission lines for this station pass by the project within 1500 feet of the powerhouse.

Also it should be noted that the main lines of the Pacific Northwest - Pacific Southwest Intertie passes through the upper reservoir. These lines will have to be rerouted around the reservoir, or the towers will have to be extended to provide the proper clearance between the lines and the reservoir surface.

Future plans include a DC high voltage transmission line from the Bryant Mountain Pumped Storage Facility to the Harry Allen Substation switchyard north of Las Vegas, Nevada. An alignment study for this line has been completed and impacted land owners have been interviewed.

2.3.1 Transmission Line – Single Line Diagram



2.3.2 Upper Reservoir

The upper reservoir will be an enlargement of the existing Pope Reservoir located in Section 25, T40S R12E; Sections 30, 31 and 32, T40S, R13E; and Section 5, and 6, T41S R13E. The enlarged reservoir will have a surface elevation of 5500 ft MSL and a surface area of approximately 475 acres, with an

average depth of 70 feet and a storage capacity of 30,000 acre feet. An earthen dam will contain the reservoir. The dam will be approximately 2700 feet long and 270 feet high at its maximum section. The dam will also have an overflow spillway and outlet facility to release water into the stream below the dam. Releases and overflow from the dam will follow natural channels, terminating in the lower reservoir.

The upper reservoir will contain intake facilities for the power tunnel, and will have the facilities to store an additional amount of water to provide for a black start capability. It will also continue to perform the existing water storage function that the basin presently serves, receiving local runoff water and storing it for required uses downstream.

A photograph of the existing Pope Reservoir is shown in Figure No.4 in Paragraph 2.2 of this report.

2.3.3 Access Roads

The upper reservoir area is served with an existing access road. This road will have a total length of 4.7 miles, including 3.7 miles along an existing alignment. The road will have to be significantly upgraded to accommodate project traffic. The road is under the jurisdiction of the U.S. Bureau of Land Management.

A paved secondary highway passes adjacent to the lower reservoir. It is adequate for project purposes. A paved side road three miles long will have to be constructed between this existing road and the project powerhouse.

2.3.4 Power Tunnels

The power tunnels will connect the upper reservoir to the powerhouse at the lower reservoir. They will consist of a low pressure power tunnel, a surge shaft, a power shaft, and a high pressure tunnel. These are shown on the Tunnel Profile drawings, in Section 2.4 of this report.

The low pressure power tunnel runs from the upper reservoir intake structure to the surge shaft - power shaft. It is 2900 feet long and 32 feet in diameter.

The location of the surge shaft / power shaft is at the intermediate butte located between the upper and lower reservoirs. This butte provides high enough natural ground elevation to make an ideal location for a surge facility. The surge shaft leads up from the low pressure power tunnel to the ground location at the intermediate butte. The surge shaft is 270 feet deep and 32 feet in diameter.

The location of the power shaft is below the surge shaft, and extends down to the high pressure tunnel. It is 1100 feet long and 32 feet in diameter.

The High pressure power tunnel runs from the power shaft to the powerhouse. It is 3800 feet long and 32 feet in diameter.

2.3.5 Powerhouse

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The powerhouse will be a partial subterranean structure constructed adjacent to the lower reservoir. As access will be directly from the surface, and the roof of the powerhouse will be at or slightly above the ground surface, it is considered a surface powerhouse. A channel will connect the deepest portion of the reservoir to the powerhouse intake.

The powerhouse will contain a total of five units. Configured as follows: Three (3) will be standard 250 MW reversible pump-turbine units, two (2) will be variable
speed 250 MW reversible pump-turbines. Dependable capacity will be 1,250 Megawatts. Average daily generation will be six hours during peaking times, the monthly energy production will be 225,000 Mw-Hr, and the annual energy production will be 2,700,000 Mw-Hr.

The units will be designed to operate in unison with each other or to function independently.

2.3.6 Lower Reservoir

The lower reservoir will be a new facility located at the foot of Bryant Mountain about 2 miles northeast of the town of Malin, in T41S, R12E Sections 1, 12, and 13 and T41S, R13E Sections 7 and 18. The reservoir will have a surface elevation of 4210 ft MSL and a surface area of approximately 590 acres, with an average depth of 60 feet and a storage capacity of 35,000 acre feet. An earthen dam will contain the reservoir. The dam will be approximately 13,800 feet long and 110 feet high at its maximum section.

Photographs of the reservoir site are shown in Figures No.2 & 3 Paragraph 2.2 of this report.

2.3.7 Water Supply Line

In the pumped storage concept, the same water is cycled from the lower reservoir to the upper reservoir and then back to the lower reservoir. The same water
can be used an indefinite number of times. Thus, the only water required is that is necessary to fill the lower reservoir for the first time and that necessary to replace water lost through seepage and evaporation.

For the Bryant Mountain Project the water to initially charge the reservoirs and to provide makeup for seepage and evaporation losses will be obtained from the “D” Canal, approximately 1-1/2 miles east of the town of Malin. It is understood that the canal and its water are a joint operation of the U.S. Bureau of Reclamation and the Klamath Irrigation District (KID). The concurrence of both organizations will be necessary to use the facility and its water for project purposes. It is further understood that there is excess water available in the system to accommodate the Bryant Mountain Pumped Storage Facility. Adequate time exists when the canal is not being used to capacity to initially fill the Lower Reservoir and to provide water to replace seepage and evaporation losses. Also the proposed project can help alleviate local ground water problems by using KID seepage water as project makeup water.

A small pumping plant and pipeline will be provided from the "D" Canal up to the lower reservoir. It is currently estimated that this will be a 36 inch diameter pipe, 7,000 foot pipeline. This pipeline passes through the Malin Irrigation District. The District now irrigates using flood irrigation techniques. The project pipeline provides the District with the opportunity to pressurize their system and use the much more efficient sprinkler irrigation techniques. To accommodate this a water storage tank will be placed adjacent to the project lower reservoir.

2.3.8 Wells

There is reportedly a significant ground water aquifer beneath the Bryant Mountain Project. The Project developers intend to apply for permits to utilize existing wells and several new wells to supply water for the Bryant Mountain Project. These wells will be used to help alleviate the high ground water that contributes to seepage problems in the area. The wells will be used to augment the USBR “D” Canal as may be required.

2.3.9 Area of Impact

The following project features will impact the acreage shown.

Transmission Lines	180 Acres
Upper Reservoir	80 Acres
Access Roads	36 Acres
Power Tunnels	7 Acres
Lower Reservoir	800 Acres
Water Supply Line	5 Acres
Wells	1 Acre

2.3.10 Project Statistics

The following statistics were developed during the initial development of

the project. They are given to provide the reviewer a concept of the project. The values are expected to change somewhat as the design and project evaluation proceeds.

Transmission Line

Capacity	- 500,000 volts AC
Length	- 4 miles

Upper Reservoir

Dam Height (Max.)	- 270 feet
Dam Length	- 2,700 feet
Reservoir Volume	- 30,000 acre-ft
Surface Elevation	- 5,500 feet MSL
Surface Area	- 475 acres

Access Road

Total Length	- 4.7 miles
Existing Alignment	- 3.7 miles
Surface	- Gravel

Low Pressure Tunnel

Quantity	- 1
Length	- 2,900 feet
Diameter	- 34 feet
Lining	- Concrete
Capacity	- 15,000 cfs

Surge Shaft

Quantity	- 1
Length	- 270 feet
Diameter	- 30 feet
Lining	- Concrete
Capacity	- 15,000 cfs

Power Shaft

Quantity	- 1
Length	- 800 feet
Diameter	- 32 feet
Lining	- Concrete
Capacity	- 15,000 cfs

Power Tunnel

Quantity	- 1
Length	- 3800 feet
Diameter	- 34 feet
Lining	- Concrete

Capacity	- 15,000 cfs

Powerhouse

Type	- Surface
Number of Units	- 5
Units	
Standard Reversible	-3 @ 250 MW
Variable Speed Reversible	-2 @ 250 MW
Total Capacity	- 1,250 megawatts
Head	- 1,290 feet
Length	- 325 feet
Height	- 200 feet
Width	- 100 feet

Lower Reservoir

Dam Height	- 110 feet
Dam Length	- 13,800 feet
Reservoir Volume	- 30,000 acre-ft
Surface Elevation	- 4,210 feet MSL
Surface Area	- 590 acres

Emergency Response Time

Unit generating under load	- 1 to 5 Sec
Unit generating on standby	- 10 Sec
Unit at no-load synchronous speed	- 15 Sec
Unit pumping - drop load	- 15 Sec
Unit idle	- 2 Min.
Unit pumping - reverse direction & begin generating	- 10 Min.

Power and Energy Production

Beginning with a full upper reservoir

Daily Energy Production for 24 Hrs	- 30,000 MW-Hr
Monthly Energy Production@ 6 Hr per Day	- 225,000 Mw-Hr
Annual Energy Production @ 6 Hr per Day	- 2,700,000 Mw-Hr

2.4 Project Operations

With the emphasis on new electrical generation now shifting to renewable resources such as wind and solar the role of pumped storage is changing. The role of storage and system reliability has become more important. For this reason the reservoirs of the Bryant Mountain Project have been made larger than traditional pumped storage facilities. Instead of the usual 10 to 12 hours of

generating time, Bryant Mountain will have 24 hours of generating time at full capacity.

In addition, the pumped storage facilities provide ancillary services and environmental benefits. These ancillary services and environmental benefits can provide the most important function of the pumped storage operation. These ancillary services can be sold at a higher market value than the price of the electrical energy generated. These services and benefits are discussed below in greater detail.

Bryant Mountain facility, can provide three distinct types of services, they are: (1) Reregulation of energy, (2) Ancillary Services and (3) Environmental Benefits

These are described as follows:

(1) Reregulation of Energy

During the daily cycle of electrical usage there is heavy demand for electricity during the working and evening hours; with little or no demand during the late night hours. The currently operated generating facilities cannot be easily regulated to this daily cycle. Therefore large amounts of this night electricity are not utilized.

The pumped storage facilities and concepts take this late night low value electricity and convert it to high demand, high value electricity that can be used during the high demand times of the day.

This changing from low demand low value electricity late at night to high demand high value electricity during daytime hours is accomplished using these pumped storage facilities and concepts.

(2). Ancillary Services

Ancillary Services are those services that can be provided by a pumped storage facility, and contracted for by owners and users of electrical generation and transmission facilities. These services firm up the offerings provided to customers by the owners of the generation and transmission facilities. Ancillary services can also be described as the services other than scheduled energy deliveries that are required to maintain system reliability and meet system operating criteria. These services include spinning, non-spinning and replacement reserves. They also include regulation (automatic generation control), voltage control and black start capability. Contracts for Differences – a financial contract for the purchase of electricity, provide electricity at a guaranteed price, for a premium. This is to guarantee a customer electricity at a guaranteed price, regardless of market fluctuations.

Some ancillary services can be described as follows:

Online generation (instantaneous response)
Provided during normal operations, to protect against an unexpected outage or fault that may occurs on the system, protects against a momentary drop in voltage or frequency. A pumped storage facility, under contract, will have generation equipment running to insure participating generators and suppliers against this drop
In voltage and frequency.

Spinning reserve (10 second response)
To provide this service, for a fee, a participating pumped storage facility will have generators spinning in air at synchronous speed. In the event of an unscheduled outage, power can be provided within 10 seconds or less.

Non spinning reserve (3 minutes or less)
To provide this service, for a fee, a participating pumped storage facility will have water in storage, and a generator on standby able to provide the required service.

Load following or Ramping (50 Mw per minute)
The ability to follow a load change at a rate of 50 Mw per minute.

Replacement reserves
To provide this service, for a fee, a participating pumped storage facility will schedule energy production in advance to provide for a given clients planned outages.

Electrical Storage
To provide electrical storage, a pumped storage facility will hold water in storage until a client calls for it in the form of electrical energy.

Regulation (Frequency control)

Black start capability
Pumped storage facilities are unique in their ability to start their plants and a connected system when no electricity is available on line. These plants provide this service by maintaining a given amount of water in their upper reservoir, expressly reserved for this contingency.

Contracts for Differences
Under this concept, for a fee, pumped storage facilities with water in storage will guarantee final customers from fluctuating energy costs.

Service to energy service companies

Energy service companies are those aggregators and marketers whose business it is to supply energy and services to retail customers, such as municipalities and larger businesses. A pumped storage facility will contract with an energy service company to provide storage, reserves, or backup energy supplies as may be required.

(3). Environmental Benefits

The Bryant Mountain Pumped Storage Facility will provide the following environmental benefits. These are listed without elaboration as the details of the listed benefits are generally common knowledge to those in the electrical industry.

Provides electrical stability to the grid
Minimizes the cycling of large plants providing load following
Allows fossil fuel plants to operate at best output
Decreases fossil fuel plant startups and shut downs
Mitigates the need for additional fossil fuel plants
Can either provide or create load
Deduces system and plant maintenance costs
Improves system economics
Located at off stream sites
No air quality impact
No nuclear waste
No ash or residue disposal
Less use of large base load plants
Flexibility in cycling large plants
Less burning of fossil fuels
Greater efficiency in using older plants
Greater efficiency in system operation (ramping rates)
Mitigates the need to build other large generating plants
It is clean quiet and out of sight
Uses a commodity that would otherwise go to waste
Higher value of peak energy when compared to off peak energy
Saving in cost of oil
Lowers system operating costs
Provides short emergency response time
Has the ability to either provide power or create load

The Bryant Mountain Pumped Storage Project is essentially a closed system. Under this operation the same water may be cycled an indefinite number of times between the lower reservoir and the upper reservoir. The only water that will be required is that necessary to provide make up water for that lost to evaporation and seepage. These losses are estimated at 5,000 acre-feet per year.

To initially charge the system (fill the lower reservoir) will require 35,000 acre-feet. This water can be pumped into the lower reservoir during the construction phases, over a three year period. This initial filling and make up water can be provided during the off peak times of year when there is excess capacity in the “D” Canal.

Socio-economic Benefits

The electricity on the transmission lines was previously transmitted through the County while providing minimum benefit to the community. Using the Bryant Mountain facilities the electrical transmission is changed to benefit the entire West Coast region, at the same time it is contributing significantly the county tax base and employment.

The facility will have a construction payroll of some 150 people for four years and a permanent employment force of 10 to 15 people in clean non-polluting high tech jobs.

Also the facility will have an appraised value of about 1.5 billion dollars. This should add about 9 million dollars a year in tax revenue to the County.

3.0 EXISTING ENVIRONMENT AND RESOURCE IMPACTS

3.1 Basin Description

3.1.1 Existing Environment

The Bryant Mountain Pumped Storage Hydroelectric Project (BMPSHP) is proposed for an area in the Lost River basin in Klamath County, Oregon, 2-4 miles northeast of Malin, which is about 1 mile from the California border and about 20 miles southeast of Klamath Falls, Oregon (see figure 1). Historically this was an endorheic basin, but following construction of the Klamath Project by the Bureau of Reclamation, irrigation waters flow between the Lost and Klamath Rivers via diversion dams and A Canal. The proposed water sources for BMPSHP is A Canal (which connects with Lost River via D Canal), and Pope Reservoir is the location of the proposed upper reservoir. Pope Reservoir connects with High Line and Low Line Canals via Mills Creek.

3.1.1.1 Major Land Uses

The major land uses are irrigated agriculture and livestock grazing, along with some recreational hunting and fishing. Major crops are hay, alfalfa, barley, cattle, sheep, irish potatoes, and wheat (see figure 2).

Malin had a 2009 population of 1,467 and an area of 45 square miles, with a median 2010 home price of $140,000 based on sales of 3 homes, a median home value of $208,000, and a median household income of $43,000. Malin's population is about 55% Hispanic, 41% white, and 4% other, 18% of which have college degrees.

3.1.1.2 Major Water Uses

Major water uses are irrigated agriculture, livestock watering, and domestic consumption.

3.1.1.3 Dams and Diversion Structures

Additional dams and diversions in the Bryant Mountain vicinity include Captain Jack, Harpold, Haymaker, Long, Russell, and Worlow,

3.1.1.4 Tributaries

Tributaries include D, J, High Line, and Low Line Canals; Haymaker Canyon, Mills, and Russell Canyon Creeks, and McCoy Springs.

3.1.1.5 Climate

The Malin climate is semi-arid, with an average of 11 inches of rain and 21 inches of snow per year; the average July high temperature is 85 ºF and the average January low temperature is 20 °F. The average annual evaporation rate is 57" in Klamath Falls and the average freeze free period is 90 days.

3.2 Geology and Soils

3.2.1 Existing Environment

3.2.1.1 Geological Formations

The BMPSHP is located in the Basin and Range physiographic province, and the Klamath/Goose Lake Basins and Klamath Juniper Woodland ecoregions (Thorson et al. 2003). It is underlain by Quaternary and Tertiary sedimentary and volcanic rock (mostly basalt, andesite, and tuffs with occasional intrusive; (see figure 3). It lies in the pluvial Lost River floodway between pluvial Goose and Klamath Lakes.

3.2.1.2 Soils

Soils in the vicinity of Malin are classified as Class II (good cultivatable land), but those on Bryant Mountain are listed as Class VI (unsuitable for cultivation, but moderately well suited for grazing and forestry). Class II soils are dominated by Haplaquolls that are wet in the winter and have a nearly black surface horizon; the Class VI soils are shallow stony Mollisols.

3.2.1.3 Geological Hazards

The BMPSHP area is underlain by a series of deep-seated faults and Bryant Mountain resulted from pre-Quaternary geologic uplift (see figure 4). The faults do not appear active in the immediate area but the steepness of the scarp suggests the possibility of rock fall or landslide. Also there have been 6 earthquakes 36-72 miles from Malin (http://www.city-data.com/city/Malin-Oregon.html. The proposed water pipeline must pass under a gas pipeline running north-south between D Canal and Mills Creek.

3.2.1.4 Mineral Resources

Major mineral resources include sand, gravel, pumice, and ornamental volcanic rock. No geothermal areas have been located near the BMPSHP.

3.2.1.5 Shorelines and Stream Banks

Pope Reservoir is proposed as the upper reservoir for BMPSHP. It will be enlarged to 475 acres and an average depth of 110 feet. The lower reservoir will be built to have a surface area of 590 acres and an average depth of 125'. Both reservoirs will have a capacity of 30,000 A-ft. The upper reservoir will be filled during off-peak periods, and the natural difference in elevation between the upper and lower reservoirs will provide the hydraulic head for power generation during peak demand periods (see figure 5).

3.2.2 Potential Impacts of Project

Soil disturbance will result from: embankment dam construction; spillway construction, reservoir excavations; powerhouse excavation; tunnel excavation; surge tunnel excavation; road upgrades and construction; pipeline construction & burial; and construction of the transmission line corridor. Dam construction requires excavation to bedrock plus rock fill. The upper reservoir dam will be 2,700' long and a maximum of 270' high. The lower reservoir dam will be 13,800' long and a maximum of 110' high. We expect to obtain dam construction materials from within the project vicinity.

Construction could cause soil erosion and increased dust. The powerhouse and tunnel excavations are projected to cause minimal erosion because the work will occur underground; however materials brought to the surface could erode and produce dust. Groundwater could be encountered at the proposed excavation sites. Construction of the upper reservoir site could discharge sediment into Mills Creek.

3.2.3 Protection and Mitigation of Resource

We will address water and wind erosion by implementing a soil erosion control plan that will be developed together with detailed project plans. We will implement best management practices (BMPs) endorsed by ODEQ (Oregon Department of Environmental Quality) to minimize erosion impacts and comply with Oregon water quality standards, including continuous water and air quality monitoring. Erosion controls will be implemented for all construction and

operation stages. Oregon state law requires permits for construction activities and the Klamath Basin TMDL (total maximum daily loads) process requires mitigation of nutrient and thermal releases to surface waters.

3.3 Water Resources

3.3.1 Existing Environment

3.3.1.1 Surface Hydrology

The BMPSHP is located in the central Lost River basin, which has a basin area of about 1,600 square miles. Historically this was an endorheic basin, but following construction of the Klamath Project by the Bureau of Reclamation, irrigation waters flow in both directions between the Lost and Klamath Rivers via diversion dams and Canal A. D and J Canals connect with A Canal and the Lost River, respectively. High Line and Low Line Canals connect D Canal with Mills Creek. Mills Creek drains Pope Reservoir (the site of the proposed upper reservoir).

3.3.1.2 Ground Water Resources

Ground water is used in areas lacking irrigation districts and to supplement surface waters, but most irrigation water originates from Upper Klamath Lake. Test wells in the Malin area discharge about 1,000 gal/min (Gannet et al. 2010). Spring discharges follow long-term drought and wet trends, and a drying trend for the past 50 years; however, ground water flows immediately north of Malin have responded to prolonged pumping and water levels have declined by 10-20 feet.

3.3.1.3 Water Quality

The ultimate water sources for BMPSHP, Upper Klamath Lake and Lost River, have high natural phosphorus loadings that are amplified by returns from irrigated agriculture. The combined loadings have led to hyper-eutrophic conditions in Upper Klamath Lake , Keno Reservoir, and Tule Lake (Goodman et al. 2011) and TMDL procedures for nutrients, sediments, temperature, and dissolved oxygen throughout the Klamath Basin—including the Malin district (ODEQ 2010).

3.3.1.4 Water Use

Most water in the Malin district is used for irrigated agriculture, livestock watering, and domestic supply, and most of that water comes from surface waters.

3.3.2 Potential Impact of Project

The BMPSHP is unlikely to affect water quality or quantity in the district to a significant degree. Water rights for the initial fill (30,000 acre-feet) are deemed unnecessary because there is ample water in A Canal, and it can be obtained outside the irrigation season and when not needed to aid fish migrations. Additional water needed to replace water lost via evaporation and seepage will be obtained from precipitation, runoff, and groundwater seepage. There is a possibility of eutrophic conditions developing in the 2 reservoirs because of the quality of the water originating from Upper Klamath Lake. Toxic cyanobacteria

could reach nuisance levels in the reservoirs if project operations do not mix the water sufficiently, because toxic cyanobacteria thrive in poorly mixed waters (Goodman et al. 2011). Water quality in Mills Creek may be reduced because of the introduction of hyper-eutrophic water from Upper Klamath Lake.

3.3.3 Protection and Mitigation of Resource

Except for seepage and evaporation losses, the A Canal water will be reused for an indefinite time. It is unlikely that toxic cyanobacteria will reach nuisance levels in the reservoirs, assuming that project operations mix the water sufficiently, because toxic cyanobacteria do poorly in well-mixed waters (Goodman et al. 2011). Phosphorus in the water column can be demobilized by alum application and settling, depending on the outlet levels of the reservoirs.

3.4 Fish and Aquatic Resources

3.4.1 Existing Environment

3.4.1.1 Fish

The fish assemblages of the canals, Mills Creek, and Pope Reservoir have not been surveyed (William Tinniswood, Oregon Department of Fish & Wildlife, Klamath Falls). However they may support commonly occurring and generally tolerant species such as blue chub *Gila coerulea*, tui chub *Gila bicolor*, fathead minnow *Pimephales promelas*, pumpkinseed *Lepomis gibbosus*, and brown bullhead *Ameiurus nebulosis*. The latter 3 species are aliens. When flowing, A Canal occasionally and temporarily supports juvenile Lost River sucker *Deltistes luxatus* and shortnose sucker *Chasmistes brevirostris*, both of which are federally listed as endangered (Douglas Markle, Department of Fisheries & Wildlife, Oregon State University, Corvallis, Oregon).

3.4.1.2 Macroinvertebrates

The reservoirs are likely to be colonized by commonly occurring and tolerant chironomid midges, leeches, caddisflies, craneflies, mayflies, beetles, and hemipterans (true bugs).

3.4.2 Potential Impact of Project

Because of their daily fluctuations the reservoirs and power tunnels are unlikely to support fish assemblages or recreational fisheries. Only those macroinvertebrates that can adapt to fluctuating water levels, such as those listed above, are likely to persist. Larval and young Lost River and shortnose suckers could be entrained via water withdrawls from A Canal—but this would be a one-time event.

3.4.3 Protection and Mitigation of Resource

Fish screens have been installed and are maintained on A Canal to limit entrainment of listed suckers. No other protection or mitigation or fish or macroinvertebrates is expected because such protections might attract recreational anglers to the project, which could be hazardous because of fluctuating water levels. Signs will be posted around the perimeter to this effect.

Should FERC grant a preliminary license, BMPSHP will consult with local ODFW, ODEQ, Klamath Tribal and USFWS biologists to limit risk to aquatic resources (including wetland habitats, listed fish, rare macroinvertebrates, and water quality) before final plans are completed and any earth is moved.

3.5 Botanical and Wildlife Resources

3.5.1 Existing Environment

3.5.1.1 Botanical Resources

The BMPSHP is located in the Klamath/Goose Lake Basins and Klamath Juniper Woodland ecoregions. The predominant natural vegetation type of the former is big sagebrush *Artemisia tridentata* and low sagebrush *Artemisia arbuscula*, and that of the latter is western juniper *Juniperus occidentalis* but occasional ponderosa pine *Pinus ponderosa* and pinyon pine *Pinus edulis* also occur. However most of the Malin district is currently occupied by irrigated agriculture for pasture, hay and alfalfa—all of which are alien plants.

3.5.1.2 Wildlife Habitat

Despite agricultural conversions in the Klamath/Goose Lake Basins, some wetlands remain. In addition to the pines and juniper, the Juniper Woodlands ecoregion supports sagebrush, antelope bitterbrush *Purshia tridentata*, and assorted bunch grasses. Pope reservoir offers a seasonal foraging site for bats, swallows, and waterfowl. Edge habitats and wetlands provide refuge, nesting and foraging sites for resident and migratory songbirds. The juniper woodlands provide refuge, nesting and foraging sites for ungulates, raptors and small mammals as well as songbirds. The high level of patchiness of the land use and vegetation types supports a relatively high diversity of song birds and small mammals, as well as seasonally important resources for raptors and ungulates.

3.5.1.3 Wildlife Resources

Pope Reservoir offers a nesting, foraging and resting site for waterfowl and shorebirds. Mills Creek provides important edge habitat and a water source for ungulates and riparian birds. The juniper woodlands of Bryant Mountain support western rattlesnake *Crotalus viridis*, ferruginous hawk *Buteo regalis*, rough-legged hawk *Buteo lagopus*, northern harrier *Circus cyaneus*, American kestrel *Falco sparverius*, bald eagle *Haliaeetus leucocephalus*, mountain quail *Oreortyx pictus*, blue grouse *Dendragapus obscurus*, white-headed woodpecker *Picoides albolarvatus*, pygmy rabbit *Brachylagus idahoensis*, mule deer *Odocoileus hemionus*, and occasional elk *Cervus canadensis*, pronghorn *Antilocapra americanus*, puma *Puma concolor*, and black bear *Ursus americanus* (see Appendix E).

3.5.2 Potential Impacts of Project

3.5.2.1 Botanical Resources

The lower reservoir will eliminate 1,500 acres of pasture, hayfield, and wet meadow; the upper reservoir will deepen and expand the existing Pope

Reservoir and eliminate about 200 acres of juniper woodland. None of these habitat types is rare in Klamath County.

3.5.2.2 Wildlife Resources

Conversion of 1,700 acres of mostly terrestrial habitat to the same amount of aquatic habitat will reduce the amount of terrestrial space for terrestrial wildlife refuge, nesting, and foraging. It will increase the amount of aquatic habitat and riparian edge habitat which are often limiting factors for wildlife in semi-arid regions such as the Klamath Basin. However, being pumped storage projects, the riparian habitat will be transitory and of poor quality because the daily water level fluctuations are likely to preclude development of healthy riparian vegetation. The ponds may increase the habitat availability for waterfowl and shorebirds. The proximity of BMPSHP to existing power transmission trunk lines and conversion stations makes increased collision and electrocution risk to birds and bats unlikely, other than for the additional 1.5-4 miles of additional lines from the powerhouse to the conversion stations.

3.5.3 Protection and Mitigation of Resource

3.5.3.1 Botanical Resources

A plant inventory will be conducted at the project site and priority species will be identified, and if those species must be displaced, their loss will be mitigated by transplanting or mitigation offsite. All project construction and implementation will be conducted to limit the establishment and spread of alien invasive weeds through replanting of native flora adapted to the site conditions.

3.5.3.2 Wildlife Resources

All piping and tunnels will be placed underground, thereby providing no barrier to seasonal and daily ungulate migrations. The power produced by BMPSHP will be sent 4 miles to the Malin Substation or 1.5 miles to the Captain Jack Substation, thereby limiting the increased risk of bat and bird mortality to that distance. Bird and bat diverters and adherence to the Avian Power Line Interaction Committee guidelines will be implemented to reduce the strike risk (APLIC 2006). The existing Pacific Northwest—Pacific Southwest Intertie passes over the existing Pope Reservoir; the lines will need to be rerouted around the Reservoir or elevated to provide proper clearance. The existing road to Pope Reservoir will be upgraded to accommodate project traffic and gated to limit public access. Although there is potential for wildlife entrapment and drowning if winter ice shelves collapse, ice shelf formation is deemed highly unlikely because of the daily water level fluctuations in both reservoirs. Should FERC grant a preliminary license, BMPSHP will consult with local ODFW, Klamath Tribal and USFWS biologists to limit risk to wildlife resources (including wetland habitats, bald eagle nests, migration routes) before final plans are completed and any earth is moved.

3.6 Wetlands, Riparian and Littoral Zone

3.6.1 Existing Environment

Historical wetlands in the project area have been converted to agriculture through drainage and irrigation or the wet meadows have been converted to reservoirs or pasture (see figure 6). Wet meadow taxa such as sedges *Carex* occur at the margins of Pope Reservoir and riparian taxa such as reed canary grass *Phalaris arundinacea*, rushes *Juncus* and *Scirpus*, and cattails *Typha* occur along Mills Creek.

3.6.2 Potential Impact of Project

The project is located outside of jurisdictional wetlands, and BMPSHP will obtain an agreement for a one-time water allocation of 30,000 A-ft to fill the upper reservoir, and that allocation will not alter wetland/riparian conditions in A Canal.

3.6.3 Protection and Mitigation of Resource

Because of the large fluctuation in water levels in the reservoirs, wetlands and riparian zones that could potentially develop at the reservoir margins will be of very low quality. If necessary, BMPSHP proposes to mitigate for those losses via agreement with a willing collaborator to construct a small wetland nearby equal to the size of the fluctuation perimeter of the storage reservoirs.

3.7 Rare, Threatened and Endangered Species

3.7.1 Existing Environment

This section briefly describes only those listed species likely to occur in the project area. Appendix E and G list Klamath County species that could potentially occur in the project area.

3.7.1.1 Fish and Aquatic Resources

The shortnose sucker is a large (adults to 20”), long-lived fish endemic to the Upper Klamath Basin of Oregon and California. It rears in lakes and spawns in gravels and coarse sand of springs or streams tributary to its home lake. Currently, it occurs in Upper Klamath Lake, Tule Lake, Clear Lake, Klamath River, Lost River, and tributaries thereof, including canals.

The Lost River sucker is a large (adults to 3’), long-lived fish endemic to the Upper Klamath Basin of Oregon and California. It rears in lakes and spawns in gravel or coarse sand of springs or streams tributary to its home lake. Currently, it occurs in Upper Klamath Lake, Clear Lake, Tule Lake, Lost River, Klamath River, and tributaries thereof, including canals.

3.7.1.2 Botanical Resources

Nodding melic is a rare grass occurring in rocky zones near coniferous forest margins.

Columbia cress is a rare species considered imperiled by Oregon that occurs in wetlands and riparian zones.

Howell's thelypody is a rare species considered imperiled by Oregon that occurs in alkaline wet meadows and pastures along riparian zones.

Short-prodded thelypody is a rare species considered imperiled by Oregon that occurs in riparian zones within sagebrush steppe.

American pillwort is an Oregon threatened species that occurs in vernal pools, mud flats, and along lake riparian zones.

3.7.1.3 Wildlife Resources

Oregon spotted frog is a federal candidate species that occupies permanent shallow waters with emergent or floating macrophytes.

Northern Pacific pond turtle is an Oregon sensitive species that inhabits lentic and lotic waters with abundant vegetation. It was recorded in 1991 on the Lost River near Bonanza.

Bald eagle is an Oregon threatened species usually found near large bodies of open water; it uses large trees or snags as nest sites.

Greater sandhill crane is an Oregon vulnerable species that forages in a variety of habitats (open freshwater wetlands, grasslands, savannas, croplands) and typically nests in sedge meadows near open grasslands. A nesting aggregation was observed in 1986 near Alkali Lake.

American white pelican is an Oregon vulnerable species that typically forages and breeds colonially in open freshwaters.

Yellow-billed cuckoo is a USFWS vulnerable species that breeds in riparian zones.

Tricolored blackbird is a USFWS vulnerable species and Oregon imperiled species that forages in grasslands and breeds colonially in marshes. A colony was recorded in 1986 in a marsh near Alkali Lake.

Western snowy plover is an Oregon threatened species that nests in sparsely vegetated riparian zones.

Pygmy rabbit is an Oregon sensitive species that occupies sagebrush steppe with deep loose soil. One was observed in 2002, 2.5 miles north of the Captain Jack Substation.

Kit fox is an Oregon threatened species that occurs in sagebrush steppe.

3.7.2 Potential Impacts of the Project

3.7.2.1 Fish and Aquatic Resources

There is a possibility of entrainment of Lost River and shortnose sucker larvae in water removed from A Canal.

3.7.2.2 Botanical Resources

The lower reservoir will eliminate 1,500 acres of pasture, hayfield, and wet meadow; the upper reservoir will expand the existing Pope Reservoir and eliminate about 200 acres of juniper woodland. None of these habitat types is rare in Klamath County.

There is a possibility that listed species will be displaced at either or both reservoirs.

3.7.2.3 Wildlife Resources

Conversion of 1,700 acres of mostly terrestrial habitat to the same amount of aquatic habitat will reduce the amount of terrestrial space for terrestrial wildlife refuge, nesting, and foraging. It will increase the amount of aquatic habitat and riparian edge habitat which are often limiting factors for wildlife in semi-arid regions such as the Klamath Basin, and key habitats for several listed species. However, being pumped storage projects, the riparian habitat will be transitory and of very poor quality because the daily water level fluctuations are likely to preclude development of healthy riparian vegetation. The ponds may increase the habitat availability for waterfowl and shorebirds. The proximity of BMPSHP to existing power transmission trunk lines and conversion stations (1.5—2 miles) increases the collision and electrocution risk to birds and bats by that distance.

3.7.3 Protection and Mitigation of Resource

3.7.3.1 Fish and Aquatic Resources

Fish screens have been installed and are maintained on A Canal to minimize risk to larval suckers.

3.7.3.2 Botanical Resources

A plant inventory will be conducted at the project site and listed species—if any--will be identified. If those species must be displaced, their loss will be mitigated by transplanting or mitigation offsite.

3.7.3.3 Wildlife Resources

All piping and tunnels will be placed underground, thereby providing no barrier to seasonal and daily vertebrate migrations. The power produced by BMPSHP will be sent 4 miles to the Malin Substation or 1.5 miles to the Captain Jack Substation, thereby limiting the increased risk of bat and bird mortality to that distance. Bird and bat diverters and adherence to the Avian Power Line Interaction Committee guidelines will be implemented to reduce the strike risk (APLIC 2006). The existing Pacific Northwest—Pacific Southwest Intertie passes over the existing Pope Reservoir; the lines will need to be rerouted around the Reservoir or elevated to provide proper clearance. The existing road to Pope Reservoir will be upgraded to accommodate project traffic and gated to limit

public access. Although there is potential for wildlife entrapment and drowning if winter ice shelves collapse, ice shelf formation is deemed highly unlikely because of the daily water level fluctuations in both reservoirs. Should FERC grant a preliminary license, BMPSHP will consult with local ODFW, Klamath Tribal and USFWS biologists and conduct a nesting survey to limit risk to wildlife resources (including wetland habitats, nesting sites, migration routes) before final plans are completed and any earth is moved.

3.8 Recreation and Land Use

3.8.1 Existing Environment

Bryant Mountain is used by bird and big game hunters and all terrain vehicle drivers. The site of the lower reservoir is used for hay and pasture.

3.8.2 Potential Impact of Project

The upper reservoir will be fenced to limit wildlife and human access because of the hazards resulting from rapidly fluctuating lake levels. The lower reservoir site will be converted from pasture and haying to open water and a fluctuating riparian zone; it will also be fenced to limit human and wildlife access and hazards.

3.8.3 Protection and Mitigation of Resource

The BMPSHP team will consult with local, Tribal, state, and federal recreational interests to minimize recreational impacts.

3.9 Aesthetic Resources

3.9.1 Existing Environment

The BMPSHP is located in the Basin and Range physiographic province, and the Klamath/Goose Lake Basins and Klamath Juniper Woodland ecoregions. Bryant Mountain contains both BLM and private lands; the locations of the lower and upper reservoirs will be on private land, but the tunnels will pass under BLM land. The 2-miles long pipeline carrying supply water to the project will pass under private land. The BLM land is class IV VRM (visual resource management), meaning that major landscape modifications are allowed and may dominate viewscapes—as long as the effects are minimized by considering project location, construction disturbance, and maintenance of texture, skyline, and form (BLM 1995).

3.9.2 Potential Impact of Project

BMPSHP proposes a new reservoir and dam and an enlarged Pope Reservoir and dam. The reservoirs together will cover 2050 acres, the upper dam will extend 4000’ and rise 310,’ and the lower dam will extend 21,500’ and rise 135’.

3.9.3 Protection and Mitigation of Resource

BMPSHP will minimize impacts by: locating the projects so that they blend into the skyline to the maximum degree, minimizing construction disturbance, burying tunnels and pipelines, maintaining natural texture and color of rock and

vegetation (BLM 1995), and connecting to nearby existing electrical tielines and substations.

3.10 Cultural Resources

3.10.1 Existing Environment

BMPSHP was notified via a 15 July 2010 letter from the US Department of Interior (USDI) that the Klamath Tribes consider Bryant Mountain sacred and that they use the area for religious purposes.

3.10.2 Potential Impact of Project

BMPSHP proposes a new reservoir and dam and an enlarged Pope Reservoir and dam. The reservoirs together will cover 2050 acres, the upper dam will extend 4000' and rise 310,' and the lower dam will extend 21,500' and rise 135'.

3.10.3 Protection and Mitigation of Resource

BMPSHP will minimize impacts by: locating the projects so that they blend into the skyline to the maximum degree, minimizing construction disturbance, burying all tunnels and pipelines, maintaining natural texture and color of rock and vegetation (BLM 1995), and connecting to nearby existing electrical tielines and substations. As recommended in the 15 July 2010 letter from the USDI, BMPSHP will consult with the Klamath Tribes, the Oregon State Archeologist, the Oregon Historic Preservation Office, and the BLM to establish an area of potential effect (APE). That APE will be assessed by a registered archeological consultant, who will report to BMPSHP and the aforementioned stakeholders, and BMPSHP will minimize damage to cultural resources.

3.11 Socioeconomic Resources

3.11.1 Existing Environment

In June 2011, unemployment in Klamath County was estimated at 12.4% (Oregon Employment Department; http://www.qualityinfo.org/olmisj/AllRates). The US Census estimated 2009 Klamath County median household income as $39,057 with 20% of persons below the poverty level (http://quickfacts.census.gov/qfd/states/41/41035.html).

3.11.2 Potential Impact of Project

BMPSHP will employ approximately 150 persons for 4 y during the construction phase and 15 persons in the operations phase. The project will have an assessed value of $1.6B, contributing $9.4M annually in taxes to the county, which is 2 orders of magnitude greater than the 2002 budget of Malin.

3.11.3 Protection and Mitigation of Resource

BMPSHP will have a positive impact on employment and the tax base.

3.12 Tribal Resources

3.12.1 Existing Environment

BMPSHP was notified via a 15 July 2010 letter from the US Department of Interior (USDI) that the Klamath Tribes consider Bryant Mountain sacred and that they use the area for religious purposes.

3.12.2 Potential Impact of Project

BMPSHP proposes a new reservoir and dam and an enlarged Pope Reservoir and dam. The reservoirs together will cover 2050 acres, the upper dam will extend 4000' and rise 310,' and the lower dam will extend 21,500' and rise 135'.

3.12.3 Protection and Mitigation of Resource

BMPSHP will minimize impacts by: locating the projects so that they blend into the skyline to the maximum degree, minimizing construction disturbance, burying all tunnels and pipelines, maintaining natural texture and color of rock and vegetation (BLM 1995), and connecting to nearby existing electrical tielines and substations. As recommended in the 15 July 2010 letter from the USDI, BMPSHP will consult with the Klamath Tribes, the Oregon State Archeologist, the Oregon Historic Preservation Office, and the BLM to establish an area of potential effect (APE). That APE will be assessed by a registered archeological consultant, who will report to BMPSHP and the aforementioned stakeholders, and BMPSHP will minimize damage to cultural resources.

4.0 PRELIMINARY ISSUES AND STUDIES LIST

4.1 Issues Pertaining to Identified Resources

4.1.1 Geology and Soils

The BMPSHP area is underlain by a series of deep-seated faults and Bryant Mountain resulted from pre-Quaternary geologic uplift. The faults do not appear active in the immediate area but the steepness of the scarp suggests the possibility of rock fall or landslide. Also there have been 6 earthquakes 36-72 miles from Malin (http://www.city-data.com/city/Malin-Oregon.html.

Soil disturbance will result from: dam construction; spillway construction, reservoir excavations; powerhouse excavation; tunnel excavation; surge tunnel excavation; road upgrades and construction; pipeline construction & burying; and construction of the transmission line corridor. Dam construction requires excavation to bedrock plus rock fill. The upper reservoir dam will be 2,700' long and a maximum of 270' high. The lower reservoir dam will be 13,800' long and a maximum of 110' high. We expect to obtain dam construction materials from within the project vicinity. Construction could cause soil erosion and increased dust. The powerhouse and tunnel excavations are projected to cause minimal erosion because the work will occur underground; however materials brought to the surface could erode and produce dust.

4.1.2 Water Resources

Groundwater could be encountered at the proposed excavation sites. Construction of the upper reservoir site could discharge sediment into Mills Creek. The BMPSHP is unlikely to affect water quality or quantity in the district to a significant degree. Water rights for the initial fill (30,000 acre-feet) are deemed unnecessary because there is ample water in A Canal, and it can be obtained outside the irrigation season and when not needed to aid fish migrations. Additional water needed to replace water lost via evaporation and seepage will be obtained from precipitation, runoff, and groundwater seepage. There is a possibility of eutrophic conditions developing in the 2 reservoirs because of the quality of the water originating from Upper Klamath Lake. Toxic cyanobacteria could reach nuisance levels in the reservoirs if project operations do not mix the water sufficiently, because toxic cyanobacteria thrive in poorly mixed waters (Goodman et al. 2011). Water quality in Mills Creek may be reduced because of the introduction of hyper-eutrophic water from Upper Klamath Lake.

Except for seepage and evaporation losses, the same water will be reused for an indefinite time. It is unlikely that toxic cyanobacteria will reach nuisance levels in the reservoirs, assuming that project operations mix the water sufficiently, because toxic cyanobacteria do poorly in well-mixed waters (Goodman et al. 2011). Phosphorus in the water column can be demobilized by alum application and settling, depending on the outlet levels of the reservoirs.

4.1.3 Fish and Aquatic resources

Because of their daily fluctuations the reservoirs and power tunnels are unlikely to support fish assemblages or recreational fisheries. Only those macroinvertebrates that can adapt to fluctuating water levels are likely to persist. Larval and young Lost River and shortnose suckers could be entrained via the one-time water withdrawl from A Canal.

Fish screens have been installed and are maintained to limit entrainment of listed suckers. Should FERC grant a preliminary license, BMPSHP will consult with local ODFW, ODEQ, Klamath Tribal and USFWS biologists to limit risk to aquatic resources (including wetland habitats, listed fish, and water quality) before final plans are completed and any earth is moved.

4.1.4 Wildlife and Botanical Resources

4.1.4.1 Wildlife Issues

Conversion of 1,500 acres of mostly terrestrial habitat to the same amount of aquatic habitat will reduce the amount of terrestrial space for terrestrial wildlife refuge, nesting, and foraging. It will increase the amount of aquatic habitat and riparian edge habitat which are often limiting factors for wildlife in semi-arid regions such as the Klamath Basin. However, being pumped storage projects, the riparian habitat will be transitory and of very poor quality because the daily water level fluctuations are likely to preclude development of healthy riparian

vegetation. The ponds may increase the habitat availability for waterfowl and shorebirds.

All piping and tunnels will be placed underground, thereby providing no barrier to seasonal and daily ungulate migrations. The power produced by BMPSHP will be sent 4 miles to the Malin Substation or 1.5 miles to the Captain Jack Substation, thereby limiting the increased risk of bat and bird mortality to that distance. Bird and bat diverters and adherence to the Avian Power Line Interaction Committee guidelines will be implemented to reduce the strike risk (APLIC 2006). The existing Pacific Northwest—Pacific Southwest Intertie passes over the existing Pope Reservoir; the lines will need to be rerouted around the Reservoir or elevated to provide proper clearance. The existing road to Pope Reservoir will be upgraded to accommodate project traffic and gated to limit public access. Because of the potential for wildlife entrapment and drowning if winter ice collapses, fencing will be installed to limit wildlife access during the winter. Should FERC grant a preliminary license, BMPSHP will consult with local ODFW, Klamath Tribal and USFWS biologists to limit risk to wildlife resources (including wetland habitats, bald eagle nests, migration routes) before final plans are completed and any earth is moved.

4.1.4.2 Botanical Issues

The lower reservoir will eliminate 1,500 acres of pasture, hayfield, and wet meadow; the upper reservoir will expand the existing Pope Reservoir and eliminate about 200 acres of juniper woodland. None of these habitat types is rare in Klamath County.

A plant inventory will be conducted at the project site and priority species will be identified, and if those species must be displaced, their loss will be mitigated by transplanting or mitigation offsite. All project construction and implementation will be conducted to limit the establishment and spread of alien invasive weeds through replanting of native flora adapted to the site conditions.

4.1.5 Wetlands, Riparian and Littoral Zone

Wet meadow taxa occur at the margins of Pope Reservoir and riparian taxa occur along Mills Creek and A Canal.

Because of the large fluctuation in water levels in the reservoirs, wetlands and riparian zones that could potentially develop at the reservoir margins will be of very low quality. If necessary, BMPSHP proposes to mitigate for those losses via agreement with a willing collaborator to construct a small wetland nearby equal to the size of the fluctuation perimeter of the storage reservoirs.

4.1.6 Rare, Threatened and Endangered (RTE) Species

4.1.6.1 Fish and Aquatic Resources

Larval and young Lost River and shortnose suckers could be entrained via water withdrawls from A Canal.

Fish screens will need to be installed and maintained to limit entrainment of listed suckers.

4.1.6.2 Wildlife Issues

Ten vertebrate RTE species may occur in the vicinity of the BMPSHP. Conversion of 1,700 acres of mostly terrestrial habitat to the same amount of aquatic habitat will reduce the amount of terrestrial space for terrestrial wildlife refuge, nesting, and foraging. It will increase the amount of aquatic habitat and riparian edge habitat for avian RTE species, which are often limiting factors for listed wildlife in semi-arid regions such as the Klamath Basin, and key habitats for several listed species. However, being pumped storage projects, the riparian habitat will be transitory and of very poor quality because the daily water level fluctuations are likely to preclude development of healthy riparian vegetation. The ponds may increase the habitat availability for waterfowl and shorebirds.

All piping and tunnels will be placed underground, thereby providing no barrier to seasonal and daily vertebrate migrations. The power produced by BMPSHP will be sent 4 miles to the Malin Substation or 1.5 miles to the Captain Jack Substation, thereby limiting the increased risk of bat and bird mortality to that distance. Bird and bat diverters and adherence to the Avian Power Line Interaction Committee guidelines will be implemented to reduce the strike risk (APLIC 2006). The existing Pacific Northwest—Pacific Southwest Intertie passes over the existing Pope Reservoir; the lines will need to be rerouted around the Reservoir or elevated to provide proper clearance. The existing road to Pope Reservoir will be upgraded to accommodate project traffic and gated to limit public access. Because of the potential for wildlife entrapment and drowning if winter ice shelves collapse, fencing will be installed to limit wildlife access during the winter. Should FERC grant a preliminary license, BMPSHP will consult with local ODFW, Klamath Tribal and USFWS biologists and conduct a nesting survey to limit risk to RTE species (including wetland habitats, nesting sites, migration routes) before final plans are completed and any earth is moved.

4.1.6.3 Botanical Issues

There are 5 RTE plant species that may occur in the project area. The lower reservoir will eliminate 1,500 acres of pasture, hayfield, and wet meadow; the upper reservoir will expand the existing Pope Reservoir and eliminate about 200 acres of juniper woodland. None of these habitat types is rare in Klamath County. There is a possibility that listed species will be displaced at either or both reservoirs.

A plant inventory will be conducted at the project site and RTE species will be identified, and if those species must be displaced, their loss will be mitigated by transplanting or mitigation offsite.

4.1.7 Recreation and Land Use

Bryant Mountain is used by bird and big game hunters and all terrain vehicle drivers. The site of the lower reservoir is used for hay and pasture.

The upper reservoir will be fenced to limit wildlife and human access because of the hazards resulting from rapidly fluctuating lake levels. The lower reservoir site will be converted from pasture and haying to open water and a fluctuating riparian zone; it will also be fenced to limit human and wildlife access.

The BMPSHP team will consult with local, Tribal, state, and federal recreational interests to minimize recreational impacts.

4.1.8 Aesthetic Resources

The 2-miles long pipeline carrying supply water to the project will pass under private land. BMPSHP proposes a new reservoir and dam and an enlarged Pope Reservoir and dam on private land. The reservoirs together will cover 2050 acres, the upper dam will extend 4000' and rise 310,' and the lower dam will extend 21,500' and rise 135'.

BMPSHP will minimize impacts by: locating the projects so that they blend into the skyline to the maximum degree, minimizing construction disturbance, burying tunnels and pipelines, maintaining natural texture and color of rock and vegetation (BLM 1995), and connecting to nearby existing electrical tielines and substations.

4.1.9 Cultural Issues

The Klamath Tribes consider Bryant Mountain sacred and that they use the area for religious purposes. BMPSHP proposes a new reservoir and dam and an enlarged Pope Reservoir and dam on private land. The reservoirs together will cover 2050 acres, the upper dam will extend 4000' and rise 310,' and the lower dam will extend 21,500' and rise 135'.

BMPSHP will minimize impacts by: locating the projects so that they blend into the skyline to the maximum degree, minimizing construction disturbance, burying tunnels and pipelines, maintaining natural texture and color of rock and vegetation (BLM 1995), and connecting to nearby existing electrical tielines and substations. As recommended in the 15 July 2010 letter from the USDI, BMPSHP will consult with the Klamath Tribes, the Oregon State Archeologist, the Oregon Historic Preservation Office, and the BLM to establish an area of potential effect (APE). That APE will be assessed by a registered archeological consultant, who will report to BMPSHP and the aforementioned stakeholders, and BMPSHP will minimize damage to cultural resources.

4.1.10 Socioeconomic Resources

In June 2011, unemployment in Klamath County was estimated at 12.4% (Oregon Employment Department; http://www.qualityinfo.org/olmisj/AllRates; accessed July 2011). The US Census estimated 2009 Klamath County median

household income as $39,057 with 20% of persons below the poverty level (http://quickfacts.census.gov/qfd/states/41/41035.html; accessed July 2011).

BMPSHP will employ approximately 150 persons for 4 years during the construction phase and 15 persons in the operations phase. The facility will have an assessed value of $1.6B, contributing $9.4M annually in taxes to the county, which is 2 orders of magnitude greater than the 2002 budget of Malin. BMPSHP will have a positive impact on employment and the tax base.

4.1.11 Tribal Resources

The Klamath Tribes consider Bryant Mountain sacred and that they use the area for religious purposes. BMPSHP proposes a new reservoir and dam and an enlarged Pope Reservoir and dam on private land. The reservoirs together will cover 2050 acres, the upper dam will extend 4000' and rise 310,' and the lower dam will extend 21,500' and rise 135'.

BMPSHP will minimize impacts by: locating the projects so that they blend into the skyline to the maximum degree, minimizing construction disturbance, burying all tunnels and pipelines, maintaining natural texture and color of rock and vegetation (BLM 1995), and connecting to nearby existing electrical tielines and substations. As recommended in the 15 July 2010 letter from the USDI, BMPSHP will consult with the Klamath Tribes, the Oregon State Archeologist, the Oregon Historic Preservation Office, and the BLM to establish an area of potential effect (APE). That APE will be assessed by a registered archeological consultant, who will report to BMPSHP and the aforementioned stakeholders, and BMPSHP will minimize damage to cultural resources.

4.2 Potential Studies

4.2.1 Transmission Line Corridor Alternatives Study

We will assess the pros and cons with linking BMPSHP with the Malin or Captain Jack Substations relative to their potential effects on the viewscape and bird and bat mortality.

4.2.2 Geotechnical Study

We will assess the geological foundations of the dams, reservoirs, tunnels, and pipeline regarding their suitability for retaining water, providing construction materials, and avoiding faults.

4.2.3 Surface Hydrology Study

We will assess more rigorously the amount of water needed for BMPSHP and document its sources via purchased water rights.

4.2.4 Water Quality Monitoring and Modeling

We will assess potential effects of the enlarged Pope Reservoir on Mills Creek both during construction and operation regarding suspended sediments and cyanobacteria.

4.2.5 Vegetation Characterization and Weed Assessment

We will assess the current and potential extent of alien invasive weed populations as well as key habitat types (refuge, migration, nesting, foraging) and condition for vertebrate wildlife populations.

4.2.6 Sensitive Plant Surveys

A plant inventory will be conducted at the project site and sensitive and RTE species will be identified; if those species must be displaced, their loss will be mitigated by transplanting or mitigation offsite. Focal species include: nodding melic, Columbia cress, Howell's thelypody, short-prodded thelypody, and American pillwort.

4.2.7 Ungulate Protection Plan

BMPSHP will consult with local ODFW, Klamath Tribal and USFWS biologists to limit risk to ungulate populations in the project area, or possibly passing through the area. In addition, a registered consulting wildlife biologist will be employed to assess ungulate risks and means for reducing them in the project area.

4.2.8 Nesting and Wintering Raptor Surveys

BMPSHP will consult with local ODFW, Klamath Tribal and USFWS biologists to limit risk to raptor populations in the project area, or possibly passing through the area. In addition, a registered consulting avian biologist will be employed to assess raptor risks and means for reducing them in the project area.

4.2.9 Sensitive Wildlife Habitat Surveys

BMPSHP will consult with local ODFW, Klamath Tribal and USFWS biologists to limit risk to sensitive wildlife populations and their habitats in the project area, as well as those possibly passing through the area. In addition, a registered consulting wildlife biologist will be employed to assess risks and alternative means for reducing them in the project area. Focal species will include: Oregon spotted frog, northern Pacific pond turtle, bald eagle, greater sandhill crane, American white pelican, yellow-billed cuckoo, tricolored blackbird, western snowy plover, pygmy rabbit, and kit fox

4.3 Relevant Resources Management Plans

4.3.1 Qualifying Comprehensive Plans Deemed Applicable

Bureau of Land Management. 2003. Draft-Upper Klamath River management plan. Lakeview, Oregon.

Bureau of Land Management. 2000. Klamath Falls resource area - annual program summary. Klamath Falls, Oregon. 139 pp.

Bureau of Land Management. 1996. Upper Klamath Basin and Wood River wetland resource management plan. Klamath Falls, Oregon.

Bureau of Land Management. 1995. Klamath Falls resource area: resource management plan. Department of the Interior, Klamath Falls, Oregon.

KBRA (Klamath Basin Restoration Agreement). 2010. Klamath basin restoration agreement for the sustainability of public and trust resources and affected communities.

Northwest Power and Conservation Council. 2005. The fifth Northwest electric power and conservation plan. Portland, Oregon. Council Document 2005-07.

Northwest Power and Conservation Council. 1988. Protected areas amendments and response to comments. Portland, Oregon. Council Document 88-22.

Governor's Hydroelectric Planning Group. 1985. Preliminary site resource inventory: report to the 63rd Legislative Assembly. Salem, Oregon. 146 pp.

Hydro Task Force and Strategic Water Management Group. 1988. Oregon comprehensive waterway management plan. Salem, Oregon.

Oregon Department of Energy. 1987. Oregon final summary report for the Pacific Northwest rivers study. Salem, Oregon. 89 pp.

Oregon Department of Environmental Quality. 2002. Upper Klamath Lake drainage total maximum daily load (TMDL) and water quality management plan (WQMP). Portland, Oregon.

Oregon Department of Environmental Quality). 2010. Upper Klamath and Lost River subbasins total maximum daily load (TMDL) and water quality management plan (WQMP). Bend, Oregon.

Oregon Department of Environmental Quality. 1978. Statewide water quality management plan. Salem, Oregon. 7 volumes.

Oregon Department of Fish and Wildlife. 2008. A plan for the reintroduction of anadromous fish in the Upper Klamath Basin. Salem, Oregon.

Oregon Department of Fish and Wildlife. 2006. Oregon conservation strategy. Salem, Oregon.

Oregon Department of Fish and Wildlife. 2006. Oregon cougar management plan. Roseburg, Oregon.

Oregon Department of Fish and Wildlife. 2003. Oregon's elk management plan. Portland, Oregon.

Oregon Department of Fish and Wildlife. 2001. Oregon wildlife and commercial fishing codes: 2001-2002. Portland, Oregon.

Oregon Department of Fish and Wildlife. 1997. Oregon plan for salmon and watersheds. Salem, Oregon.

Oregon Department of Fish and Wildlife. 1997. Klamath River Basin, Oregon fish management plan. Prineville, Oregon.

Oregon Department of Fish and Wildlife. 1996. Species at risk: sensitive, threatened, and endangered vertebrates of Oregon. Portland, Oregon.

Oregon Department of Fish and Wildlife. 1993. Oregon wildlife diversity plan.

Portland, Oregon. 512 pp.

Oregon Department of Fish and Wildlife. 1993. Oregon black bear management plan, 19931998. Portland, Oregon. 33 pp.

Oregon State Game Commission. 1963-1975. Fish and wildlife resources - 18 basins. Portland, Oregon.

Oregon State Parks and Recreation Department. 2003. Oregon outdoor recreation plan

(SCORP): 2003-2007. Salem, Oregon.

Oregon Water Resources Department. 1988. Oregon water laws. Salem, Oregon.

Oregon Water Resources Commission. 1987. State of Oregon water use programs. Salem, Oregon. 295 pp.

Oregon Water Resources Board. 1973. Surface area of lakes and reservoirs. Salem, Oregon. 43 pp.

United States Environmental Protection Agency. 2003. EPA Region 10 guidance for Pacific Northwest state and tribal temperature water quality standards. EPA 910-B-03-002. Seattle, Washington.

4.3.2 Qualifying Comprehensive Plans Deemed Not Applicable

Bureau of Land Management. 1985. A five-year comprehensive anadromous fish habitat enhancement plan for Oregon coastal rivers. Portland, Oregon. 20 pp.

Bureau of Land Management. 1985. John Day resource area management plan. Burns, Oregon. 40 pp.

Bureau of Land Management. 1986. Two Rivers resource area management plan. Prineville, Oregon. 61 pp.

Bureau of Land Management. 1987. Spokane resource area management plan. Spokane, Oregon. 62 pp.

Bureau of Land Management. 1989. Brothers/LaPine resource management plan. Prineville, Oregon. 133 pp.

Bureau of Land Management. 1990. Issues and alternatives for management of the lower Deschutes River. Prineville, Oregon. 72 pp.

Bureau of Land Management. 1990. Final eligibility and suitability report for the Upper Klamath wild and scenic river study. Klamath Falls, Oregon. 131 pp.

Bureau of Land Management. 1993. Wallowa & Grande Ronde Rivers final management plan. Baker City, Oregon. Chapters 1-3.

Bureau of Land Management. 1990. Resource assessment of the Powder River. Baker, Oregon.

Bureau of Land Management. 1990. Resource assessment of the Grande Ronde River. Baker, Oregon.

Bureau of Land Management. 1992. Three Rivers resource management plan. Hines, Oregon. 232 pp.

Bureau of Land Management. 1992. South Fork of the Walla Walla River area plan amendment. Vale, Oregon.

Bureau of Land Management. 1992. Quartzville Creek national wild and scenic river management plan. Salem, Oregon. 54 pp.

Bureau of Land Management. 1993. Donner and Blitzen national wild and scenic river management plan. Hines, Oregon. 116 pp.

Bureau of Land Management & Forest Service. 1994. Standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Washington, D.C.

Bureau of Land Management. 1995. Roseburg District resource management plan. Roseburg, Oregon. 216 pp.

Bureau of Land Management. 1995. Medford District resource management plan. Department of the Interior, Medford, Oregon. June 1995. 248 pp.

Bureau of Land Management. 1995. Eugene District resource management plan. Eugene, Oregon. 263 pp.

Bureau of Land Management. 1995. Coos Bay District resource management plan. North Bend, Oregon. 99 pp.

Bureau of Land Management. 1995. Salem District resource management plan. Salem, Oregon. 76 pp.

Bureau of Land Management. 1996. High desert management framework proposed plan amendment and final environmental impact statement for the Lake Abert area of critical environmental concern. Lakeview, Oregon. 42 pp.

Bureau of Land Management & Bureau of Reclamation. 1992. Lower Crooked wild and scenic river (Chimney Rock segment) management plan. Prineville, Oregon. 60 pp.

Bureau of Land Management, Forest Service & Oregon State Parks and Recreation Department. 1992. Middle Deschutes/Lower Crooked wild and scenic rivers management plan. Prineville, Oregon.

Bureau of Land Management & U.S. Forest Service. 1996. Status of the Interior Columbia Basin: summary of scientific findings. Portland, Oregon.

Bureau of Land Management. 1993. Lower Deschutes River management plan. Prineville, Oregon.

Bureau of Land Management & Forest Service. 1993. North Fork Crooked River management plan. Prineville, Oregon. 30 pp.

Bureau of Land Management. 1993. North Fork Malheur River final eligibility study report for the National Wild and Scenic Rivers System. Vale, Oregon. 48 pp.

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5.1 List of non-FERC Contacts

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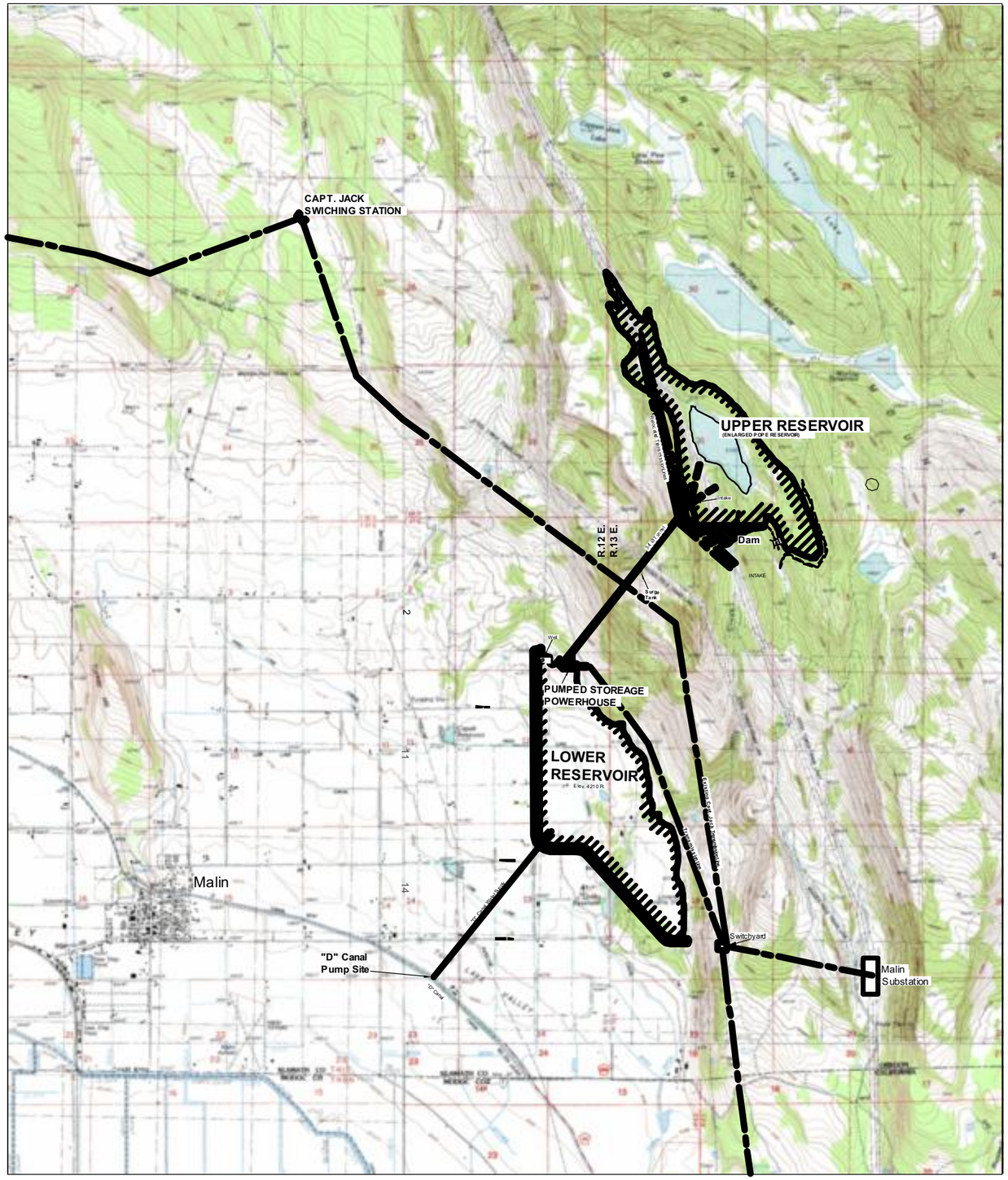
APPENDIX A - FIGURES



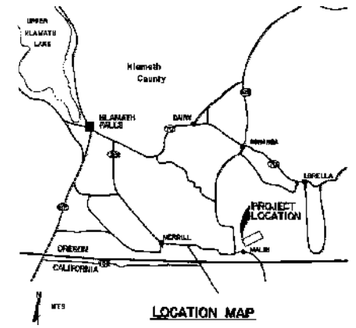
NORTH

PROJECT MAP

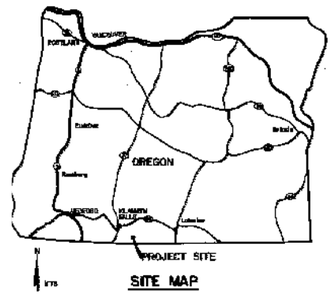
0 1/4 1/2 1mi.

MILES

CONTOUR INTERVAL 20 FEET



LOCATION MAP

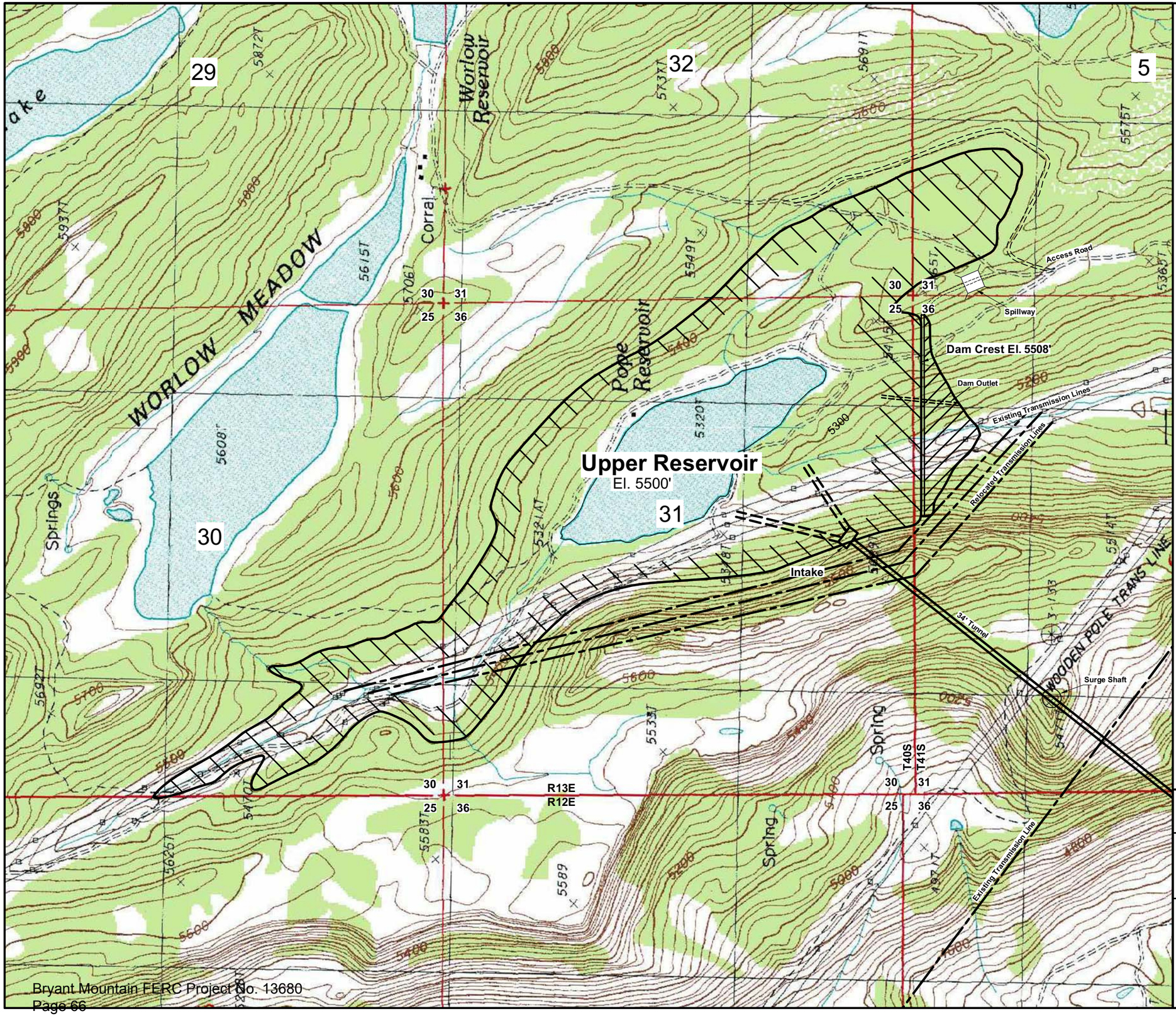


SITE MAP

BRYANT MOUNTAIN LLC	
Bryant Mountain Pumped Storage Project Maps	B. O'Keeffe

Figure 1

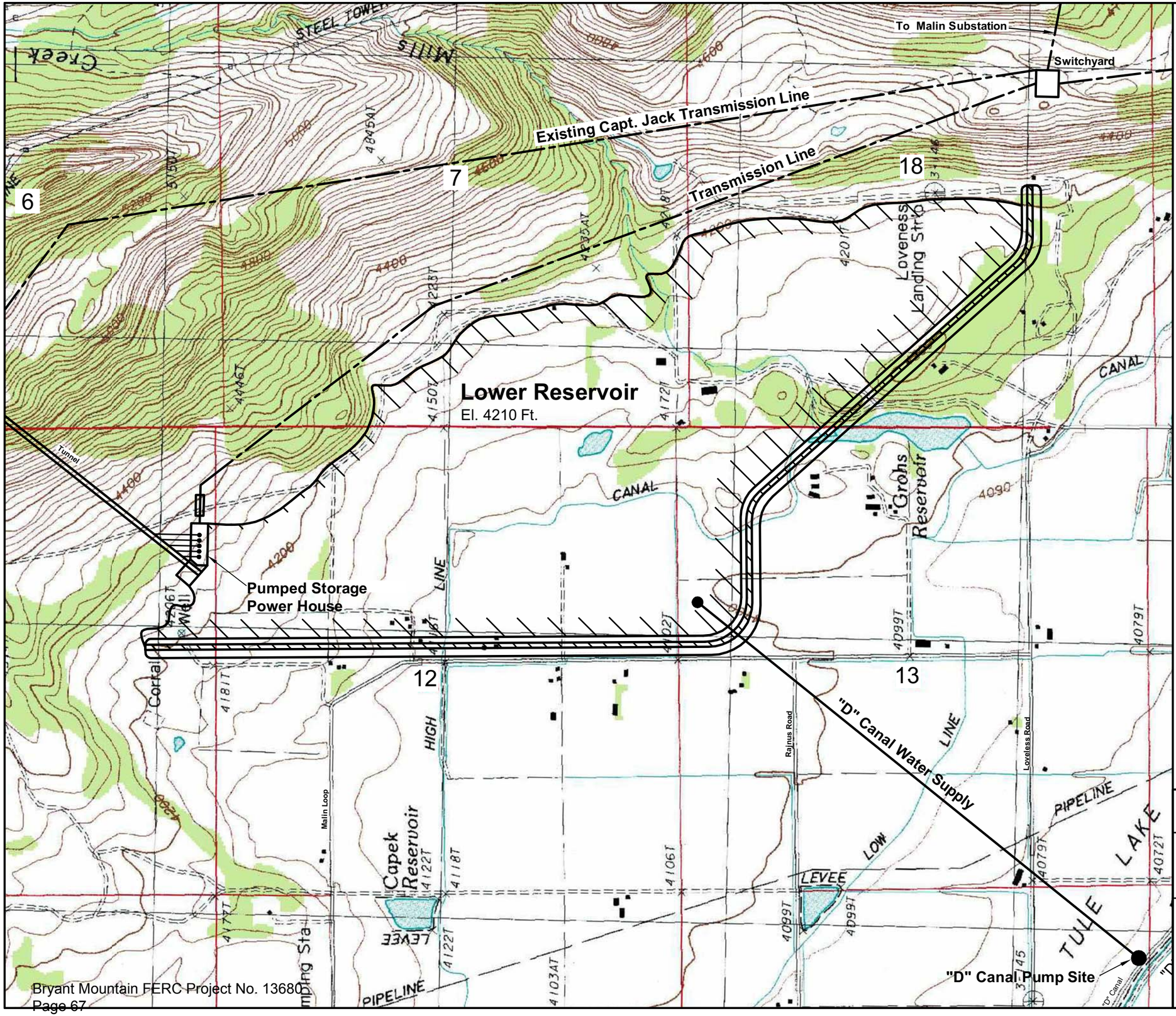
A topographical Map of the Location of the Project



BRYANT MOUNTAIN LLC	Project Number Date: Nov. 2010
Bryant Mountain Pumped Storage Upper Reservoir	Checked By: B. O'Keeffe Approved By Sheet Number

Figure 2

Conceptual Drawing of the Upper Reservoir



North

0 1/8 1/4 1/2

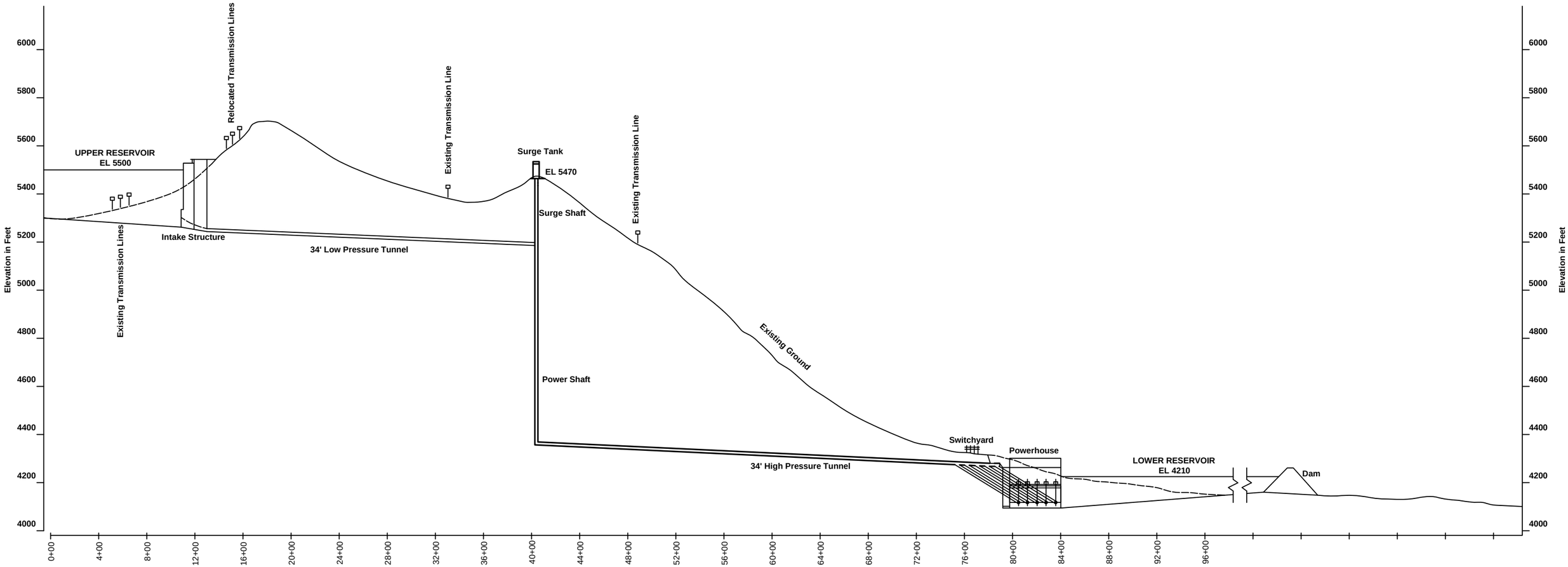
Miles

CONTOUR INTERVAL 20 FEET

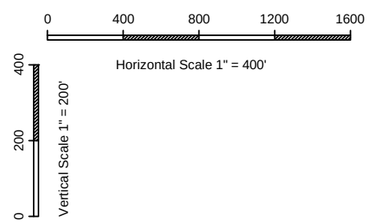
BRYANT MOUNTAIN LLC	Project Number
	Date: Nov. 2010
Bryant Mountain Pumped Storage Lower Reservoir	Checked By: B. O'Keeffe
	Approved By
	Sheet Number

Figure 3

Conceptual Drawing of the Lower Reservoir



TUNNEL SYSTEM PROFILE



BRYANT MOUNTAIN LLC	Project Number
	Date: Nov. 2010
	Checked By: B. O'Keeffe
Bryant Mountain Pumped Storage Project Profile	Approved By
	Sheet Number

Figure 4

Project Profile

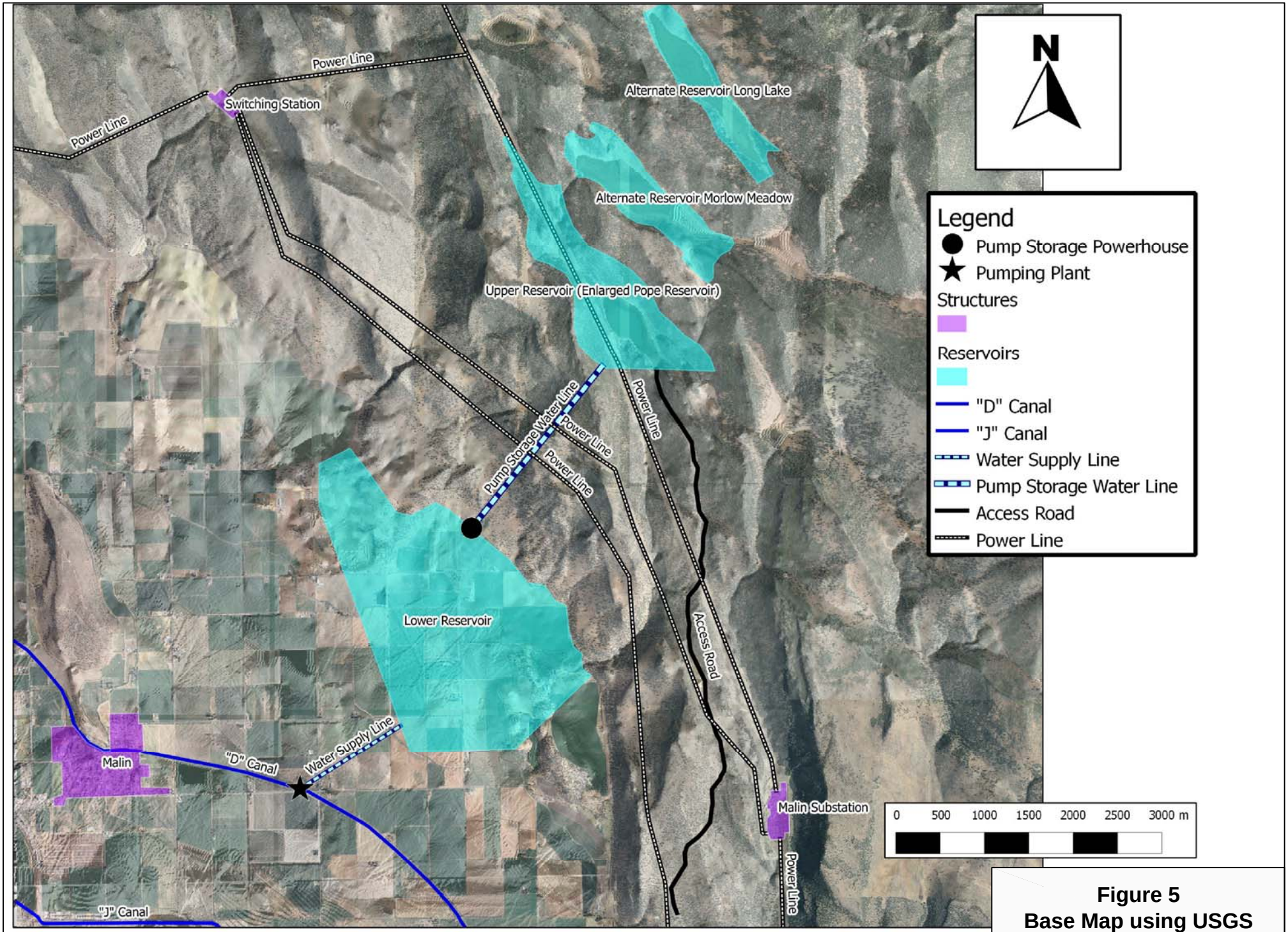


Figure 5
Base Map using USGS Digital Orthophoto Quads

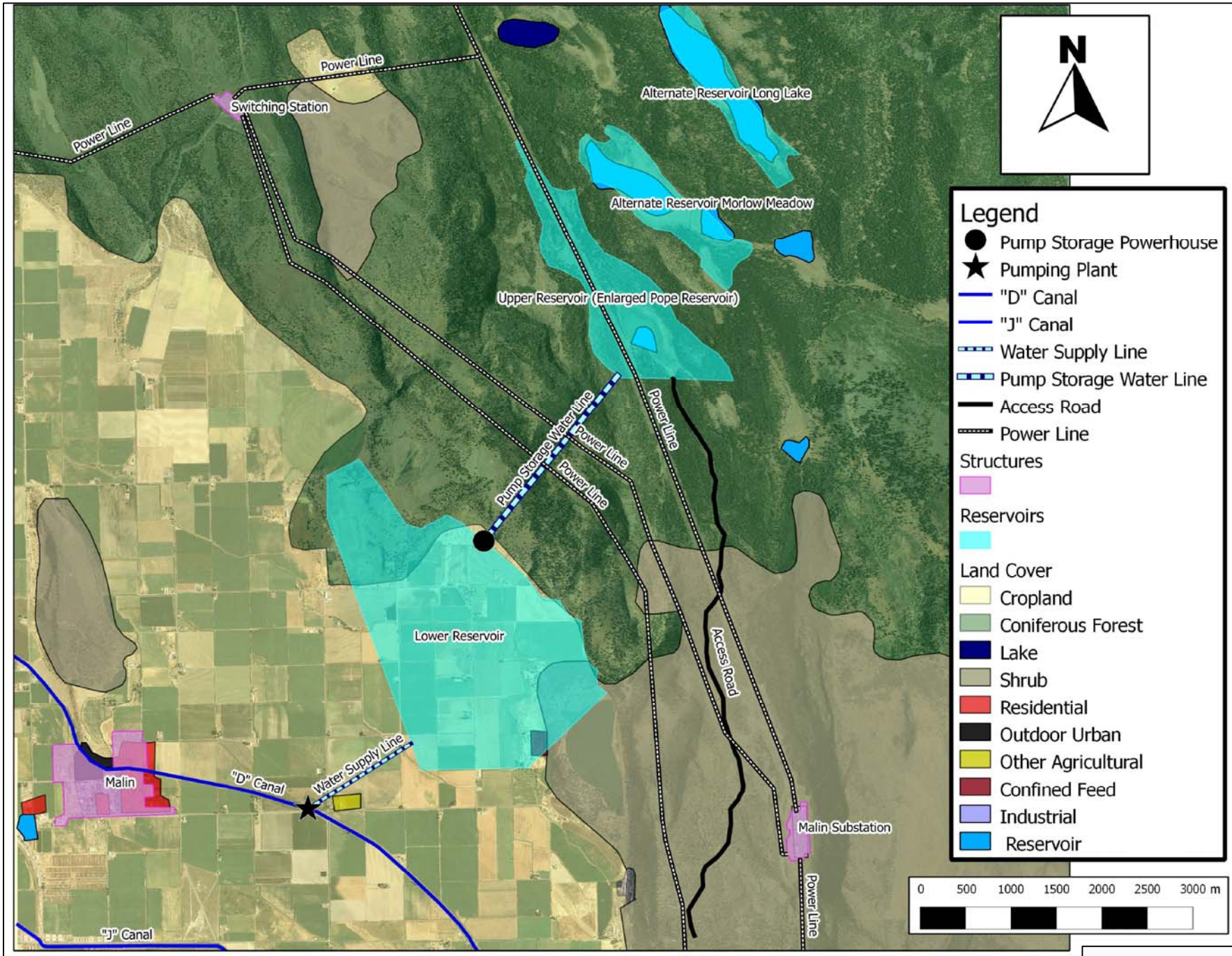


Figure 6
USGS Land Use and Land Cover Map

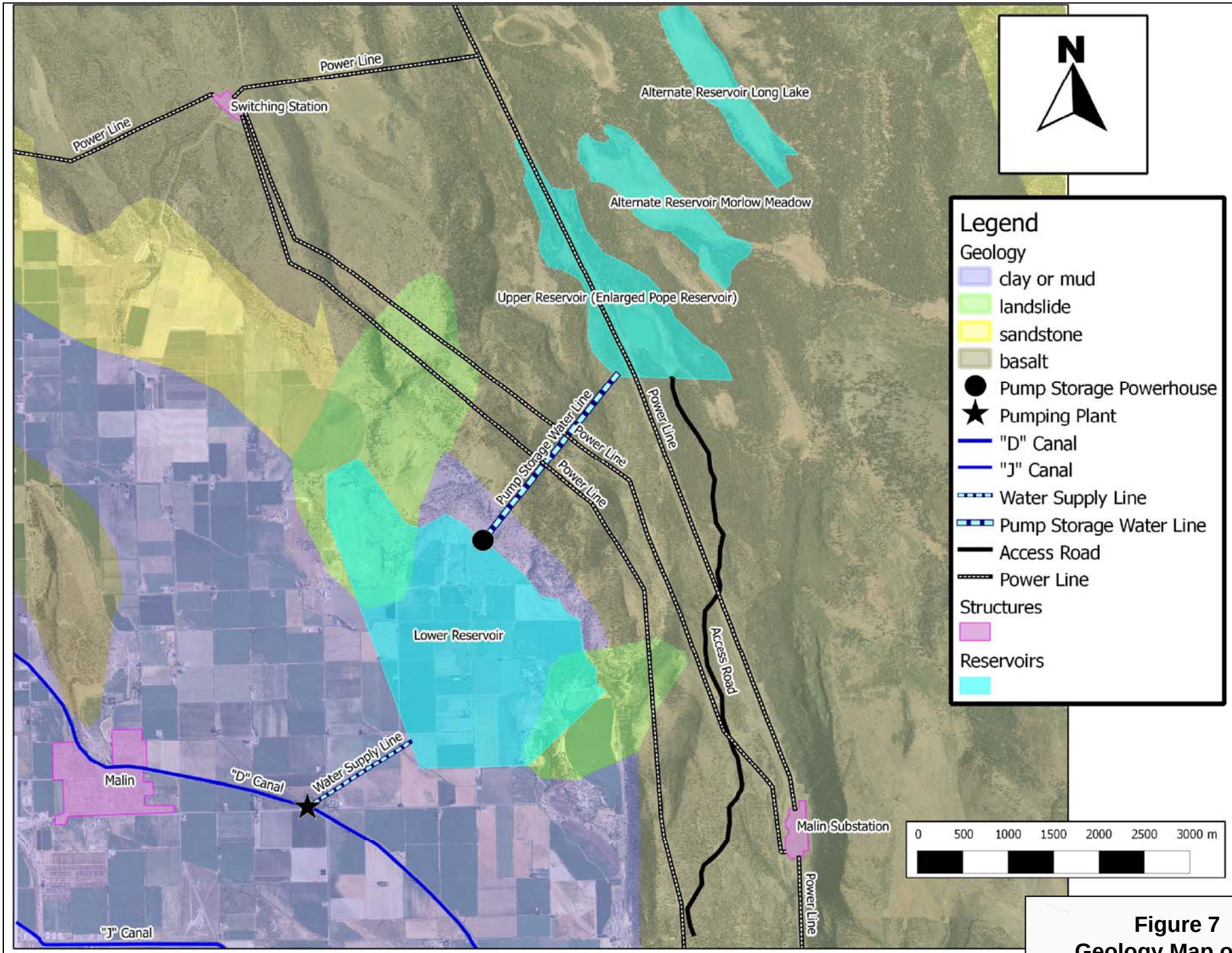


Figure 7
Geology Map of the Project Site (USGS)

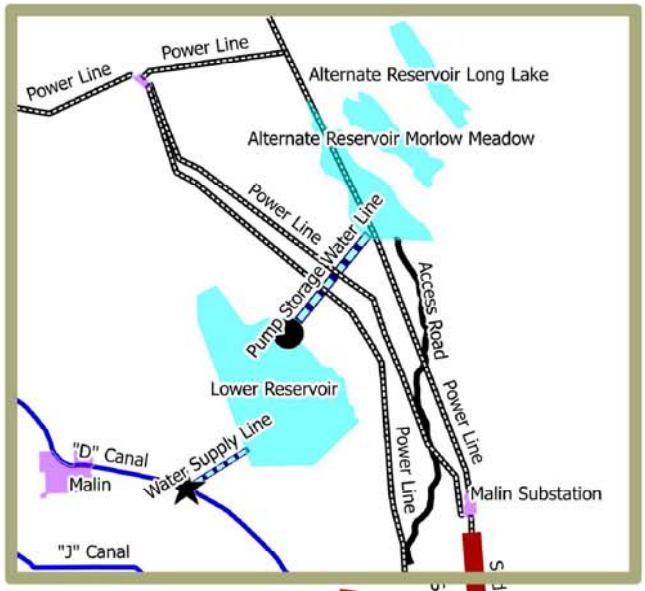


Figure 8
Seismogenic Faults in the vicinity of Project Site

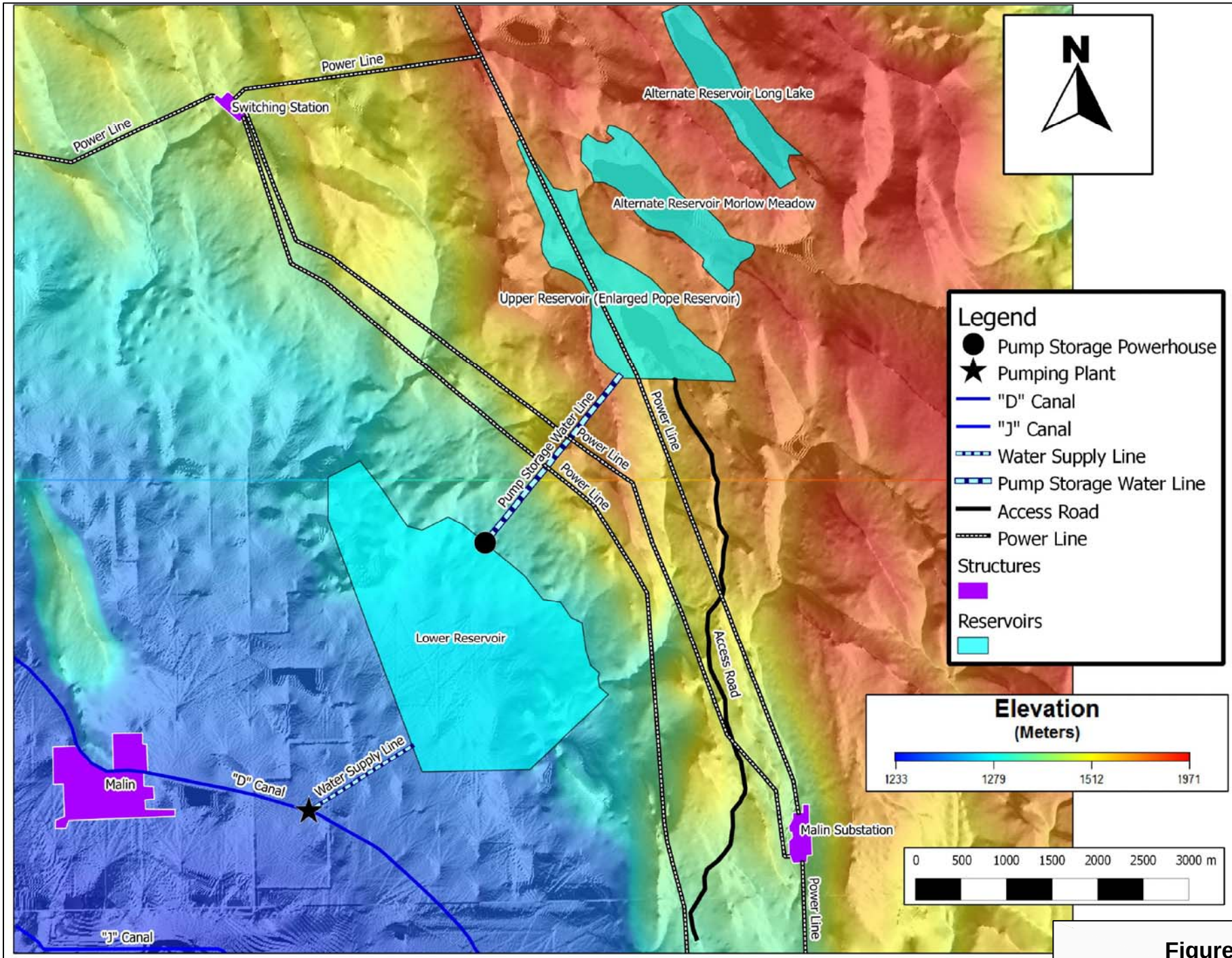


Figure 9
Elevation and Hill Shade map from USGS

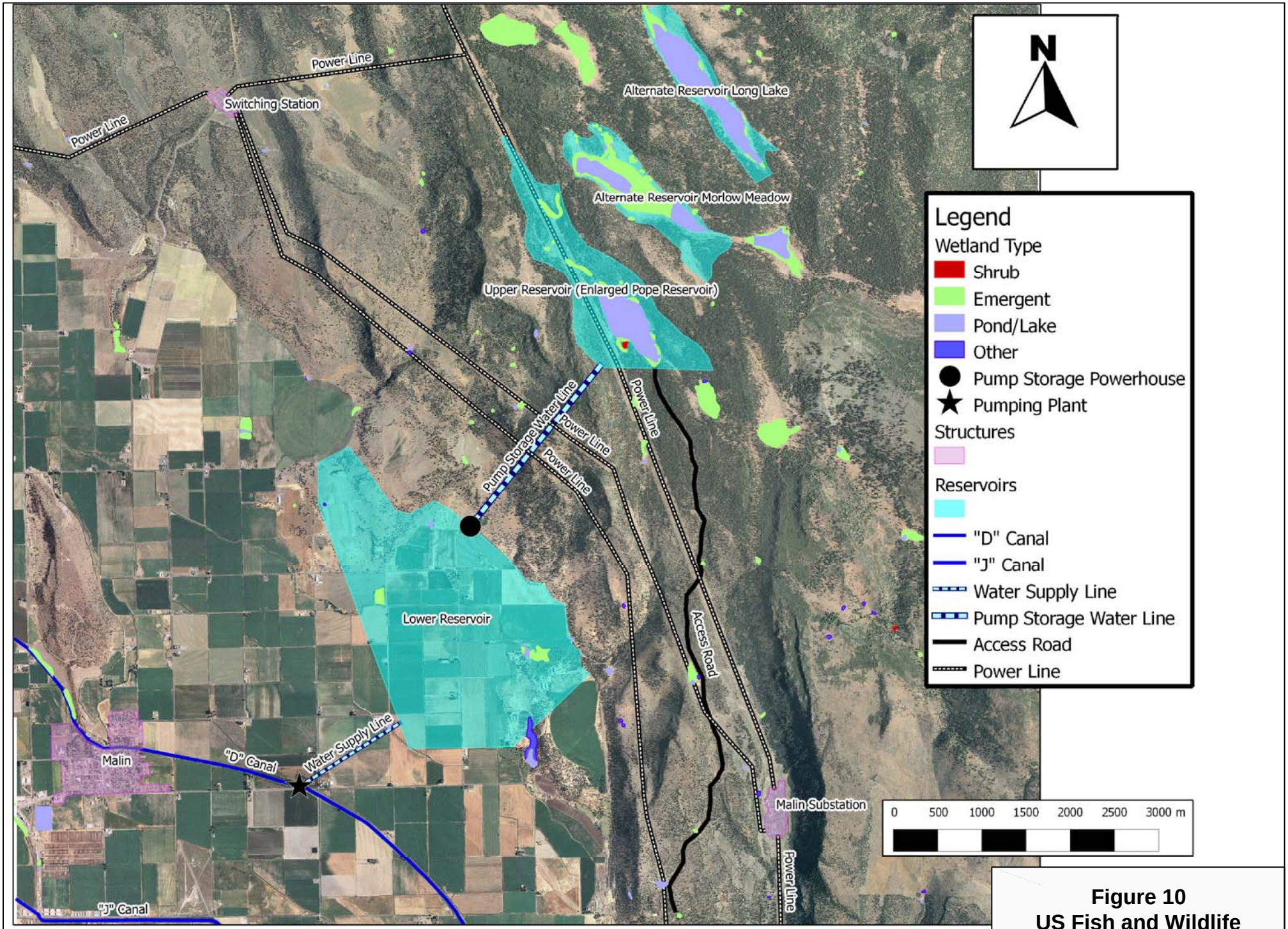


Figure 10
US Fish and Wildlife Service CONUS Wetlands

APPENDIX B - PHOTOGRAPHS OF THE PROJECT AREA

Figure 1

View of "D" Canal

Location of the Pumping Plant where the project water originates

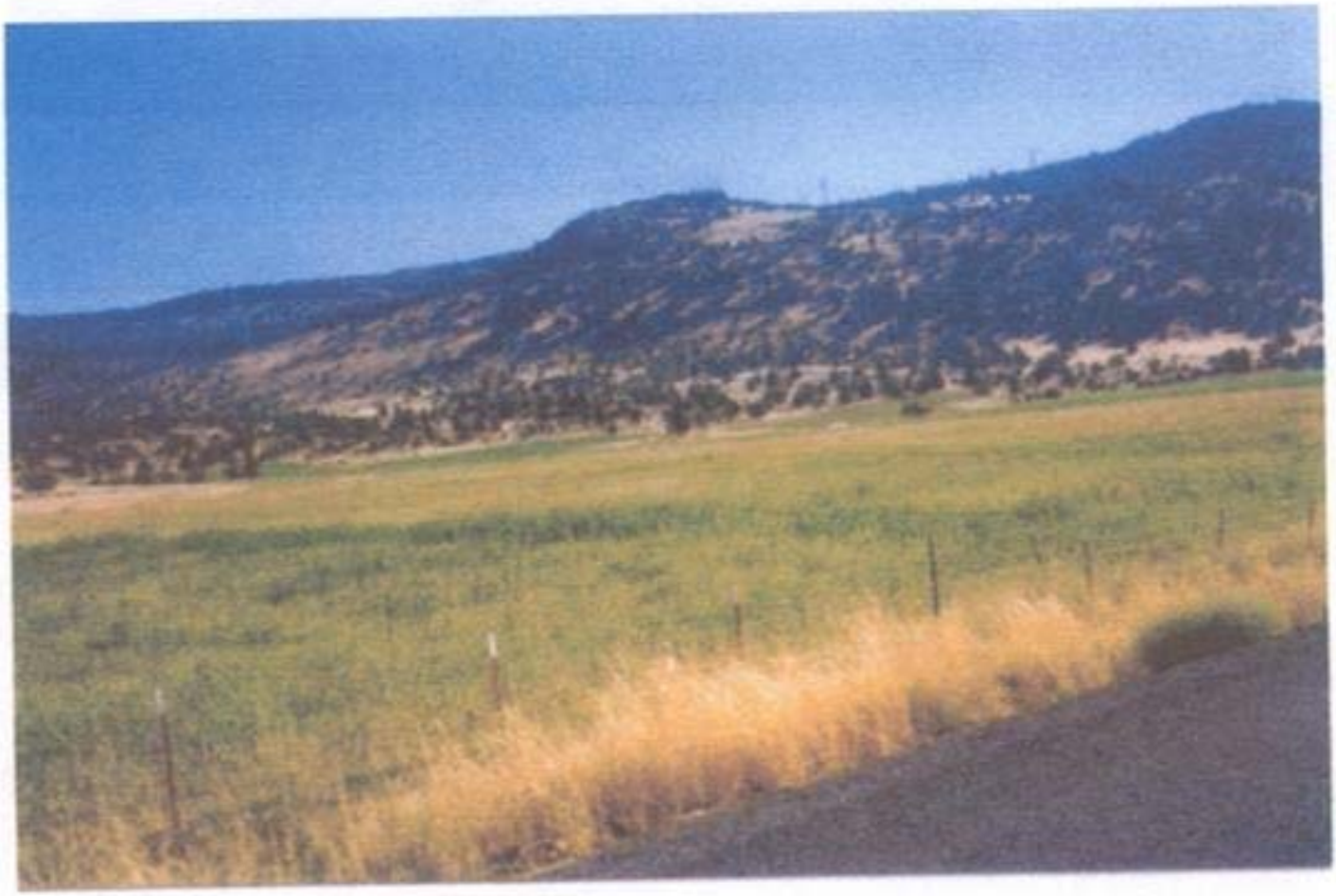


Figure 2

View of Lower Reservoir Site

The butte on the skyline is the location of the surge facilities

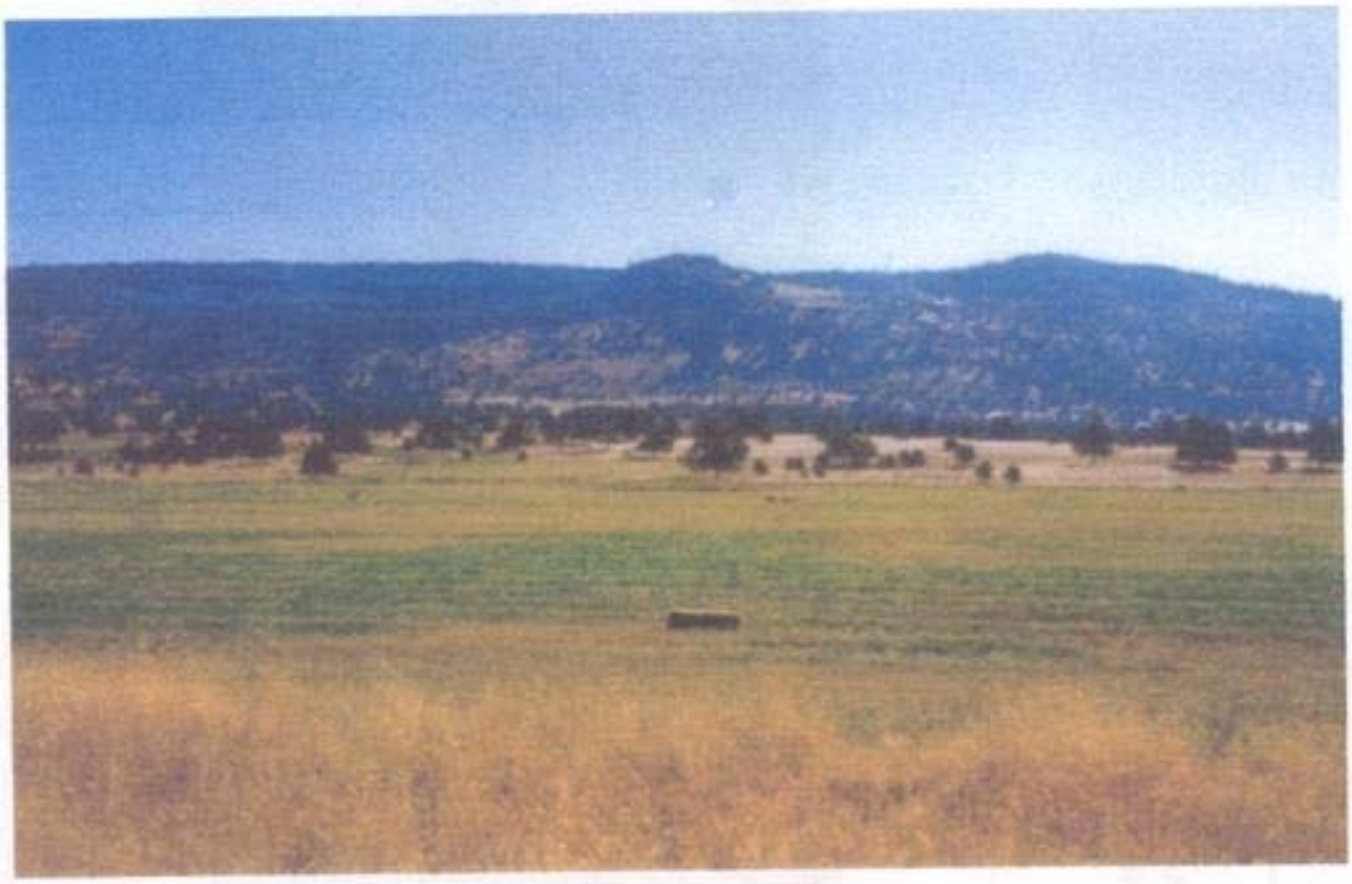


Figure 3

View of Lower Reservoir Site

The butte on the skyline is the location of the surge facilities

Figure 4

View of upper reservoir site
(The existing Pope Reservoir)

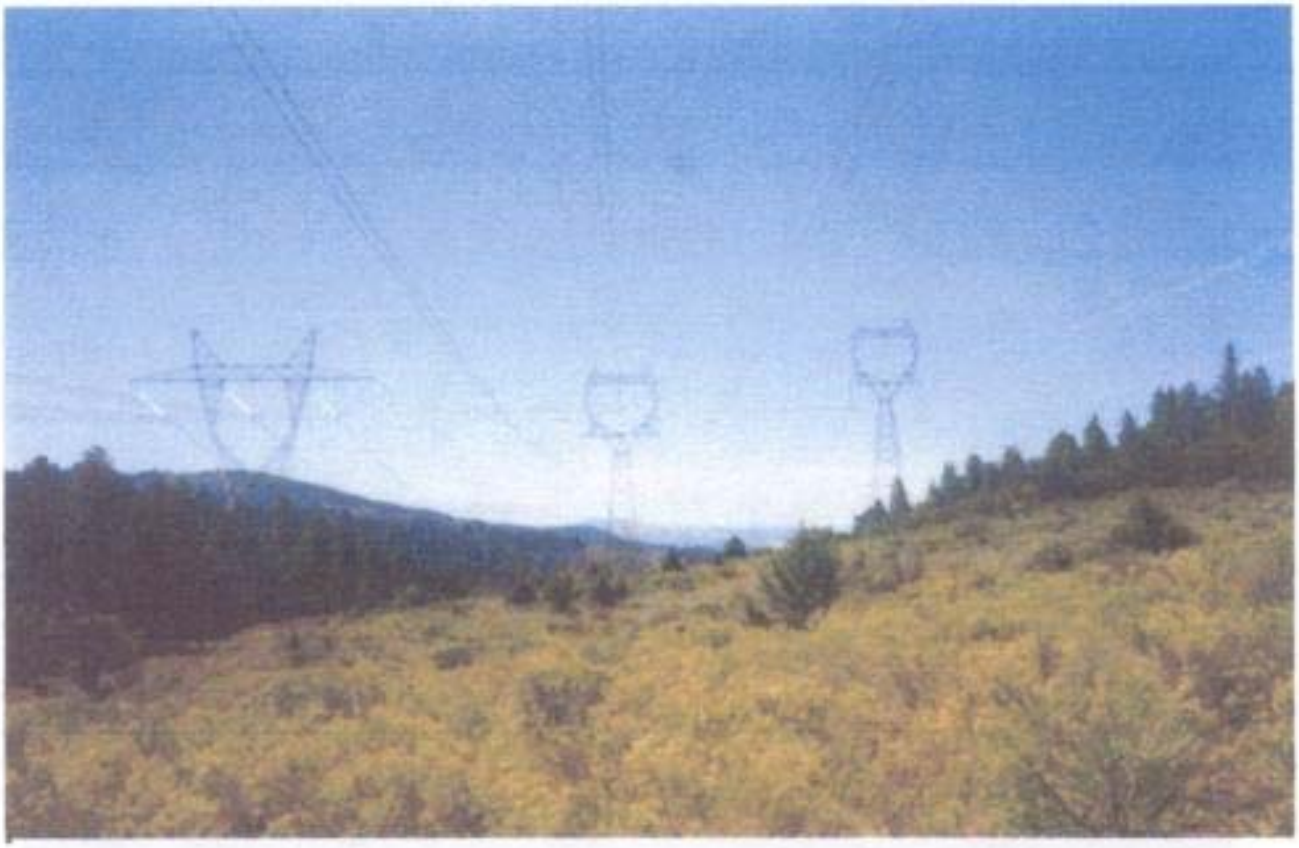


Figure 5

View of transmission lines near the upper reservoir

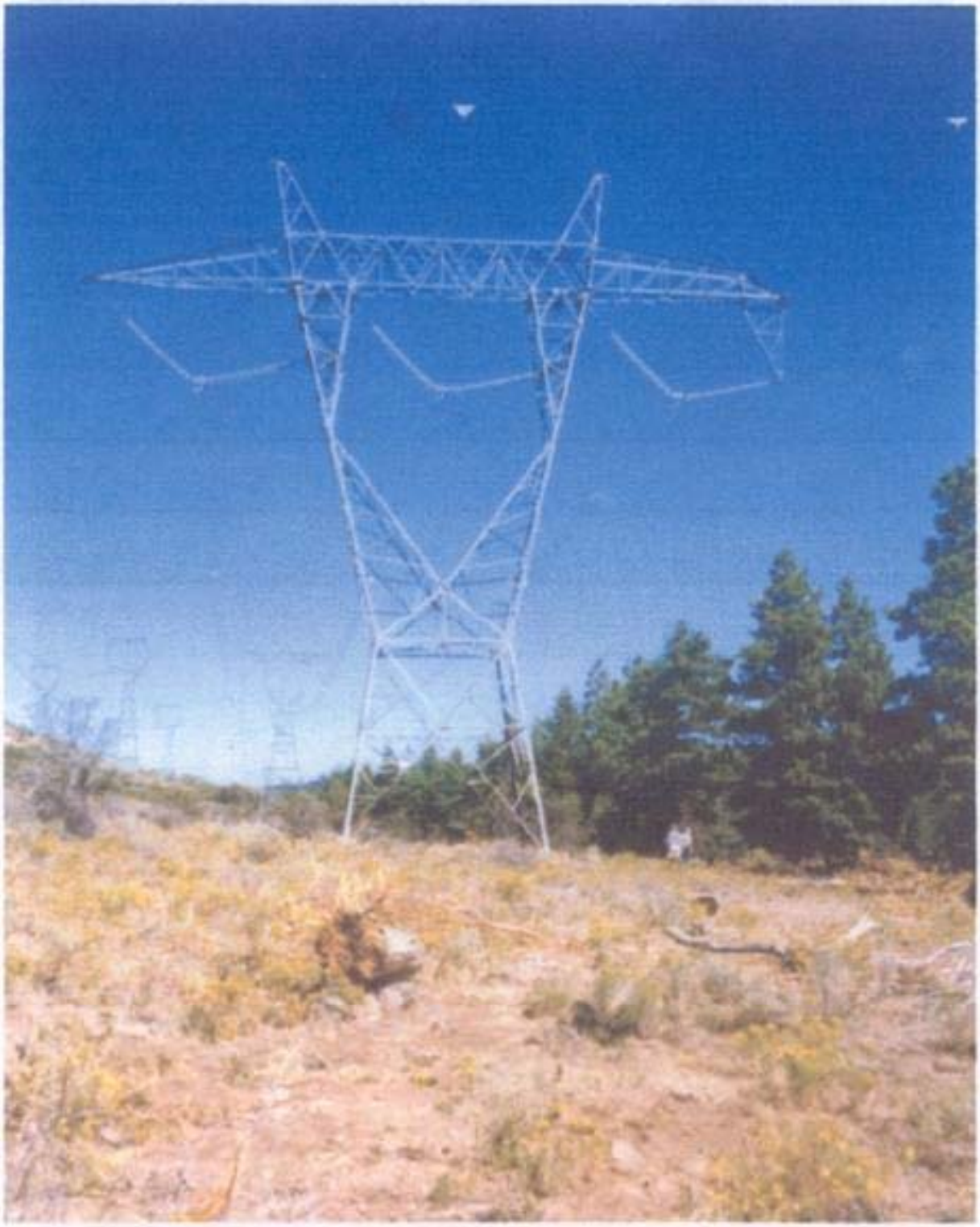


Figure 6

View of the transmission towers in the vicinity of the upper reservoir

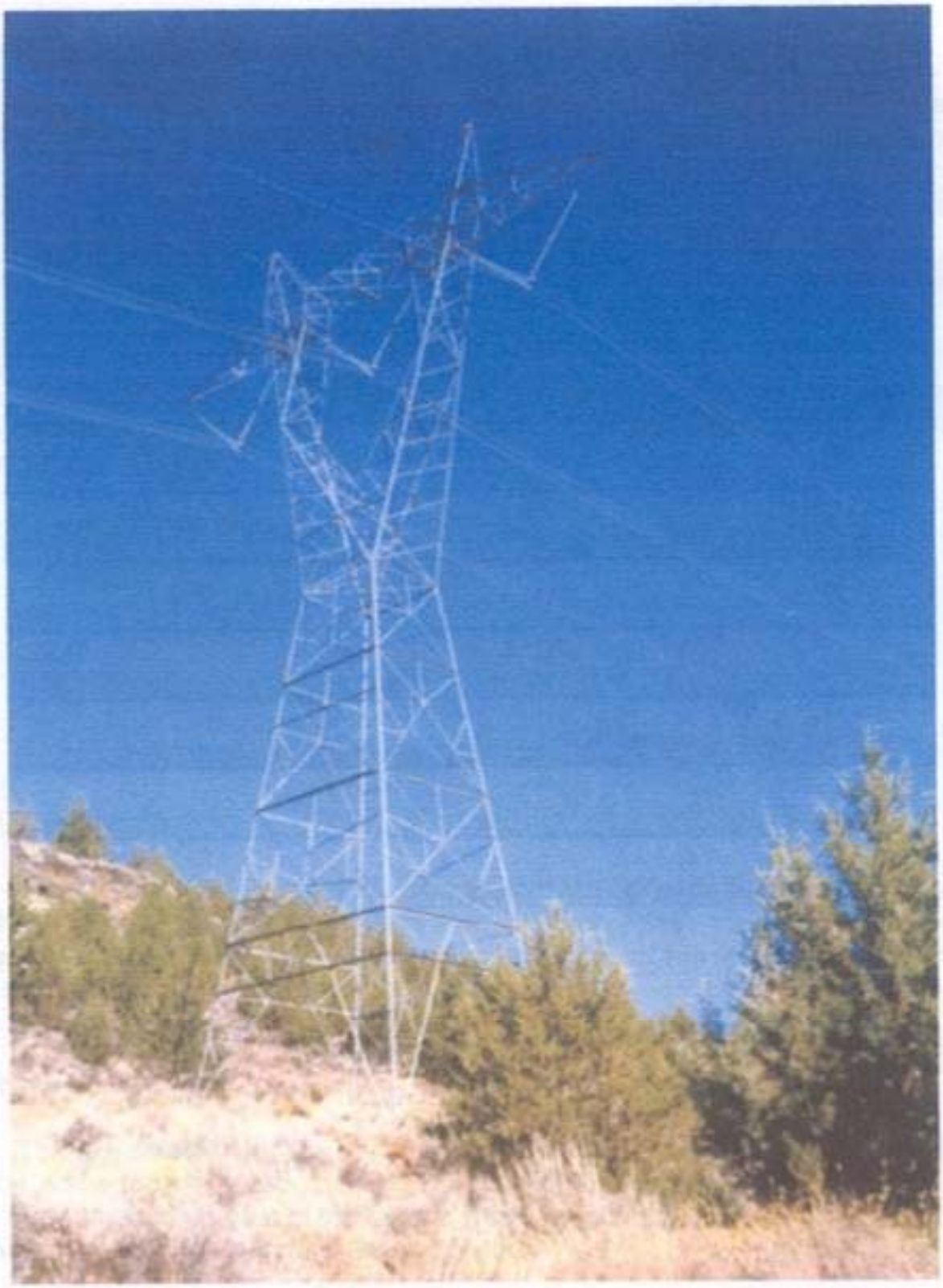


Figure 7

Transmission tower in the vicinity of the upper reservoir

APPENDIX C - LIST OF LAND OWNERS IN PROJECT AREA

Parcel No.	Tax Lot	Owner & Address
1	Portion of Lot 3600	United States of America Bureau of Land Management P.O. Box 369 Klamath Falls, OR 97601
2	Portion of Lot 200	Jeld Wen, Inc. 6400 Highway 66 Klamath Falls OR 97601
3	All of Lot 700	Mario L. & Dian Giordano 11431 W. Langell Valley Road Bonanza, OR 97623
4	All of Lot 800	Moxley Family Trust P.O. Box 2410 Alpine, CA 91903
5	All of Lot 8200	United States of America Bureau of Land Management P.O. Box 369 Klamath Falls, OR 97601
6	All of Lot 8300	Lester R. Strum 36121 Stastny Rd Malin, OR 97632
7	All of Lot 8301	A. L. & Marilyn Bruner 607 Ave. DeTeresa Grants Pass. OR 97526
8	All of Lot 8400	United States of America Bureau of Land Management P.O. Box 369 Klamath Falls, OR 97601
9	All of Lot 8500	Lester R. Strum 36121 Stastny Road Malin, OR 97632

Parcel No.	Tax Lot	Owner & Address
10	All of Lot 8700	A. L. & Marilyn Bruner 607 Ave. DeTeresa Grants Pass. OR 97526
14	All of Lot 400	Harold Hartman 35243Malin Loop Road Malin, OR 97632
24	All of Lot 100	Lester R. Sturm 36121 Stastny Road Malin, OR 97632
25	All of Lot 101	Lester R. Strum 36121 Stastny Road Malin, OR 97632
26	All of Lot 102	Paul R. & Shelley Randall 21771 Evans Road Malin, OR 97632
31	All of Lot 600	Lester R. Sturm 36121 Stastny Road Malin, OR 97632
32	All of Lot 700	Rollin & Leigh Thorne P.O. Box 285 Malin, OR 97632
33	All of Lot 800	Lester R. Sturm 36121 Stastny Road Malin, OR 97632
36	All of Lot 1100	Edwin J. Stastny, Jr. 32121 Hwy 50 Malin, OR 97632
37	All of Lot 100	Edwin J. Stastny, Jr. 32121 Hwy 50 Malin, OR 97632

Parcel No.	Tax Lot	Owner & Address
40	Portion of Lot 400	Walter H. Stastny 33001 Hwy 50 Malin OR 97632
41	All of Lot 500	Lois Rumer Evans 35125 Stastny Road Malin, OR 97632
42	All of Lot 600	Malin Irrigation District P.O. Box 355 Malin, OR 97632
43	All of Lot 700	Edwin J. Stastny, Jr. 32121 Hwy 50 Malin, OR 97632
44	All of Lot 800	Edwin J. Stastny, Jr. 32121 Hwy 50 Malin, OR 97632
52	Portion of Lot 1400	United States of America Bureau of Land Management P.O. Box 369 Klamath Falls, OR 97601
53	All of Lot 1500	Lester R. Sturm 36121 Stastny Road Malin, OR 97632
54	All of Lot 1501	Lester R. Sturm 36121 Stastny Road Malin, OR 97632
55	All of Lot 1600	Lester R. Sturm 36121 Stastny Road Malin, OR 97632
56	All of Lot 4100	Laurence G. & Sarah Bagg 23911 Hall Road Malin, OR 97632

Parcel No.	Tax Lot	Owner & Address
57	All of Lot 4101	Lester R. Sturm 36121 Stastny Road Malin, OR 97632
58	All of Lot 4102	Bill J. & Carol L. Braham 23939 Hall Rd Malin, OR 97632
59	All of Lot 600	Malin Irrigation District P.O. Box 355 Malin, OR 97632
60	All of Lot 4300	Douglas & Li Smith 36149 Stastny Road. Malin OR 97632
61		"D" Canal Pump Site
62	All of Lot 402	United States, Bonneville Power
63	Power Line Easement	Portland General Electric Pacific Power and Light

Appendix D – Vertebrate Wildlife Potentially Occurring in the Project Area

Amphibians

- Blotched tiger salamander
- Long-toed salamander
- Cascades frog
- Oregon spotted frog
- Pacific treefrog
- Western toad
- Great Basin spadefoot
- Bullfrog

Reptiles

- Northern Pacific pond turtle
- Short-horned lizard
- Northern sagebrush lizard
- Western fence lizard
- Side-blotched lizard
- Northern alligator lizard
- Western skink
- Rubber boa
- Western yellow-bellied racer
- Night snake
- Striped whipsnake
- Gopher snake
- Western terrestrial garter snake
- Common garter snake
- Western rattlesnake
- Common kingsnake

Birds

- Pacific loon
- Common loon
- Pied-billed grebe
- Horned grebe
- Red-necked grebe
- Eared grebe
- Western grebe
- Clark's grebe
- American white pelican
- Double-crested cormorant
- American bittern
- Least bittern
- Great blue heron
- Great egret
- Snowy egret
- Cattle egret
- Green heron
- Black-crowned heron
- White-faced ibis

Tundra swan
Trumpeter swan
Greater white-fronted goose
Snow goose
Ross' goose
Emperor goose
Brant
Canada goose
Wood duck
Green-winged teal
Ring-necked duck
Greater scaup
Lesser scaup
Long-tailed duck
Harlequin duck
Surf scoter
White-winged scoter
Common goldeneye
Barrow's goldeneye
Bufflehead
Hooded merganser
Common merganser
Red-breasted merganser
Ruddy duck
Turkey vulture
Osprey
White-tailed kite
Bald eagle
Northern harrier
Sharp-shinned hawk
Cooper's hawk
Northern goshawk
Swainson's hawk
Red-tailed hawk
Ferruginous hawk
Rough-legged hawk
Golden eagle
American kestrel
Merlin
Peregrine falcon
Prairie falcon
Chukar
Ring-necked pheasant
Blue grouse
Ruffed grouse
California quail

Mountain quail
Yellow rail
Virgina rail
Sora
Northern pintail
Northern shoveler
Gadwall
Eurasian wigeon
American wigeon
Canvasback
Redhead
American coot
Sandhill crane
American golden plover
Black-bellied plover
Snowy plover
Semipalmated plover
Killdeer
Black-necked stilt
American avocet
Greater yellowlegs
Lesser yellowlegs
Willet
Solitary sandpiper
Whimbrel
Long-billed curlew
Marbled godwit
Ruddy turnstone
Red knot
Sanderling
Western sandpiper
Least sandpiper
Baird’s sandpiper
Pectoral sandpiper
Dunlin
Short-billed dowitcher
Long-billed dowitcher
Common snipe
Wilson’s phalarope
Red-necked phalarope
Franklin’s gull
Bonaparte's gull
Ring-billed gull
California gull
Herring gull
Thayer's gull

Blue-winged teal
Cinnamon teal
Mallard

Glaucous-winged gull
Sabine's gull
Caspian tern
Forster's tern
Black tern
Mourning dove
Rock dove
Common barn owl
Flammulated owl
Western screech-owl
Great horned owl
Northern pygmy-owl
Burrowing owl
Northern spotted owl
Great gray owl Long-eared owl
Short-eared owl
Northern saw-whet owl
Boreal owl
Common nighthawk
Common poorwill
Vaux's swift
White-throated swift
Calliope hummingbird
Rufous hummingbird
Belted kingfisher
Lewis' woodpecker
Red-naped sapsucker
Red-breasted sapsucker
Williamson's sapsucker
Downy woodpecker
Hairy woodpecker
White-headed woodpecker
Black-backed woodpecker
Three-toed woodpecker
Acorn woodpecker
Northern flicker
Pileated woodpecker
Olive-sided flycatcher
Western wood-pewee
Willow flycatcher
Hammond's flycatcher
Dusky flycatcher
Gray flycatcher
Cordilleran flycatcher
Say's phoebe
Ash-throated flycatcher

Western kingbird
Eastern kingbird
Horned lark
Purple martin
Tree swallow
Violet-green swallow
Northern rough-winged swallow
Bank swallow
Cliff swallow
Barn swallow
Gray jay
Stellar’s jay
Scrub jay
Pinyon jay
Clark's nutcracker
Black-billed magpie
American crow
Common raven
Black-capped chickadee
Mountain chickadee
Chestnut-backed chickadee
Plain titmouse
Bushtit
Red-breasted nuthatch
White-breasted nuthatch
Pygmy nuthatch
Brown creeper
Rock wren
Canyon wren
Bewick’s wren
House wren
Winter wren
Marsh wren
Golden-crowned kinglet
Ruby-crowned kinglet
Blue-gray gnatcatcher
Western bluebird
Mountain bluebird
Townsend's solitaire
Swainson's thrush
Hermit thrush
American robin
Varied thrush
Northern waterthrush
Sage thrasher
American pipit

Bohemian waxwing
Cedar waxwing
Northern shrike
Loggerhead shrike
European starling
Solitary vireo
Warbling vireo
Orange-crowned warbler
Nashville warbler
Yellow warbler
Yellow-rumped warbler
Black-throated gray warbler
Townsend's warbler
Hermit warbler
MacGillivray's warbler
Common yellowthroat
Wilson's warbler
American redstart
Yellow-breasted chat
Western tanager
Black-headed grosbeak
Lazuli bunting
Green-tailed towhee
Spotted towhee
California towhee
American tree sparrow
Chipping sparrow
Brewer’s sparrow
Vesper sparrow
Lark sparrow
Sage sparrow
Black-throated sparrow
Savannah sparrow
Fox sparrow
Song sparrow
Lincoln’s sparrow
White-throated sparrow
Golden-crowned sparrow
White-crowned sparrow
Harris’ sparrow
Dark-eyed junco
Lapland longspur
Snow bunting
Red-winged blackbird
Tricolored blackbird
Western meadowlark

Yellow-headed blackbird
Brewer’s blackbird
Brown-headed cowbird
Northern oriole
Gray-crowned rosy-finch
House finch
Cassin’s finch
Purple finch
Red crossbill
Pine siskin
Lesser goldfinch
American goldfinch
Evening grosbeak
House sparrow

Mammals

Vagrant shrew
Water shrew
Marsh shrew
Trowbridge's shrew
Merriam's shrew
Shrew-mole
Broad-footed mole
Little brown myotis
Yuma myotis
Long-eared myotis
Fringed myotis
Long-legged myotis
California myotis
Small-footed myotis
Silver-haired bat
Western pipistrelle
Big brown bat
Hoary bat
Townsend's big-eared bat
Pallid bat
Spotted bat
Brazillian free-tailed bat
Coyote
Red fox
Gray fox
American black bear
Ringtail
Raccoon
Fisher

Marten
Short-tailed weasel
Long-tailed weasel
American mink
American badger
Western spotted skunk
Striped skunk
River otter
Cougar
Bobcat
Elk
Mule deer
Pronghorn
Least chipmunk
Yellow-pine chipmunk
Allen’s chipmunk
Yellow-bellied marmot
Belding’s ground squirrel
Golden-mantled ground squirrel
Western gray squirrel
Douglas’ squirrel
Northern flying squirrel
Botta’s pocket gopher
Northern pocket gopher
Western pocket gopher
Great Basin pocket mouse
California kangaroo rat
Beaver
Western harvest mouse
Deer mouse
Canyon mouse
Brush mouse
Pinon mouse
Northern grasshopper mouse
Dusky-footed woodrat
Bushy-tailed woodrat
Montana vole
Long-tailed vole
Sagebrush vole
Norway rat
House mouse
Western jumping mouse
Porcupine
American pika
Pygmy rabbit
Mountain cottontail

Snowshoe hare
White-tailed jackrabbit
Black-tailed jackrabbit

Appendix E – Rare, Threatened and Endangered Species in Klamath County

Mollusks

California floater
Oregon floater
Western ridged mussel
Western pearlshell
Modoc peaclam
Montane peaclam
Klamath duskysnail
Mare's egg duskysnail
Nodose duskysnail
Odessa pebblesnail
Ouxy Spring pebblesnail
Tall pebblesnail
Tiger lily pebblesnail
Keene Creek pebblesnail
Wood River pebblesnail
Casebeer pebblesnail
Crooked Creek pebblesnail
Klamath pebblesnail
Klamath Rim pebblesnail
Lake of the Woods pebblesnail
Lost River pebblesnail
Archimedis springsnail
Lost River springsnail
Klamath Lake springsnail
Great Basin ramshorn
Highcap lanx
Scale lanx
Dall's ramshorn
Lined ramshorn
Klamath ramshorn
Sinitsin ramshorn

Insects

Colorado bed bug
Schuh's plant bug
Cascades apatanian caddisfly
Schuh's homoplectran caddisfly
Moselyana comosa (no common name)
Johnson's hairstreak
Leona's little blue
Gray blue
Mardon skipper

Fish

Pit-Klamath brook lamprey
Miller Lake lamprey
Pacific lamprey
Rainbow (steelhead, redband) trout
Bull trout
Chinook salmon
Klamath largescale sucker
Shortnose sucker
Slender sculpin
Lost River sucker

Amphibians

Blotched salamander
Clouded salamander
Oregon slender salamander
Crater Lake newt
Western toad
Coastal tailed frog
Foothill yellow-legged frog
Northern red-legged frog
Cascades frog
Oregon spotted frog
Northern leopard frog

Reptiles

Northern Pacific pond turtle
Common kingsnake
Northern sagebrush lizard

Birds

Clark’s grebe
Western grebe
Horned grebe
Red-necked grebe
Eared grebe
Tule goose
Trumpeter swan
Bufflehead
Harlequin duck
American white pelican
Black tern
Caspian tern
Forster’s tern
Barrow’s goldeneye
Upland sandpiper

Western snowy plover
Lesser yellowlegs
Marbled godwit
Long-billed curlew
White-faced ibis
Snowy egret
Yellow rail
Greater sandhill crane
Western least bittern
Common nighthawk
Ferruginous hawk
Northern goshawk
Merlin
American peregrine falcon
Golden eagle
Bald eagle
Great gray owl
Northern spotted owl
Boreal owl
Western burrowing owl
Flammulated owl
Mountain quail
Greater sage-grouse
Columbian sharp-tailed grouse
Pileated woodpecker
White-headed woodpecker
Black-backed woodpecker
American three-toed woodpecker
Acorn woodpecker
Lewis' woodpecker
Williamson's sapsucker
Tricolored blackbird
Western meadowlark
Western bluebird
Yellow-billed cuckoo
Pinyon jay
Loggerhead shrike
Sage thrasher
Northern waterthrush
Olive-sided flycatcher
Willow flycatcher
Purple martin
Horned lark
Rufus hummingbird
Calliope hummingbird
Yellow-breasted chat

Slender-billed nuthatch
Green-tailed towhee
Black-throated sparrow
Vesper sparrow
Brewer’s sparrow
Purple finch

Mammals

Preble’s shrew
Brazilian free-tailed bat
Pallid bat
Townsend’s big-eared bat
Silver-haired bat
Hoary bat
California myotis
Western small-footed myotis
Long-eared myotis
Fringed myotis
Long-legged myotis
Yuma myotis
Ringtail
Pygmy rabbit
Black-tailed jackrabbit
White-tailed jackrabbit
Western gray squirrel
Wolverine
American marten
Fisher
Grizzly bear
Gray wolf
Kit fox
Canada lynx

Appendix F –Sensitive Plant Species in Klamath County

Abrupt-beaked sedge
Awned sedge
Capitate sedge
Bristly sedge
Involute-leaved sedge
Sedge
Bolander onion
Two-stemmed onion
Crater Lake rockcress
Shasta arnica
Lahontan sagebrush
Green-flowered wild-ginger
Grass-fern
Applegate’s milk-vetch
Lemmon’s milk-vetch
Peck’s milk-vetch
Lance-leaved grape-fern
Pumice grape-fern
Northern water-starwort
Greene’s mariposa-lily
Long-bearded mariposa-lily
One-leaved calochortus
Dissected toothwort
Bulb-bearing water-hemlock
Mount Mazama collomia
Pine woods cryptantha
Golden alpine draba
Elmera
Dwarf isopyrum
Swamp willow-herb
Cascade daisy
Inland coyote-thistle
Jaynes Canyon buckwheat
Prostrate buckwheat
Shast buckwheat
Newberry’s gentian
Sierra gentian
Alva Day’s gilia
White-margined waxplant
Beautiful stickseed
Whitney’s haplopappus
Salt heliotrope
Greene’s hawkweed
Baker’s globe-mallow
Kellogg’s dwarf rush
Flowering quillwort

Kellogg’s lily
Bellinger’s meadow-foam
Aristulate lipocarpha
Anderson’s lupine
Northern bog clubmoss
Nodding melic
Disappearing monkeyflower
Jepson’s monkeyflower
Three-colored monkeyflower
Common water-milfoil
Lobb’s nama
Tehama navarretia
White-flowered navarretia
Blue-leaved penstemon
Red-root yampah
Playa phacelia
American pillwort
Dense-flower rein orchid
Desert allocarya
Profuse-flowered pogogyne
Dotted smartweed
Kruckeberg’s sword-fern
Rafinesque’s pondweed
Fibrous pondweed
Slender pondweed
Klamath gooseberry
Columbia cress
Long-lobe arrowhead
Polished willow
Sierra willow
Scheuchzeria
Water clubrush
Slender bulrush
Norhwestern yellow flax
Fringed campion
Suksdorf’s campion
California mountain ash
Short-podded thelypody
Howell’s thelypody
Narrow mannagrass
Lesser bladderwort

Appendix G - Acronyms and Abbreviations used in the report

APE-- area of potential effect
APLIC--Avian Power Line Interaction Committee
BLM—US Bureau of Land Management
BMP—best management practices
BMPSHP-- Bryant Mountain Pumped Storage Hydroelectric Project
FERC—Federal Energy Regulatory Commission
ODEQ--Oregon Department of Environmental Quality
ODFW—Oregon Department of Fish & Wildlife
TMDL—total maximum daily loads
USDI—US Department of the Interior
USFWS—US Fish & Wildlife Service
USGS—US Geological Survey
VRM--visual resource management