

Exhibits

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Exhibit A

Information About Applicant

**Sams Valley Reinforcement Projects
December 2017**

Prepared for



PacifiCorp

Prepared by



Tetra Tech, Inc.

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List of Attachments

Attachment A-1. Documents Related to PacifiCorp's Incorporation and Authorization

Attachment A-2. Authorization Letter

Acronyms and Abbreviations

EFSC	Energy Facility Siting Council
OAR	Oregon Administrative Rule
PacifiCorp	PacifiCorp dba Pacific Power
Project	Sams Valley Reinforcement Projects
Site Certificate	Eugene-Medford 500 KV Transmission Line Site Certificate

1.0 Introduction

Exhibit A provides information about PacifiCorp dba Pacific Power (PacifiCorp), which is seeking a site certificate amendment for the Sams Valley Reinforcement Projects (Project) from the Oregon Energy Facility Siting Council (EFSC). This would amend the Eugene-Medford 500-kV Transmission Line Project Site Certificate (Site Certificate).

PacifiCorp is the successor to the original Site Certificate applicant, Pacific Power & Light Company. On January 9, 1989, Pacific Power & Light Company merged into PacifiCorp, succeeded all of the rights and responsibilities of the previous company, and continued to do business under the assumed business name of Pacific Power & Light Company.

2.0 Applicant Contact Information – OAR 345-021-0010(1)(a)(A)

OAR 345-021-0010(1)(a)(A) The name and address of the applicant including all co-owners of the proposed facility, the name, mailing address, email address and telephone number of the contact person for the application, and if there is a contact person other than the applicant, the name, title, mailing address, email address and telephone number of that person.

Name and Address of Site Certificate Holder

PacifiCorp
825 NE Multnomah Street
Portland, OR 97232

Contact Information

John Aniello
Director of Project Management West
PacifiCorp
825 NE Multnomah Street
Portland, OR 97232
John.Aniello@pacificorp.com
503.813.6030

Suzy Cavanagh, P.G.
Project Manager/NEPA Specialist
Tetra Tech, Inc.
3380 Americana Terr. Suite 201
Boise, ID 83706
suzy.cavanagh@tetratech.com
208.489.2868

Dustin Till
Senior Attorney
825 NE Multnomah St Suite 1800
Portland OR 97232
Dustin.Till@pacificorp.com
503-813-6589

3.0 Other Participants – OAR 345-021-0010(1)(a)(B)

OAR 345-021-0010(1)(a)(B) The contact name, mailing address, email address and telephone number of all participating persons, other than individuals, including but not limited to any parent corporation of the applicant, persons upon whom the applicant will rely for third-party permits or approvals related to the facility, and persons upon whom the applicant will rely in meeting any facility standard adopted by the Council.

No additional participants are involved.

4.0 Corporation Status – OAR 345-021-0010(1)(a)(C)

OAR 345-021-0010(1)(a)(C) If the applicant is a corporation, it shall give:

- (i) The full name, official designation, mailing address, email address and telephone number of the officer responsible for submitting the application;*
- (ii) The date and place of its incorporation;*
- (iii) A copy of its articles of incorporation and its authorization for submitting the application;*
and

(iv) In the case of a corporation not incorporated in Oregon, the name and address of the resident attorney-in-fact in this state and proof of registration to do business in Oregon.

Officer Responsible

John Aniello
Director of Project Management West
PacifiCorp
825 NE Multnomah Street
Portland, OR 97232
John.Aniello@pacificorp.com
503.813.6030

Date and Location of Incorporation

PacifiCorp was incorporated on November 20, 1996 within the State of Oregon.

Copy of Articles of Incorporation

A copy of PacifiCorp's articles of incorporation have been included as part of Attachment A-1.

Authorization for Submitting the Application

A letter of authorization has been included as Attachment A-2.

PacifiCorp's Attorney-in-Fact for the Request for Amendment

Garrett H. Stephenson, Of Counsel
Schwabe Williamson & Wyatt
PacWest Center
1211 SW Fifth Avenue Suite 1900
Portland, OR 97204
503-796-2893

5.0 Ownership – OAR 345-021-0010(1)(a)(D)

OAR 345-021-0010(1)(a)(D) Owner Information if Subsidiary

PacifiCorp is a wholly owned subsidiary of Berkshire Hathaway Energy.

Full Name and Business Address of PacifiCorp's Full Owner

Berkshire Hathaway Energy

666 Grand Avenue

Des Moines, IA 50306-0657

6.0 Association/Joint-Venture Information – OAR 345-021-0010(1)(a)(E)

OAR 345-021-0010(1)(a)(E) Association/Joint-Venture Information

- (i) The full name, official designation, mailing address, email address and telephone number of the person responsible for submitting the application;*
- (ii) The name, business address and telephone number of each person participating in the association, joint venture or partnership and the percentage interest held by each;*
- (iii) Proof of registration to do business in Oregon;*
- (iv) A copy of its articles of association, joint venture agreement or partnership agreement and a list of its members and their cities of residence; and*
- (v) If there are no articles of association, joint venture agreement or partnership agreement, the applicant shall state that fact over the signature of each member.*

PacifiCorp is not an association of citizens, a joint venture, or partnership. Therefore, this rule is not applicable.

7.0 Public/Government Entity Information – OAR 345-021-0010(1)(a)(F)

OAR 345-021-0010(1)(a)(F) Public/Government Entity Information

- (i) The full name, official designation, mailing address, email address and telephone number of the person responsible for submitting the application; and*
- (ii) Written authorization from the entity's governing body to submit an application.*

PacifiCorp is an investor-owned utility, and is not a government entity.

8.0 Individual Applicant – OAR 345-021-0010(1)(a)(G)

OAR 345-021-0010(1)(a)(G) If the applicant is an individual, the individual shall give his or her mailing address and telephone number.

PacifiCorp is not an individual, therefore, this OAR does not apply.

9.0 Limited Liability Company Information – OAR 345-021-0010(1)(a)(H)

OAR 345-021-0010(1)(a)(H) Limited Liability Company Information

(i) The full name, official designation, mailing address, email address and telephone number of the officer responsible for submitting the application;

(ii) The date and place of its formation;

(iii) A copy of its articles of organization and its authorization for submitting the application; and

(iv) In the case of a limited liability company not registered in Oregon, the name and address of the resident attorney-in-fact in this state and proof of registration to do business in Oregon.

PacifiCorp is not a Limited Liability Company, therefore, this OAR does not apply.

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Attachment A-1. Documents Related to PacifiCorp's Incorporation and Authorization

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THIRD RESTATED ARTICLES OF
INCORPORATION
of
PACIFICORP

FILED
NOV 20 1996
SECRETARY OF STATE

ARTICLE I

The name of the Company is PacificCorp.

ARTICLE II

The purposes for which the Company is organized are the manufacture, production, generation, storage, utilization, purchase, sale, supply, transmission, distribution, or disposition of electric energy, natural or artificial gas, water or steam, or power produced thereby; and the transaction of any and all other lawful businesses for which corporations may be organized under the Oregon Business Corporation Act.

ARTICLE III

(1) The total amount of the authorized capital stock of the Company is 769,626,535 shares, divided into 126,533 shares of 5% Preferred Stock of the stated value of \$100 per share, 3,500,000 shares of Serial Preferred Stock of the stated value of \$100 per share, 16,000,000 shares of No Par Serial Preferred Stock (the 5% Preferred Stock, the Serial Preferred Stock and the No Par Serial Preferred Stock collectively referred to herein as the "Senior Securities"), and 750,000,000 shares of Common Stock.

(2) The 5% Preferred Stock, *pari passu* with the other Senior Securities, shall be entitled, but only when and as declared by the Board of Directors, out of funds legally available for the payment of dividends, in preference to the Common Stock, to dividends at the rate of

5 per centum (5%) per annum of the stated value thereof, and no more, payable quarterly on February 15, May 15, August 15 and November 15 of each year or otherwise as the Board of Directors may determine (such dates, including any changes thereof, being hereinafter referred to as the "Payment Dates"), to shareholders of record as of a date to be fixed by the Board of Directors, not exceeding thirty (30) days and not less than ten (10) days preceding the Payment Dates, such dividends to be cumulative from the day immediately following the last period for which dividends on the 5% Preferred Stock of PacifiCorp, a Maine corporation, have been declared (such date being hereinafter referred to as the "Accrual Date"). The Serial Preferred Stock, *pari passu* with the other Senior Securities, shall be entitled, but only when and as declared by the Board of Directors, out of funds legally available for the payment of dividends, in preference to the Common Stock, to dividends at the rate or rates, which may be subject to adjustment, as to each series thereof, fixed and determined pursuant to Section (5) or (6) of this Article at the time of the creation of such series, and no more, payable as the Board of Directors may from time to time determine, such dividends to be cumulative from the date of issue of such stock or as otherwise provided in Section (6) of this Article. The No Par Serial Preferred Stock, *pari passu* with the other Senior Securities, shall be entitled, but only when and as declared by the Board of Directors, out of funds legally available for the payment of dividends, in preference to the Common Stock, to dividends at the rate or rates, which may be subject to adjustment, as to each series thereof, fixed and determined pursuant to Section (5) or (7) of this Article at the time of the creation of such series, and no more, payable as the Board of Directors may from time to time determine, such dividends to be cumulative from the date of issue of such stock or as otherwise provided in Section (7) of this Article.

(3) In the event of any voluntary liquidation, dissolution or winding up of the Company, the 5% Preferred Stock, pari passu with the other Senior Securities, shall also have a preference over the Common Stock until \$110 per share and five per centum (5%) per annum on the stated value thereof from and after the date on which dividends on such stock became cumulative, shall have been paid by dividends or distribution; the Serial Preferred Stock, pari passu with the other Senior Securities, shall also have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of the Serial Preferred Stock, the amount as to each series thereof fixed and determined by resolution of the Board of Directors or pursuant to Section (6) of this Article at the time of the creation of each such series, plus the amount, if any, by which dividends at the rate or rates fixed and determined for such stock pursuant to Section (5) or (6) of this Article, from and after the respective dates on which dividends on such stock became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon; and the No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall also have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of the No Par Serial Preferred Stock, the amount as to each series thereof fixed and determined by resolution of the Board of Directors or pursuant to Section (7) of this Article at the time of the creation of each such series, plus the amount, if any, by which dividends at the rate or rates fixed and determined for such stock pursuant to Section (5) or (7) of this Article, from and after the respective dates on which dividends on such stock became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

(4) In the event of any involuntary liquidation, dissolution or winding up of the Company, which shall include any such liquidation, dissolution or winding up which may arise out of or result from the condemnation or purchase of all or a major portion of the properties of the Company by (i) the United States Government or any authority, agency or instrumentality thereof, (ii) a state of the United States or any authority, agency or instrumentality thereof, or (iii) a district, cooperative or other association or entity not organized for profit, the 5% Preferred Stock, pari passu with the other Senior Securities, shall also have a preference over the Common Stock until the full stated value thereof and five per centum (5%) per annum thereon from and after the date on which dividends on such stock became cumulative, shall have been paid by dividends or distribution; the Serial Preferred Stock, pari passu with the other Senior Securities, shall also have a preference over the Common Stock until there shall have been paid, by dividends or distribution on each share of the Serial Preferred Stock, the full stated value thereof, plus the amount, if any, by which dividends at the rate or rates fixed and determined for such stock pursuant to Section (5) or (6) of this Article, from and after the respective dates on which dividends on such stock became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon; and the No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall also have a preference over the Common Stock until there shall have been paid, by dividends or distribution on each share of the No Par Serial Preferred Stock, the amount as to each series thereof fixed and determined by resolution of the Board of Directors as the consideration therefor or pursuant to Section (7) of this Article at the time of creation of each such series, plus the amount, if any, by which dividends at the rate or rates fixed and determined for such stock

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pursuant to Section (5) or (7) of this Article, from and after the respective dates on which dividends on such stock became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

(5) The Board of Directors shall have authority by resolution to divide the Serial Preferred Stock into series designated " % Serial Preferred Stock" or the " Serial Preferred Stock," as applicable, and to divide the No Par Serial Preferred Stock into series designated "\$ No Par Serial Preferred Stock" or the " No Par Serial Preferred Stock," as applicable (inserting, in each case, the annual dividend rate, as fixed and determined by the Board of Directors for each series or, if the rate of dividends is subject to adjustment, so indicating by appropriate language). All shares of Serial Preferred Stock, irrespective of series, shall constitute one and the same class of stock, and all shares of No Par Serial Preferred Stock, irrespective of series, shall constitute one and the same class of stock. Within each such class of stock, all shares shall be of equal rank and shall be identical in all respects except as to designation thereof and except that in establishing a series within either of said classes, the Board of Directors may fix and determine the relative rights and preferences of such series as to any of the following:

(a) The dividend rate or rates, which may be subject to adjustment in accordance with a method adopted by resolution of the Board of Directors at the time of the creation of such series;

(b) The date or dates from which dividends on shares of each series shall be cumulative;

(c) The dividend payment dates;

(d) The amount to be paid upon redemption, if redeemable, or in the event of voluntary liquidation, dissolution or winding up of the Company;

(e) The rights of conversion, if any, into shares of Common Stock and the terms and conditions on which shares may be so converted, if the shares of any series are issued with the privilege of conversion; and

(f) Provisions, if any, for the redemption or purchase of shares, which may be at the option of the Company or upon the happening of a specified event or events, for cash, at such time or times, price or prices, or rate or rates, and with such adjustments as shall be fixed and determined by resolution of the Board of Directors or from time to time in accordance with a method adopted by resolution of the Board of Directors at the time of the creation of such series;

and except further that in establishing a series of the No Par Serial Preferred Stock, the Board of Directors may also fix and determine the voting rights of such series.

All shares of the same series shall be identical in all respects except as to the date or dates from which dividends upon shares of such series may be cumulative. Each certificate for Serial Preferred Stock or No Par Serial Preferred Stock shall state the designation of the series in which the shares represented by such certificate are issued. Whenever an affirmative vote of the Serial Preferred Stock or the No Par Serial Preferred Stock may be required for any purpose, the shares voting shall be counted irrespective of series and not by different series.

(6) Without limitation of the foregoing authority conferred upon the Board of Directors, there follows a statement of the rights and preferences of the respective series of Serial Preferred Stock created on the effective date of the merger of PacifiCorp, a Maine

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corporation, and Utah Power & Light Company, a Utah corporation, into the Company, being the initial series and the fourth through thirteenth series, inclusive, thereof.

(a) There is hereby created an initial series of the Company's Serial Preferred Stock which shall be designated as 4.52% Serial Preferred Stock and which shall consist of 2,065 shares.

The annual dividend rate of said initial series of the Company's Serial Preferred Stock shall be four and fifty-two one-hundredths per centum (4.52%) of the stated value thereof. The date or dates from which dividends on shares of said initial series of the Company's Serial Preferred Stock shall be cumulative shall be the Accrual Date. The dividend payment dates for the payment of dividends on shares of said initial series of the Company's Serial Preferred Stock shall be the Payment Dates.

The amount to be paid upon redemption of shares of said initial series of the Company's Serial Preferred Stock shall be \$103.50 per share, plus unpaid accumulated dividends, if any, to the date of redemption.

The amounts to be paid in respect of shares of said initial series of the Company's Serial Preferred Stock in the event of voluntary liquidation, dissolution or winding up of the Company shall be as follows: In the event of any voluntary liquidation, dissolution or winding up of the Company, said initial series of the Company's Serial Preferred Stock, *pari passu* with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said initial series of the Company's Serial Preferred Stock, an amount equal to the redemption price applicable to shares of said initial series of the Company's Serial Preferred Stock, plus the amount, if any, by which

dividends at the rate of 4.52% per annum on the stated value thereof, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

(The second and third series of the Serial Preferred Stock of PacifiCorp, a Maine corporation, were redeemed on September 6, 1963 and March 5, 1965, respectively.)

(h) There is hereby created a fourth series of the Company's Serial Preferred Stock which shall be designated as 7.00% Serial Preferred Stock and which shall consist of 18,060 shares.

The annual dividend rate of said fourth series of the Company's Serial Preferred Stock shall be seven per centum (7.00%) of the stated value thereof. The date from which dividends on shares of said fourth series of the Company's Serial Preferred Stock shall be cumulative shall be the Accrual Date. The dividend payment dates for the payment of dividends on shares of said fourth series of the Company's Serial Preferred Stock shall be the Payment Dates.

The amounts to be paid in respect of said fourth series of the Company's Serial Preferred Stock in the event of voluntary liquidation, dissolution or winding up of the Company shall be as follows: In the event of any voluntary liquidation, dissolution or winding up of the Company, said fourth series of the Company's Serial Preferred Stock, *pari passu* with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said fourth series of the Company's Serial Preferred Stock, an amount equal to the full stated value thereof, plus the amount, if any, by which dividends at the rate of 7.00% per annum on the stated value thereof, from and after the

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date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

(c) There is hereby created a fifth series of the Company's Serial Preferred Stock which shall be designated as 6.00% Serial Preferred Stock and which shall consist of 5,932 shares.

The annual dividend rate of said fifth series of the Company's Serial Preferred Stock shall be six per centum (6.00%) of the stated value thereof. The date from which dividends on shares of said fifth series of the Company's Serial Preferred Stock shall be cumulative shall be the Accrual Date. The dividend payment dates for the payment of dividends on shares of said fifth series of the Company's Serial Preferred Stock shall be the Payment Dates.

The amounts to be paid in respect of said fifth series of the Company's Serial Preferred Stock in the event of voluntary liquidation, dissolution or winding up of the Company shall be as follows: In the event of any voluntary liquidation, dissolution or winding up of the Company, said fifth series of the Company's Serial Preferred Stock, *pari passu* with the other Senior Securities, shall have a preference over the Common Stock until there shall have been paid, by dividends or distribution on each share of said fifth series of the Company's Serial Preferred Stock, an amount equal to the full stated value thereof, plus the amount, if any, by which dividends at the rate of 6.00% per annum on the stated value thereof, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

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(d) There is hereby created a sixth series of the Company's Serial Preferred Stock which shall be designated as 5.00% Serial Preferred Stock and which shall consist of 42,000 shares.

The annual dividend rate of said sixth series of the Company's Serial Preferred Stock shall be five per centum (5.00%) of the stated value thereof. The date from which dividends on shares of said sixth series of the Company's Serial Preferred Stock shall be cumulative shall be the Accrual Date. The dividend payment dates for the payment of dividends on shares of said sixth series of the Company's Serial Preferred Stock shall be the Payment Dates.

The amount to be paid upon redemption of shares of said sixth series of the Company's Serial Preferred Stock shall be \$100 per share, plus unpaid accumulated dividends, if any, to the date of redemption.

The amounts to be paid in respect of shares of said sixth series of the Company's Serial Preferred Stock in the event of voluntary liquidation, dissolution or winding up of the Company shall be as follows: In the event of any voluntary liquidation, dissolution or winding up of the Company, said sixth series of the Company's Serial Preferred Stock, *pari passu* with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said sixth series of the Company's Serial Preferred Stock, an amount equal to the full stated value thereof, plus the amount, if any, by which dividends at the rate of 5.00% per annum on the stated value thereof, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceeds the dividends actually paid thereon or declared and set apart for payment thereon.

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(e) There is hereby created a seventh series of the Company's Serial Preferred Stock which shall be designated as 5.40% Serial Preferred Stock and which shall consist of 65,960 shares.

The annual dividend rate of said seventh series of the Company's Serial Preferred Stock shall be five and forty one-hundredths per centum (5.40%) of the stated value thereof. The date from which dividends on shares of said seventh series of the Company's Serial Preferred Stock shall be cumulative shall be the Accrual Date. The dividend payment dates for the payment of dividends on shares of said seventh series of the Company's Serial Preferred Stock shall be the Payment Dates.

The amount to be paid upon redemption of shares of said seventh series of the Company's Serial Preferred Stock shall be \$101.00 per share, plus unpaid accumulated dividends, if any, to the date of redemption.

The amounts to be paid in respect of shares of said seventh series of the Company's Serial Preferred Stock in the event of voluntary liquidation, dissolution or winding up of the Company shall be as follows: In the event of any voluntary liquidation, dissolution or winding up of the Company, said seventh series of the Company's Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said seventh series of the Company's Serial Preferred Stock, an amount equal to the full stated value thereof, plus the amount, if any, by which dividends at the rate of 5.40% per annum on the stated value thereof, from and after the date on which dividends on such shares became cumulative to the

date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

(f) There is hereby created an eighth series of the Company's Serial Preferred Stock which shall be designated as 4.72% Serial Preferred Stock and which shall consist of 69,890 shares.

The annual dividend rate of said eighth series of the Company's Serial Preferred Stock shall be four and seventy-two one-hundredths per centum (4.72%) of the stated value thereof. The date from which dividends on shares of said eighth series of the Company's Serial Preferred Stock shall be cumulative shall be the Accrual Date. The dividend payment dates for the payment of dividends on shares of said eighth series of the Company's Serial Preferred Stock shall be the Payment Dates.

The amount to be paid upon redemption of shares of said eighth series of the Company's Serial Preferred Stock shall be \$103.50 per share, plus unpaid accumulated dividends, if any, to the date of redemption.

The amounts to be paid in respect of shares of said eighth series of the Company's Serial Preferred Stock in the event of voluntary liquidation, dissolution or winding up of the Company shall be as follows: In the event of any voluntary liquidation, dissolution or winding up of the Company, said eighth series of the Company's Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said eighth series of the Company's Serial Preferred Stock, an amount equal to the redemption price applicable to shares of said eighth series of the Company's Serial Preferred Stock, plus the amount, if any, by which

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dividends at the rate of 4.72% per annum on the stated value thereof, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

(g) There is hereby created a ninth series of the Company's Serial Preferred Stock which shall be designated as 4.56% Serial Preferred Stock and which shall consist of 84,592 shares.

The annual dividend rate of said ninth series of the Company's Serial Preferred Stock shall be four and fifty-six one-hundredths per centum (4.56%) of the stated value thereof. The date from which dividends on shares of said ninth series of the Company's Serial Preferred Stock shall be cumulative shall be the Accrual Date. The dividend payment dates for the payment of dividends on shares of said ninth series of the Company's Serial Preferred Stock shall be the Payment Dates.

The amount to be paid upon redemption of shares of said ninth series of the Company's Serial Preferred Stock shall be \$102.34 per share, plus unpaid accumulated dividends, if any, to the date of redemption.

The amounts to be paid in respect of shares of said ninth series of the Company's Serial Preferred Stock in the event of voluntary liquidation, dissolution or winding up of the Company shall be as follows: In the event of any voluntary liquidation, dissolution or winding up of the Company, said ninth series of the Company's Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said ninth series of the Company's Serial Preferred Stock, an amount equal to the redemption price applicable to shares of said

ninth series of the Company's Serial Preferred Stock, plus the amount, if any, by which dividends at the rate of 4.56% per annum on the stated value thereof, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

(The tenth, eleventh and twelfth series of the Serial Preferred Stock of PacifiCorp, an Oregon corporation, were redeemed on July 12, 1996. The thirteenth series of Serial Preferred Stock of PacifiCorp, an Oregon corporation, was redeemed on October 10, 1989. The fourteenth series of the Serial Preferred Stock of PacifiCorp, a Maine corporation, was redeemed on January 11, 1987.)

(7) Without limitation of the foregoing authority conferred upon the Board of Directors, there follows a statement of the rights and preferences of the respective series of No Par Serial Preferred Stock created on the effective date of the merger of PacifiCorp, a Maine corporation, and Utah Power & Light Company, a Utah corporation, into the Company, being the second series and the sixth through thirteenth series, inclusive, thereof, and the respective series of No Par Serial Preferred Stock created thereafter and prior to the date of this restatement, being the fourteenth through twentieth series, inclusive, thereof.

(The initial series of the No Par Serial Preferred Stock of PacifiCorp, a Maine corporation, was redeemed on May 15, 1987. The second series of the No Par Serial Preferred Stock of PacifiCorp, an Oregon corporation, was redeemed on July 12, 1996. The third, fourth and fifth series of No Par Serial Preferred Stock of PacifiCorp, a Maine corporation, were redeemed on May 15, 1987, October 3, 1984 and June 15, 1986, respectively. The sixth series

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and seventh series of No Par Serial Preferred Stock of PacifiCorp, an Oregon corporation, were exchanged and retired on June 29, 1992).

(a) There is hereby created an eighth series of the Company's No Par Serial Preferred Stock, which shall be designated as \$7.12 No Par Serial Preferred Stock. Said eighth series of No Par Serial Preferred Stock shall consist of 500,000 shares, shall have a stated value of \$100 per share and shall have the relative rights and preferences as follows:

The annual dividend on said eighth series of the Company's No Par Serial Preferred Stock shall be \$7.12 per share.

The date from which dividends on shares of said eighth series of the Company's No Par Serial Preferred Stock shall be cumulative shall be the Accrual Date. The dates for the payment of dividends on shares of said eighth series of the Company's No Par Serial Preferred Stock shall be the Payment Dates.

The amounts to be paid upon optional redemption of the shares of said eighth series of the Company's No Par Serial Preferred Stock shall be, for the period from the date upon which dividends on said eighth series became cumulative to and including March 31, 1992, \$107.12 per share; thereafter to and including March 31, 1997, \$104.75 per share; thereafter to and including March 31, 2002, \$102.38 per share; and thereafter \$100 per share; plus, in each case, unpaid accumulated dividends, if any, to the date of redemption; provided, however, that shares of said eighth series of the Company's No Par Serial Preferred Stock shall not be redeemable prior to April 1, 1992, directly or indirectly, as part of, or in anticipation of, any refunding operation involving the incurring of indebtedness or the issuance of shares of preferred stock ranking equally with or prior to shares of said eighth series of the Company's No Par

Serial Preferred Stock as to dividends or on liquidation, if the interest on such indebtedness or the dividends on shares of any such preferred stock would result in an effective cost to the Company (computed in accordance with generally accepted financial practice) of less than 7.18% per annum.

As a sinking fund for said eighth series of No Par Serial Preferred Stock, the Company shall redeem, out of funds legally available therefor, on March 31 of each year, beginning with March 31, 1993, not less than 15,000 shares nor more than 30,000 shares of said eighth series of the Company's No Par Serial Preferred Stock at a redemption price equal to \$100 per share plus unpaid accumulated dividends, if any, to the date of redemption; the option to redeem in excess of 15,000 shares of said eighth series of No Par Serial Preferred Stock on any March 31 shall not be cumulative; shares of said eighth series of No Par Serial Preferred Stock acquired or redeemed by the Company otherwise than through operation of the sinking fund may, at the option of the Company, be credited against subsequent minimum sinking fund requirements; if the Company shall be prevented, because of restriction or for any other reason, from acquiring or redeeming on any March 31 the number of shares of said eighth series of No Par Serial Preferred Stock that in the absence of such restriction or other reason it would be required to acquire or redeem on such date, the deficit shall be made good on the first succeeding March 31 on which the Company shall not be prevented by such restriction or other reason from acquiring or redeeming shares of said eighth series of No Par Serial Preferred Stock. If the Company shall be in arrears in the redemption of shares of said eighth series of No Par Serial Preferred Stock, no dividends (other than dividends payable in Common Stock) shall be paid or any other distribution of assets made, by purchase of shares or otherwise, on

Common Stock or on any other stock of the Company over which the No Par Serial Preferred Stock has preference as to the payment of dividends or as to assets.

In the event of any involuntary liquidation, dissolution or winding up of the Company, said eighth series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock until there shall have been paid, by dividends or distribution on each share of said eighth series of the Company's No Par Serial Preferred Stock, an amount equal to \$100, plus the amount, if any, by which dividends of \$7.12 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

In the event of any voluntary liquidation, dissolution or winding up of the Company, said eighth series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said eighth series of the Company's No Par Serial Preferred Stock, an amount equal to the then current redemption price applicable to shares of said eighth series of the Company's No Par Serial Preferred Stock, plus the amount, if any, by which dividends of \$7.12 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

Every holder of record of said eighth series of the Company's No Par Serial Preferred Stock, or his legal representative, at the record date for the determination of persons

entitled to vote at a meeting of shareholders, shall be entitled to one vote for each share of such stock standing in his name on the books of the Company.

(b) There is hereby created a ninth series of the Company's No Par Serial Preferred Stock which shall be designated as \$1.28 No Par Serial Preferred Stock. Said ninth series of No Par Serial Preferred Stock shall consist of 400,000 shares, shall have a stated value of \$25 per share and shall have the relative rights and preferences as follows:

The annual dividend on said ninth series of the Company's No Par Serial Preferred Stock shall be \$1.28 per share.

The date from which dividends on shares of said ninth series of the Company's No Par Serial Preferred Stock shall be cumulative shall be the day immediately following the last period for which dividends on the Cumulative Preferred Stock, \$25 par value, of Utah Power & Light Company, a Utah corporation, have been declared (such date being hereinafter referred to as the "UP&L Accrual Date"). The dates for the payment of dividends on shares of said ninth series of the Company's No Par Serial Preferred Stock shall be the Payment Dates.

The amount to be paid upon redemption of the shares of said ninth series of the Company's No Par Serial Preferred Stock shall be \$26.35 per share, plus unpaid accumulated dividends, if any, to the date of redemption.

In the event of any involuntary liquidation, dissolution or winding up of the Company, said ninth series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock until there shall have been paid, by dividends or distribution on each share of said ninth series of the Company's No Par Serial Preferred Stock, an amount equal to \$25, plus the amount, if any, by which dividends

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of \$1.28 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

In the event of any voluntary liquidation, dissolution or winding up of the Company, said ninth series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said ninth series of the Company's No Par Serial Preferred Stock, an amount equal to the redemption price applicable to shares of said ninth series of the Company's No Par Serial Preferred Stock, plus the amount, if any, by which dividends of \$1.28 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

The holders of shares of said ninth series of the Company's No Par Serial Preferred Stock shall have no voting rights except as provided in these Restated Articles of Incorporation and except as otherwise required by law. Whenever holders of shares of said ninth series of the Company's No Par Serial Preferred Stock shall be entitled to vote, every holder, or his legal representative, at the record date for the determination of persons entitled to vote at a meeting of shareholders, shall be entitled to one-quarter (1/4) of a vote for each share of such stock standing in his name on the books of the Company.

The shares of said ninth series of the Company's No Par Serial Preferred Stock, by their terms, shall not be entitled to a sinking fund or purchase fund and shall not be convertible into or exchangeable for shares of any other class or series.

VOID IF ALTERED OR ERASED

(c) There is hereby created a tenth series of the Company's No Par Serial Preferred Stock which shall be designated as \$1.18 No Par Serial Preferred Stock. Said tenth series of No Par Serial Preferred Stock shall consist of 480,000 shares, shall have a stated value of \$25 per share and shall have the relative rights and preferences as follows:

The annual dividend on said tenth series of the Company's No Par Serial Preferred Stock shall be \$1.18 per share.

The date from which dividends on shares of said tenth series of the Company's No Par Serial Preferred Stock shall be cumulative shall be the UP&L Accrual Date. The dates for the payment of dividends on shares of said tenth series of the Company's No Par Serial Preferred Stock shall be the Payment Dates.

The amount to be paid upon redemption of the shares of said tenth series of the Company's No Par Serial Preferred Stock shall be \$26.15 per share, plus unpaid accumulated dividends, if any, to the date of redemption.

In the event of any involuntary liquidation, dissolution or winding up of the Company, said tenth series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock until there shall have been paid, by dividends or distribution on each share of said tenth series of the Company's No Par Serial Preferred Stock, an amount equal to \$25, plus the amount, if any, by which dividends of \$1.18 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

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In the event of any voluntary liquidation, dissolution or winding up of the Company, said tenth series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said tenth series of the Company's No Par Serial Preferred Stock, an amount equal to the redemption price applicable to shares of said tenth series of the Company's No Par Serial Preferred Stock, plus the amount, if any, by which dividends of \$1.18 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

The holders of shares of said tenth series of the Company's No Par Serial Preferred Stock shall have no voting rights except as provided in these Restated Articles of Incorporation and except as otherwise required by law. Whenever holders of shares of said tenth series of the Company's No Par Serial Preferred Stock shall be entitled to vote, every holder, or his legal representative, at the record date for the determination of persons entitled to vote at a meeting of shareholders, shall be entitled to one-quarter (1/4) of a vote for each share of such stock standing in his name on the books of the Company.

The shares of said tenth series of the Company's No Par Serial Preferred Stock, by their terms, shall not be entitled to a sinking fund or purchase fund and shall not be convertible into or exchangeable for shares of any other class or series.

(d) There is hereby created an eleventh series of the Company's No Par Serial Preferred Stock which shall be designated as \$1.16 No Par Serial Preferred Stock. Said eleventh

series of No Par Serial Preferred Stock shall consist of 200,000 shares, shall have a stated value of \$25 per share and shall have the relative rights and preferences as follows:

The annual dividend on said eleventh series of the Company's No Par Serial Preferred Stock shall be \$1.16 per share.

The date from which dividends on shares of said eleventh series of the Company's No Par Serial Preferred Stock shall be cumulative shall be the UP&L Accrual Date. The dates for the payment of dividends on shares of said eleventh series of the Company's No Par Serial Preferred Stock shall be the Payment Dates.

The amount to be paid upon redemption of the shares of said eleventh series of the Company's No Par Serial Preferred Stock shall be \$26.11 per share, plus unpaid accumulated dividends, if any, to the date of redemption.

In the event of any involuntary liquidation, dissolution or winding up of the Company, said eleventh series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock until there shall have been paid, by dividends or distribution on each share of said eleventh series of the Company's No Par Serial Preferred Stock, an amount equal to \$25, plus the amount, if any, by which dividends of \$1.16 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

In the event of any voluntary liquidation, dissolution or winding up of the Company, said eleventh series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock, until there shall

have been paid, by dividends or distribution on each share of said eleventh series of the Company's No Par Serial Preferred Stock, an amount equal to the redemption price applicable to shares of said eleventh series of the Company's No Par Serial Preferred Stock, plus the amount, if any, by which dividends of \$1.16 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

The holders of shares of said eleventh series of the Company's No Par Serial Preferred Stock shall have no voting rights except as provided in these Restated Articles of Incorporation and except as otherwise required by law. Whenever holders of shares of said eleventh series of the Company's No Par Serial Preferred Stock shall be entitled to vote, every holder, or his legal representative, at the record date for the determination of persons entitled to vote at a meeting of shareholders, shall be entitled to one-quarter (1/4) of a vote for each share of such stock standing in his name on the books of the Company.

The shares of said eleventh series of the Company's No Par Serial Preferred Stock, by their terms, shall not be entitled to a sinking fund or purchase fund and shall not be convertible into or exchangeable for shares of any other class or series.

(The twelfth, thirteenth, fourteenth and fifteenth series of the No Par Serial Preferred Stock of PacifiCorp, an Oregon corporation, were redeemed on July 12, 1996, July 12, 1996, July 29, 1996 and December 29, 1992, respectively).

(e) There is hereby created a sixteenth series of the Company's No Par Serial Preferred Stock which shall be designated as \$7.70 No Par Serial Preferred Stock. The amount of the consideration received by the Company fixed as a preference over the Common Stock in

the assets of the Company upon involuntary liquidation and that constitutes the stated value of said sixteenth series of the Company's No Par Serial Preferred Stock is \$100 per share. Said sixteenth series of the Company's No Par Serial Preferred Stock shall consist of 1,000,000 shares and shall have the relative rights and preferences as follows:

The annual dividend on said sixteenth series of the Company's No Par Serial Preferred Stock shall be \$7.70 per share.

The date from which dividends on shares of said sixteenth series of the Company's No Par Serial Preferred Stock shall be cumulative shall be the date of issue of such shares. The dates for the payment of dividends on shares of said sixteenth series of the Company's No Par Serial Preferred Stock shall be the Payment Dates.

The shares of said sixteenth series of the Company's No Par Serial Preferred Stock shall not be subject to redemption at the option of the Company and shall not be subject to any sinking fund.

On August 15, 2001, the Company shall redeem all shares of said sixteenth series of No Par Serial Preferred Stock then outstanding, out of funds legally available therefor, at a redemption price equal to \$100 per share plus unpaid accumulated dividends, if any, to the date of redemption.

In the event of any voluntary liquidation, dissolution or winding up of the Company, said sixteenth series of the Company's No Par Serial Preferred Stock, pari passu with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said sixteenth series of the Company's No Par Serial Preferred Stock, an amount equal to \$100, plus the amount, if any,

by which dividends of \$7.70 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

Every holder of record of shares of said sixteenth series of the Company's No Par Serial Preferred Stock, or his legal representative, at the record date for the determination of persons entitled to vote at a meeting of shareholders, shall be entitled to one vote for each share of such stock standing in his name on the books of the Company.

(f) There is hereby created a seventeenth series of the Company's No Par Serial Preferred Stock, which shall be designated as \$1.98 No Par Serial Preferred Stock, Series 1992. Said seventeenth series of No Par Serial Preferred Stock shall consist of 5,000,000 shares. The amount of the consideration received by the Company fixed as a preference over the Common Stock in the assets of the Company upon involuntary liquidation, dissolution or winding up of the Company and that constitutes the stated value of said seventeenth series of the Company's No Par Serial Preferred Stock is \$25 per share.

The annual dividend on said seventeenth series of the Company's No Par Serial Preferred Stock shall be \$1.98 per share.

The date from which dividends on shares of said seventeenth series of the Company's No Par Serial Preferred Stock shall be cumulative shall be the date of issue of such shares. The dates for the payment of dividends on shares of said seventeenth series of the Company's No Par Serial Preferred Stock shall be the Payment Dates.

The shares of said seventeenth series of the Company's No Par Serial Preferred Stock shall not be redeemable by the Company on or before May 31, 1997. After May 31,

1997, the outstanding shares of said seventeenth series of the Company's No Par Serial Preferred Stock shall be redeemable at the option of the Company, in whole or in part, out of funds legally available therefor, at a redemption price equal to \$25 per share plus unpaid accumulated dividends, if any, to the date of redemption. The shares of said seventeenth series of the Company's No Par Serial Preferred Stock shall not be subject to any sinking fund.

In the event of any voluntary liquidation, dissolution or winding up of the Company, said seventeenth series of the Company's No Par Serial Preferred Stock, *pari passu* with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said seventeenth series of the Company's No Par Serial Preferred Stock, an amount equal to \$25, plus the amount, if any, by which dividends of \$1.98 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

Every holder of record of shares of said seventeenth series of the Company's No Par Serial Preferred Stock, or his legal representative, at the record date for the determination of persons entitled to vote at a meeting of shareholders, shall be entitled to one-quarter vote for each share of such stock standing in his name on the books of the Company.

(g) There is hereby created an eighteenth series of the Company's No Par Serial Preferred Stock, which shall be designated as \$7.48 No Par Serial Preferred Stock. Said eighteenth series of No Par Serial Preferred Stock shall consist of 750,000 shares. The amount of the consideration received by the Company fixed as a preference over the Common Stock in the assets of the Company upon involuntary liquidation, dissolution or winding up of the

Company and that constitutes the stated value of said seventeenth series of the Company's No Par Serial Preferred Stock is \$100 per share.

The annual dividend on said eighteenth series of the Company's No Par Serial Preferred Stock shall be \$7.48 per share.

The date from which dividends on shares of said eighteenth series of the Company's No Par Serial Preferred Stock shall be cumulative shall be the date of issue of such shares. The dates for the payment of dividends on shares of said eighteenth series of the Company's No Par Serial Preferred Stock shall be the Payment Dates.

The shares of said eighteenth series of the Company's No Par Serial Preferred Stock shall not be subject to redemption at the option of the Company, other than as described below.

On June 15, 2007, the Company shall redeem all shares of said eighteenth series of No Par Serial Preferred Stock then outstanding, out of funds legally available therefor, at a redemption price equal to \$100 per share plus unpaid accumulated dividends, if any, to the date of redemption. As a sinking fund for said eighteenth series of No Par Serial Preferred Stock, the Company shall redeem, out of funds legally available therefor, on June 15 of each year, beginning with June 15, 2002 and ending with June 15, 2006, not less than 37,500 shares nor more than 75,000 shares of said eighteenth series of No Par Serial Preferred Stock, in each case at a redemption price equal to \$100 per share plus unpaid accumulated dividends, if any, to the date of redemption; the option to redeem in excess of 37,500 shares of said eighteenth series of No Par Serial Preferred Stock on any June 15 from 2002 through 2006 shall not be cumulative; shares of said eighteenth series of No Par Serial Preferred Stock acquired by the Company otherwise than through operation of the sinking fund may, at the option of the Company, be

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credited against subsequent minimum sinking fund requirements; if the Company shall be prevented, because of restriction or for any other reason, from acquiring or redeeming on any June 15 from 2002 through 2006 the number of shares of said eighteenth series of No Par Serial Preferred Stock that in the absence of such restriction or other reason it would be required to acquire or redeem on such date, the deficit shall be made good on the first succeeding June 15 on which the Company shall not be prevented by such restriction or other reason from acquiring or redeeming shares of said eighteenth series of No Par Serial Preferred Stock. If the Company shall be in arrears in the redemption of shares of said eighteenth series of No Par Serial Preferred Stock, no dividends (other than dividends payable in Common Stock) shall be paid or any other distribution of assets made, by purchase of shares or otherwise, on Common Stock or on any other stock of the Company over which the No Par Serial Preferred Stock has preference as to the payment of dividends or as to assets.

In the event of any voluntary liquidation, dissolution or winding up of the Company, said eighteenth series of the Company's No Par Serial Preferred Stock, *pari passu* with the other Senior Securities, shall have a preference over the Common Stock, until there shall have been paid, by dividends or distribution on each share of said eighteenth series of the Company's No Par Serial Preferred Stock, an amount equal to \$100, plus the amount, if any, by which dividends of \$7.48 per annum, from and after the date on which dividends on such shares became cumulative to the date of such distribution, exceed the dividends actually paid thereon or declared and set apart for payment thereon.

Every holder of record of shares of said eighteenth series of the Company's No Par Serial Preferred Stock, or his legal representative, at the record date for the determination

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of persons entitled to vote at a meeting of shareholders, shall be entitled to one vote for each share of such stock standing in his name on the books of the Company.

(The nineteenth and twentieth series of the No Par Serial Preferred Stock of PacifiCorp, an Oregon corporation, were redeemed on August 9, 1996 and January 25, 1993, respectively).

(8) Subject to the rights of the holders of the Senior Securities, and subordinate thereto (and subject and subordinate to the rights of any class of stock hereafter authorized), the Common Stock alone shall receive all dividends and shares in liquidation, dissolution, winding up or distribution other than those to be paid on shares of Senior Securities as provided in Sections (2) through (7) of this Article.

(9) The Company, by a majority vote of its Board of Directors, may at any time redeem all of said 5% Preferred Stock or may from time to time redeem any part thereof, by paying in cash a redemption price of \$110 per share, plus unpaid accumulated dividends, if any, to the date of redemption; may at any time redeem all or any part of any one or more series of Serial Preferred Stock, other than the 7.00% Serial Preferred Stock and the 6.00% Serial Preferred Stock created at the time of merger of PacifiCorp, a Maine corporation, and Utah Power & Light Company, a Utah corporation, into the Company, by paying in cash a redemption price fixed and determined by resolution of the Board of Directors or pursuant to Section (6) of this Article at the time of creation of each such series, plus unpaid accumulated dividends, if any, to the date of redemption; and may at any time redeem all or any part of any one or more series of No Par Serial Preferred Stock by paying in cash a redemption price fixed and determined by resolution of the Board of Directors or pursuant to Section (7) of this Article at the time of creation of each such series plus unpaid accumulated dividends, if any, to the date of redemption. Notice of the intention of the Company to redeem all or any part of the 5%

Preferred Stock, Serial Preferred Stock or No Par Serial Preferred Stock shall be mailed not less than thirty (30) days nor more than sixty (60) days before the date of redemption to each holder of record of 5% Preferred Stock, Serial Preferred Stock or No Par Serial Preferred Stock to be redeemed, at his post office address as shown by the Company's records or, in lieu of such mailing, not less than thirty (30) days nor more than sixty (60) days' notice of such redemption may be published in such manner as may be prescribed by resolution of the Board of Directors of the Company; and, in the event of such publication, no failure to mail such notice nor any defect therein or in the mailing thereof shall affect the validity of the proceedings for the redemption of any shares of 5% Preferred Stock, Serial Preferred Stock or No Par Serial Preferred Stock so to be redeemed. Contemporaneously with the mailing or the publication of such notice as aforesaid or at any time thereafter prior to the date of redemption, the Company may deposit the aggregate redemption price (or the portion thereof not already paid in the redemption of such 5% Preferred Stock, Serial Preferred Stock or No Par Serial Preferred Stock) with any bank or trust company in the City of New York, New York, or in the City of Portland, Oregon, named in such notice, payable to the order of the record holders of the 5% Preferred Stock, Serial Preferred Stock or No Par Serial Preferred Stock so to be redeemed, on the endorsement and surrender of their certificates, and thereupon said holders shall cease to be shareholders with respect to such shares; and from and after the making of such deposit such holders shall have no interest in or claim against the Company with respect to said shares, but shall be entitled only to receive such moneys from said bank or trust company, with interest, if any, allowed by such bank or trust company, on such moneys deposited as in this Section provided, on endorsement and surrender of their certificates, as aforesaid. Any moneys so deposited, plus interest thereon, if any, and remaining unclaimed at the end of six years from

the date fixed for redemption, if thereafter requested by resolution of the Board of Directors, shall be repaid to the Company, and in the event of such repayment to the Company such holders of record of the shares so redeemed as shall not have made claim against such moneys prior to such repayment to the Company, shall be deemed to be unsecured creditors of the Company for an amount, without interest, equivalent to the amount deposited, plus interest thereon, if any, allowed by such bank or trust company, as above stated, for the redemption of such shares and so paid to the Company. If less than all of the shares of the 5% Preferred Stock or of any series of Serial Preferred Stock or No Par Serial Preferred Stock are to be redeemed, the shares to be redeemed shall be selected by lot, in such manner as the Board of Directors of the Company shall determine, by an independent bank or trust company selected for that purpose by the Board of Directors of the Company. Nothing in this Section contained shall limit any right of the Company to purchase or otherwise acquire any shares of 5% Preferred Stock, Serial Preferred Stock or No Par Serial Preferred Stock.

(10) Except as hereinafter otherwise provided, every holder of record of 5% Preferred Stock, of Serial Preferred Stock or of Common Stock, or his legal representative, at the record date for the determination of persons entitled to vote at a meeting of shareholders, shall be entitled at such meeting to one vote for each share of such stock standing in his name on the books of the Company, and every holder of record of No Par Serial Preferred Stock, or his legal representative, at the record date for the determination of persons entitled to vote at a meeting of shareholders, shall be entitled to such voting rights as shall be fixed and determined for the series of which his share or shares are a part by Section (7) of this Article or the resolution establishing such series.

(11) If and when dividends payable on the Senior Securities shall be in default in an amount equal to four full quarterly payments or more per share, and thereafter until all dividends on the Senior Securities in default shall have been paid, the holders of the Senior Securities, voting separately from the Common Stock as one class, shall be entitled to elect the smallest number of directors necessary to constitute a majority of the full Board of Directors, and the holders of the Common Stock, voting separately from the Senior Securities as a class, shall be entitled to elect the remaining directors of the Company, anything herein and in the Bylaws of the Company to the contrary notwithstanding. The terms of office, as directors, of all persons who may be directors of the Company at the time shall terminate upon the election of a majority of the Board of Directors by the holders of the Senior Securities, except that if the holders of the Common Stock shall not have elected the remaining directors of the Company, then, and only in that event, the directors of the Company in office just prior to the election of a majority of the Board of Directors by the holders of the Senior Securities shall elect the remaining directors of the Company. Thereafter, while such default continues and the majority of the Board is being elected by the holders of Senior Securities, the remaining directors, whether elected by directors, as aforesaid, or whether originally or later elected by holders of the Common Stock, shall continue in office until their successors are elected by holders of the Common Stock and shall qualify.

(12) If and when all dividends then in default on the Senior Securities then outstanding shall be paid (such dividends to be declared and paid out of any funds legally available therefor as soon as reasonably practicable), the holders of the Senior Securities shall be divested of any special right with respect to the election of directors, and the voting power of the holders of Senior Securities and the holders of the Common Stock shall revert to the status existing before

the first dividend payment date on which dividends on the Senior Securities were not paid in full, but always subject to the same provisions for vesting such special rights in the holders of the Senior Securities in the event of further like default or defaults in the payment of dividends thereon. Upon termination of any such special voting right upon payment of all accumulated and defaulted dividends on the Senior Securities, the term of office of all persons who may have been elected directors of the Company by vote of the holders of Senior Securities as one class, pursuant to such special voting right, shall forthwith terminate, and the resulting vacancies shall be filled by the vote of a majority of the remaining directors, and directors so elected shall hold office until their successors are elected and shall qualify.

(13) In the case of any vacancy in the office of a director occurring among the directors elected by the holders of the Senior Securities, voting separately from the Common Stock as one class, the remaining directors elected by the holders of the Senior Securities, by affirmative vote of a majority thereof, or the remaining director so elected if there be but one, may elect a successor or successors to hold office for the unexpired term or terms of the director or directors whose place or places shall be vacant. Likewise, in case of any vacancy in the office of a director occurring among the directors not elected by the holders of the Senior Securities, the remaining directors not elected by the holders of the Senior Securities by affirmative vote of a majority thereof, or the remaining director so elected if there be but one, may elect a successor or successors to hold office for the unexpired term or terms of the director or directors whose place or places shall be vacant.

(14) Whenever the right shall have accrued to the holders of the Senior Securities to elect directors, voting separately from the Common Stock as one class, it shall be the duty of the President, a Vice-President or the Secretary of the Company forthwith to cause notice to be

given to the shareholders entitled to vote at a meeting to be held at such time as the Company's officers may fix, not less than ten (10) nor more than sixty (60) days after the accrual of such right, for the purpose of electing directors. At all meetings of shareholders held for the purpose of electing directors during such time as the holders of the Senior Securities shall have the special right, voting separately from the Common Stock as one class, to elect directors, the presence in person or by proxy of the holders of a majority of the outstanding Common Stock shall be required to constitute a quorum of such class for the election of directors, and the presence in person or by proxy of the holders of a majority in voting rights, of the outstanding Senior Securities shall be required to constitute a quorum of such class for the election of directors; provided, however, that the absence of a quorum of the holders of stock of either such class shall not prevent the election at any such meeting or adjournment thereof of directors by the other class, if the necessary quorum of the holders of stock of such other class is present in person or by proxy at such meeting or any adjournment thereof; and provided further, that in the event a quorum of the holders of the Common Stock is present but a quorum of the holders of the Senior Securities is not present, then the election of the directors elected by the holders of the Common Stock shall not become effective and the directors so elected by the holders of Common Stock shall not assume their offices and duties until the holders of the Senior Securities, with a quorum present, shall have elected the directors they shall be entitled to elect; and provided further, however, that in the absence of a quorum of holders of stock of either class, a majority of the holders of the stock of such class who are present in person or by proxy shall have power to adjourn the election of the directors to be elected by such class from time to time without notice other than announcement at the meeting, until the requisite quorum of holders of such class shall be made present in person or by proxy, but such adjournment shall

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not be to a date beyond the date for the mailing of the notice of the next annual meeting of the Company or special meeting in lieu thereof.

(15) So long as any shares of the 5% Preferred Stock are outstanding, the Company shall not, without the consent (given by a vote at a meeting called for that purpose) of the holders of at least two-thirds of the total number of votes entitled to be cast by the shares of the 5% Preferred Stock then outstanding:

(a) create or authorize any new stock ranking prior to the 5% Preferred Stock as to dividends, in liquidation, dissolution, winding up or distribution, or create or authorize any security convertible into shares of any such stock; or

(b) amend, alter, change or repeal any of the express terms of the 5% Preferred Stock then outstanding in a manner substantially prejudicial to the holders thereof.

(16) So long as any shares of Serial Preferred Stock are outstanding, the Company shall not, without the consent (given by a vote at a meeting called for that purpose) of the holders of at least two-thirds of the total number of votes entitled to be cast by the shares of Serial Preferred Stock then outstanding:

(a) create or authorize any new stock ranking prior to such Serial Preferred Stock as to dividends, in liquidation, dissolution, winding up or distribution, or create or authorize any security convertible into shares of any such stock; or

(b) amend, alter, change or repeal any of the express terms of such Serial Preferred Stock then outstanding in a manner substantially prejudicial to the holders thereof.

(17) So long as any shares of No Par Serial Preferred Stock are outstanding, the Company shall not, without consent (given by a vote at a meeting called for that purpose) of the

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holders of at least two-thirds of the total number of votes entitled to be cast by the shares of No Par Serial Preferred Stock then outstanding:

(a) create or authorize any new stock ranking prior to such No Par Serial Preferred Stock as to dividends, in liquidation, dissolution, winding up or distribution, or create or authorize any security convertible into shares of any such stock; or

(b) amend, alter, change or repeal any of the express terms of such No Par Serial Preferred Stock then outstanding in a manner substantially prejudicial to the holders thereof.

(18) So long as any shares of the Senior Securities are outstanding, the Company shall not, without the consent (given by vote at a meeting called for that purpose) of the holders of a majority of the total voting power of the Senior Securities then outstanding, voting separately from the Common Stock, as one class:

(a) merge or consolidate with or into any other corporation or corporations; provided, that the provisions of this subparagraph (a) shall not apply to a purchase or other acquisition by the Company of franchises or assets of another corporation in any manner which does not involve a merger or consolidation; or

(b) issue any unsecured notes, debentures or other securities representing unsecured indebtedness, or assume any such unsecured indebtedness, for purposes other than (i) the refunding of outstanding unsecured indebtedness theretofore issued or assumed by the Company, or (ii) the reacquisition, redemption or other retirement of all outstanding shares of the Senior Securities, if immediately after such issue or assumption the total principal amount of all unsecured notes, debentures or other securities representing unsecured indebtedness issued or assumed by the Company, including unsecured indebtedness then to be issued or assumed,

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would exceed thirty per centum (30%) of the aggregate of (1) the total principal amount of all bonds or other securities representing secured indebtedness issued or assumed by the Company and then to be outstanding, and (2) the capital and surplus of the Company as then to be stated on the books of account of the Company; or

(c) issue, sell or otherwise dispose of any shares of the Senior Securities or of any other class of stock ranking prior to, or on a parity with, the Senior Securities as to dividends or distributions, unless the net income of the Company determined, after provision for depreciation and all taxes and in accordance with generally accepted accounting practices, to be available for the payment of dividends for a period of twelve (12) consecutive calendar months within the fifteen (15) calendar months immediately preceding the issuance, sale or disposition of such stock, is at least equal to twice the annual dividend requirements on all outstanding shares of the Senior Securities and all other classes of stock ranking prior to, or on a parity with, the Senior Securities as to dividends or distributions, including the shares proposed to be issued, computed, in the case of any such shares on which the dividend rate is subject to adjustment, at the dividend rate then in effect or, if such shares are the shares proposed to be issued, at the dividend rate initially established for such shares, and unless the gross income of the Company for such period, determined in accordance with generally accepted accounting practices (but in any event after deducting the amount for said period charged by the Company on its books to depreciation expense and all taxes) to be available for the payment of interest, shall have been at least one and one-half times the sum of (i) the annual interest charges on all interest bearing indebtedness of the Company and (ii) the annual dividend requirements on all outstanding shares of the Senior Securities and all other classes of stock ranking prior to, or on a parity with, the Senior Securities as to dividends or distributions, including the shares proposed

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to be issued, computed, in the case of any such indebtedness or shares on which the interest or dividend rate is subject to adjustment, at the interest or dividend rate then in effect or, if such shares are the shares proposed to be issued, at the dividend rate initially established for such shares; provided, that there shall be excluded from the foregoing computation interest charges on all indebtedness and dividends on all shares of stock which are to be retired in connection with the issue of such additional shares of Senior Securities or other class of stock ranking prior to, or on a parity with, the Senior Securities as to dividends or distributions; and provided further, that in any case where such additional shares of Senior Securities or other class of stock ranking prior to, or on a parity with, the Senior Securities as to dividends or distributions, are to be issued in connection with the acquisition of new property, the net earnings of the property to be so acquired may be included on a pro forma basis in the foregoing computation, computed on the same basis as the net earnings of the Company; or

(d) issue, sell or otherwise dispose of any shares of the Senior Securities, or of any other class of stock ranking prior to, or on a parity with, the Senior Securities as to dividends or distributions, unless the aggregate of the capital of the Company applicable to the Common Stock and the surplus of the Company shall be not less than the aggregate amount payable on the involuntary dissolution, liquidation or winding up of the Company, in respect of all shares of the Senior Securities and all shares of stock, if any, ranking prior thereto, or on a parity therewith, as to dividends or distributions, which will be outstanding after the issue of the shares proposed to be issued; provided, that if, for the purposes of meeting the requirements of this subparagraph (d), it becomes necessary to take into consideration any earned surplus of the Company, the Company shall not thereafter pay any dividends on shares of the Common Stock which would result in reducing the Company's Common Stock equity to an amount less

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than the aggregate amount payable, on dissolution, winding up or involuntary liquidation of the Company, on all shares of the Senior Securities and of any stock ranking prior to, or on a parity with, the Senior Securities as to dividends or other distributions, at the time outstanding.

(19) The Company from time to time may, subject to the limitations or requirements provided above in this Article III, purchase any of its stock outstanding at such price as may be fixed by its Board of Directors or Executive Committee and accepted by the holders of the stock purchased, and may resell any stock so purchased at such price as may be fixed by its Board of Directors or Executive Committee, but in the case the stock so purchased is subject to redemption, the price paid therefor shall not exceed the price at which it is redeemable.

(20) The Company from time to time may, subject to the limitations or requirements provided above in this Article III, issue and sell Common Stock or Preferred Stock of any class then authorized but unissued, bonds, notes or other evidences of indebtedness convertible or not into Common Stock or stock of any other class then authorized but unissued.

(21) No holder of any stock or other securities of the Company now or hereafter authorized shall have any preemptive or other right to subscribe for, purchase or receive any unissued shares, treasury shares, or other shares of any class, whether now or hereafter authorized, or any notes, bonds, debentures, or other securities convertible into, or carrying options or warrants to purchase, shares of any class. The Company may issue and dispose of any of its authorized shares for such consideration as may be fixed by the Board of Directors subject to the laws then applicable.

ARTICLE IV

Meetings of shareholders of the Company may be held at such place, either within or outside the State of Oregon, as shall be designated from time to time by the Board of Directors.

ARTICLE V

(1) The number of directors of the Company shall be not less than nine (9) nor more than twenty-one (21), and within such limits the exact number shall be fixed and increased or decreased from time to time by resolution of the Board of Directors. The directors shall be divided into three classes, as nearly equal in number as possible, with the term of office of the first class ("Class I") to expire at the 1991 annual meeting of shareholders, the term of office of the second class ("Class II") to expire at the 1989 annual meeting of shareholders and the term of office of the third class ("Class III") to expire at the 1990 annual meeting of shareholders. At each annual meeting of shareholders following such initial classification and election, directors elected to succeed those directors whose terms expire shall be elected to serve three-year terms and until their successors are elected and qualified, so that the term of one class of directors will expire each year. When the number of directors is changed within the limits provided herein, any newly created directorships, or any decrease in directorships, shall be so apportioned among the classes as to make all classes as nearly equal as possible, provided that no decrease in the number of directors constituting the Board of Directors shall shorten the term of any incumbent director.

(2) All or any number of the directors of the Company may be removed without cause only at a meeting of shareholders called expressly for that purpose, by the vote of 80 percent of the votes then entitled to be cast for the election of directors. The shareholders may remove

all or any number of directors for cause at a meeting of shareholders called expressly for that purpose by the vote of two-thirds of the votes then entitled to be cast for the election of directors. At any meeting of shareholders at which one or more directors are removed, a majority of the votes then entitled to be cast for the election of directors may fill any vacancy created by such removal. If any vacancy created by removal of a director is not filled by the shareholders at the meeting at which the removal is effected, such vacancy may be filled by a majority vote of the remaining directors.

(3) The provisions of this Article V may not be amended, altered, changed or repealed in any respect unless such action is approved by the affirmative vote of not less than 80 percent of the votes then entitled to be cast for the election of directors.

ARTICLE VI

The Company's Bylaws may be amended or repealed or new bylaws may be made: (a) by the affirmative vote of the holders of record of a majority of the outstanding capital stock of the Company entitled to vote thereon, irrespective of class, given at any annual or special meeting of the shareholders; provided that notice of the proposed amendment, repeal or new bylaw or bylaws be included in the notice of such meeting or waiver thereof; or (b) by the affirmative vote of a majority of the entire Board of Directors given at any regular meeting of the Board, or any special meeting thereof; provided that notice of the proposed amendment, repeal or new bylaw or bylaws be included in the notice of such meeting or waiver thereof or all of the directors at the time in office be present at such meeting.

ARTICLE VII

(1) Whether or not a vote of shareholders is otherwise required, the affirmative vote of the holders of not less than 80 percent of the outstanding shares of "Voting Stock" (as

hereinafter defined) of the Company shall be required for the approval or authorization of any "Business Transaction" (as hereinafter defined) with any "Related Person" (as hereinafter defined) or any Business Transaction in which a Related Person has an interest (except proportionately as a shareholder of the Company); provided, however, that the 80 percent voting requirement shall not be applicable if either:

(a) The "Continuing Directors" (as hereinafter defined) of the Company by at least a two-thirds vote (i) have expressly approved in advance the acquisition of the outstanding shares of Voting Stock that caused such Related Person to become a Related Person, or (ii) have expressly approved such Business Transaction; or

(b) The cash or fair market value (as determined by at least a majority of the Continuing Directors) of the property, securities or other consideration to be received per share by holders of Voting Stock of the Company (other than the Related Person) in the Business Transaction is not less than the "Highest Purchase Price" or the "Highest Equivalent Price" (as those terms are hereinafter defined) paid by the Related Person involved in the Business Transaction in acquiring any of its holdings of the Company's Voting Stock.

(2) For purposes of this Article VII:

(a) The term "Business Transaction" shall include, without limitation, (i) any merger, consolidation or plan of exchange of the Company, or any entity controlled by or under common control with the Company, with or into any Related Person, or any entity controlled by or under common control with such Related Person, (ii) any merger, consolidation or plan of exchange of a Related Person, or any entity controlled by or under

common control with such Related Person, with or into the Company or any entity controlled by or under common control with the Company, (iii) any sale, lease, exchange, transfer or other disposition (in one transaction or a series of transactions), including without limitation a mortgage or any other security device, of all or any "Substantial Part" (as hereinafter defined) of the property and assets of the Company, or any entity controlled by or under common control with the Company, to a Related Person, or any entity controlled by or under common control with such Related Person, (iv) any purchase, lease, exchange, transfer or other acquisition (in one transaction or a series of transactions), including without limitation a mortgage or any other security device, of all or any Substantial Part of the property and assets of a Related Person or any entity controlled by or under common control with such Related Person, by the Company or any entity controlled by or under common control with the Company, (v) any recapitalization of the Company that would have the effect of increasing the voting power of a Related Person, (vi) the issuance, sale, exchange or other disposition of any securities of the Company, or of any entity controlled by or under common control with the Company, by the Company or by any entity controlled by or under common control with the Company, (vii) any liquidation, spin-off, split-off, split-up or dissolution of the Company, and

(viii) any agreement, contract or other arrangement providing for any of the transactions described in this definition of Business Transaction.

(b) The term "Related Person" shall mean and include (i) any individual, corporation, association, trust, partnership or other person or entity (a "Person") which, together with its "Affiliates" (as hereinafter defined) and "Associates" (as hereinafter defined), "Beneficially Owns" (as defined in Rule 13d-3 of the General Rules and Regulations under the Securities Exchange Act of 1934 as in effect at June 13, 1984) in the aggregate 20 percent or more of the outstanding Voting Stock of the Company, and (ii) any Affiliate or Associate (other than the Company or a subsidiary of the Company of which the Company owns, directly or indirectly, more than 80 percent of the voting stock) of any such Person. Two or more Persons acting in concert for the purpose of acquiring, holding or disposing of Voting Stock of the Company shall be deemed a "Person."

(c) Without limitation, any share of Voting Stock of the Company that any Related Person has the right to acquire at any time (notwithstanding that Rule 13d-3 deems such shares to be beneficially owned only if such right may be exercised within 60 days) pursuant to any agreement, contract, arrangement or understanding, or upon exercise of conversion rights, warrants or

options, or otherwise, shall be deemed to be Beneficially Owned by such Related Person and to be outstanding for purposes of subsection (b) above.

(d) For the purposes of subsection (b) of Section 1 of Article VII, the term "other consideration to be received" shall include, without limitation, Common Stock or other capital stock of the Company retained by its existing shareholders, other than any Related Person or other Person who is a party to such Business Transaction, in the event of a Business Transaction in which the Company is the survivor.

(e) The term "Voting Stock" shall mean all of the outstanding shares of capital stock of the Company entitled to vote generally in the election of directors, considered as one class, and each reference to a proportion of shares of Voting Stock shall refer to such proportion of the votes entitled to be cast by such shares.

(f) The term "Continuing Director" shall mean a director of the Company who became a director on the effective date of the merger of PacifiCorp, a Maine corporation, and Utah Power & Light Company, a Utah corporation, into the Company, provided that any person becoming a director subsequent to such date whose election, or nomination for election, by the Company's

shareholders was approved by a vote of at least a majority of the Continuing Directors shall be considered a Continuing Director.

(g) A Related Person shall be deemed to have acquired a share of the Voting Stock of the Company at the time when such Related Person became the Beneficial Owner thereof. With respect to the shares owned by Affiliates, Associates or other Persons whose ownership is attributed to a Related Person under the foregoing definition of Related Person, if the price paid by such Related Person for such shares is not determinable by a majority of the Continuing Directors, the price so paid shall be deemed to be the higher of (i) the price paid upon the acquisition thereof by the Affiliate, Associate or other Person or (ii) the market price of the shares in question at the time when such Related Person became the Beneficial Owner thereof.

(h) The terms "Highest Purchase Price" and "Highest Equivalent Price" as used in this Article VII shall mean the following: If there is only one class of capital stock of the Company issued and outstanding, the Highest Purchase Price shall mean the highest price that can be determined to have been paid at any time by the Related Person involved in the Business Transaction for any share or shares of that class of capital stock. If there is more than one class of capital stock of the Company issued and outstanding, the Highest Equivalent Price shall mean,

with respect to each class and series of capital stock of the Company, the amount determined by a majority of the Continuing Directors, on whatever basis they believe is appropriate, to be the highest per share price equivalent to the highest-price that can be determined to have been paid at any time by the Related Person for any share or shares of any class or series of capital stock of the Company. The Highest Purchase Price and the Highest Equivalent Price shall include any brokerage commissions, transfer taxes and soliciting dealers' fees paid by a Related Person with respect to the shares of capital stock of the Company acquired by such Related Person. In the case of any Business Transaction with a Related Person, the Continuing Directors shall determine the Highest Purchase Price or the Highest Equivalent Price for each class and series of the capital stock of the Company. The Highest Purchase Price and Highest Equivalent Price shall be appropriately adjusted to reflect the occurrence of any reclassification, recapitalization, stock split, reverse stock split or other readjustment in the number of outstanding shares of capital stock of the Company, or the declaration of a stock dividend thereon, between the last date upon which the Related Party paid the Highest Purchase Price or Highest Equivalent Price and the effective date of the merger or consolidation or the date of distribution to shareholders of the

Company of the proceeds from the sale of all or substantially all of the assets of the Company.

(i) The term "Substantial Part" shall mean 10 percent or more of the fair market value of the total assets of the Person in question, as reflected on the most recent balance sheet of such Person existing at the time the shareholders of the Company would be required to approve or authorize the Business Transaction involving the assets constituting any such Substantial Part.

(j) The term "Affiliate," used to indicate a relationship with a specified Person, shall mean a Person that directly, or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, the Person specified.

(k) The term "Associate," used to indicate a relationship with a specified Person, shall mean (i) any entity of which such specified Person is an officer or partner or is, directly or indirectly, the beneficial owner of 10 percent or more of any class of equity securities, (ii) any trust or other estate in which such specified Person has a substantial beneficial interest or as to which such specified Person serves as trustee or in a similar fiduciary capacity, (iii) any relative or spouse of such specified Person, or any relative of such spouse, who has the same home as

such specified Person or who is a director or officer of the Company or any of its subsidiaries, and (iv) any Person who is a director or officer of such specified Person or any of its parents or subsidiaries (other than the Company or an entity controlled by or under common control with the Company).

(1) The term "Subsidiary," when used to indicate a relationship with a specified Person, shall mean an Affiliate controlled by such Person directly, or indirectly through one or more intermediaries.

(3) For the purposes of this Article VII, a majority of the Continuing Directors shall have the power to make a good faith determination, on the basis of information known to them, of: (a) the number of shares of Voting Stock that any Person Beneficially Owns, (b) whether a Person is an Affiliate or Associate of another, (c) whether a Person has an agreement, contract, arrangement or understanding with another as to the matters referred to in subsection (2)(a)(viii) or (2)(c) hereof, (d) whether the assets subject to any Business Transaction constitute a Substantial Part, (e) whether any Business Transaction is one in which a Related Person has an interest (except proportionately as a shareholder of the Company), and (f) such other matters with respect to which a determination is required under this Article VII.

(4) The provisions set forth in this Article VII may not be amended, altered, changed or repealed in any respect unless such action is approved by the affirmative vote of the holders of not less than 80 percent of the outstanding shares of Voting Stock of the Company.

ARTICLE VIII

The Company shall indemnify to the fullest extent not prohibited by law any person who is made, or threatened to be made, a party to an action, suit or proceeding, whether civil, criminal, administrative, investigative, or otherwise (including an action, suit or proceeding by or in the right of the Company) by reason of the fact that the person is or was a director, officer, employee or agent of the Company or a fiduciary within the meaning of the Employee Retirement Income Security Act of 1974 with respect to any employee benefit plan of the Company, or serves or served at the request of the Company as a director, officer, employee or agent, or as a fiduciary of an employee benefit plan, of another corporation, partnership, joint venture, trust or other enterprise. The Company shall pay for or reimburse the reasonable expenses incurred by any such person in any such proceeding in advance of the final disposition of the proceeding to the fullest extent not prohibited by law. This Article shall not be deemed exclusive of any other provisions for indemnification or advancement of expenses of directors, officers, employees, agents and fiduciaries that may be included in any statute, bylaw, agreement, general or specific action of the Board of Directors, vote of shareholders or otherwise.

ARTICLE IX

No director of the Company shall be personally liable to the Company or its shareholders for monetary damages for conduct as a director; provided that this Article IX shall not eliminate the liability of a director for any act or omission for which such elimination of liability is not permitted under the Oregon Business Corporation Act. No amendment to the Oregon Business Corporation Act that further limits the acts or omissions for which elimination

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of liability is permitted shall affect the liability of a director for any act or omission which occurs prior to the effective date of such amendment.

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Attachment A-2. Authorization Letter

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825 NE Multnomah
Portland, Oregon 97232

Brian Fritz
Director, Transmission Services
Pacific Power
825 NE Multnomah, Suite 1700
Portland, OR 97232
503-813-7237
Brian.fritz@pacificorp.com

December 18, 2017

Oregon Department of Energy
550 Capitol St. NE, 1st Floor
Salem, Oregon 97301

Re: Submittal of Amended Preliminary Application for Site Certificate Sam's Valley
Transmission Line Project

To Whom It May Concern:

Pacific Power Company hereby submits this Amended Preliminary Application for Site Certificate for the Sam's Valley Transmission Line Project. As set forth in the attached Secretary's Certificate, as the Director of Transmission Services, I am authorized to submit this application on Pacific Power's behalf.

Sincerely,

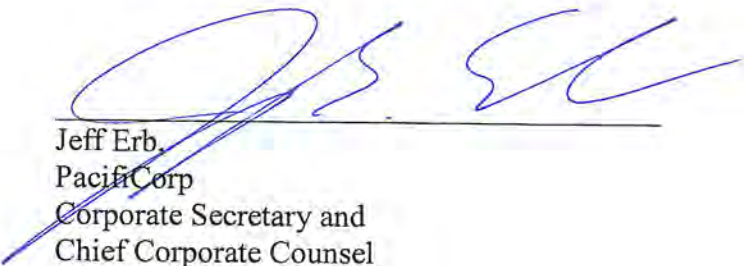
Brian Fritz
Director,
PacifiCorp
Transmission Services

PACIFICORP
SECRETARY'S CERTIFICATE

December 21, 2017

I, Jeff Erb, the undersigned, Corporate Secretary of PacificCorp, an Oregon corporation doing business as Pacific Power, do hereby certify that Brian Fritz is currently the Director of Transmission Services of Pacific Power, and as such he is authorized to execute and submit the amended preliminary application for site certificate relating to the Sam's Valley Transmission Line Project, for and on behalf of PacificCorp.

IN WITNESS WHEREOF, I have hereunto set my hand this 21st day of December 2017.



Jeff Erb,
PacificCorp
Corporate Secretary and
Chief Corporate Counsel

Exhibit B

Project Description and Schedule

Sams Valley Reinforcement Projects December 2017

Prepared for



PacifiCorp

Prepared by



Tetra Tech, Inc.

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Information supporting Oregon Administrative Rule (OAR) 345-021-0010(1)(b) has been included in the *Written Request for Amendment #4 Eugene–Medford 500 kV Transmission Line*.

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Exhibit C

Project Location and Maps

Sams Valley Reinforcement Projects December 2017

Prepared for



PacifiCorp

Prepared by



Tetra Tech, Inc.

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Acronyms and Abbreviations

BLM	U.S. Bureau of Land Management
EFSC	Energy Facility Siting Council
OAR	Oregon Administrative Rule
PacifiCorp	PacifiCorp dba Pacific Power
Project	Sams Valley Reinforcement Projects
Request	<i>Written Request for Amendment #4 Eugene–Medford 500 kV Transmission Line</i>

1.0 Introduction

The Energy Facility Siting Council (EFSC; Council) previously approved the Eugene–Medford 500 kV Transmission Line Project. In this Request for Amendment No. 4, PacifiCorp dba Pacific Power (PacifiCorp) seeks to expand the EFSC-certificated facility boundary to include the new Grants Pass–Sams Valley Transmission Line, the Sams Valley–Whetstone Reconductoring, and the Sams Valley Substation for the Sams Valley Reinforcement Projects (Project). This exhibit contains information about the location of the Project described in *Written Request for Amendment #4 Eugene–Medford 500 kV Transmission Line* (Request), as required to meet the submittal requirements of Oregon Administrative Rule (OAR) 345-021-0010(1)(c).

OAR 345 Division 22 does not provide an approval standard specific to Exhibit C.

2.0 General Location – OAR 345-021-0010(1)(c)(A)

OAR 345-021-0010(1)(c) Information about the location of the proposed facility, including:

OAR 345-021-0010(1)(c)(A) A map or maps showing the proposed locations of the energy facility site, all related or supporting facility sites and all areas that might be temporarily disturbed during construction of the facility in relation to major roads, water bodies, cities and towns, important landmarks and topographic features, using a scale of 1 inch = 2000 feet or smaller when necessary to show detail.

Figure C-1 shows the regional facility area, including the previously approved Eugene–Medford 500 kV Transmission Line Project (roughly 23,975 acres) and the proposed Project Site Boundary (487.5 acres). The resulting combined site boundary will encompass approximately 24,462.5 acres.

Figure C-2 shows the Project Site Boundary as described in the Request. The maps provide the locations of all permanent and temporary Project disturbance features, at a scale of 1:4,800 (1 inch = 400 feet). These figures also show the location of the Project in relation to existing roads, water bodies, and other topographic features. Please note, that due to the variable spatial accuracy of the displayed data layers, some features may not reflect what is actually on the ground.

3.0 Specific Location of Major and Supporting Facilities – OAR 345-021-0010(1)(c)(B)

OAR 345-021-0010(1)(c)(B) A description of the location of the proposed energy facility site, the proposed site of each related or supporting facility and areas of temporary disturbance, including the total land area (in acres) within the proposed site boundary, the total area of permanent disturbance, and the total area of temporary disturbance. If a proposed pipeline or transmission line is to follow an existing road, pipeline or transmission line, the applicant shall

state to which side of the existing road, pipeline or transmission line the proposed facility will run, to the extent this is known.

The 23.5-mile Project is located in the jurisdictions of unincorporated Josephine and Jackson counties, and crosses a small portion of the City of Rogue River. In total, the Project crosses 4.5 miles of land managed by the U.S. Bureau of Land Management (BLM), 18.6 miles of privately owned land, and 0.3 miles of land managed by the State of Oregon at the Rogue River crossing near the existing Whetstone Substation. Table C-1 summarizes land ownership and jurisdictions crossed by the Project segments. The Sams Valley Substation will be sited entirely on land owned by PacifiCorp in Jackson County.

Table C-1. Land Ownership and Jurisdictions Crossed by Project Transmission Lines

Project Section	Jurisdiction	BLM	State ¹	Private	Total
Grants Pass–Sams Valley Transmission Line	Josephine County	1.5	–	1.6	3.0
	Jackson County	2.8	–	12.7	15.5
	City of Rogue River	–	–	<0.1	<0.1
Total		4.3	–	14.3	18.6
Sams Valley–Whetstone Reconductoring	Jackson County	0.2	0.3	4.3	4.9
Total		0.2	0.3	4.3	4.9
Total – Overall Project		4.5	0.3	18.6	23.5
Sources: BLM 2013, ODOT 2016. Note that totals may not sum correctly due to rounding. 1. Water crossing at the Rogue River.					

3.1 Grants Pass–Sams Valley Transmission Line

The new Grants Pass–Sams Valley Transmission Line is a 230/115 kV double circuit transmission line that would begin at the existing Grants Pass Substation in Josephine County, approximately 1 mile northeast of Grants Pass, Oregon. It runs in an easterly direction approximately 17.6 miles to the proposed Sams Valley Substation located in Jackson County, approximately 6 miles northwest of Medford, Oregon. It crosses a small portion (approximately 400 feet) of the north side of the City of Rogue River near Evans Creek. The new double circuit transmission line generally parallels to the north of Interstate 5 and the Rogue River. The new transmission line will be constructed primarily on new double circuit monopole structures within the right-of-way of the existing 115 kV Grants Pass–Whetstone Transmission Line. The new double circuit structures would be constructed in close proximity to the existing 115 kV H-frame structures, and the existing 115 kV transmission line would be decommissioned and the old structures removed after construction of the new transmission line is complete. An additional 35 feet of right-of-way (135 feet total width) will be required to provide a safe operating system per the National Electrical Safety Code. The new 230/115 kV double circuit transmission line will run south of and mostly parallel to the existing

Grants Pass–Whetstone 230 kV Transmission Line. New tap lines would be constructed for the existing 230 and 115 kV transmission lines at the Grants Pass Substation.

3.2 Sams Valley Substation

The proposed Sams Valley Substation would be a 500/230 kV substation constructed in Sams Valley, Jackson County, Oregon, approximately 6 miles northwest of Medford, Oregon. The substation will join the 230 kV circuit of the new 230/115 kV double circuit Grants Pass–Sams Valley Transmission Line (the 115 kV circuit of this line will continue on directly to the existing Whetstone Substation), the existing 230 kV Grants Pass–Whetstone Transmission Line, and the existing 500 kV Dixonville–Meridian Transmission Line. The Sams Valley Substation will be sited entirely on land owned by PacifiCorp. Tap lines would be constructed for the existing 230 and 500 kV transmission lines as part of the Project. Up to 200 feet of new 230 kV easement may be required to bring the line into the substation, while the 500 kV line would require approximately 500 feet of additional easements at the north side of the station.

3.3 Grants Pass–Whetstone Reconductoring

Beginning at the proposed 500/230 kV Sams Valley Substation and continuing in a southeasterly direction around Lower Table Rock, approximately 4.9 miles of the existing 230 kV Grants Pass–Meridian Transmission Line will be reconducted as the Sams Valley–Whetstone Transmission Line in order to increase current line capacity. No new rights-of-ways will be required; however, up to 16 existing H-frame structures may be replaced to accommodate the new, heavier conductors. These structures would be similar in appearance to those currently in use.

3.4 Description of Location

Table C-2 summarizes the general location of the Project by the Public Land Survey System’s Township, Range, and Section, as well as by county and the Tax Lot Identification Number of parcels that are directly affected by permanent or temporary Project impacts.

Table C-2. Project Location by Township, Range, Section, County, and Tax Lot ID Number

Township	Range	Section	County	Tax Lot ID Number
Grants Pass–Sams Valley Transmission Line				
36	5	13, 14	Josephine	3605130000010000
36	5	13, 14, 15	Josephine	3605140000010000
36	5	14	Josephine	3605140000050300
36	5	13, 14	Josephine	3605140000120000
36	5	14, 15	Josephine	3605150000010000
36	5	13, 24	Josephine	3605240000010000
36	5	13, 24	Josephine	3605240000020000
36	5	15	Josephine	360515AB00030000
36	5	15	Josephine	360515AB00040000

Table C-2. Project Location by Township, Range, Section, County, and Tax Lot ID Number

Township	Range	Section	County	Tax Lot ID Number
36	5	15	Josephine	360515AC00010000
36	5	15	Josephine	360515B000010000
36	5	14, 15	Josephine	360515D000010000
35	2	32	Jackson	352W322000
35	2	32	Jackson	352W322003
35	2	32	Jackson	352W322004
36	2	5	Jackson	362W05500
36	2	5	Jackson	362W05600
36	2	5	Jackson	362W05700
36	2	5	Jackson	362W05701
36	2	5	Jackson	362W05706
36	2	6	Jackson	362W06101
36	2	6	Jackson	362W06102
36	2	6	Jackson	362W06104
36	2	1, 6	Jackson	362W06200
36	2	5, 6	Jackson	362W05801
36	2	5, 6	Jackson	362W05901
36	3	1	Jackson	363W01100
36	3	1	Jackson	363W01200
36	3	1	Jackson	363W01201
36	3	1	Jackson	363W01203
36	3	1	Jackson	363W01300
36	3	2	Jackson	363W02300
36	3	2	Jackson	363W02400
36	3	2	Jackson	363W02500
36	3	2	Jackson	363W02600
36	3	3	Jackson	363W03200
36	3	3	Jackson	363W03400
36	3	3	Jackson	363W03600
36	3	4	Jackson	363W04700
36	3	4	Jackson	363W04900
36	3	5	Jackson	363W05400
36	3	5	Jackson	363W05900
36	3	6	Jackson	363W06300
36	3	10	Jackson	363W10915
36	3	1, 2	Jackson	363W01400
36	3	2, 3	Jackson	363W02100
36	3	2, 3	Jackson	363W02202
36	3	3, 10	Jackson	363W10101

Table C-2. Project Location by Township, Range, Section, County, and Tax Lot ID Number

Township	Range	Section	County	Tax Lot ID Number
36	3	3, 10	Jackson	363W10104
36	3	3, 4	Jackson	363W03100
36	3	3, 4	Jackson	363W03700
36	3	3, 4, 10	Jackson	363W10800
36	3	4, 5	Jackson	363W04500
36	3	5, 6	Jackson	363W05700
36	3	5, 6	Jackson	363W05800
36	3	6, 7, 12	Jackson	363W07100
36	4	11	Jackson	364W11100
36	4	12	Jackson	364W12D100
36	4	12	Jackson	364W12A600
36	4	12	Jackson	364W12D900
36	4	12	Jackson	364W12A1100
36	4	12	Jackson	364W12C1300
36	4	12	Jackson	364W12D1300
36	4	12	Jackson	364W12D1400
36	4	12	Jackson	364W12D1600
36	4	12	Jackson	364W12C1700
36	4	12	Jackson	364W12D1700
36	4	12	Jackson	364W12D1800
36	4	12	Jackson	364W12C2000
36	4	12	Jackson	364W12C2100
36	4	14	Jackson	364W14B900
36	4	15	Jackson	364W15100
36	4	15	Jackson	364W15BB100
36	4	15	Jackson	364W15BB1000
36	4	15	Jackson	364W15BB1100
36	4	15	Jackson	364W151600
36	4	15	Jackson	364W151604
36	4	15	Jackson	364W152000
36	4	16	Jackson	364W16A1402
36	4	16	Jackson	364W16A1407
36	4	16	Jackson	364W16A1409
36	4	16	Jackson	364W16A1500
36	4	16	Jackson	364W16A1503
36	4	19	Jackson	364W19100
36	4	19	Jackson	364W19200
36	4	19	Jackson	364W19201
36	4	19	Jackson	364W19D202

Table C-2. Project Location by Township, Range, Section, County, and Tax Lot ID Number

Township	Range	Section	County	Tax Lot ID Number
36	4	19	Jackson	364W19D203
36	4	19	Jackson	364W19300
36	4	19	Jackson	364W19D300
36	4	20	Jackson	364W20400
36	4	20	Jackson	364W20401
36	4	20	Jackson	364W20402
36	4	20	Jackson	364W20500
36	4	20	Jackson	364W20600
36	4	11, 12, 13, 14	Jackson	364W13302
36	4	11, 13, 14	Jackson	364W14A200
36	4	11, 14	Jackson	364W14A100
36	4	11, 14	Jackson	364W14A300
36	4	11, 14	Jackson	364W14A400
36	4	12, 13	Jackson	364W13200
36	4	12, 13	Jackson	364W13301
36	4	16, 17	Jackson	364W162700
36	4	16, 17	Jackson	364W162800
36	4	16, 17, 20, 21	Jackson	364W167600
36	4	16, 20, 21	Jackson	364W21B100
36	4	17, 20	Jackson	364W20100
36	4	17, 20	Jackson	364W20200
36	4	17, 20	Jackson	364W17300
36	4	19, 20	Jackson	364W20403
Sams Valley Substation				
36	2	5	Jackson	362W05500
36	2	5	Jackson	362W05600
36	2	5	Jackson	362W05700
Sams Valley-Whetstone Reconductoring				
36	2	4	Jackson	362W04315
36	2	4	Jackson	362W04316
36	2	4	Jackson	362W04402
36	2	4	Jackson	362W04404
36	2	4	Jackson	362W04700
36	2	4	Jackson	362W041000
36	2	4	Jackson	362W041100
36	2	5	Jackson	362W05100
36	2	5	Jackson	362W05200
36	2	5	Jackson	362W05300
36	2	9	Jackson	362W09101

Table C-2. Project Location by Township, Range, Section, County, and Tax Lot ID Number

Township	Range	Section	County	Tax Lot ID Number
36	2	15	Jackson	362W151001
36	2	15	Jackson	362W151100
36	2	23	Jackson	362W23103
36	2	14, 15	Jackson	362W14800
36	2	14, 15	Jackson	362W14801
36	2	14, 15, 23	Jackson	362W23101
36	2	14, 23	Jackson	362W23100
36	2	14, 23	Jackson	362W23102
36	2	4, 5	Jackson	362W04400
36	2	4, 9	Jackson	362W09200
36	2	5, 6	Jackson	362W05901
36	2	9, 15, 16	Jackson	362W15800
36	2	9, 16	Jackson	362W16100
Sources: BLM 2013, Jackson County GIS 2017, Josephine County Assessor 2017.				

3.5 Temporary and Permanent Disturbance Areas

During construction, a temporary work area approximately 135 feet by 200 feet will be required for the staging and construction of each double-circuit 230/115 kV structure, 100 feet by 200 feet for single-circuit 230 kV (including the reconductored transmission line) and 115 kV structures, and 250 feet by 250 feet for 500 kV structures. The total permanent disturbance for each structure would be 25 to 50 square feet. Finally, temporary pulling-tensioning sites of approximately 0.6 acres each may be used during construction to assist with the staging and stringing of conductors. No permanent disturbance is expected at these sites. The Sams Valley Substation will have a permanent disturbance or operating area of 17.3 acres and a temporary disturbance area for construction which generally encircles the substation of 9.2 acres.

Approximately 25.1 miles of existing multi-use access roads may be improved for use in the Project during construction. Most of these roads will be expanded from an 8-foot wide travel way to a 14-foot wide travel way. These roads may be temporarily widened an additional 5.5 feet on either side of the permanent travel way to facilitate construction of the Project. An additional 23.2 miles of existing multi-use roads will also be utilized, but no improvements beyond the existing travel ways are expected on those roads. Table C-3 summarizes the estimated temporary and permanent disturbance impacts by type that would result from Project construction and operation.

Table C-3. Estimated Temporary and Permanent Disturbance (in Acres)

Disturbance Type	Temporary	Permanent	Total
Grants Pass-Sams Valley Transmission Line			
Existing Roads, No Improvements	-	-	-
Existing Roads, Improvements Required	51.7	-	51.7
Pulling-Tensioning Sites	67.2	-	67.2
Transmission Structures	74.0	0.1	74.0
Total	192.9	0.1	192.9
Sams Valley Substation			
Substation	9.2	17.3	26.5
Total	9.2	17.3	26.5
Sams Valley-Whetstone Reconductoring			
Existing Roads, No Improvements	-	-	-
Existing Roads, Improvements Required	1.4	1.9	3.3
Pulling-Tensioning Sites	15.1	-	15.1
Transmission Structures	8.0	<0.1	8.0
Total	24.5	1.9	26.4
Total - Overall Project	226.6	19.3	245.8
Note that totals may not sum correctly due to rounding.			

4.0 Energy Generation Facilities – OAR 345-021-0010(1)(c)(C)

OAR 345-021-0010(1)(c)(C) For energy generation facilities, a map showing the approximate locations of any other energy generation facilities that are known to the applicant to be permitted at the state or local level within the study area as defined in OAR 345-001-0010 for impacts to public services.

The Project is not an energy generation facility.

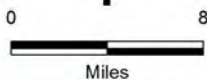
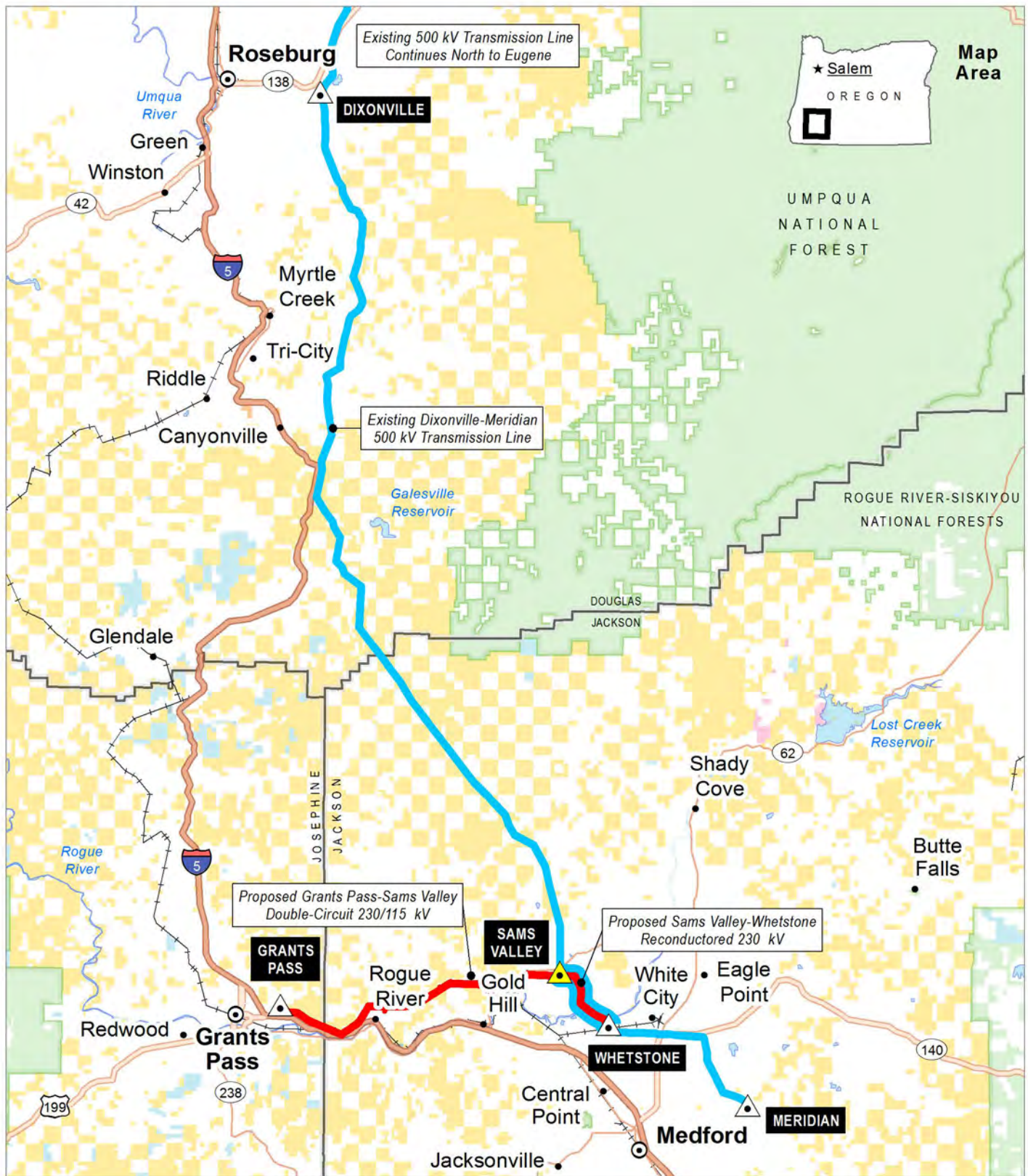
5.0 References

- BLM (U.S. Bureau of Land Management). 2013. BLM OR Cadastral PLSS First Division Polygon. Washington, D.C.: Department of Interior, 2013.
- EFSC (Energy Facility Siting Council). 1990. Third Amended Site Certification Agreement for the Eugene-Medford 500 kV Transmission Line. October 26.
- Jackson County GIS. 2017. Jackson County Tax Lots. <http://data.jacksoncounty.org/datasets/tax-lots>. (9/6/2017).
- Josephine County Assessor. 2017. Property Data Search. <http://www.co.josephine.or.us/Page.asp?NavID=921>. (9/6/2017).
- ODOT (Oregon Department of Transportation). 2016. Oregon City Limits – 2016. Salem, OR: Geographic Information Services (GIS) Unit. November 2016.

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Figures

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Project Features

- Proposed 230/115 kV Transmission Line and 230 kV Reconstructor
- Existing Eugene-Meridian 500 kV Transmission Line
- Transmission Lines Adjacent to Each Other

Substations

- Proposed
- Existing

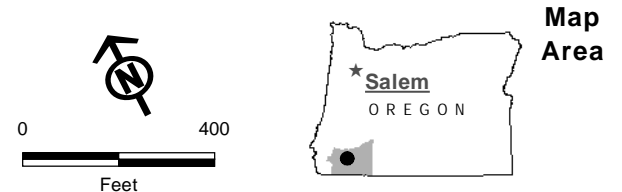
Land Status

- Bureau of Land Management
- Forest Service
- Military Reservation or Corps of Engineers

Legend

- Private
- State or Local
- State or Local Parks and Recreation or Wildlife

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Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

- Project Features**

 - Site Boundary
 - Transmission Centerlines
 - Grants Pass to Sams Valley 230 kV
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV
 - Grants Pass-Whetstone 115 kV
- Transmission Centerline Mileposts**

 - Mile
 - Tenth-mile
- Permanent Impacts**

 - Existing Road, Improvements Required
 - Transmission Structures

Temporary Impacts

 - Pulling-Tensioning Site
 - Structure Work Area
- Land Status**

 - Bureau of Land Management
 - Private

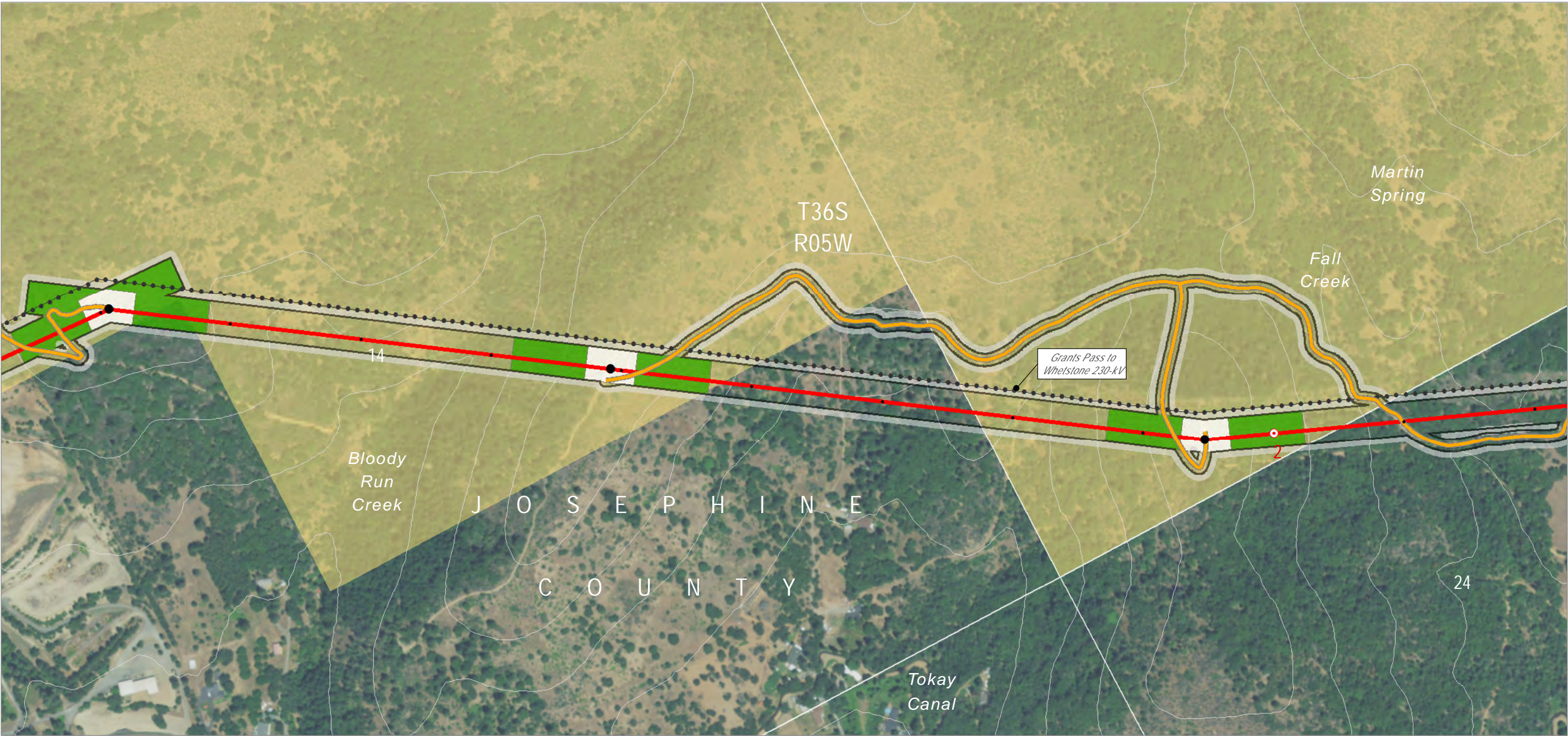
Other Features

 - 100-foot Contours
 - Existing Transmission Lines

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Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.1



0 400
Feet

Map Area

★ Salem
OREGON

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

- Project Features**

 - Site Boundary
 - Transmission Centerlines
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV
- Transmission Centerline Mileposts**

 - Mile
 - Tenth-mile
- Permanent Impacts**

 - Existing Road, Improvements Required
 - Transmission Structures

Temporary Impacts

 - Pulling-Tensioning Site
 - Structure Work Area
- Land Status**

 - Bureau of Land Management
 - Private

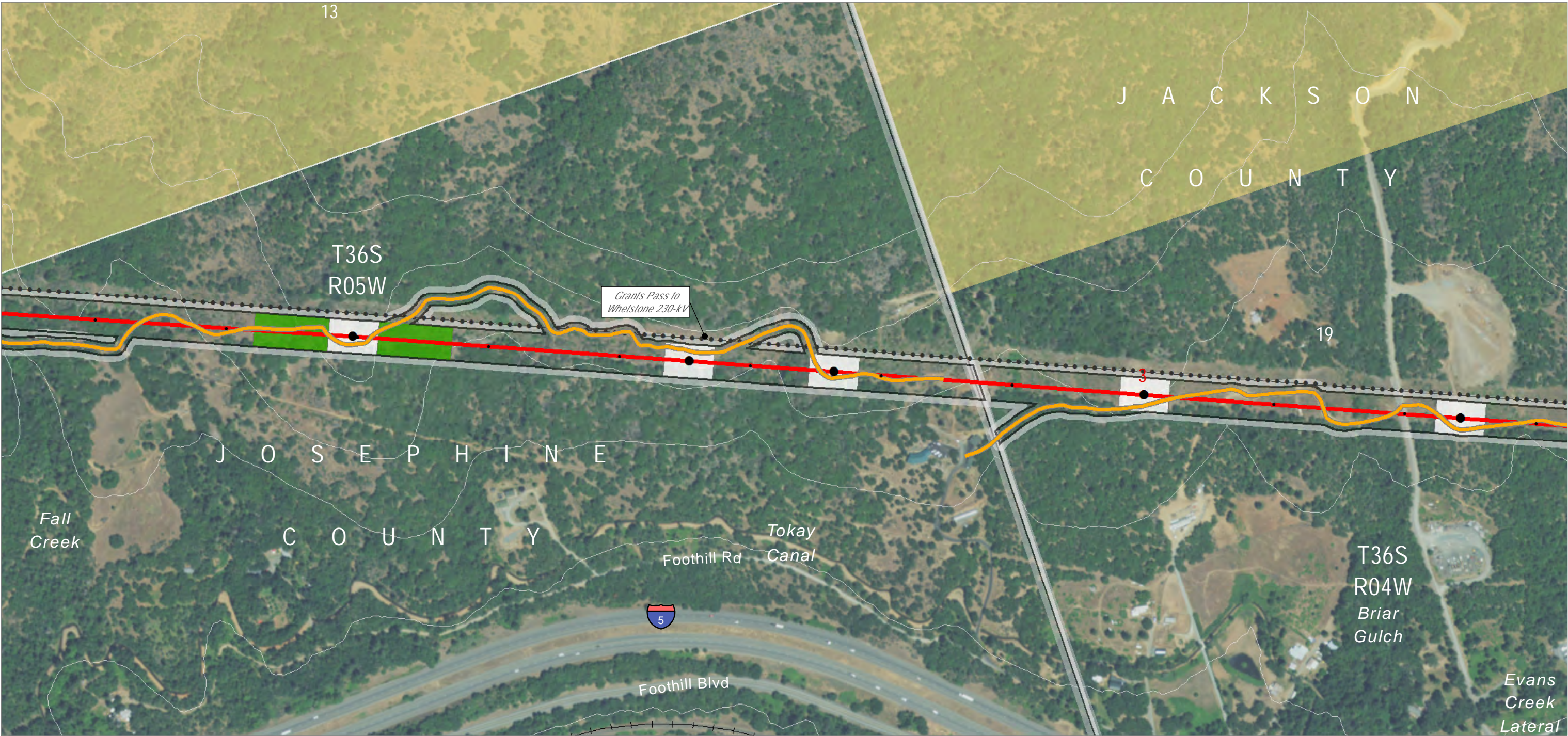
Other Features

 - 100-foot Contours
 - Existing Transmission Lines

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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.2



Project Features

- Site Boundary
- Transmission Centerlines
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
- Transmission Structures

Temporary Impacts

- Pulling-Tensioning Site
- Structure Work Area

Land Status

- Bureau of Land Management
- Private

Other Features

- 100-foot Contours
- County Line
- Existing Transmission Lines
- Railroad

Map Area

Salem
OREGON

Project Location

Figure C-2.3

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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Source(s): BLM, Esri, PacificCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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Map Area

0 400 Feet

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

Project Features

Site Boundary

Transmission Centerlines

Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

Mile

Tenth-mile

Permanent Impacts

Existing Road, Improvements Required

Transmission Structures

Temporary Impacts

Pulling-Tensioning Site

Structure Work Area

Land Status

Bureau of Land Management

Private

Other Features

100-foot Contours

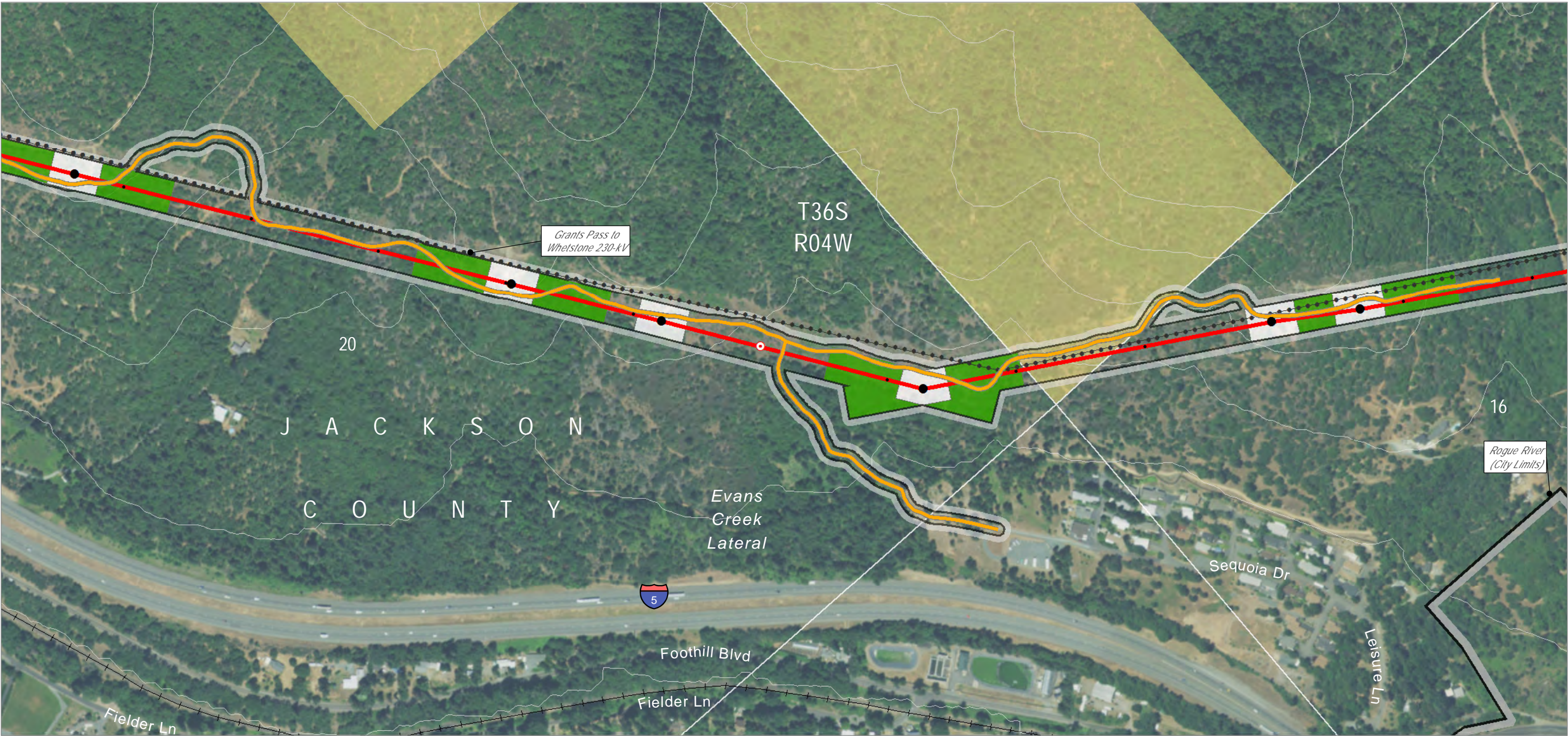
Existing Transmission Lines

Railroad

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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.4



Map Area

0 400 Feet

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

Project Features

Site Boundary

Transmission Centerlines

Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

Mile

Tenth-mile

Permanent Impacts

Existing Road, Improvements Required

Transmission Structures

Temporary Impacts

Pulling-Tensioning Site

Structure Work Area

Land Status

Bureau of Land Management

Private

Other Features

100-foot Contours

Existing Transmission Lines

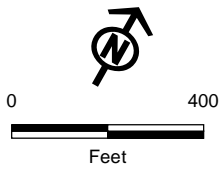
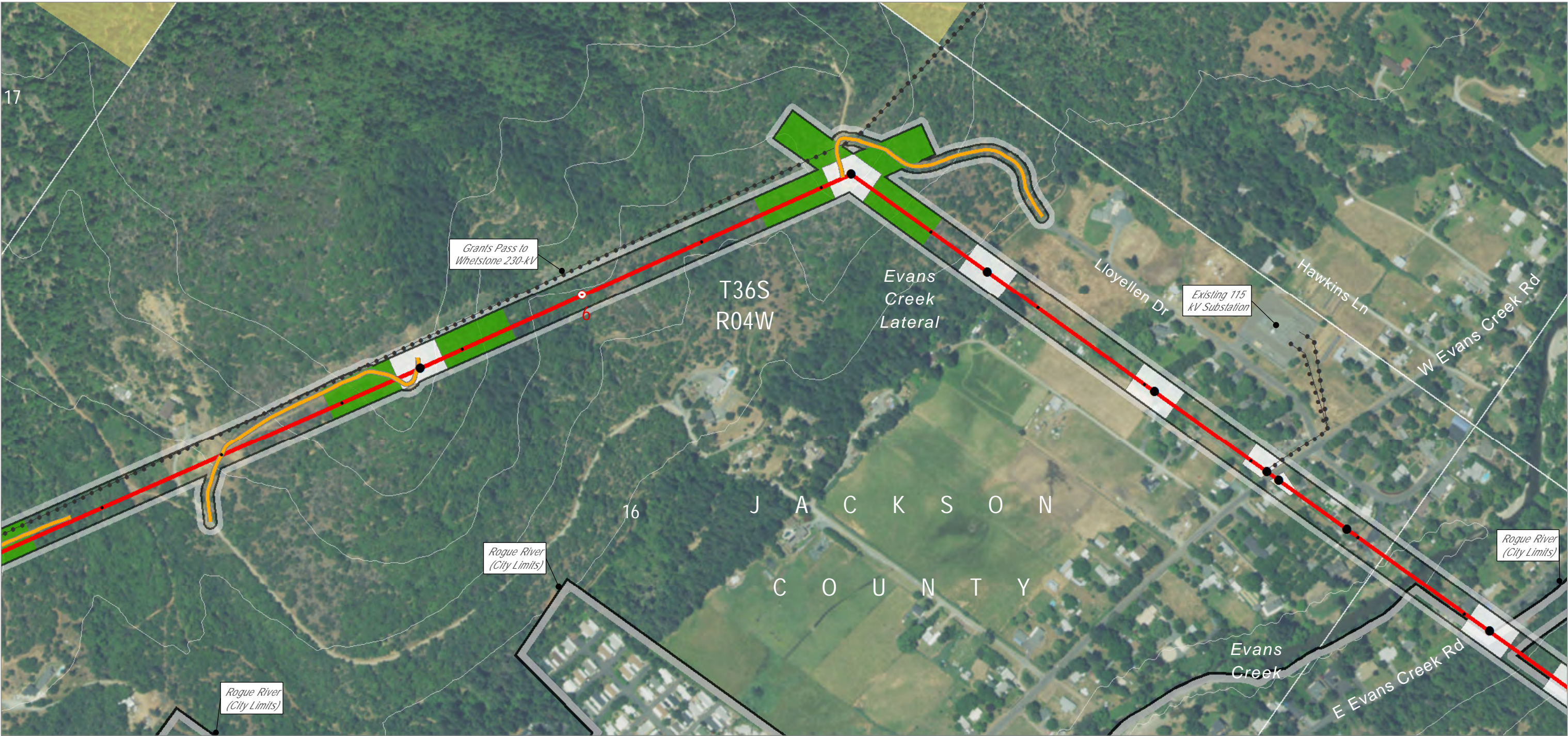
Railroad

City Limits

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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.5



Map Area

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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Project Features

Site Boundary

Transmission Centerlines

Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

Mile
Tenth-mile

Permanent Impacts

Existing Road, Improvements Required
Transmission Structures

Temporary Impacts

Pulling-Tensioning Site
Structure Work Area

Land Status

Bureau of Land Management
Private

Other Features

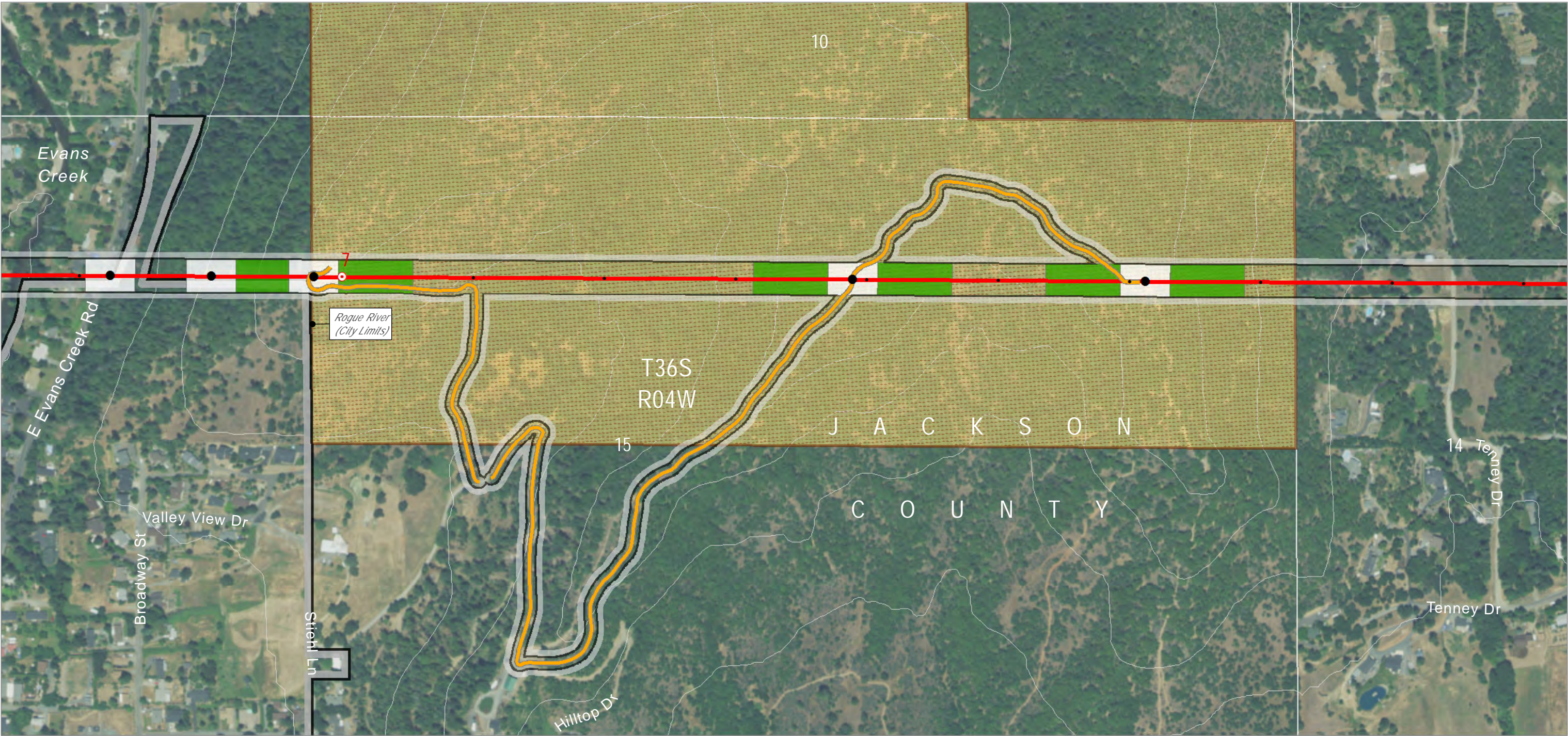
100-foot Contours
Existing Transmission Lines
City Limits



Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location

Figure C-2.6



Map Area

0 400 Feet

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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Project Features

Site Boundary

Transmission Centerlines

Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

Mile

Tenth-mile

Permanent Impacts

Existing Road, Improvements Required

Transmission Structures

Temporary Impacts

Pulling-Tensioning Site

Structure Work Area

Land Status

Bureau of Land Management

Private

Other Features

100-foot Contours

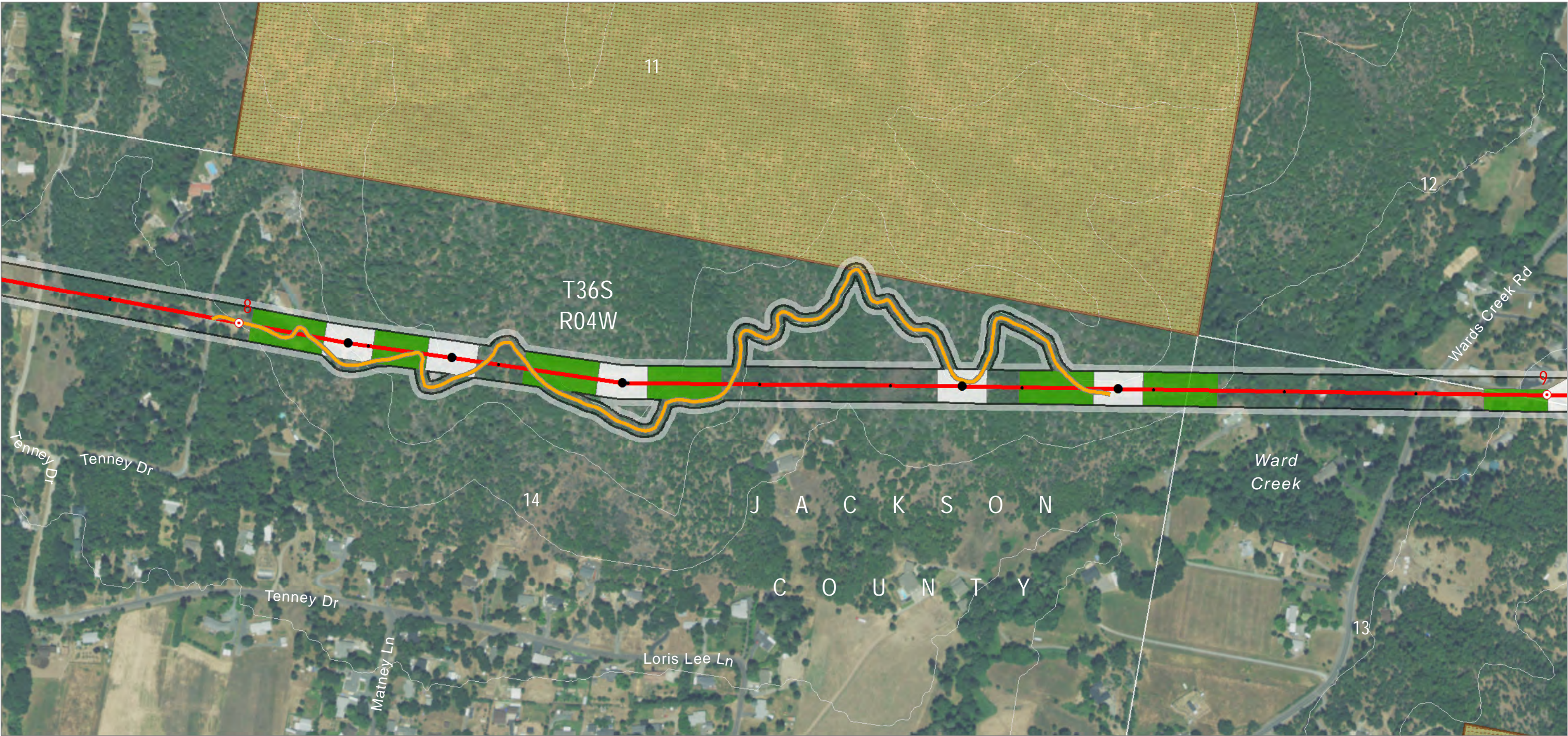
City Limits

BLM Visual Resource Management (VRM) Classification 3

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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.7



Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

- Project Features**

 - Site Boundary
 - Transmission Centerlines
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV
- Transmission Centerline Mileposts**

 - Mile
 - Tenth-mile
- Permanent Impacts**

 - Existing Road, Improvements Required
 - Transmission Structures

Temporary Impacts

 - Pulling-Tensioning Site
 - Structure Work Area
- Land Status**

 - Bureau of Land Management
 - Private

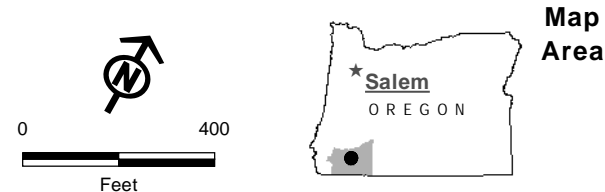
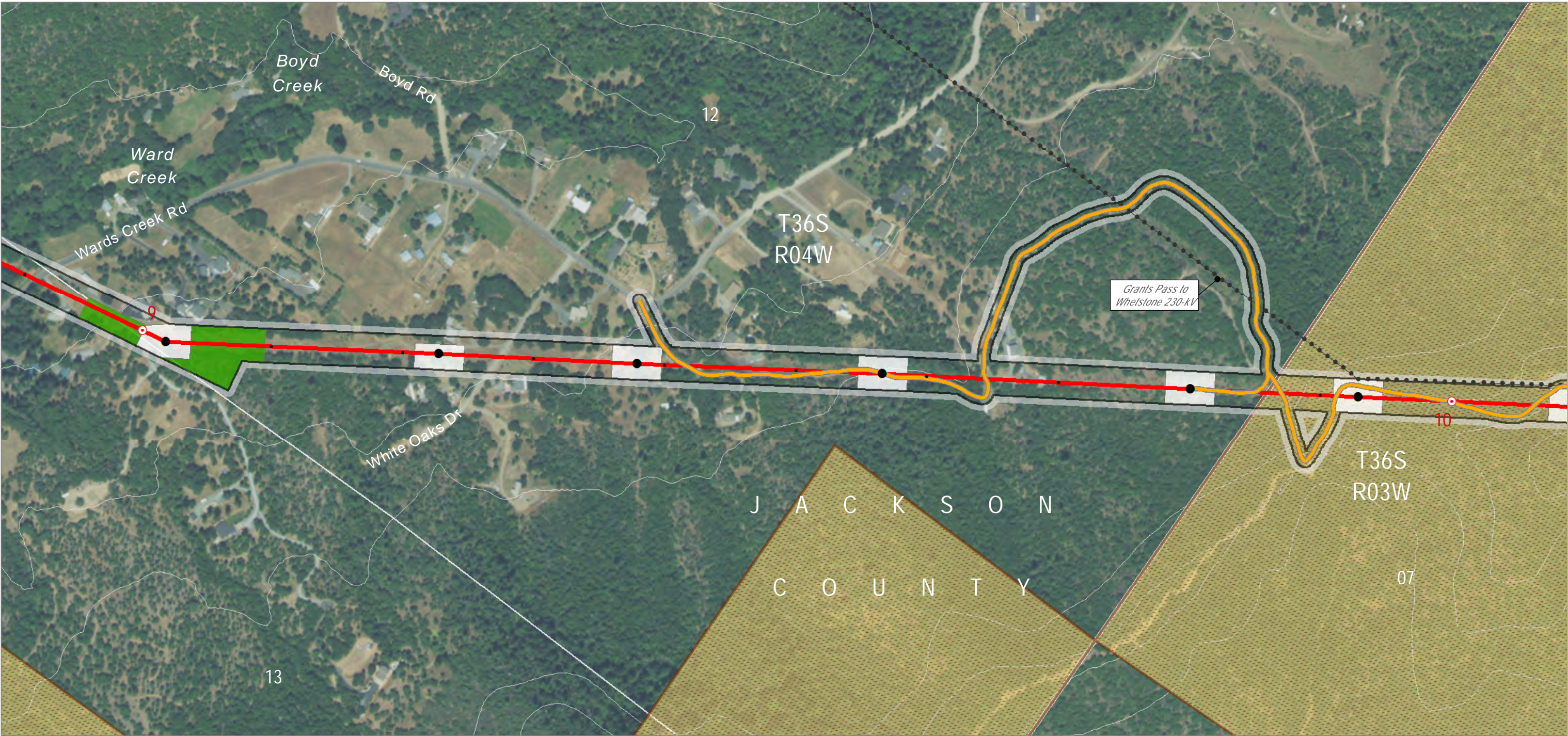
Other Features

 - 100-foot Contours
 - BLM Visual Resource Management (VRM) Classification 3

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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.8



Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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- Project Features**
- Site Boundary
 - Transmission Centerlines
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV

- Transmission Centerline Mileposts**
- Mile
 - Tenth-mile

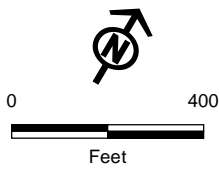
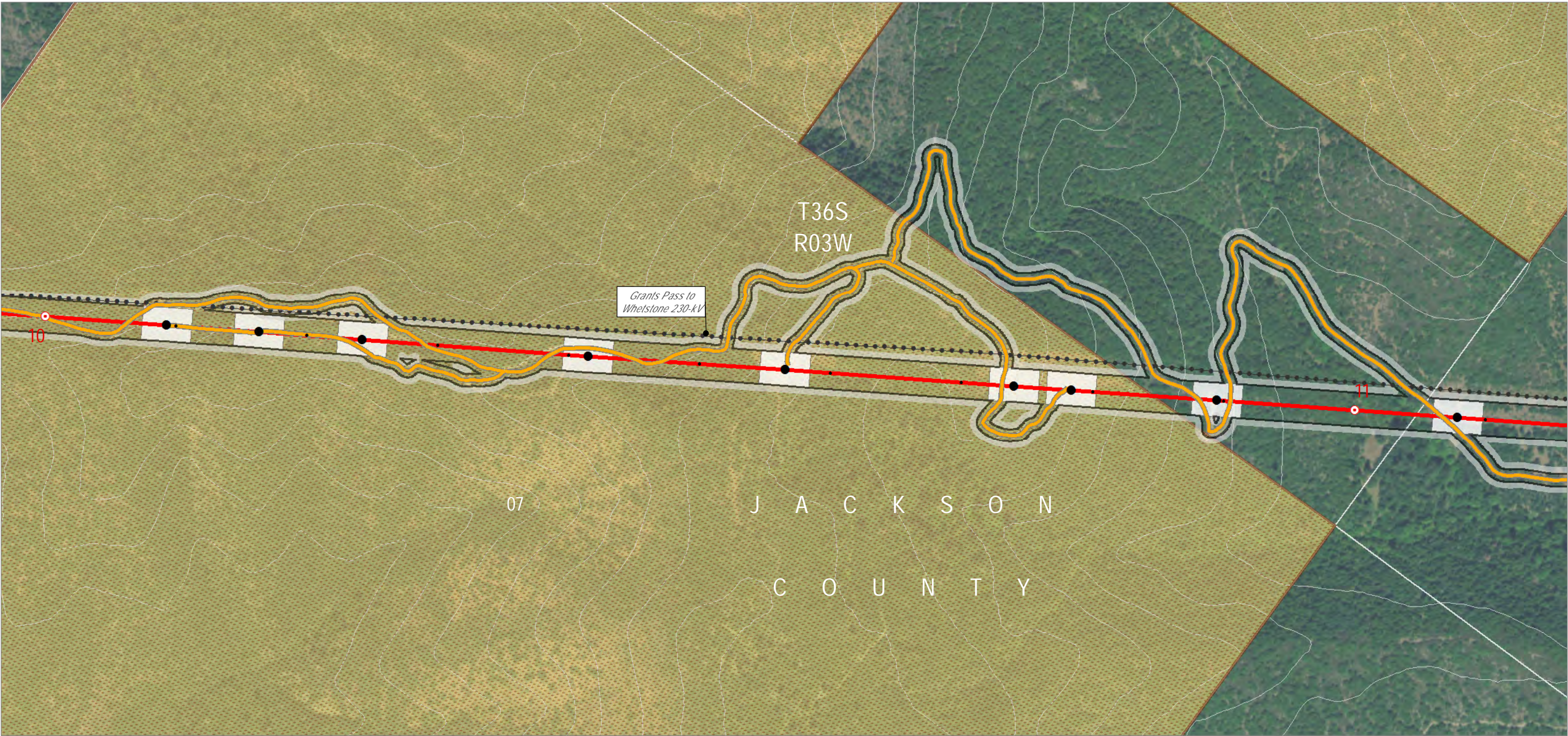
- Permanent Impacts**
- Existing Road, Improvements Required
 - Transmission Structures
- Temporary Impacts**
- Pulling-Tensioning Site
 - Structure Work Area

- Land Status**
- Bureau of Land Management
 - Private
- Other Features**
- 100-foot Contours
 - Existing Transmission Lines
 - BLM Visual Resource Management (VRM) Classification 3

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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.9



Map Area

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

Project Features

Site Boundary

Transmission Centerlines

Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
- Transmission Structures

Temporary Impacts

- Structure Work Area

Land Status

- Bureau of Land Management
- Private

Other Features

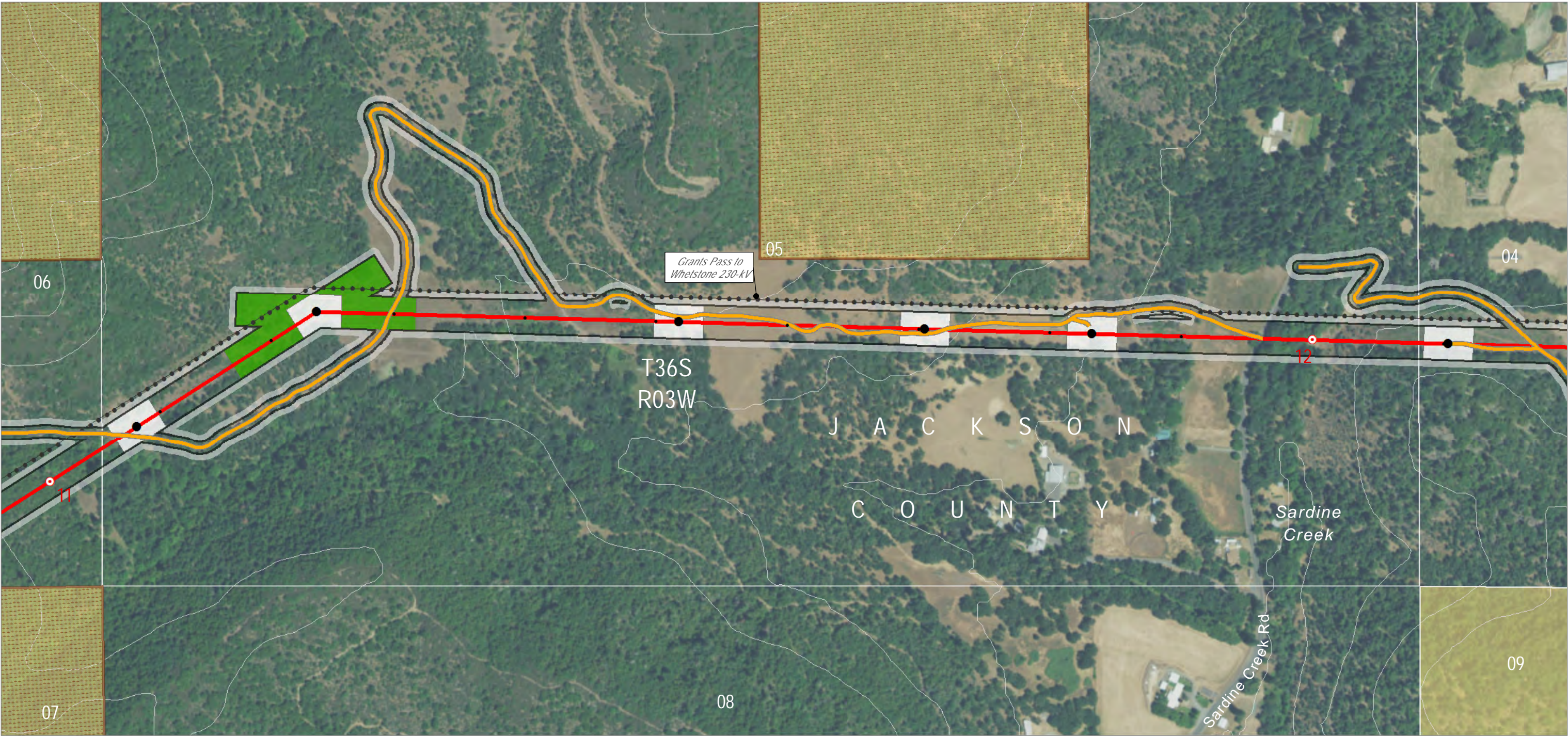
- 100-foot Contours
- Existing Transmission Lines
- BLM Visual Resource Management (VRM) Classification 3



Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location

Figure C-2.10



Map Area

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

Project Features

- Site Boundary
- Transmission Centerlines
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
- Transmission Structures

Temporary Impacts

- Pulling-Tensioning Site
- Structure Work Area

Land Status

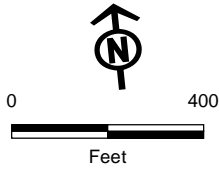
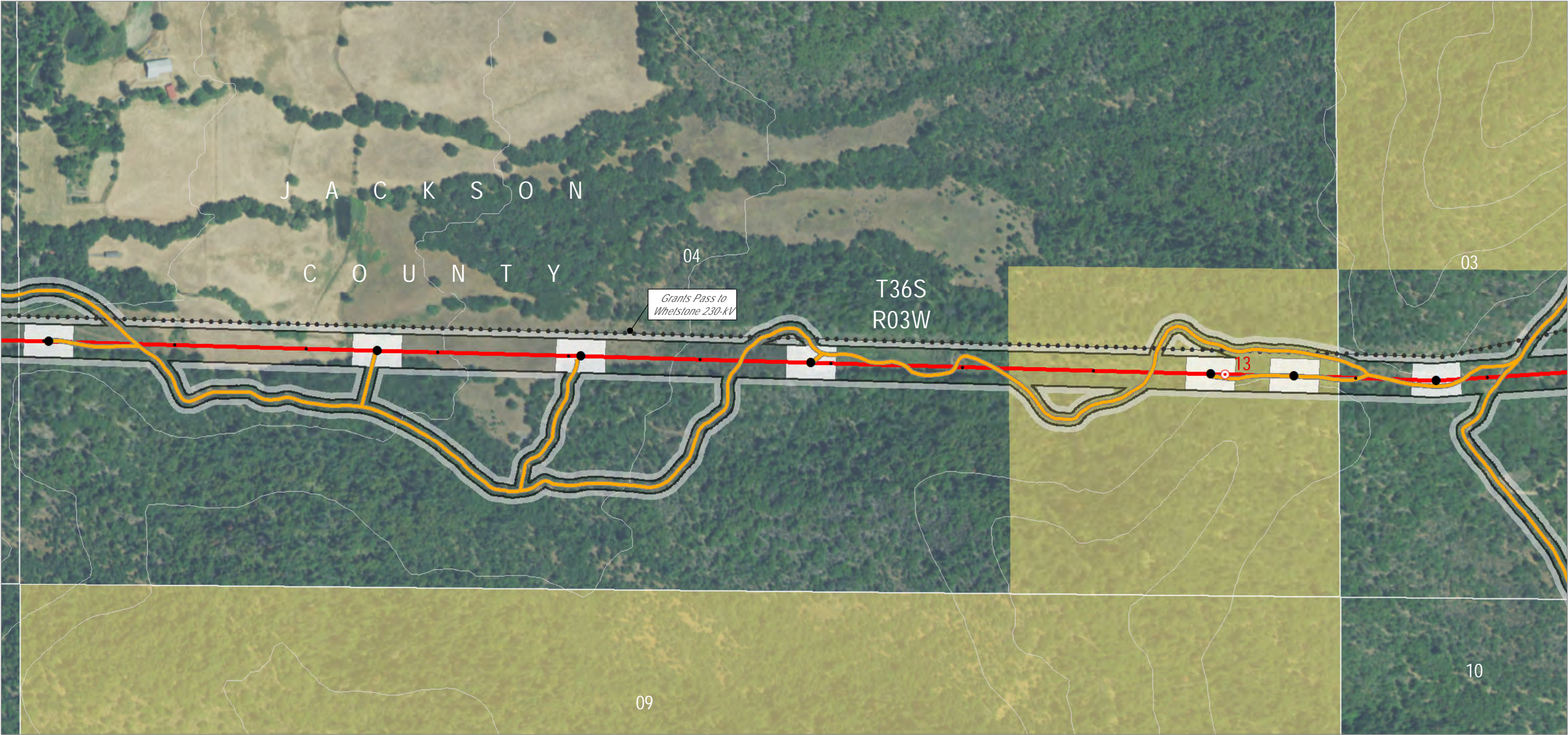
- Bureau of Land Management
- Private

Other Features

- 100-foot Contours
- Existing Transmission Lines
- BLM Visual Resource Management (VRM) Classification 3

Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.11



Map Area

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

Disclaimer: No warranty is made as to the accuracy or completeness of the data shown, and its use is not intended for other than the stated purpose.

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November 2017

Project Features

Site Boundary

Transmission Centerlines

Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
- Transmission Structures

Temporary Impacts

- Structure Work Area

Land Status

- Bureau of Land Management
- Private

Other Features

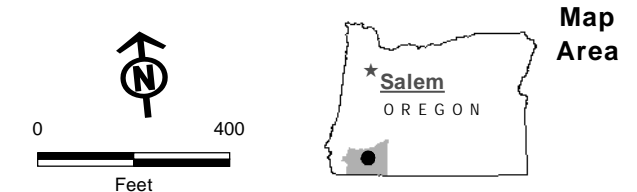
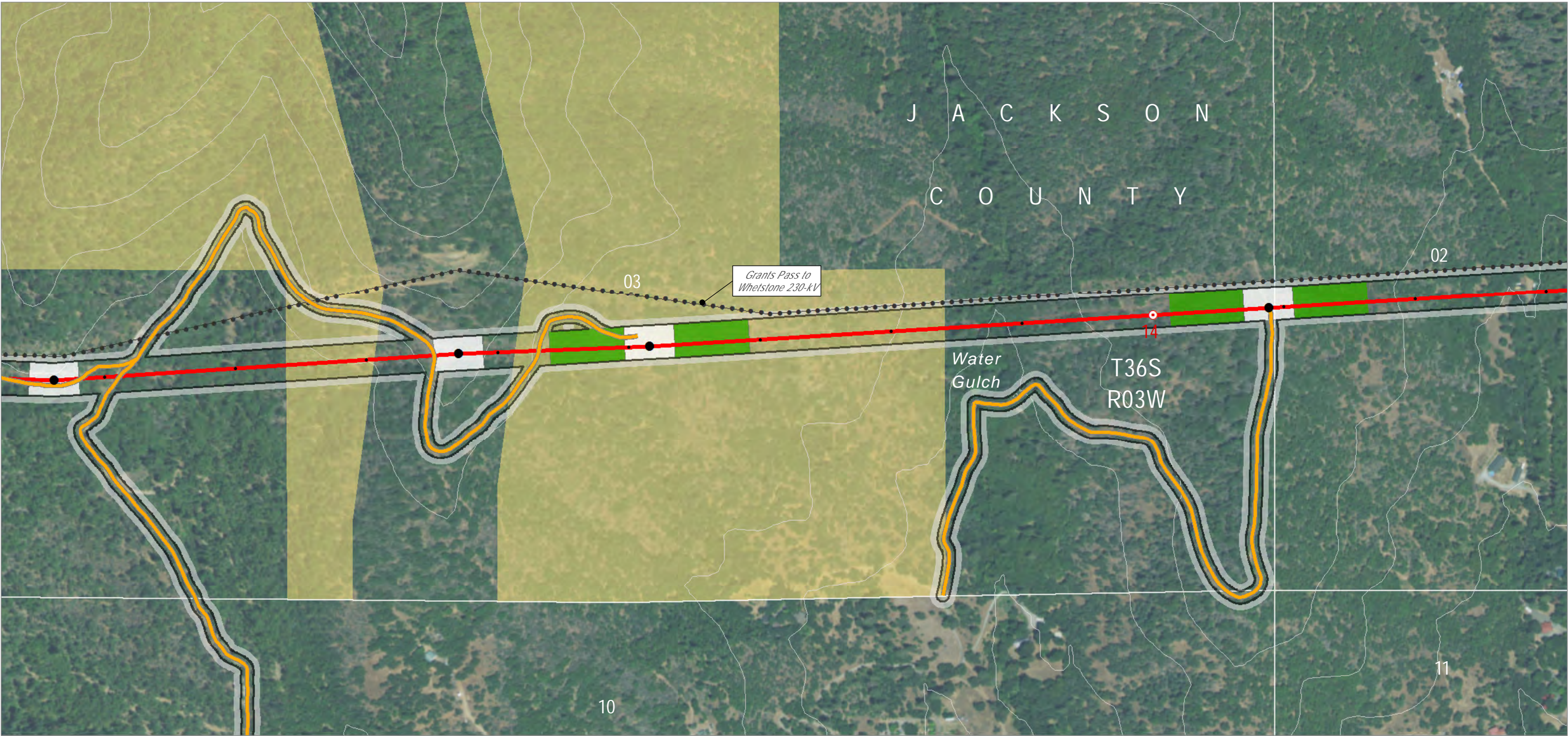
- 100-foot Contours
- Existing Transmission Lines



Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location

Figure C-2.12



Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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Project Features

- Site Boundary
- Transmission Centerlines
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
- Transmission Structures

Temporary Impacts

- Pulling-Tensioning Site
- Structure Work Area

Land Status

- Bureau of Land Management
- Private

Other Features

- 100-foot Contours
- Existing Transmission Lines





Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location

Figure C-2.13




0 400
Feet


Map Area

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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- Project Features**

 - Site Boundary
- Permanent Impacts**

 - Existing Road, Improvements Required
- Land Status**

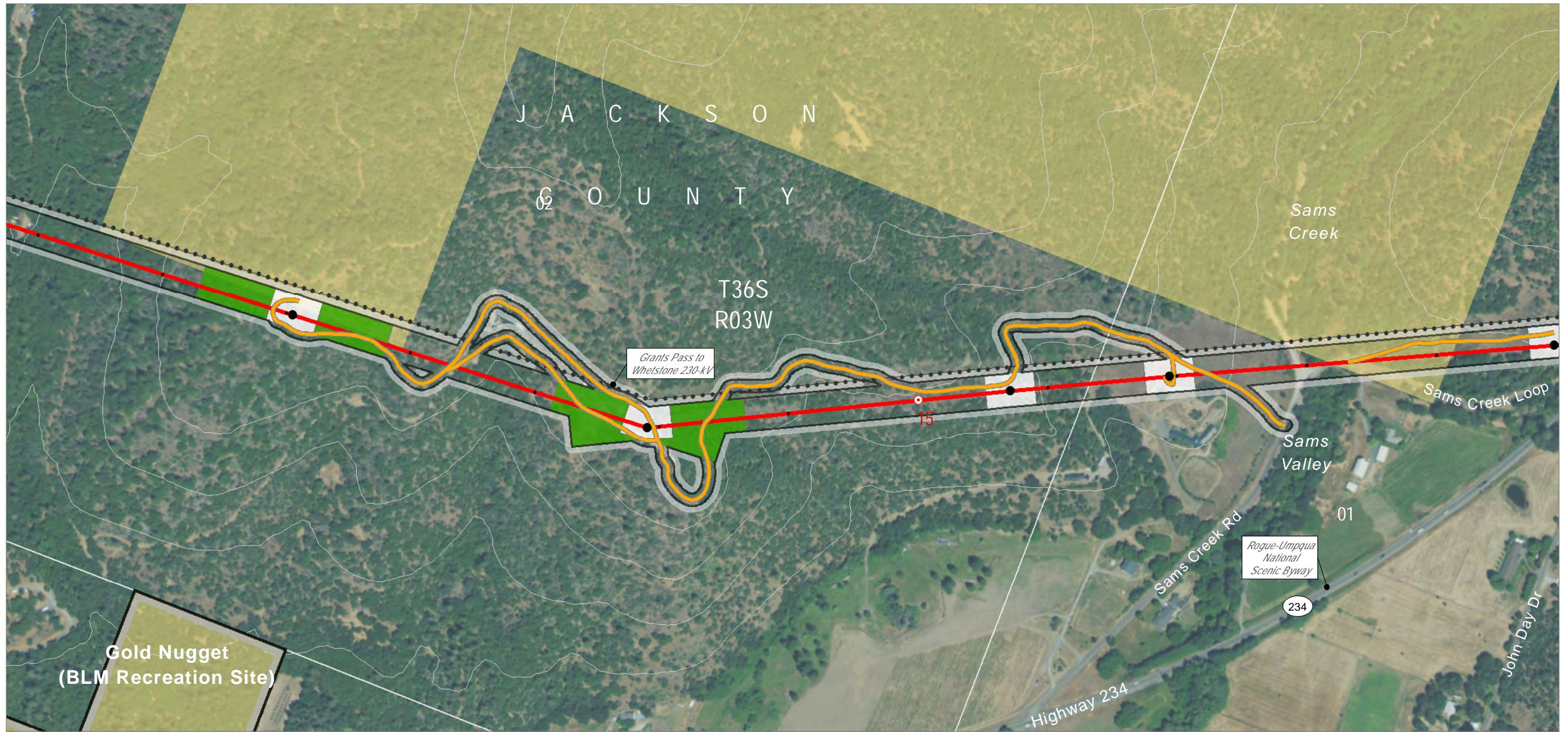
 - Bureau of Land Management
 - Private

Other Features

 - 100-foot Contours
 - Railroad
 - Other Areas


Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.14



Map Area

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

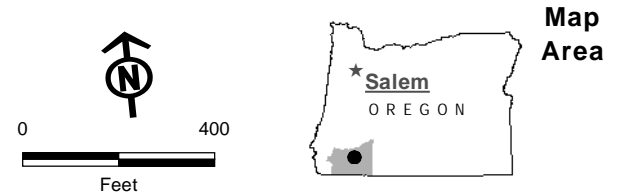
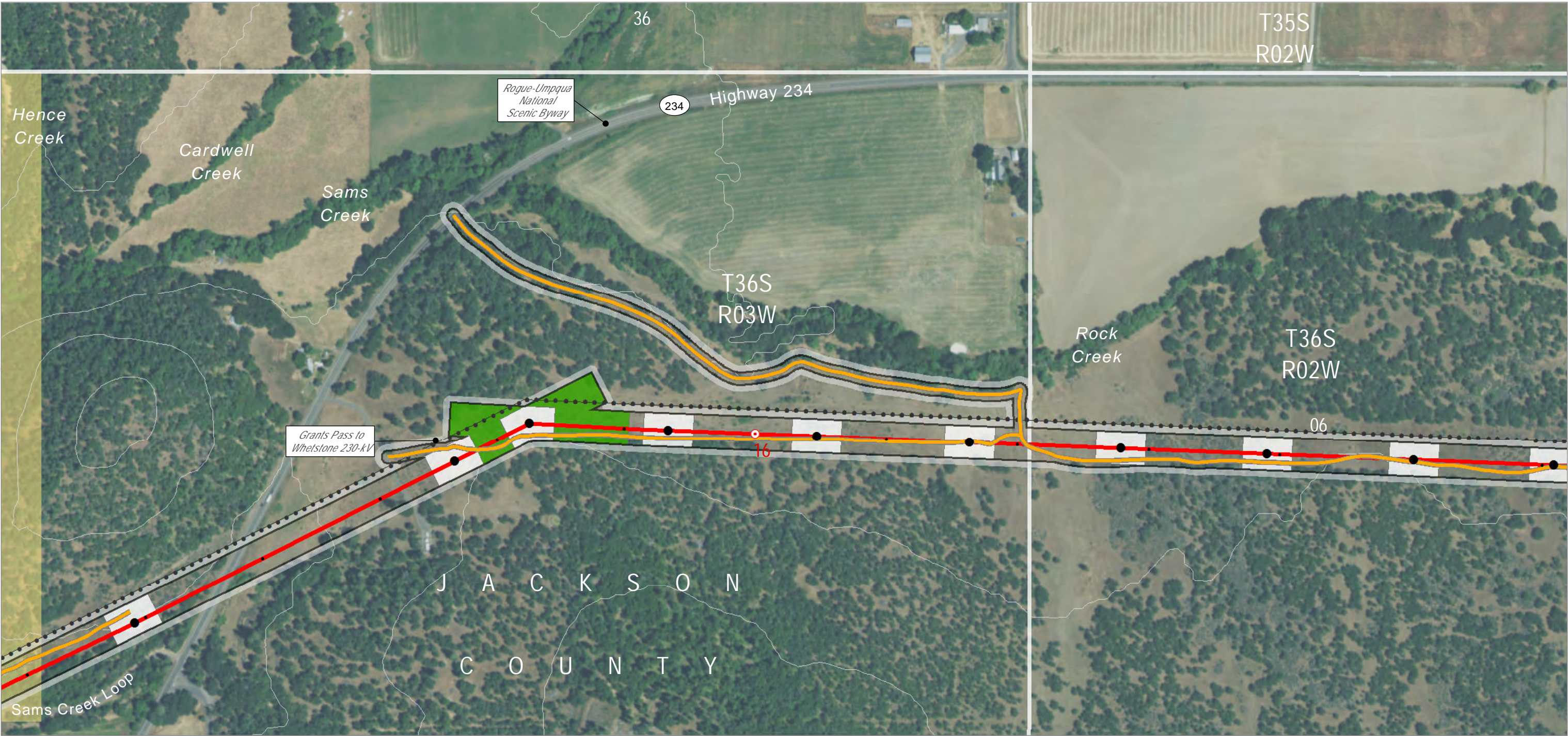
Disclaimer: No warranty is made as to the accuracy or completeness of the data shown, and its use is not intended for other than the stated purpose.

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<p>Project Features</p> <p>Site Boundary</p> <p>Transmission Centerlines</p> <p>Grants Pass to Sams Valley Double-Circuit 230/115 kV</p>	<p>Transmission Centerline Mileposts</p> <p>Mile</p> <p>Tenth-mile</p>	<p>Permanent Impacts</p> <p>Existing Road, Improvements Required</p> <p>Transmission Structures</p> <p>Temporary Impacts</p> <p>Pulling-Tensioning Site</p> <p>Structure Work Area</p>	<p>Land Status</p> <p>Bureau of Land Management</p> <p>Private</p> <p>Other Features</p> <p>100-foot Contours</p> <p>Existing Transmission Lines</p> <p>Other Areas</p>
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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.15



Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

- Project Features**

 - Site Boundary
 - Transmission Centerlines
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV
- Transmission Centerline Mileposts**

 - Mile
 - Tenth-mile
- Permanent Impacts**

 - Existing Road, Improvements Required
 - Transmission Structures

Temporary Impacts

 - Pulling-Tensioning Site
 - Structure Work Area
- Land Status**

 - Bureau of Land Management
 - Private

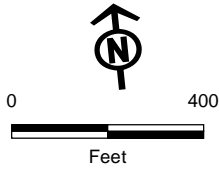
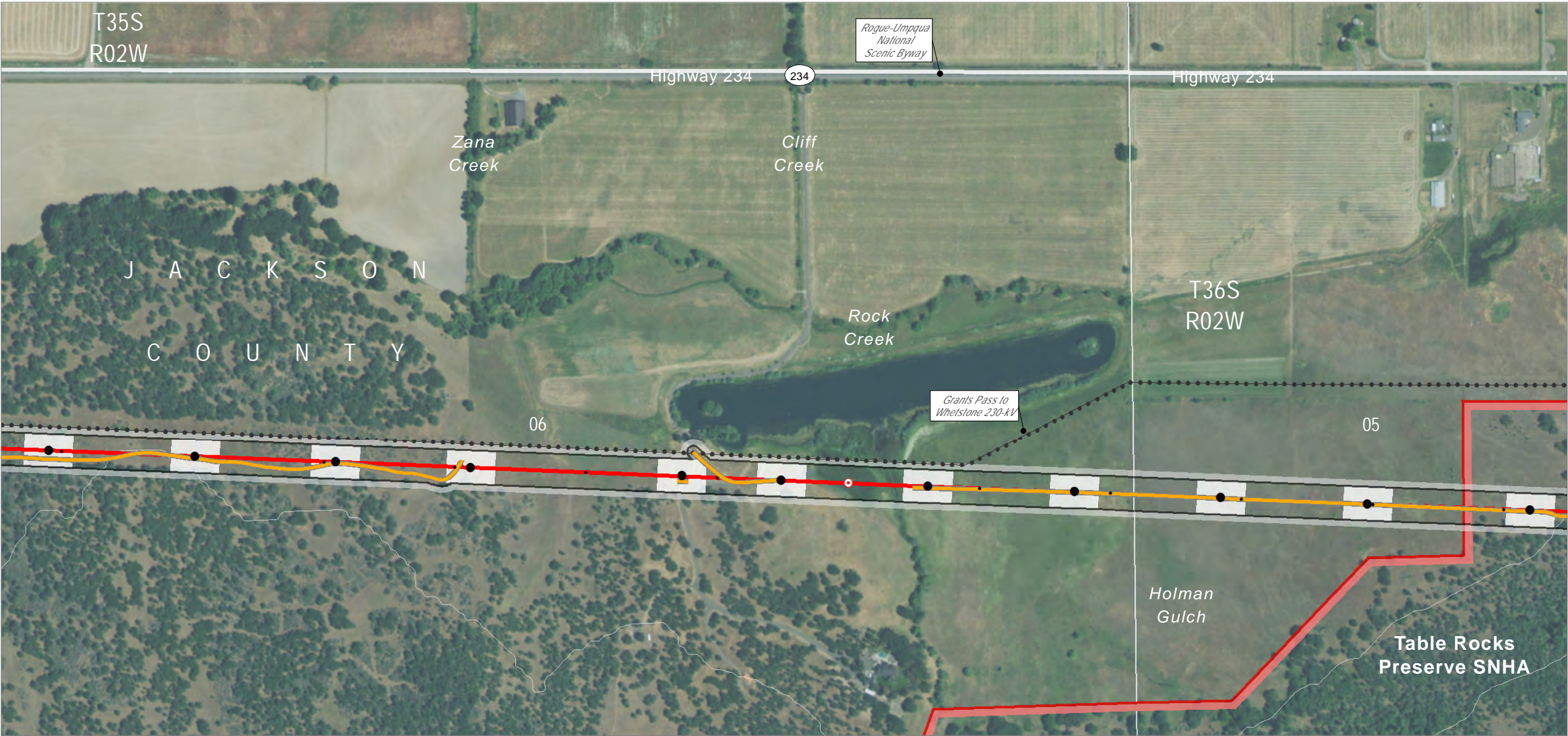
Other Features

 - 100-foot Contours
 - Existing Transmission Lines

PACIFICORP
A PACIFICORP ENERGY HOLDINGS COMPANY

Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.16



Map Area

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

Project Features

Site Boundary

Transmission Centerlines

Grants Pass to Sams Valley Double-Circuit 230/115 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
- Transmission Structures

Temporary Impacts

- Structure Work Area

Land Status

Private

Other Features

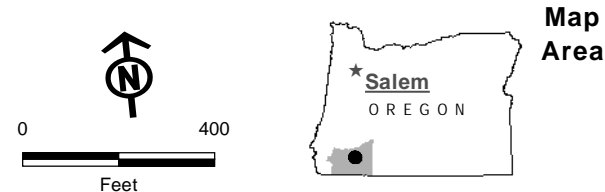
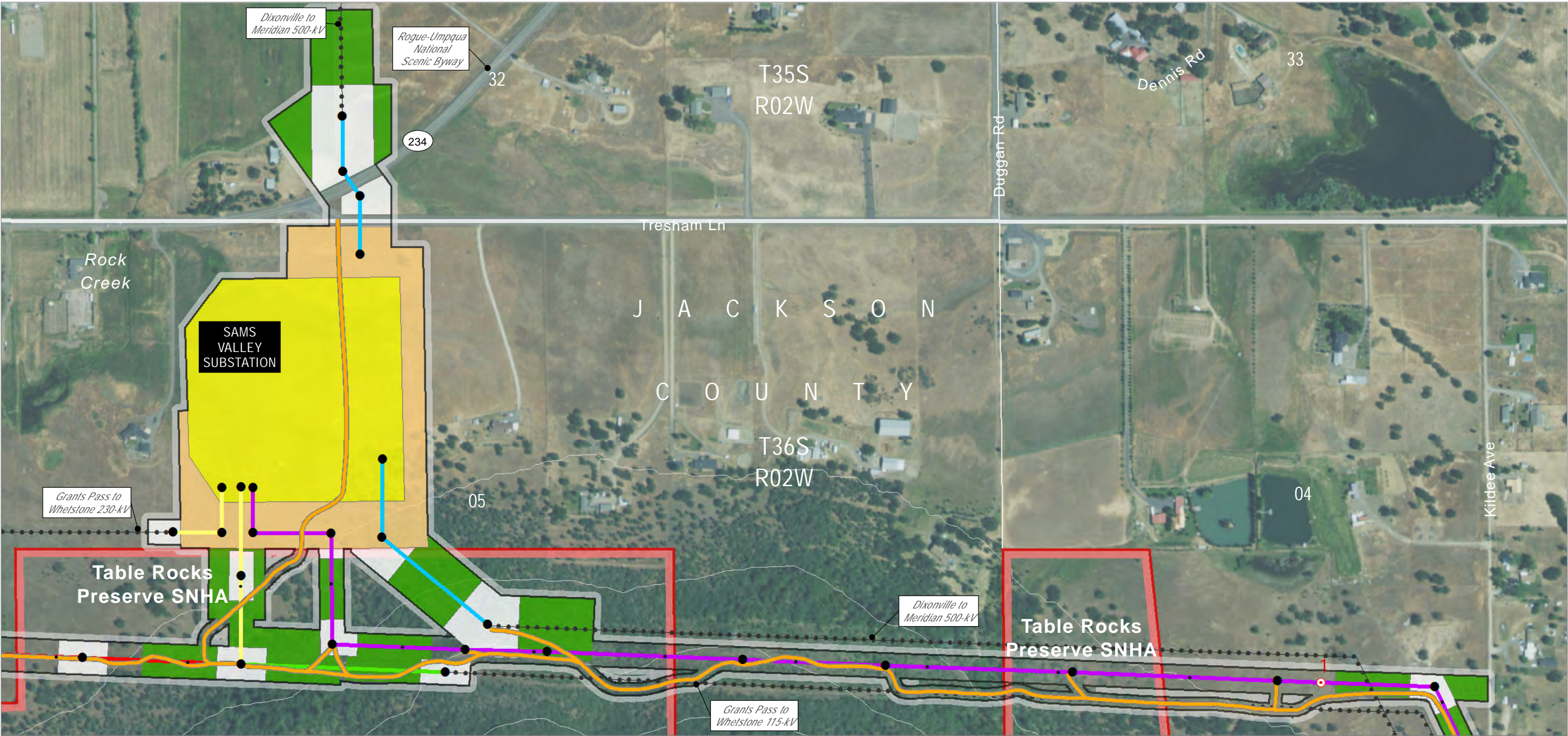
- 100-foot Contours
- Existing Transmission Lines
- Protected Areas (EFSC)



Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location

Figure C-2.17



Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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Project Features

- Site Boundary
- Transmission Centerlines
 - Dixonville-Sams Valley-Meridian 500-kV
 - Grants Pass to Sams Valley 230 kV
 - Grants Pass to Sams Valley Double-Circuit 230/115 kV
 - Grants Pass-Whetstone 115 kV
 - Sams Valley-Whetstone Reconductored 230 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
 - Transmission Structures
 - Substation
- Temporary Impacts**
- Pulling-Tensioning Site
 - Structure Work Area
 - Substation

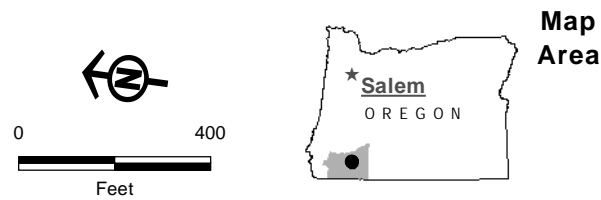
Land Status

- Private
- Other Features
 - 100-foot Contours
 - Existing Transmission Lines
 - Protected Areas (EFSC)



Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.18



Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

Disclaimer: No warranty is made as to the accuracy or completeness of the data shown, and its use is not intended for other than the stated purpose.

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November 2017

Map Area

Project Features

Site Boundary

Transmission Centerlines

Sams Valley-Whetstone Reconductored 230 kV

Transmission Centerline Mileposts

○ Mile
• Tenth-mile

Permanent Impacts

Existing Road, Improvements Required
● Transmission Structures

Temporary Impacts

Pulling-Tensioning Site
Structure Work Area

Land Status

Bureau of Land Management
Private

Other Features

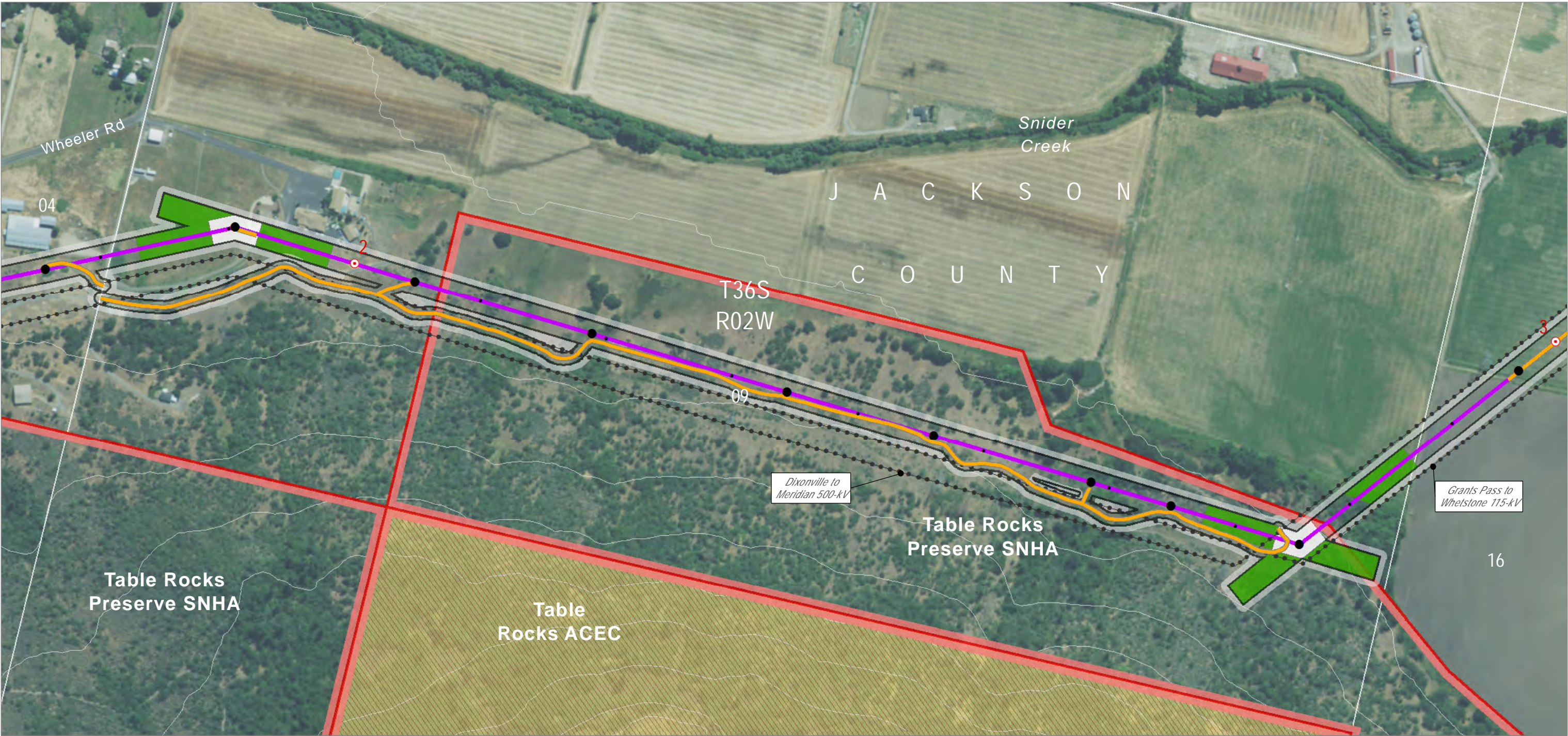
100-foot Contours
Existing Transmission Lines
Protected Areas (EFSC)
BLM Visual Resource Management (VRM) Classification 2



Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location

Figure C-2.19



Map Area

0 400
Feet

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

Project Features

- Site Boundary
- Transmission Centerlines
 - Sams Valley-Whetstone Reconductored 230 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
- Transmission Structures

Temporary Impacts

- Pulling-Tensioning Site
- Structure Work Area

Land Status

- Bureau of Land Management
- Private

Other Features

- 100-foot Contours
- Existing Transmission Lines
- Protected Areas (EFSC)
- BLM Visual Resource Management (VRM) Classification 2

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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.20



0 400
Feet

★ Salem
OREGON

Map Area

Project Features

- Site Boundary
- Transmission Centerlines
- Sams Valley-Whetstone Reconductored 230 kV

Transmission Centerline Mileposts

- Mile
- Tenth-mile

Permanent Impacts

- Existing Road, Improvements Required
- Transmission Structures

Temporary Impacts

- Pulling-Tensioning Site
- Structure Work Area

Land Status

- Bureau of Land Management
- Private

Other Features

- 100-foot Contours
- Existing Transmission Lines
- Protected Areas (EFSC)
- BLM Visual Resource Management (VRM) Classification 2

Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location

Figure C-2.21

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017



0 400
Feet

Map Area

Source(s): BLM, Esri, PacifiCorp, ODFW, ODOT, NPS, USDA, USFS, USGS, Ventyx

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November 2017

- Project Features**

 - Site Boundary
 - Transmission Centerlines
 - Sams Valley-Whetstone Reconstructed 230 kV
- Transmission Centerline Mileposts**

 - Mile
 - Tenth-mile
- Permanent Impacts**

 - Existing Road, Improvements Required
 - Transmission Structures

Temporary Impacts

 - Pulling-Tensioning Site
 - Structure Work Area
- Land Status**

 - Private

Other Features

 - 100-foot Contours
 - Existing Transmission Lines
 - Railroad


Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Project Location
Figure C-2.22

Exhibit D

Applicant's Organizational Expertise

**Sams Valley Reinforcement Projects
December 2017**

Prepared for



PacifiCorp

Prepared by



Tetra Tech, Inc.

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Acronyms and Abbreviations

kV	kilovolt
OAR	Oregon Administrative Rule
ODSL	Oregon Department of State Lands
PacifiCorp	PacifiCorp dba Pacific Power
Project	Sams Valley Reinforcements Projects

1.0 Introduction

Exhibit D provides information regarding the organizational expertise of PacifiCorp dba Pacific Power (PacifiCorp) to construct, operate, and retire the Sams Valley Reinforcements Projects (Project), as required to meet the submittal requirements of Oregon Administrative Rule (OAR) 345-021-0010(1)(d).

2.0 Site Certificate Condition Compliance

PacifiCorp recommends the following conditions for this resource:

- **Organizational Expertise Condition 1:** Throughout the life of the Project, the site certificate holder shall be responsible for any matter of non-compliance under the site certificate. Any notice of violation issued under the site certificate will be issued to the site certificate holder. Any civil penalties under the site certificate will be levied on the site certificate holder.
- **Organizational Expertise Condition 2:** Throughout the life of the Project, within 72 hours after discovery of incidents or circumstances that violate the terms or conditions of the site certificate, the site certificate holder must report the conditions or circumstances to the department, in addition to the requirements of OAR 345-026-0170.
- **Organizational Expertise Condition 3:** Prior to construction, the site certificate holder shall notify the department of the identity and qualifications of the major design, engineering, and construction contractor(s) for the facility. The site certificate holder shall select contractors that have substantial experience in the design, engineering, and construction of similar facilities. The site certificate holder shall report to the department any changes of major contractors.
- **Organizational Expertise Condition 4:** Prior to construction, the site certificate holder shall notify the department of the identity and qualifications of the construction manager to demonstrate that the construction manager is qualified in environmental compliance and has the capability to ensure compliance with all site certificate conditions.
- **Organizational Expertise Condition 5:** Prior to construction, the site certificate holder shall contractually require all construction contractors and subcontractors involved in the construction of the facility to comply with all applicable laws and regulations and with the terms and conditions of the site certificate. Such contractual provisions shall not operate to relieve the site certificate holder of responsibility under the site certificate.
- **Organizational Expertise Condition 6:** Prior to construction, the site certificate holder shall notify the department before conducting any work on the site that does not qualify as surveying, exploration, or other activities to define or characterize the site. The notice must

include a description of the work and evidence that its value is less than \$250,000 or evidence that the certificate holder has satisfied all conditions that are required prior to construction.

- **Organizational Expertise Condition 7:** Prior to construction on a communication station requiring third-party electrical distribution service, the site certificate holder shall provide evidence to the department that the relevant third-party electrical distribution service provider that will construct, own, and operate the distribution line has obtained all necessary approvals and permits for the distribution line and that the site certificate holder has a contract with the third-party provider for use of the distribution line.

3.0 Applicant's Previous Experience – OAR 345-021-0010(1)(d)(A)

OAR 345-021-0010(1)(d) Information about the organizational expertise of the applicant to construct and operate the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0010, including:

OAR 345-021-0010(1)(d)(A) The applicant's previous experience, if any, in constructing and operating similar facilities;

3.1 Overview of PacifiCorp and Its Transmission System

PacifiCorp has nearly 107 years of experience operating and maintaining electric utility infrastructure providing safe reliable electric service across a six state service territory. PacifiCorp owns and operates over 16,000 miles of transmission lines and 63,000 miles of distribution lines interconnecting 900 substations and providing safe reliable power to over 1.8 million customers.

PacifiCorp includes the following expertise:

- Substation and transmission line engineering;
- Civil engineering;
- Protection and control engineering;
- Procurement and contract management;
- Project management construction delivery; and
- System operations and maintenance.

3.2 Previous Experience Constructing and Operating Transmission Lines and Substations

PacifiCorp constructed or oversaw the construction of nearly the entirety of its transmission system, including the following recent projects:

- Sigurd–Red Butte Transmission Line: Project installed an approximately 170-mile 345-kilovolt (kV) transmission line from southern Utah to south-central Utah. Project included expansion of the Red Butte and Sigurd substations to accommodate the new line termination.
- Mona–Oquirrh Transmission Line: Project installed an approximately 100-mile long 345/500 kV transmission line from central Utah to the Salt Lake Valley in Utah. The project included a new 345/138 kV substation.
- Populus–Terminal Transmission Line: Project installed an approximately 135-mile long 345 kV transmission line from SE Idaho to the Salt Lake Valley in Utah. The project included a new 345 kV substation and expansion of the Terminal substation to accommodate line termination.
- Treasureton 138 kV Bus Tie Breaker: Project replaced and relocated the existing bus tie oil circuit breaker with a sulfur hexafluoride circuit breaker in a new bay within the 138 kV bus, and installed a circuit switcher in series along with the bus tie circuit breaker in a new bay position.
- Casper Sub Install 230/115 250 MVA Transformer: Project added a second 230/115 kV 240 MVA transformer at Casper Substation, including expanding the 115 kV bus, installing four new 115 breakers, and reconnecting the existing WAPA Casper 115 kV Transmission Line into the new line position.
- Fry Substation Install 115 kV Capacitor Banks: Project installed two 20 MVAR 115 kV and two 30 MVAR 115 kV capacitor banks, added three 115 kV breakers connecting to the bypass bus, and upgraded select protective relay equipment.
- Standpipe Substation Construct New 230 kV Sub: Project constructed a new 230 kV substation and installed a new synchronous condenser.
- Troutdale Sub Construct 230 kV Switchyard and Complete 115 kV Ring Bus: Project installed 230 kV and 115 kV breakers.
- Union Gap Substation Add 230/115 kV Transformer and Rebuild Sub: Project rebuilt the substation, relocated and constructed a ring bus to accommodate the installation of the new 230/115 kV 250 MVA transformer, rebuilt the 115 kV main transfer bus, installed a 115/12.5 kV transformer, constructed new line terminations, and installed new distribution switchgear.
- Whetstone 230/115 kV Substation: Project constructed a new 230/115 kV substation.

4.0 Qualifications of Applicant's Personnel - OAR 345-021-0010(1)(d)(B)

OAR 345-021-0010(1)(d)(B) The qualifications of the applicant's personnel who will be responsible for constructing and operating the facility, to the extent that the identities of such personnel are known when the application is submitted.

PacifiCorp has assembled an experienced team of professional, technical, and administrative personnel to manage all phases of the Project. The following provides a brief description of the qualifications and experience of the key members of the Project Team:

- The engineering and design team is composed of internal engineers for both the line and substation, who have gained experienced on similar projects (described in Section 3.2). The design team is composed of professional engineers in various disciplines, including both electrical and civil engineering.
- The administrative team will be composed of various internal employees who have numerous years of experience in tracking both project and financial accounting issues, with a goal towards ensuring all efforts are made to conform to reasonable cost requirements.

5.0 Qualifications of Known Contractors - OAR 345-021-0010(1)(d)(C)

OAR 345-021-0010(1)(d)(C) The qualifications of any architect, engineer, major component vendor, or prime contractor upon whom the applicant will rely in constructing and operating the facility, to the extent that the identities of such persons are known when the application is submitted.

PacifiCorp does not intend to retain an outside contractor to perform the engineering or design activities related to the Project. PacifiCorp intends to retain an outside contractor to perform some materials procurement and the majority of all construction activities.

6.0 Applicant's Past Performance - OAR 345-021-0010(1)(d)(D)

OAR 345-021-0010(1)(d)(D) The past performance of the applicant, including but not limited to the number and severity of any regulatory citations in constructing or operating a facility, type of equipment, or process similar to the proposed facility.

6.1 Construction and Operation

None

6.2 Regulatory Compliance

None

7.0 Warranty to Secure Necessary Expertise - OAR 345-021-0010(1)(d)(E)

OAR 345-021-0010(1)(d)(E) If the applicant has no previous experience in constructing or operating similar facilities and has not identified a prime contractor for construction or operation of the proposed facility, other evidence that the applicant can successfully construct and operate the proposed facility. The applicant may include, as evidence, a warranty that it will, through contracts, secure the necessary expertise.

This section is not applicable.

8.0 ISO Certified Program – OAR 345-021-0010(1)(d)(F)

OAR 345-021-0010(1)(d)(F) If the applicant has an ISO 9000 or ISO 14000 certified program and proposes to design, construct and operate the facility according to that program, a description of the program.

None.

9.0 Mitigation – OAR 345-021-0010(1)(d)(G)

OAR 345-021-0010(1)(d)(G) If the applicant relies on mitigation to demonstrate compliance with any standards of Division 22 or 24 of this chapter, evidence that the applicant can successfully complete such proposed mitigation, including past experience with other projects and the qualifications and experience of personnel upon whom the applicant will rely, to the extent that the identities of such persons are known at the date of submittal.

The construction of the 500kV/230kV substation will impact approximately 3.5 acres of non-jurisdictional wetlands that will require an Oregon Department of State Lands (ODSL) permit. PacifiCorp is currently working with both the U.S. Army Corp of Engineers and the ODSL to obtain this permit, and has currently purchased 4 acres of wetlands to mitigate this impact from an existing wetlands bank in southern Oregon.

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Exhibit E

Permits for Construction and Operation

**Sams Valley Reinforcement Projects
December 2017**

Prepared for



PacifiCorp

Prepared by



Tetra Tech, Inc.

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Acronyms and Abbreviations

EFSC	Oregon Energy Facility Siting Council
FAA	Federal Aviation Administration
NPDES	National Pollutant Discharge Elimination System
OAR	Oregon Administrative Rule
ODEQ	Oregon Department of Environmental Quality
ODSL	Oregon Department of State Lands
ORS	Oregon Revised Statutes
PacifiCorp	PacifiCorp dba Pacific Power
Project	Sams Valley Reinforcement Projects
Request	Request for Amendment No. 4
SHPO	State Historic Preservation Office
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

The Energy Facility Siting Council (EFSC; Council) previously approved the Eugene-Medford 500 kV Transmission Line Project¹ and found that PacifiCorp dba Pacific Power (PacifiCorp) appropriately identified permits required for construction and operation. In this Request for Amendment No. 4 (Request), PacifiCorp seeks to expand the EFSC-certificated facility boundary to include the Grants Pass-Sams Valley Transmission Line and the Sams Valley Substation for the Sams Valley Reinforcement Projects (Project). The analysis in this exhibit focuses on the Project described in *Written Request for Amendment #4 Eugene–Medford 500 kV Transmission Line*.

Exhibit E provides information about permits PacifiCorp will need for construction and operation of the Project, as required to meet the submittal requirements of Oregon Administrative Rule (OAR) 345-021-0010(1)(e). While OAR 345 Division 22 does not provide an approval standard specific to Exhibit E, permits identified in this exhibit are identified and addressed in each applicable exhibit as noted in Section 3.0 below.

Exhibit E identifies all federal, state, and local government permits related to the siting of the Project. EFSC determines compliance with all Oregon and local government statutes, regulations, and permitting requirements related to siting the Project, except for federal permits and federally-delegated state permits. For the purposes of determining whether a permit or approval is related to siting the Project, siting is understood to mean the placement of something on a site or in a position. Upon issuance of the site certificate and following submission by PacifiCorp of the appropriate applications and payment of proper fees, the affected state agencies and local governments will issue the permits addressed in the site certificate.

2.0 Identification and Description of Required Permits – OAR 345-021-0010(1)(e)(A)(B)

OAR 345-021-0010(1)(e) Information about permits related to the siting of the facility, including:

OAR 345-021-0010(1)(e)(A) Identification of all federal, state and local government permits related to the siting of the proposed facility, a legal citation of the statute, rule or ordinance governing each permit, and the name, mailing address, email address and telephone number of the agency or office responsible for each permit.

OAR 345-021-0010(1)(e)(B) A description of each permit, the reasons the permit is needed for construction or operation of the facility and the applicant's analysis of whether the permit should or should not be included in and governed by the site certificate.

¹ EFSC (Energy Facility Siting Council). 1990. Third Amended Site Certification Agreement for the Eugene-Medford 500 kV Transmission Line. October 26.

2.1 Federal Permits

Table E-1 identifies and describes the federal permits potentially required for construction and operation of the Project.

Table E-1. Federal Permits

Permit	Agency Name and Contact	Authority	Description
Right-of-Way Grant	Bureau of Land Management (BLM) Teresa Trulock Butte Falls Field Manager, Medford District Office 3040 Biddle Road Medford, OR 97504	Federal Land Policy and Management Act (FLPMA), 43 United States Code (U.S.C.) 1761-1771, 43 Code of Federal Regulations (CFR) 2800	A Right-of-Way (ROW) grant is an authorization for a certain project, such as a transmission line, to use a specific piece of public land for a specific period of time for. Generally, a BLM ROW is granted for a term appropriate for the life of the project. PacifiCorp submitted an Environmental Assessment on November 2016 and will submit a special use application for the Project. This permit will be obtained directly from BLM and should not be included in and governed by the site certificate.
Clean Water Act Section 404 Permit	U.S. Army Corps of Engineers (USACE) Portland District JOSEPHINE COUNTY Andrea Wagner andrea.r.wagner@usace.army.mil 541-465-6882 JACKSON COUNTY Benny Dean Benny.A.Dean@usace.army.mil 541-465-6769	Sections 10 and 14 of the Rivers and Harbors Act, Sections 401, 404, and 408 of the Clean Water Act (CWA), Section 7 of the Endangered Species Act (ESA), Section 106 of the National Historic Preservation Act (NHPA)	A Section 404 Permit will be required if dredge or fill occurs in water of the United States. The Project anticipates requiring a Removal-Fill Permit from Oregon Department of State Lands (ODSL) for construction of Project components that impact jurisdictional wetlands or other waters. Since both state and federal jurisdictional waters will potentially be impacted, a complete Joint Permit Application will be filed concurrently with both ODSL and USACE for their respective review and permit issuance. See Exhibit J for discussion. This permit will be obtained directly from USACE and should not be included in and governed by the site certificate.
Notice of Proposed Construction or Alteration	Federal Aviation Administration (FAA) Attention: Dan Shoemaker Airspace Specialist Seattle Obstruction Evaluation Group Dan.Shoemaker@faa.gov (425) 227-2791	Federal Aviation Act of 1958 (14 U.S.C. § 44718); 14 CFR § 77	CFR Title 14, Part 77 establishes standards and notification requirements for objects affecting navigable airspace. Any construction activities involving cranes exceeding 200 feet above ground level require notification to the FAA so this permit is not likely to be required. If this changes this permit will be obtained directly from FAA and should not be included in and governed by the site certificate.

Table E-1. Federal Permits

Permit	Agency Name and Contact	Authority	Description
Supplemental Notice of Actual Construction or Alteration (Form 7460-2)	FAA Attention: Dan Shoemaker Airspace Specialist Seattle Obstruction Evaluation Group Dan.Shoemaker@faa.gov (425) 227-2791	Federal Aviation Act of 1958 (14 U.S.C. Section 44718); 14 CFR Section 77	Submission of the Supplemental Notice of Actual Construction or Alteration form must be filed within 5 days after construction reaches its greatest height as specified in the DNH. Issuance of the DNH is not considered a permit activity by FAA. This federal process is not within the jurisdiction of EFSC and therefore should not be included in the site certificate. This permit will be obtained directly from FAA and should not be included in and governed by the site certificate.
Endangered Species Act Section 7 Consultation	U.S. Fish and Wildlife Service (USFWS) Roseburg Field Office 2900 N.W. Stewart Parkway, Roseburg, OR 97471 (541) 957-3474	16 USC 1536, 1539; 50 CFR 402	Consultation under ESA Section 7 will be conducted outside of the site certificate process. No permits are anticipated at this time.

2.2 State Permits Not Federally Delegated

Table E-2 identifies and describes the state permits not federally delegated that are potentially required for construction and operation of the Project.

Table E-2. State Permits Not Federally Delegated

Permit	Agency Name and Contact	Authority	Description
Amendment to Site Certificate	Oregon Department of Energy Mr. Todd Cornett Siting Division Administrator 625 Marion Street NE Salem, Oregon 97301-3737 (541) 378-8328	Oregon Revised Statutes (ORS) 469.300 et seq.; OAR Chapter 345, Divisions 1, 21- 21, 27	An amendment to PacifiCorp's Energy Facility Site Certificate is required before construction of Project facilities proposed under the Request because PacifiCorp has requested an amendment to its site certificate under OAR 345-027-0050.

Table E-2. State Permits Not Federally Delegated

Permit	Agency Name and Contact	Authority	Description
Removal/Fill Permit	<p>ODSL Aquatic Resources Management Program 775 Summer Street NE, Suite 100 Salem, Oregon 97301-1279</p> <p>Melody Rudenko, Aquatic Resource Coordinator for Josephine and Jackson Counties Melody.rudenko@state.or.us 503-508-4035</p>	ORS 196.800-196.990; OAR Chapter 141, Division 85 (Removal-Fill Authorizations)	Oregon's Removal-Fill statutes, ORS 196.795 through 196.910, require a permit from the ODSL to remove material from, or to fill in, waters of the state. The Project will require removal of material from, or the filling in of, waters of the state; therefore, PacifiCorp will need a Removal-Fill Permit. Because the removal or fill activities will be site-specific and related to the location of the transmission line and related and supporting facilities in waters of the state, the Removal-Fill Permit is within EFSC's jurisdiction. Exhibit J includes the evidence required for issuance of the Removal-Fill Permit. Accordingly, PacifiCorp requests that EFSC approve the Removal-Fill Permit under ORS 469.401(3) and that the approval be included in and governed by the site certificate.
Oversize Load Movement Permit/Load Registration	<p>Oregon Department of Transportation (ODOT) Art Anderson 100 Antelope Road White City, OR 97503</p>	ORS 818.030; OAR Chapter 734, Division 82 (Variance Permits Issued for Non- Divisible Loads and Road Use Assessment Fees)	This permit/registration applies to the operation of vehicles transporting loads that exceed legal limits and is issued for vehicles or loads having weight or dimension greater than that allowed by statute. Movement of construction cranes and other equipment and materials may require that PacifiCorp obtain this permit. If necessary, the vehicle operator (third party) will obtain this permit directly from ODOT. This permit will be obtained directly from ODOT and should not be included in and governed by the site certificate.
Permit to Construct a State Highway Approach; Permit to Operate, Maintain, and Use a State Highway Approach	<p>ODOT Art Anderson 100 Antelope Road White City, OR 97503</p>	ORS Chapter 374 (Control of Access to Public Highways); OAR Chapter 734, Division 51 (Highway Approaches, Access Control, Spacing Standards and Medians)	There are two components to state highway approach permitting process—the Permit to Construct a State Highway Approach and the Permit to Operate, Maintain and Use a State Highway Approach. The Project may require construction and operational access off of state highways. The permit(s) will be obtained by the construction contractor (third party) directly from ODOT and should not be included in and governed by the site certificate.

Table E-2. State Permits Not Federally Delegated

Permit	Agency Name and Contact	Authority	Description
Permit to Occupy or Perform Operations Upon a State Highway	ODOT Art Anderson 100 Antelope Road White City, OR 97503	ORS Chapter 374 (Control of Access to Public Highways); OAR Chapter 734, Division 55 (Pole Lines, Buried Cables, Pipe Lines, Signs, Miscellaneous Facilities and Miscellaneous Operations)	Utility installations within the ROW of a state highway in Oregon require a permit issued by ODOT. No utilities may be installed within an interstate highway ROW. Utilities may cross an interstate highway but may not be sited longitudinally within the operating interstate highway ROW. The Project includes crossing the ROW of state and interstate highways, but will not include transmission line structures within highway ROWs. This permit will be obtained directly from ODOT and should not be included in and governed by the site certificate.
Archaeological Excavation Permit	Jessica Gabriel, Historian Oregon State Historic Preservation Office (SHPO) 725 Summer St NE, Suite C Salem, OR 97301 503.986.0677 Jessica.Gabriel@oregon.gov	The National Historic Preservation Act (16 U.S.C. 470 et seq.); 7 CFR Part 3100; ORS Chapters 97, 358, and 390; OAR Chapter 736, Division 50	During construction of the proposed Project, if an archaeological site is discovered, all construction will cease and PacifiCorp will report the finding to the SHPO immediately. In that instance, SHPO will require an archaeological excavation permit. See Exhibit S for further discussion. Should this permit be required, it will be obtained directly from SHPO and should not be included in or governed by the Site Certificate.

2.3 State Permits Federally Delegated

Table E-3 identifies and describes the state permits federally delegated that are required for construction and operation of the Project.

Table E-3. State Permits Federally Delegated

Permit	Agency Name and Contact	Authority	Description
National Pollutant Discharge Elimination System (NPDES) 1200-C Construction Stormwater Permit	Oregon Department of Environmental Quality (ODEQ) 221 Stewart Ave # 201, Medford, OR 97501 (503) 229-5696 deqinfo@deq.state.or.us	Clean Water Act (33 USC Sections 1342 et seq.); 40 CFR Parts 6, 122 and 124; ORS 468B.050, OAR Chapter 340, Division 45 (Regulations Pertaining to NPDES and Water Pollution Control Facility Permits)	The U.S. Environmental Protection Agency (EPA) has delegated authority to ODEQ to issue NPDES Storm Water Discharge permits for construction and operation activities. PacifiCorp will submit, prior to the Final Application for Site Certificate (ASC), a preliminary 1200-C permit application for the Project to ODEQ and obtain an acknowledgement from ODEQ that the agency received the application. See Exhibit I for further discussion. This permit will be obtained directly from ODEQ and should not be included in or governed by the Site Certificate.
Section 401 Water Quality Certification	ODEQ 221 Stewart Ave # 201, Medford, OR 97501 (503) 229-5696 deqinfo@deq.state.or.us	CWA, 33 U.S.C. 1341, OAR Chapter 340, Division 48 (Certification of Compliance with Water Quality Requirements and Standards)	The CWA Section 401 Water Quality Certification process may be triggered during the USACE CWA Section 404 permitting process. However, PacifiCorp anticipates obtaining a Nationwide 12 permit for water quality certification. This permit should not be included in or governed by the Site Certificate.

2.4 Local Permits

Table E-4 identifies and describes the local permits required for construction and operation of the Project.

Table E-4. Local Permits

Permit	Agency Name and Contact	Authority	Description
Administrative Type II Land Use Permit	Jackson County County Planner 10 South Oakdale Avenue, Room 100 Medford, OR 97501	Jackson County Code	An Administrative Type II Land Use Permit is required to build a substation and transmission line in Jackson County in Exclusive Farm Use zones. Jackson County Land Development Ordinance (“LDO”) 4.2.2. In forest resource zones, a Type III permit is required for transmission lines. LDO 4.3.3. PacifiCorp intends to satisfy the EFSC land use standard by seeking an EFSC determination of compliance with the land use standards under ORS 469.504(1)(b). PacifiCorp demonstrates compliance with applicable criteria in Exhibit K.
Floodplain Development Permit	Jackson County County Planner 10 South Oakdale Avenue, Room 100 Medford, OR 97501	Jackson County Code	A Floodplain Development Permit is required whenever building in or near a floodplain. This permit will not be included in and governed by the Site Certificate.
Road Approach Permit	Jackson County Roads 200 Antelope Road White City, OR 97503	Jackson County Code	A county road approach permit is required per section 1034.05 of the Jackson County Code of Ordinances.
Building Permit	Jackson County County Planner 10 South Oakdale Avenue, Room 100 Medford, OR 97501	Jackson County Code	A Construction Permit (grading and Erosion Control) is required to build the substation in Jackson County. This permit will not be included in and governed by the Site Certificate.
Utility Permit	Jackson County County Planner 10 South Oakdale Avenue, Room 100 Medford, OR 97501	Jackson County Code	A Utility Permit is issued for work related to utilities which need to occur in the road right-of-way. This permit will not be included in and governed by the Site Certificate.

Table E-4. Local Permits

Permit	Agency Name and Contact	Authority	Description
Conditional Use Permit	Josephine County County Planner 700 NW Dimmick Street, Suite C Grants Pass, OR 97526	Josephine County Code	A Conditional Use Permit is required to build the transmission line in Josephine County in residential areas per Josephine County Development Code 61.030(U) and forest zones per Josephine County Development Code 65.030(F). PacifiCorp intends to satisfy the EFSC land use standard by seeking an EFSC determination of compliance with the land use standards under ORS 469.504(1)(b). PacifiCorp demonstrates compliance with the conditional use standards, as well as other applicable substantive criteria, in Exhibit K.
Building Permit	Josephine County County Planner 700 NW Dimmick Street, Suite C Grants Pass, OR 97526	Josephine County Code	A Construction Permit (Grading and Erosion Control) is required to build the transmission line in Josephine County. This permit will not be included in and governed by the Site Certificate.
Utility Permit	Josephine County County Planner 700 NW Dimmick Street, Suite C Grants Pass, OR 97526	Josephine County Code	A Utility Permit is required whenever public facilities, such as water, sewer, gas or transmission lines, are proposed to be constructed within a right-of-way. This permit will not be included in and governed by the Site Certificate.
Building Permit	City of Rogue River Mark Reagles City Planner 133 Broadway Street Rogue River, OR 97537	City of Rogue River Code	A Construction Permit (Grading and Erosion Control) is required to build a project in the city of Rogue River. This permit will not be included in and governed by the Site Certificate.

3.0 Permit Applications Not Federally Delegated – OAR 345-0010(1)(e)(C)(i)(ii)

OAR 345-021-0010(1)(e)(C) For any state or local government agency permits, licenses or certificates that are proposed to be included in and governed by the site certificate, evidence to support findings by the Council that construction and operation of the proposed facility will comply with the statutes, rules and standards applicable to the permit. The applicant may show this evidence:

(i) In Exhibit J for permits related to wetlands.

Exhibit J contains permits related to wetlands.

(ii) In Exhibit O for permits related to water rights.

There are no permits required for water rights.

4.0 Permit Applications Federally Delegated – OAR 345-021-0010(1)(e)(D)

OAR 345-021-0010(1)(e)(D) For federally-delegated permit applications, evidence that the responsible agency has received a permit application and the estimated date when the responsible agency will complete its review and issue a permit decision.

PacifiCorp will prepare an NPDES 1200-C permit application for the Project and submit it to ODEQ prior to construction. Exhibit I provides additional discussion on the project-specific Erosion and Sediment Control Plan that will be completed to fulfill requirements of the NPDES 1200-C permit.

PacifiCorp will work with the USACE, ODSL, and ODEQ to determine type of permit (Individual vs Nationwide) and Section 401 water quality certification, as necessary.

If the Project is reviewed under an Individual Permit, the USACE will put the Project out for on a 30-day Public Notice, which includes ODEQ's public notice. The Public Notice will include information on how the public may submit comments and questions to the USACE and ODEQ. If the Project does not require a Public Notice by the USACE, ODEQ may still be required to put the Project out on a 35-day Public Notice. ODEQ staff will review Project applications, and evaluate impacts. Staff will provide comments and request additional information in addition to notifying PacifiCorp of the review fee that will be assessed.

DEQ staff will continue to evaluate the information provided by PacifiCorp. Using information gathered during the review process and received via public comment, ODEQ staff will determine whether the Project is consistent with state water quality standards. ODEQ will work with PacifiCorp to modify the Project if necessary to ensure compliance with these standards. Once this

is completed, PacifiCorp and USACE receive a 401 Water Quality Certification with that confirms the Project will meet water quality standards.

5.0 Third Party State or Local Permits – OAR 345-021-0010(1)(e)(E)

OAR 345-021-0010(1)(e)(E) If the applicant relies on a state or local government permit or approval issued to a third party, identification of any such third party permit and for each:

(i) Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit.

PacifiCorp's third-party contractors will obtain the state permits described below, if required. PacifiCorp often relies on contractors to obtain third-party permits for constructing facilities such as those described in Exhibit D. For example, PacifiCorp recently contracted with Camus LLC for support in the county review process for Sams Valley. During Facility construction and operation, PacifiCorp will select similarly qualified contractors with experience constructing transmission line facilities and a reasonable likelihood of securing the required permits. For example, an Oversize Load Movement Permit/Load Registration (ORS 818.030; OAR Chapter 734, Division 82) will be required for transporting large or overweight equipment to the site over state roads. This permit typically is required for the construction of energy facilities in Oregon to transport oversized components. A contractor familiar with constructing energy facilities will have experience obtaining this permit from ODOT. For example, Omega Morgan, a contracted heavy hauling company routinely obtains permits for delivery of oversize or overweight equipment over state roads.

The use of a State Highway approach by require A Permit to Construct a State Highway Approach; Permit to Operate, Maintain, and Use a State Highway Approach from ODOT. A contractor familiar with constructing energy facilities will have experience obtaining this permit from ODOT. For example, PacifiCorp has contracted with Omega Morgan on previous projects, who routinely obtain this permit as needed for use of a State Highway approach.

PacifiCorp will rely on third party permits for staging areas on private land because it does not currently have staging areas designated in the site boundary. The third party/local permits or approvals will be dependent on the final location of the staging areas. PacifiCorp's construction contractor will work with the appropriate county and/or city to obtain to the proper permits, as necessary. For example, an NPDES 1200-C permit may be required. PacifiCorp has contracted with Cache Valley Electric on previous projects, who routinely obtain NPDES permits for projects which require them. The NPDES 1200-C, 1200-CN and 1200-CA general permits apply to construction activities including clearing, grading, excavation, materials or equipment staging and stockpiling that will disturb 1 or more acres of land. They also apply to construction activities that will disturb less than 1 acre that are part of a common plan of development or sale, if the larger common plan of

development or sale will ultimately disturb one acre or more. In addition, ODEQ may require registration for any other construction activity based on the potential for contribution to an excursion of a water quality standard or potential for significant contribution of pollutants to waters of the state. The third party contractor will need to submit, prior to grading at the laydown areas, a preliminary stormwater application to ODEQ and obtain an acknowledgement from ODEQ that the agency received the application.

(ii) Evidence that the third party has, or has a reasonable likelihood of obtaining, the necessary permit.

As indicated above, for each of the permits identified, PacifiCorp has worked with contractors familiar with constructing or operating transmission line facilities, and are knowledgeable with the requirements for applications and activities under such permits. PacifiCorp will select the same, or similar, contractors who have the necessary experience to likely obtain the necessary permits.

(iii) An assessment of the impact of the proposed facility on any permits that a third party has obtained and on which the applicant relies to comply with any applicable Council standard.

At this time, no third party has obtained any permits related to the Project and PacifiCorp does not anticipate impacts to any permit a third party has previously obtained.

6.0 Third Party Federal Permits – OAR 345-021-0010(1)(e)(E)

OAR 345-021-0010(1)(e)(F) If the applicant relies on a federally-delegated permit issued to a third party, identification of any such third-party permit and for each:

(i) Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit.

(ii) Evidence that the responsible agency has received a permit application.

(iii) The estimated the date when the responsible agency will complete its review and issue a permit decision.

PacifiCorp will not rely on any federally-delegated permits issued to a third party.

7.0 Monitoring – OAR 345-021-0010(1)(e)(G)

OAR 345-021-0010(1)(e)(G) The applicant's proposed monitoring program, if any, for compliance with permit conditions.

To the extent that monitoring may be required for any permit conditions, monitoring programs are discussed in the specific Exhibit to which the permits pertain. For example, monitoring for compliance with removal-fill permit conditions is discussed in Exhibit J.

Exhibit G

Materials Analysis

Sams Valley Reinforcement Projects
December 2017

Prepared for



PacifiCorp

Prepared by



Tetra Tech, Inc.

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Acronyms and Abbreviations

OAR	Oregon Administrative Rule
OSFM	Oregon State Fire Marshall
Project	Sams Valley Reinforcement Projects
RCRA	Resource Conservation and Recovery Act
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan

1.0 Introduction

Exhibit G was prepared to meet the submittal requirements for the Sams Valley Reinforcement Projects (Project) per Oregon Administrative Rule (OAR) OAR 345-021-0010(1)(g) related to materials analysis. The analysis in this exhibit focuses on the Project described in the *Written Request for Amendment #4 Eugene–Medford 500 kV Transmission Line*.

2.0 Site Certificate Condition Compliance

No existing Site Certificate conditions apply to this resource. PacifiCorp proposes the new following condition:

Materials Condition 1: Prior to construction, the site certificate holder shall submit to the department a copy of an Oregon Department of Environmental Quality–approved construction-related Spill Prevention, Control, and Countermeasures Plan (SPCC Plan).

3.0 Materials Inventory – OAR 345-021-0010(1)(g)(A)

OAR 345-021-0010(1)(g) A materials analysis including:

OAR 345-021-0010(1)(g)(A) An inventory of substantial quantities of industrial materials flowing into and out of the proposed facility during construction and operation.

3.1 Construction Materials

Typical materials needed for construction are as follows:

- **Transmission Line:** Concrete, transmission structures, conductors, ground wire, communication wire, etc.
- **Substations:** Aggregate, concrete, fencing, transmission structures, transformers, control building, duplex panel with relays and controls, insulating oil etc.
- **Roads:** Pit run gravel, aggregate base, geotextile fabric, concrete, culverts silt fencing, spill absorbent material, native seed mix.

Table G-1 provides a list of industrial materials that would be used during Project construction, based on current engineering estimates. Solid wastes generated and flowing out of the facility during construction are outlined in Exhibit V.

Table G-1. Inventory of Construction Materials

Material	Ultimate Disposition	Units	Quantity
Structures and Wire			
Concrete for Foundations	Remains on-site as structure footings	cubic yards	3,525
230/138-kV steel or wood pole structures (Avg. weight = 9 tons each)	Used on-site for power transmission	number	91
230-kV Conductor (Avg. weight = 9.1 tons per mile) x 3	Used on-site for power transmission	miles	67.8
115-kV Conductor (Avg. weight = 3 tons per mile) x3	Used on-site for power transmission	miles	53.7
3/8" Steel overhead ground wire (Avg. weight = 0.8 tons per mile) x3	Used on-site for power transmission	miles	67.8
Optical communication wire (weight = 1.1 tons per mile)	Used for communications for system operations	miles	22.6
Sams Valley Substation			
Concrete for Foundation	Remains on-site as foundation	cubic yards	1,120
Aggregate Base	Remains on-site as yard rock	cubic yards	63,060
New Control Building	Remains on-site for operations	lot	1
Duplex Panel with Relays & Controls	Remains on-site for operations	lot	1
Chain link fencing	Remains on-site as permanent fencing	feet	6,425
Grants Pass Substation			
Concrete for Foundation	Remains on-site as foundation	cubic yards	100
Aggregate Base	Remains on-site as yard rock	cubic yards	100
Access Roads, Stream Crossings, and Restoration			
Pit run gravel	Remains on-site as fill	cubic yards	3,041

Table G-1. Inventory of Construction Materials

Material	Ultimate Disposition	Units	Quantity
Aggregate base	Remains on-site as road surface, structural backfill for direct embedded structures, culvert backfill	cubic yards	55
Geotextile stabilization fabric	Used on-site for construction	miles	1
Concrete for stream crossing structures	Remains on-site for permanent access	cubic yards	5
Culverts (high-density polyethylene [HDPE], Concrete and Corrugated Metal)	Remains on-site for drainage and stormwater control	number	11
Silt fence or fiber roll	Used for sediment control	miles	7
Spill absorbent material	Used to contain liquid spills if needed	containers	18
Native seed for restoration	Used for erosion control, reseeding, and restoration	acres	227
Liquid or Hazardous Materials			
Herbicide	Used on transmission rights-of-way for weed control	gallons	14
Insulating Oil (PCB free)	Used at Longhorn Station to insulate shunt reactors. Remains on-site for operations.	gallons	13,024

3.2 Operational Materials Inventory

There are no plans to regularly store materials or maintain inventories of materials on-site during the operations phase.

Table G-2 provides a list of materials estimated for use for a typical 5-year operation period. Operations materials are variable, and dependent upon the maintenance or repair events that occur. It is possible that no materials would be required during a typical 5-year period. However, Table G-2 provides for minimal replacement of materials that are sometimes lost, damaged, or stolen. Operations materials would be delivered to the required location at the time needed.

Table G-2. Materials Inventory for Operations (Typical 5-Year Estimate)

Material	On-Site Storage	Ultimate Disposition	Units	Quantity
Transmission Line Components				
Copper Wire for Tower Grounds	No	Used to replace damaged or stolen copper wire grounding	feet	350
Road Maintenance				
Aggregate base	No	Used for road repair/stabilization	cubic yards	16
Culvert	No	Used to repair washed out or failed culverts	each	1
Substation Maintenance				
Herbicide	No	Used on-site for weed control	gallons	52
Aggregate base	No	Used to replenish yard rock	cubic yards	100

4.0 Hazardous Materials Handling and Management – OAR 345-021-0010(1)(g)(B)

OAR 345-021-0010(1)(g)(B) The applicant's plans to manage hazardous substances during construction and operation, including measures to prevent and contain spills.

During the construction or operations phases of the Project, it may be necessary to use minor quantities of hazardous substances (materials requiring Safety Data Sheets). These materials would include small, but necessary, quantities of motor vehicle fuel and automotive fluids. All potentially hazardous substances, during both phases, would be used in a manner that is protective of human health, protective of the environment, and that complies with all applicable local, state, and federal environmental laws and regulations. For any necessary, potentially hazardous substance used during the Project's construction or operation, Safety Data Sheets would be made available and located at the construction area or the relevant Project facility.

Extremely Hazardous Substances in excess of threshold planning quantities, highly toxic substances, or explosive materials would not be necessary to support either the construction or the operations phase of the Project. Additionally, materials used during the construction and operations of the Project would be selected so that they minimize the potential for producing "hazardous waste," as defined by the Resource Conservation and Recovery Act (RCRA).

4.1 Construction Materials

Potentially hazardous substances used during the Project's construction phase may include vehicle fluids such as gasoline, diesel, hydraulic oil, etc. It is anticipated that only minor quantities of these

potentially hazardous substances will be necessary to complete construction, and that when potentially they are necessary, will only be present in quantities similar to household levels. The use would be limited to the amounts required to operate construction vehicles and equipment, and no excess quantities will be stored onsite at any point of the construction. Potentially hazardous substances will not be permanently present within the staging areas in quantities that exceed Oregon State Fire Marshall (OSFM) Reportable Quantities.

Fuel for construction equipment would be delivered to the site via a specialized mobile vehicle by a licensed service contractor on an as-needed basis. Following the completion of fueling activities, these vehicles would not remain within any staging areas or at the substations longer than necessary to complete their fueling tasks. Fueling for smaller mobile vehicles would be completed off site, at nearby privately owned fueling stations. Construction-based equipment would be regularly inspected to detect potential leaks or other issues that may require maintenance. Potentially hazardous substances related to the maintenance of the construction equipment would only be brought to the construction site by a maintenance technician on an as-needed basis, and any unused or waste substances would be removed during the same service call.

The prevention and minimization of accidental releases of these materials would be accomplished through proper containment during use and transportation to the Project site, and the observance of appropriate handling procedures during the transfer of any fuels from the delivery vehicles to the construction equipment. All fueling and vehicle maintenance operations would be conducted a sufficient distance (at least 100 feet) from any sensitive ecosystems (e.g., riparian, wetland, potential nesting areas) to avoid the potential for impacting those areas.

In the unlikely event that an accidental spill occurs, any spilled or released substances would be cleaned up, and any contaminated media impacted by the spill would be managed in accordance with all applicable regulations. Larger spill kits with absorbents, absorbent pads, spill socks, and disposable bags would be maintained at the staging areas, in close proximity to construction activities. In addition, to reduce the response time to a spill, smaller spill kits containing absorbent pads would be located on key pieces of construction equipment. All employees would be instructed in the location, handling, and usage of the spill kits. All spills would be reported to a designated qualified person who would make an assessment of the cleanup activities and a determination if further actions or notifications are required.

4.2 Operations Materials

Potentially hazardous substances used during the operations phase of the Project may include motor vehicle fuel and automotive fluids, which would be used in vehicles for Project operational roles. It is anticipated that the types, amounts, and usage of potentially hazardous substances would be limited based on the operational nature of the Project and the limited need for these substances. Any potentially hazardous substances necessary to support the long-term operation of the Project would either be limited to amounts less than OSFM Reportable Quantities, or disclosed annually as part of the Community Right to Know Act managed by the OSFM. Table G-2 provides an inventory of industrial materials that would be used during operations of the Project.

In the unlikely event that an accidental spill occurs during the operations phase, any spilled or released substances would be cleaned up, and any contaminated media would be managed in accordance with all applicable RCRA regulations. Spill kits with absorbents, absorbent pads, spill socks, and disposable bags would be located within Project vehicles. All employees associated with the operation of the Project would be trained on the location and usage of the spill kits. Employees will have spill hotline numbers on cards that they are required to carry with them.

5.0 Non-Hazardous Waste Management – OAR 345-021-0010(1)(g)(C)

OAR 345-021-0010(1)(g)(C) The applicant's plans to manage non-hazardous waste materials during construction and operation.

PacifiCorp would fully comply with all applicable waste handling and disposal regulations on all lands associated with the Project, during both construction and operation. Solid waste would be stored in a manner that does not constitute a fire, health, or safety hazard until such time as it can be hauled off for recycling or disposal, as appropriate. Exhibit V provides an estimate of solid waste quantities and the procedures and systems for the handling and disposal of non-hazardous waste materials.

During operations, little to no solid waste would be generated by the Project.

Exhibit H

Geologic and Soil Stability

**Sams Valley Reinforcement Projects
December 2017**

Prepared for



PacifiCorp

Prepared by



Tetra Tech, Inc.

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Acronyms and Abbreviations

bgs	below ground surface
BLM	U.S. Bureau of Land Management
CSZ	Cascadian Subduction Zone
DOGAMI	Oregon Department of Geology and Mineral Industries
EFSC	Energy Facility Siting Council
IBC	International Building Code
MMI	Modified Mercalli Intensity
NESC	National Electric Safety Code
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rule
OSSC	Oregon Structural Specialty Code
PacifiCorp	PacifiCorp dba Pacific Power
Project	Sams Valley Reinforcement Projects
SLIDO-3.3	Statewide Landslide Information Database for Oregon
USGS	U.S. Geological Survey

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1.0 Introduction

The Energy Facility Siting Council (EFSC) previously approved the Eugene-Medford 500 kV Transmission Line Project and found that PacifiCorp dba Pacific Power (PacifiCorp) appropriately addressed the structure standard in Oregon Administrative Rule (OAR) 345-022-0020. In this Request for Amendment No. 4, PacifiCorp seeks to expand the EFSC-certificated facility boundary to include the Grants Pass–Sams Valley Transmission Line and the Sams Valley Substation for the Sams Valley Reinforcement Project (Project). The analysis in this exhibit focuses on the Project described in the *Written Request for Amendment #4 Eugene–Medford 500 kV Transmission Line*.

Exhibit H was prepared to meet the submittal requirements for the Project, per OAR 345-021-0010(1)(h), related to geologic and soil stability. The information provided in Exhibit H demonstrates that PacifiCorp can design, engineer, and construct the Project to avoid dangers to human safety and the environment presented by seismic, geological, and soil hazards.

2.0 Site Certificate Condition Compliance

PacifiCorp recommends the following new condition for this resource:

- **Structural Standard Condition 1:** Prior to construction, the Certificate Holder shall conduct a site-specific geological and geotechnical investigation, and shall submit to the Department a Site-Specific Geological and Geotechnical Report.

3.0 Geologic Report – OAR 345-021-0010(1)(h)(A)

OAR 345-021-0010(1)(h) Information from reasonably available sources regarding the geological and soil stability within the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0020, including:

OAR 345-021-0010(1)(h)(A) A geologic report meeting the Oregon State Board of Geologist Examiners geologic report guidelines. Current guidelines shall be determined based on consultation with the Oregon Department of Geology and Mineral Industries, as described in paragraph (B) of this subsection.

OAR 345-021-0010(1)(h)(A) requires submission of a geological report meeting the Oregon State Board of Geologist Examiners geologic report guidelines. Current guidelines shall be determined based on consultation with the Oregon Department of Geology and Mineral Industries (DOGAMI).

3.1 Topographic Setting

The Project Site Boundary is located on U.S. Bureau of Land Management (BLM)-managed land and private land, and is located in the Grants Pass, Rogue River, Gold Hill, and Sams valleys, within the

Klamath Mountains geologic province of Oregon. The Project occupies slopes ranging from 1 to 113 percent, with an average slope of 16.2 percent (BLM 2016). Steep slopes are generally defined as land with a slope gradient greater than 30 percent. Approximately one-third of the project area contains steep slopes.

Land uses along the Project Site Boundary primarily include shrub/grassland, followed by agriculture, forest, open space, developed land and wetlands or open water. The eastern half of the project area is located in a relatively remote setting composed of agricultural land, forest, and open space. The western half of the project area passes through the cities of Rogue River and Grants Pass and contains a more diverse mixture of land uses, including agricultural land, forest, parks/open space, residential, and industrial.

Elevations in the Project area range from 1,000 feet above mean sea level to 2,500 feet above mean sea level (USGS 2017a, USGS 2017b, USGS 2017c).

3.2 Geologic Setting

The Project is located within the Klamath Mountains geologic province of Oregon. This province consists of four north-south-trending belts of metamorphic and igneous rocks that formed in an oceanic setting. Due to plate tectonics, terranes formed, uplifting volcanic and meta-sedimentary rocks. These terranes subsequently collided with the North American continent during the early Cretaceous period (DOGAMI 2015a). The lithic belts of the Klamath mountains are subdivided from west to east into subbelts known as the Rattlesnake Creek, Hayfork, and North Fork. The Rattlesnake Creek Terrane consists predominately of serpentinized ultramafic rocks, gabbro, diabase, pillow lavas, and other mafic rocks. The rocks generally are metamorphosed to low greenschist facies, and the strata are considerably disarrayed by folding and faulting. The North Fork terrane is made up of serpentinite, gabbro, and diabase. The lithic assemblage of the North Fork is dominantly that of an ophiolite suit. The Hayfork Terrane consist mainly of a layered structural sequence of three formations, with the lowest formation being augite andesite metavolcanic rocks. It is succeeded upward by a formation consisting of slaty argillite, sandstone, pebble conglomerate, and thin-bedded chert, with sparse lenses of limestone. The third and upper most formation consists of mafic volcanic rocks, thin bedded chert, phyllite, quartzite, siliceous leucocratic volcanic rocks, and occasional lenses of limestone (Irwin 1972).

Grants Pass is located at the western end of the Project and includes quaternary surficial deposits, specifically beaches, dunes, and coastal terraces. Following the Rogue River eastward to Gold Hill, the lithology is dominantly volcanics that were sheared, altered, and recrystallized, with granitic and andesitic intrusions throughout. The easternmost portion of the Project, toward Sam's Valley, is made up of an ophiolite complex.

Figure H-1 is a geologic map of the Project's vicinity, adapted using the GIS and Oregon Geologic Database Compilation OGDC-6 (DOGAMI 2015b). As seen on Figure H-1, the western terminus of the Grants Pass-Sams Valley Transmission Line is located on Quaternary surficial deposits, which consist of mixed grained, unconsolidated sediments. Following the existing transmission line route north of the Rogue River, eastward past the City of Rogue River, the lithology is dominantly Tertiary

intermediate metavolcanic rock and meta-basalt with Quaternary surficial deposits in the river valleys. Crossing through an area of Tertiary amphibolite and mica schist followed by argillite and chert, the Grants Pass–Sams Valley Transmission Line then crosses Tertiary conglomerates. The proposed Sams Valley Substation and the first half of the Sams Valley–Whetstone Reconductoring is located on Tertiary conglomerates until it transitions onto Quaternary sand and gravel to the existing Whetstone Substation, which is located on Quaternary gravel and terrace sediments.

Ramp and Peterson (2004), Wiley (2006), and Wiley et al. (2011) mapped the structural geologic features in the area, including the northeast trending faults seen in Figure H-1. These faults were formed from regional compressional and extensional tectonic forces, and do not represent Quaternary-active, ongoing faulting (see Section 8 below). No potentially active faults have been mapped within the area (Figure H-2; USGS 2017d).

Groundwater in the Project area ranges from 42 feet below ground surface (bgs) in the Grants Pass area, to 16 to 45 feet bgs in the City of Rogue River area, to approximately 1 foot bgs in the Sams Valley area (OWRD 2017).

Exhibit I describes properties of the site surficial soils based on Natural Resources Conservation Service (NRCS) data within the Project area, as well as the approximate thickness, the formation setting, permeability, runoff potential, and potential hazard for erosion.

4.0 Evidence of Consultation with DOGAMI – OAR 345-021-0010(1)(h)(B)

OAR 345-021-0010(1)(h)(B) A summary of consultation with the Oregon Department of Geology and Mineral Industries regarding the appropriate methodology and scope of the seismic hazards and geology and soil-related hazards assessments, and the appropriate site-specific geotechnical work that must be performed before submitting the application for the Department to determine that the application is complete.

While preparing this exhibit, Tetra Tech consulted DOGAMI publications and other guideline documents. In addition, a Tetra Tech geologist spoke with Yumei Wang at DOGAMI (Y. Wang, pers. com. October 2, 2017), to discuss the general details of the Project (see Attachment H-1). Discussion results are summarized as follows:

- Desktop analyses are currently being conducted; site reconnaissance is not needed at this time.
- PacifiCorp will provide specific plans for what will be done (including whether Light Detection and Ranging [LIDAR] will be flown). These plans will address landslides, including large “global” slides and normal faulting, as well as explain the types of hazards that will be evaluated, and how PacifiCorp will follow up with DOGAMI.

PacifiCorp will consult further with DOGAMI before planning and initiating the site-specific geotechnical exploration.

5.0 Site-Specific Geotechnical Investigation – OAR 345-021-0010(1)(h)(C)

OAR 345-021-0010(1)(h)(C) A description and schedule of site-specific geotechnical work that will be performed before construction for inclusion in the site certificate as conditions.

Tetra Tech completed a detailed literature review of the local and regional geology in the vicinity of the Site Boundary. This included evaluating existing reports at adjacent sites, as well as reviewing other published literature and geologic mapping. The literature review included a detailed evaluation of seismic hazards at the Project (Section 8).

The following detailed geologic hazards and geotechnical investigations will be conducted over the course of a few weeks in March or April of 2018, before fire season, to inform final design:

- Test pits, soil borings, and rock cores will be advanced at structure locations and along access road alignments in order to determine soil strength and rock mass properties, and to evaluate foundation conditions. Seismic refraction surveys may also be used to evaluate depth to suitable foundation materials. The final layout of the structures and associated roads will dictate the locations of the site-specific geotechnical investigations.
- During the final design geotechnical investigations, landslide hazard mapping will be conducted using the best available resources, including stereo pairs of aerial photographs, available LIDAR coverage, and field mapping. Drilling will be used to evaluate unstable areas, the characteristics of landslide-prone areas in order to avoid placing structures or facilities on existing landslides or potentially unstable areas.
- Conversely, based on the results of the detailed geotechnical investigations, the structures will be sited to avoid or minimize geologic hazards and areas of poor foundation conditions, and foundations will be designed to appropriate factors of safety. They will be sited to minimize or avoid geologic impacts on the environment (for example, causing accelerated erosion or reconfiguring the landscape), and to minimize or avoid geologic impacts of the environment on the structures.
- Data and design reports will summarize the geologic hazards and geotechnical conditions, describe soil and rock properties and foundation conditions, present laboratory testing results of soils and rock, and provide detailed foundation recommendations for structural designers.
- A qualified engineer will provide oversight and inspection during construction, including foundation inspection by a qualified engineering geologist or geotechnical engineer, to ensure that the Project is built according to plans and specifications and the stability of the transmission line structures is not compromised.

6.0 Transmission Lines and Pipelines – OAR 345-021-0010(1)(h)(D)

OAR 345-021-0010(1)(h)(D) For all transmission lines, and for all pipelines that would carry explosive, flammable or hazardous materials, a description of locations along the proposed route where the applicant proposes to perform site specific geotechnical work, including but not limited to railroad crossings, major road crossings, river crossings, dead ends (for transmission lines), corners (for transmission lines), and portions of the proposed route where geologic reconnaissance and other site specific studies provide evidence of existing landslides, marginally stable slopes or potentially liquefiable soils that could be made unstable by the planned construction or experience impacts during the facility's operation.

The Grants Pass–Sams Valley Transmission Line crosses Oregon Highway 234 along the alignment of the existing 115 kV transmission line, and does not cross railroads or any other transmission lines. The Sams Valley–Whetstone Reconductoring follows the existing Grants Pass–Whetstone 230 kV Transmission Line and crosses under the existing Dixonville–Meridian 500 kV Transmission Line in two locations. It also crosses the Rogue River prior to reaching the existing Whetstone Substation.

On the basis of review of aerial photography and existing geologic mapping, transmission structure foundations can be located in the alignment without adversely affecting slope stability or long-term erosion. The transmission structures will be placed adjacent to the existing 115 kV and 230 kV structures. During final design of the transmission line structures, geotechnical investigations and landslide hazard mapping will be conducted to characterize the soils and bedrock along the alignment where new transmission line structures will be placed adjacent to current structures. The investigation will consist of soil and rock borings at structure locations, the crossing of Oregon State Highway 234, the crossing of the Rogue River, and any other locations that appear to have weak soils, soils prone to liquefaction, or poor foundation conditions. In particular, geologic hazard and landslide mapping will be conducted along the steeper hillsides where historic landslides have occurred.

7.0 Seismic Hazard Assessment – OAR 345-021-0010(1)(h)(E)

OAR 345-021-0010(1)(h)(F) An assessment of seismic hazards, in accordance with standard-of-practice methods and best practices, that addresses all issues relating to the consultation with the Oregon Department of Geology and Mineral Industries as described in paragraph (B) of this subsection, and an explanation of how the applicant will design, engineer, construct, and operate the facility to avoid dangers to human safety and the environment from these seismic hazards. Furthermore, an explanation of how the applicant will design, engineer,

construct and operate the facility to integrate disaster resilience design to ensure recovery of operations after major disasters. The applicant shall include proposed design and engineering features, applicable construction codes, and any monitoring and emergency measures for seismic hazards, including tsunami safety measures if the site is located in the DOGAMI-defined tsunami evacuation zone.

7.1 Methods

PacifiCorp contracted Tetra Tech to review available reference materials and perform a seismic hazard assessment. Tetra Tech evaluated topographic and geologic conditions and hazards within the Project Site Boundary by reviewing available reference materials such as topographic and geologic maps, aerial photographs, existing geologic reports, and data provided by DOGAMI, the Oregon Water Resources Department, the U.S. Geological Survey (USGS), and NRCS.

Tetra Tech performed a seismic hazard analysis to characterize seismicity in the vicinity of the Project, and to evaluate potential seismic impacts. This work was based on the potential for regional and local seismic activity as described in the existing scientific literature, and on subsurface soil and groundwater conditions within the Project Site Boundary based on geotechnical subsurface investigations. The seismic hazard analysis consisted of the following tasks:

1. Detailed review USGS, National Geophysical Data Center, and DOGAMI literature and databases.
2. Identification of potential seismic events for the site characterization of those events in terms of a series of design events.
3. Preparation of conclusions and recommendations based on the characteristics of the subsurface soils and design earthquakes, including specific seismic events that might have a significant effect on the site, potential for seismic energy amplification at the site, and the site-specific acceleration response spectrum for the site.
4. Evaluation of seismic hazards, including potential for fault rupture, earthquake-induced landslides, liquefaction and lateral spread, settlement, and subsidence.

7.2 Maximum Considered Earthquake Ground Motion under IBC 2012

The USGS Seismic Hazard Mapping project (USGS 2017f) developed ground motions using a probabilistic seismic hazard analysis that covered the Project site. Though these motions are not considered site-specific, they provide a reasonable estimate of the ground motions at the Project site. For new construction, the site should be designed for the maximum considered earthquake, according to the most recently updated International Building Code (IBC; IBC 2012) as amended by the Oregon Structural Specialty Code (OSSC; OSSC 2014). The design event has a 2 percent probability of exceedance in 50 years (or a 2,475 year return period). This event has a peak ground acceleration (PGA) of 0.587 acceleration from gravity (g) at the bedrock surface at the western end of the Project (near the western terminus of the Grants Pass–Sams Valley Transmission Line) and a PGA of 0.452g at the bedrock surface at the eastern end (Sams Valley Substation). The values of PGA

on rock are an average representation of the acceleration most likely to occur at the site for all seismic events (crustal, intraplate, or subduction; USGS 2017f).

Seismic design parameters were developed in accordance with the International Building Code (IBC; IBC 2012). Using the subsurface information currently available, the Project would be designed for Site Class D (stiff soil profile), according to IBC requirements. Once additional subsurface information is collected, it is likely (based on experience at nearby substation sites) that Site Class C may apply in certain portions of the Site Boundary. Final site class determination cannot be made until further site exploration is performed, including evaluation of shear wave velocity in rock and drilling at specific structure locations to obtain parameters for soil strength and consistency. The current recommended seismic design parameters are summarized in Table H-1.

Table H-1. Seismic Design Parameters—Maximum Considered Earthquake

Location	Site Class	Earthquake Magnitude	Peak Horizontal Ground Acceleration on Bedrock	Soil Amplification Factor, F_a	Peak Horizontal Ground Acceleration at Ground Surface
Grants Pass–Sams Valley Transmission Line (Western Terminus)	S_D	9.0	0.587g	1.2	0.70g
Sams Valley Substation	S_D	9.0	0.452g	1.3	0.59g

The following additional parameters for the Maximum Considered Earthquake may be used for structural design:

- **Grants Pass Substation:**
 - Short period (0.2-second) spectral response acceleration, $S_{MS} = 0.912g$ for Site Class S_D
 - 1-second period spectral response acceleration, $S_{M1} = 0.650g$ for Site Class S_D
- **Sams Valley Substation:**
 - Short period (0.2-second) spectral response acceleration, $S_{MS} = 0.812g$ for Site Class S_D
 - 1-second period spectral response acceleration, $S_{M1} = 0.586g$ for Site Class S_D

The design spectral response acceleration parameters, S_{DS} and S_{D1} , for both short period and 1-second period are determined by multiplying the Maximum Considered Earthquake spectral response accelerations (S_{MS} and S_{M1}) by a factor of $2/3$.

7.2.1 Earthquake Sources

Seismicity in southern Oregon is generated from the convergence of the Juan de Fuca plate and the North American plate at the Cascadian Subduction Zone (CSZ). These plates converge at a rate between 1 and 2 inches per year and accumulate large amounts of stress that are released abruptly in earthquake events. The four sources of earthquakes and seismic activity in this region are crustal, intraplate, volcanic, and the CSZ (DOGAMI 2010).

- 1 Crustal earthquakes in this region are generally shallow (< 30 kilometers depth) and result from active faulting in the upper North American plate. Crustal earthquakes typically have a maximum magnitude near 7.0, and recurrence intervals are dependent on stress accumulation and release but can range from tens to hundreds of years.
- 2 Intraplate earthquakes occur deep (50 to 70 kilometers depth) in the CSZ and have a maximum magnitude potential near 7.0. Recurrence intervals for deep intraplate earthquakes are generally between 500 to 600 years. Intraplate earthquake epicenters generally occur beneath the Willamette region (north of this region) between the Cascade Mountains and Oregon Coast Range.
- 3 Volcanic earthquakes result from the movement and shifting of magma bodies beneath the earth's crust. Magma movement can create earthquake swarms (multiple earthquakes in nearby locations over a relatively short period of time), which can be precursors to volcanic activity. Magnitudes and recurrence intervals of these earthquakes are highly variable and are dependent on magma movement and volcanic activity.
- 4 Deep subduction zone earthquakes occur near the interface between the Juan de Fuca plate and North American plate off the Oregon coast. The CSZ and similar type plate boundaries are capable of producing 9.0 magnitude subduction zone earthquakes. Recurrence intervals are typically on the order of 300 to 500 years.

Regionally, seismicity has been attributed to crustal deformation resulting from the CSZ and volcanism. Faults are considered active if there has been displacement in the last 10,000 years, and potentially active if there has been movement over the Quaternary period (last 1.6 million years). Overall, earthquakes in Oregon are associated with active faults in four regional zones of seismicity: the Cascade Seismic Zone, Portland Hills (Portland, Oregon-Vancouver, Washington metropolitan area) zone, south-central (Klamath Falls) zone, and northeastern Oregon zone (Niewendorp and Neuhaus 2003). There are no known or active faults mapped within the Project Site Boundary (USGS 2017a), as indicated on Figure H-2. Probabilistic seismic hazard deaggregation at 475-year intervals are shown in Attachment H-2, and at 4,275-year intervals in Attachment H-3.

7.2.2 Recorded Earthquakes

Figure H-2 displays the location and approximate magnitude of all recorded earthquakes within approximately 50 miles of the Project Site Boundary. The historical seismic events are grouped by magnitude, and are displayed with differently-sized symbols based on the strength of event.

Because of the high number of events in the vicinity of the Upper Klamath Lake, several of the symbols overlap in this area of the figure.

Table H-2 provides a summary of recorded earthquakes within 50 miles of the Project site boundary that are known to have caused Modified Mercalli Intensity (MMI) III or greater shaking intensity. For reference, an intensity of MMI III is associated with shaking that is “noticeable indoors, but may not be recognized as an earthquake.” (USGS 2017f).

The largest recorded earthquake within 50 miles of the Project site boundary was a magnitude 5.9 event, which occurred in 1993 approximately 45.6 miles east of the nearest site boundary of the proposed Project (Madin 1994, USGS 2011e). The most distant event to have produced a minimum intensity of MMI III at the site is the 1962 magnitude 5.9 (Richter scale) event, located approximately 60 miles southwest of the nearest site boundary. Table H-2 is derived from earthquake databases provided by DOGAMI (Madin 1994), and the USGS National Earthquake Information Center, Earthquake Search Data Bases (USGS 2017e).

Table H-2. Significant Historical Earthquakes within 50 Miles of the Project

Year	Month	Day	Latitude	Longitude	Moment Magnitude	Estimated MMI Intensity	Miles from Site Boundary
1873	11	22	42.00	-124.00	5.6	VII	48.1
1906	4	23	42.40	-123.40	4.3	IV	7.0
1931	9	2	41.80	123.00	4.5	V	43.8
1953	4	6	42.40	-122.90	3.6	III	2.3
1960	12	27	42.60	-123.70	3.3	III	24.0
1985	12	1	42.27	-123.54	2.7	II	18.1
1987	11	4	42.88	-123.01	2.7	II	27.8
1988	8	14	41.93	-123.37	2.8	II	34.9
1993	9	21	42.32	-122.03	5.9	VII	45.6
1993	9	21	42.30	-122.03	3.8	III	45.9
1993	9	21	42.36	-122.06	6	VII	43.7
1993	9	21	42.40	-122.09	3.4	III	41.9
1993	9	22	42.33	-122.01	3.5	III	46.5
1993	9	23	42.30	-122.05	4.1	IV	44.9
1993	9	24	42.37	-121.98	3.7	III	47.7
1993	9	28	42.28	-122.05	3.2	II	45.2
1993	10	22	42.32	-122.04	3.4	III	45.1
1993	11	30	42.28	-121.99	3.5	III	48.2
1993	12	04	42.29	-122.01	5.1	VI	47.1
1993	12	04	42.24	-121.97	3.7	III	49.9

Table H-2. Significant Historical Earthquakes within 50 Miles of the Project

Year	Month	Day	Latitude	Longitude	Moment Magnitude	Estimated MMI Intensity	Miles from Site Boundary
1994	11	17	42.39	-122.04	3.9	III	44.5
2009	2	26	42.54	-123.90	4.2	IV	32.4
2014	1	24	42.61	-123.96	3.8	III	36.6
Sources: Madin, 1994; USGS 2017e.							

The Ground Response Spectra Assessment on Attachments H-4 and H-5 compare the design response spectrum given in the 2012/2015 IBC with the 2014 Oregon Structural Specialty Code (USGS 2017f). Response spectra are provided for the maximum considered earthquake at the Grants Pass Substation location. For the maximum considered earthquake, separate response spectra modified by the amplification factors for Site Class D (S_D) and also Site Class C (S_C) are provided. On the basis of the current subsurface information available, it is recommended that the Project be designed for Site Class D. However, examination of the geology mapped for the site suggests that shallow bedrock formations may exist at certain locations, where the S_C response spectra would apply.

7.2.3 Hazards Resulting from Seismic Events

Potential seismic hazards associated with a design seismic event for this Project include seismic shaking or ground motion, liquefaction, fault displacement, subsidence, and instability from landslides or subsurface movement. These hazards are anticipated to be low, as discussed below. The Project is located well away from the Oregon coastline and is not within a DOGAMI-defined tsunami evacuation zone (DOGAMI 2017a), so tsunami inundation is not considered a hazard.

7.2.4 Seismic Shaking or Ground Motion

For facilities designed to the current IBC and OSSC (2014) guidelines for Site Class D, the design seismic event will have a 2 percent chance of exceedance in the next 50 years (or an event with an approximate 2,475-year recurrence interval). The Project will be designed for this event, to avoid life threatening structural damage from either the vibrational response of the structure or from secondary hazards associated with ground movement or failure, such as landslides, lateral spreading, liquefaction, fault displacement, or subsidence. It is generally assumed that if significant structural damage can be prevented, the risk to human safety and the environment will be minimal.

7.2.5 Fault Rupture

The probability of a fault displacement at the Project is considered to be low because of the absence of known or mapped potentially active faults in the Project area, and particularly within the Site Boundary (Figure H-2). Unknown faults could possibly exist, or new fault ruptures could form during a significant seismic event, but the likelihood of either occurrence is low based on the relatively stable region and lack of active faults identified during previous geologic investigations. This low probability, in combination with the limited occupancy of the substations, results in minimal risk from fault rupture; the risk to human safety and the environment will be minimal.

7.2.6 Liquefaction

Liquefaction is a phenomenon in which saturated, cohesionless soils temporarily lose their strength and liquefy when subjected to dynamic forces such as intense and prolonged ground shaking and seismic activity. The soils in the Project Site Boundary are not saturated, and are generally cohesive in nature. Combined with the relatively low seismic event potential, liquefaction of Project soils is considered very unlikely; the risk to human safety and the environment will be minimal.

7.2.7 Seismically Induced Landslides

Seismicity in the region has the potential to trigger landslides and mass wasting processes within the Site Boundary; the potential is considered moderate and limited to the steep canyon areas along tributary creeks. Known historic landslides are shown in Figure H-1. The proposed Sams Valley Substation is not located in a historic landslide area. The Grants Pass–Sams Valley Transmission Line and the Sams Valley–Whetstone Reconductoring structures are located away from landside areas to the extent practicable. More detailed discussion on the location and type of landslides is included in Section 8.1.

7.2.8 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface, and is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence due to seismic event is highly unlikely. In most areas bedrock is relatively shallow and as noted above, the overlying soils are not saturated due to the typical depth to groundwater; the risk to human safety and the environment will be minimal.

7.2.9 Seismic Hazard Mitigation

The state of Oregon uses the 2012 IBC, with current amendments by the OSSC (OSSC 2014). Pertinent design codes as they relate to geology, seismicity, and near-surface soil are contained in IBC Chapter 16, Section 1613, with slight modifications by the current amendments of the state of Oregon. The Facility will be designed to meet or exceed the minimum standards required by these design codes.

A final geotechnical exploration will be conducted to collect pertinent data for the design of the Facility to mitigate potential hazards that could be created during a seismic event. The hazard of a surficial rupture along a fault trace is anticipated to be low, given the seismic history of the site displayed in geologic mapping and the low probability that a fault rupture would actually displace the ground surface at the location of one of the transmission structures. No mitigation for potential fault rupture is anticipated; the risk to human safety and the environment will be minimal.

The design for disaster resilience is further described in Section 9.

8.0 Non-Seismic Geological Hazards – OAR 345-021-0010(1)(h)(F)

OAR 345-021-0010(1)(h)(G) An assessment of geology and soil-related hazards which could, in the absence of a seismic event, adversely affect or be aggravated by the construction or operation of the facility, in accordance with standard-of-practice methods and best practices, that addresses all issues relating to the consultation with the Oregon Department of Geology and Mineral Industries as described in (B) of this subsection. An explanation of how the applicant will design, engineer, construct and operate the facility to adequately avoid dangers to human safety and the environment presented by these hazards, as well as:

- (i) An explanation of how the applicant will design, engineer, construct and operate the facility to integrate disaster resilience design to ensure recovery of operations after major disasters.*
- (ii) An assessment of future climate conditions for the expected life span of the proposed facility and the potential impacts of those conditions on the proposed facility.*

8.1 Landslides

Mass wasting is a generic term for landslides, rockslides, rockfall, debris flows, soil creep, and other processes that include the downslope movement of masses of soil and rock. Mass wasting can be initiated by precipitation events, sometimes in conjunction with land use. Slope stability is a function of moisture content, slope gradient, rock and soil type, slope aspect, vegetation, seismic conditions and ground-disturbing activities. In 2017, DOGAMI released an update of the Statewide Landslide Information Database for Oregon (SLIDO-3.3; DOGAMI 2017b). SLIDO is a compilation of known landslides that have been identified on published maps and entered into this statewide database. Features included in the database include landslides, debris flows, alluvial fans, and colluvium or talus. The primary sources of this historical landslide information are published geologic reports and geologic hazard studies by the USGS and DOGAMI. The SLIDO-3.3 landslide database was used to overlay landslide areas or landslide-related features on Figure H-1.

Landslides are indicated at various locations along the existing transmission line (Figure H-1). While most of the structure locations on the existing 115 kV Grants Pass–Sams Valley Transmission

Line are outside of landslide areas, there are a few locations where the existing structures are located inside landslide areas. Upon review of the overlay of landslide areas on aerial imagery, these areas appear to be older landslides and lack fresh landslide scarps, are considerably revegetated, and occur on fairly shallow slopes.

The new double circuit 230/115 structures will be placed adjacent to existing structures. Considering the existing structures have not experienced landslide issues while in place, a potential reactivation of these older landslides is unlikely and would pose a low risk to public safety because they are located in unpopulated areas.

If slope stability issues are identified during the final design geotechnical investigations, the structures will either be relocated during the micrositing process or else remedial measures to improve slope stability will be implemented.

8.2 Volcanic Activity

The Pacific Northwest region is home to a large number of active volcanoes along the Cascade Mountain Range. The closest volcanoes to the Project Site Boundary are:

- Mount Shasta: 84 miles southeast
- Mount Jefferson: 270 miles north
- Mount Hood: 310 miles north
- Mount Adams: 350 miles north
- Mount St. Helens: 400 miles north

Mt. Shasta and Mount Jefferson are the two closest volcanoes to the Project. Most of the volcanic hazards impacts would occur within a 50-mile radius of the erupting volcano. Depending on the prevailing wind direction at the time of the eruption and the source of the eruption, ash fallout in the region surrounding the Project may occur. Because of the distance to the nearest volcanoes, impacts to the Project from volcanic activity would be indirect and likely be limited to ash fallout. In addition, the Project is not located near any streams that would likely be subject to pyroclastic flows from a volcanic eruption from these close volcanoes. It is unlikely that there would be any adverse effects to volcanic activity by the construction or operation of the Project.

8.3 Erosion

As discussed in Exhibit I, erosion can be caused by increasing exposure to wind or water. Wind erosion is influenced by the wind intensity, vegetative cover, soil texture, soil moisture, grain size of unprotected soil surface, topography, and the frequency of soil disturbance. Wind erosion is not a concern within the Project Site Boundary because of the cohesive surface soils, moisture content of the soil, and the erosion control measures that will be implemented to mitigate erosion potential. Water erosion is a function of primarily soil type, vegetative cover, precipitation, and slope inclination. If left unmitigated, erosion from rainfall would be a hazard during construction.

The runoff potential and water erosion hazard for the identified soils at the site range from low to high with higher erosion potentials associated with steeper slopes, especially on slopes exceeding 25 percent (see Exhibit I). U.S. Climate Data (2017) reports that the site vicinity receives approximately 31 inches of rainfall per year. The erosion potential and available precipitation, therefore, make site soils sensitive to water erosion during winter and spring months when most of the precipitation occurs, particularly where slopes are steep.

The majority of soil erosion impacts would be of limited duration, occurring predominantly during the construction period, approximately 1 year. The areas used only for construction would be reclaimed when the best season exists for replanting, typically in the fall or spring. Reclamation activities may include regrading to original land contours, replacing topsoil, and revegetation (see Exhibit P).

During operations, maintenance or repair activities may also require reclamation in small areas in or around Project features. The impacts resulting from operations-related reclamation activities would be similar to those described above for construction-related reclamation, only on a much smaller scale. Existing gravel roads would be used to access the Project. PacifiCorp does not anticipate that significant soil disturbance or erosion would result from typical operations. The substation area would be covered with gravel and/or pavement that will have a low susceptibility to wind and water erosion.

8.4 Flooding

To evaluate flood hazards, the DOGAMI *Statewide Flood Hazard Database for Oregon – FEMA Flood Insurance Study* inundation zones (DOGAMI 2017c) was compared to the temporary and permanent disturbance areas in the Site Boundary (Table H-3).

Temporary flood zone impacts would occur in Jackson County on approximately 4.9 acres of temporary work areas, and along 0.9 miles of roads. Project access roads are existing permanent features and would continue to have permanent impacts within the 100-year floodplain.

Seasonal thunderstorms can result in concentrated stormwater runoff and localized flooding. The engineered access roads and drainages will direct stormwater runoff away from structures and into drainage ditches and culverts. The Sams Valley Substation will be designed and engineered to include zoning ordinances and building codes that establish flood protection standards for all construction, including criteria to ensure that the foundation will withstand flood forces. Therefore, the risks and potential impacts to the Project from flood hazards are expected to be low.

Table H-3. 100-year Flood Zone Impacts for Work Areas and Access Roads.

County	Temporary Work Areas (acres)	Access Roads (miles)
Jackson	4.9	0.9
Josephine	0.0	0.0
Total	4.9	0.9
Source: Oregon Spatial Data Library (DOGAMI 2015). Note: Work Areas include pulling and tensioning sites and structure work areas. Access Roads are existing roads with improvements.		

Mitigation for flood hazards will be included in the design and engineering of roads, and will include meeting zoning ordinances and building codes, and establishing flood protection standards for all construction.

8.5 Shrinking and Swelling Soils

Changes in soil moisture cause certain clay minerals in soils to either expand or contract. The amount and type of clay minerals in the soil influence the change in volume. Structures or roads built on shrinking or swelling soils could be damaged by the change in volume of the soil. Linear extensibility (shrink-swell potential) refers to the change in length of an unconfined clod as its moisture content is decreased from a moist state to a dry state. There are clay or clayey soils within the area, most of which are located primarily near the Table Rocks near the proposed Sams Valley Substation. Clay or clayey soils make up a small percentage of the soils crossed by the Grants Pass–Sams Valley Transmission Line. The surficial soils with clay (Brockman clay loam, Carney clay, Carney cobbly clay, Coker clay, Gregory silty clay loam, and the Medford silty clay loam) could have the potential to affect the Project or require special evaluation and construction. Roads and transmission line structures constructed in areas underlain by these soils may require mitigation and special construction techniques.

Based on soil data, shrinking and swelling soils are not anticipated along the majority of the Project. The surficial soils with clay (Brockman clay loam, Carney clay, Carney cobbly clay, Coker clay, Gregory silty clay loam, and the Medford silty clay loam) could have the potential to affect the Project, or require special evaluation and construction. During final design, the shrink-swell potential of these soils will be evaluated by geotechnical investigations and laboratory testing and analysis. If shrinking or swelling soils are present at foundation locations or along road alignments, soil improvements will include reworking and compacting onsite soils, over-excavating and placing with compacted structural fill, constructing an impermeable barrier to prevent saturation, or mixing with other soils to reduce the potential for shrinking and swelling.

9.0 Disaster Resilience

A qualified engineer will assess and review the seismic, geologic, and soil hazards associated with the construction of Project facilities. Construction requirements will be modified, as needed, based on the site-specific characterization of seismic, geologic, and soil hazards. The Project will be designed, engineered, and constructed to adequately avoid potential dangers to human safety presented by seismic hazards. Substation structures will be designed in accordance with the OSSC. Substation equipment will be specified in accordance with the latest version of the Institute of Electrical and Electronics Engineers 693. The Project facilities will be generally unmanned and located in sparsely populated areas; therefore, the risks to human safety and the environment due to seismic hazards will be minimal. As discussed in Exhibit N, the need for the project is to maintain compliance through the North American Reliability Corporation (NERC) requirements for reliability which includes recovery of operations if another line were to fail. The Project will help meet new power demands due to regional growth and act as a redundant path for power in the event another local transmission line is damaged or experiences disruption of service.

PacifiCorp is governed by the National Electric Safety Code (NESC) and is required to apply various weather-related structural loading cases while designing transmission lines. PacifiCorp will apply all NESC-required, weather-related loading cases as well as additional cases identified to be important to the integrity of the lines.

Notably, NESC Section 250.A.4 indicates that by designing for the required line and tower loading cases, nothing further is required to resist earthquake loads. It states, “The structural capacity provided by meeting the loading and strength requirements of Sections 25 (Loadings for Grades B and C) and 26 (Strength Requirements) provides sufficient capability to resist earthquake ground motions.” Additionally, the American Society of Civil Engineer Guidelines for Electrical Transmission Line Structural Loading (Wong and Miller 2010) states the following:

Transmission structures need not be designed for ground-induced vibrations caused by earthquake motion because, historically, transmission structures have performed well under earthquake events, and transmission structure loadings caused by wind/ice combinations and broken wire forces exceed earthquake loads. This may not be the case if the transmission structure is partially erected or if the foundations fail due to earth fracture or liquefaction.

Transmission structures are designed to resist large, horizontal loads of wind blowing on the wires and structures. These loads and the resulting strengths provide ample resistance to the largely transverse motions of the majority of earthquakes. Decades of experience with lines of all sizes has shown that very infrequent line damages have resulted from soil liquefaction or when earth failures affect the structural capacity of the foundation.

Generally, NESC-mandated combined ice and loading cases have been determined by the industry to be sufficient to address seismic hazards from earthquakes.

PacifiCorp proposes to design, engineer and construct the Project to avoid dangers to human safety related to non-seismic hazards in many ways, including conducting site-specific geotechnical

evaluations for the transmission line structure placement, road improvement, and at the proposed Sams Valley Substation site. Typical mitigation measures for non-seismic hazards include avoiding potential hazards, conducting subsurface investigations to characterize the soils to adequately plan and design appropriate mitigation measures, creating detailed geologic hazard maps to aid in laying out facilities, providing warnings in the event of hazards, and purchasing insurance to cover the Project in the event of a hazard.

10.0 Climate Change

The University of Oregon Climate Leadership Initiative, in partnership with The National Center for Conservation Science & Policy and the MAPSS Team at the U.S. Forest Service Pacific Northwest Research Station, conducted a study to assess the likely consequences of climate change for the Rogue River Basin, which includes the Project's location. The study involved downscaling three climate models (CSIRO, MIROC, and Hadley) and incorporating a global vegetation change model (MC1) used by the Intergovernmental Panel on Climate Change (Doppelt et al. 2008). A panel of scientists and land managers then assessed the likely risks posed by changing climate conditions, and a panel of policy experts used the information to assess the likely risks to built systems and recommended ways to increase resistance and resiliency of those systems.

The downscaling of the three climate models and the analysis of the vegetation model for this area led to future projections of greater annual average and summer temperatures, and more severe storm events and wildfires, among other changes. These specific changes are expected to increase stress to power lines in the region. The study states, "The electrical power and transmission sectors play important roles in delivering a reliable supply of energy that is vital to support the Rogue Basin's growing population and diverse economy. The power system is likely to face increased stress due to the likelihood of more intense storms, heatwaves, and more frequent fires" (Doppelt et al. 2008).

Reinforcing PacifiCorp's electric grid with the Project provides resilience to the overall energy grid in this part of Oregon both directly, by upgrading the system which is anticipated to experience higher loads under raising temperatures and related increases in power demand for summer cooling, and indirectly, by supporting delivery of power generated through a variety of sources, to minimize the potential reduction in hydro power's role. Both aspects of this project support resiliency in the face of future climate change. In addition, the project will be designed to withstand extreme events such as flooding (see Section 8.4).

11.0 Conclusions

PacifiCorp reviewed regional geologic information and performed a site-specific characterization of potential seismic, geologic, and soils hazards. This exhibit demonstrates that PacifiCorp can design,

engineer, and construct the Project to avoid dangers to human safety. The following supporting evidence is provided:

- The risk of seismic hazards to human safety at the proposed Project is considered low. PacifiCorp has adequately characterized the seismic hazard risk of the site in accordance with OAR 345-022-0020(1)(a) and considered seismic events and amplification for the Project's site-specific subsurface profile. Project components include improved access roadways, transmission line structures, and substation equipment. There will be no continually staffed facilities, and the Sams Valley Substation operations and maintenance building will only be occasionally staffed. As a result, the probability of a large seismic event occurring while the Project is occupied is much lower than for a normal building or facility. This very low probability results in minimal risk to human safety.
- PacifiCorp has demonstrated that the Project can be designed, engineered, and constructed to avoid dangers to human safety and the environment in case of a design seismic event by adhering to most recently updated IBC requirements, per OAR 345- 022-0020(1)(b). These standards require that for the design seismic event, the factors of safety used in the Project design exceed certain values. For example, in the case of slope design, a factor of safety of at least 1.1 is normally required during the evaluation of seismic stability. This factor of safety is introduced to account for uncertainties in the design process and to ensure that performance is acceptable. In the event that factors of safety for slope stability are not met, the Project components will either be relocated during the micrositings process or else remedial measures to improve slope stability will be implemented. For slope stability, the remedial measures could include use of ground improvement methods (such as retaining structures) to limit the movement to acceptable levels. Given the relatively low level of risk for the Project, adherence to the IBC requirements will ensure that appropriate protection measures for human safety are taken.
- PacifiCorp has provided appropriate site-specific information and demonstrated (in accordance with OAR 345-022-0020(1)(c)) that the construction and operation of the proposed Project, in the absence of a seismic event, will not adversely affect or aggravate the geological or soil conditions of the Project site or vicinity. The risks posed by non-seismic geologic hazards are generally considered to be low because the Project can be designed to minimize or avoid the hazards of landslides, rockfall, and soil erosion. Landslide and slope stability issues will be identified during final design and mitigated. Erosion hazard resulting from soil and wind action will be minimized with the implementation of an engineered erosion control plan.
- PacifiCorp has demonstrated that the Project can be designed, engineered, and constructed to avoid dangers to human safety and the environment resulting from the geological and soil hazards of the site, pursuant to OAR 345-022-0020(1)(d). Site-specific studies will be conducted, additional geotechnical work will be done once the final locations of the structures are selected, and adequate measures will be implemented to control erosion. Accordingly, given the relatively small risks these hazards pose to human safety, standard

methods of practice (including implementation of the current IBC) will be adequate for the design and construction of the Project.

- Finally, PacifiCorp will conduct an assessment of future climate conditions for the expected life span of the Project and the potential impacts of those conditions on the Project.

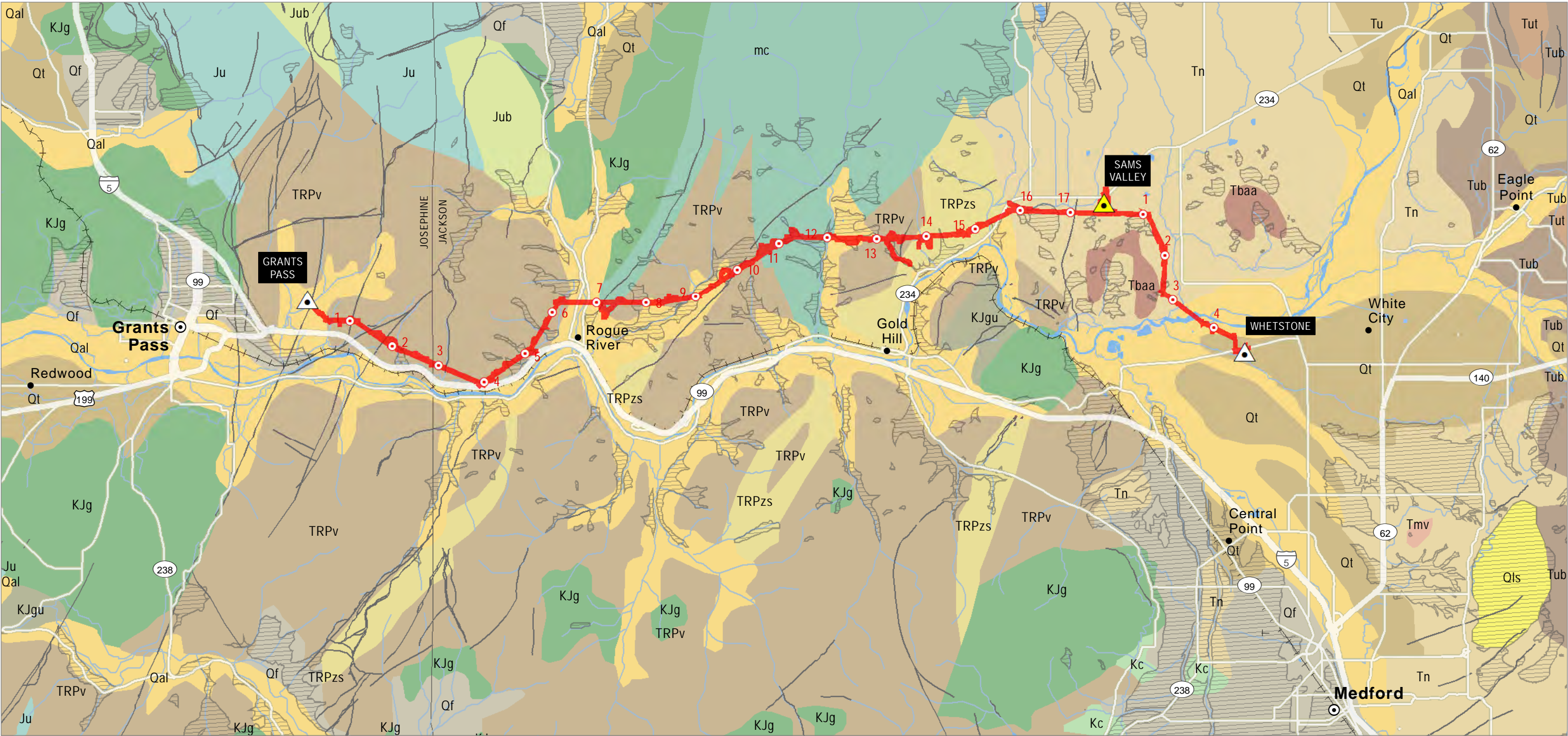
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Figures

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Map Area

Source(s): Esri, PacifiCorp, SLIDO, USGS

Disclaimer: No warranty is made as to the accuracy or completeness of the data shown, and its use is not intended for other than the stated purpose.

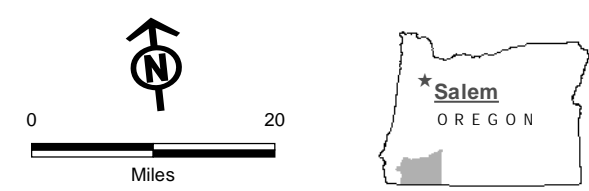
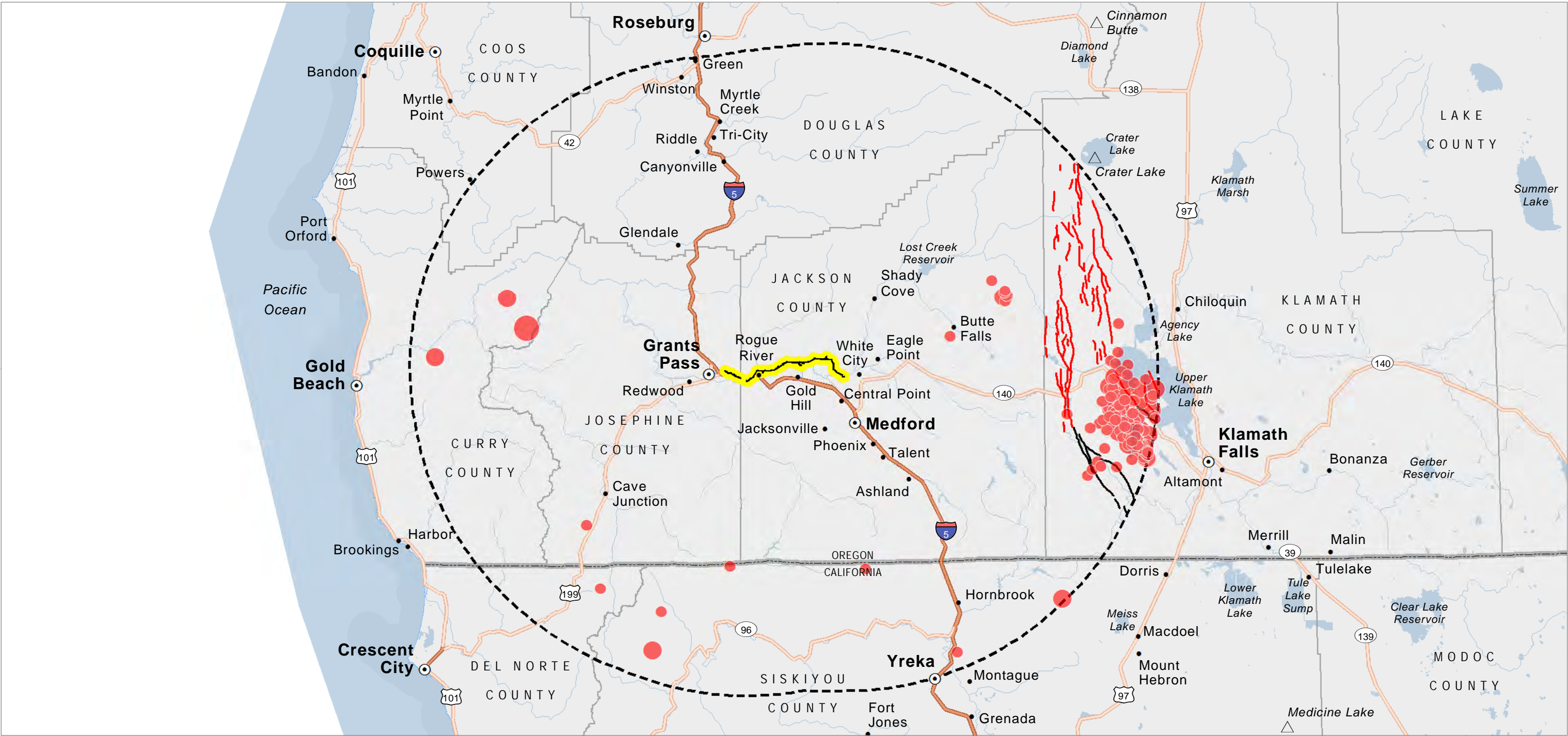
Z:\UtilServ\Sams Valley\Reports\Exhibit H_Geologic and Soil Stability\FIG H-1_Geologic Map.mxd December 2017

<p>Faults and Landslides</p> <ul style="list-style-type: none">Fault (age unknown)Landslide Areas <p>Geologic Units</p> <ul style="list-style-type: none">Ju - peridotite and serpentiniteJub - basalt and mudstoneKJg - quartz diorite and dioriteKJgu - gabbro and pyroxenite	<ul style="list-style-type: none">Kc - sandstone and mudstoneQal - sand and gravelQf - alluvial fan and colluviumQls - landslideQt - gravel and terraceTRPv - intermediate metavolcanic rock and meta-basaltTRPzs - argillite and chert	<ul style="list-style-type: none">Tbaa - andesite and basaltTmv - basalt and andesiteTn - conglomerate and sandstoneTu - basalt and volcanic breccia (agglomerate)Tub - basalt and volcanic breccia (agglomerate)Tut - ash-flow tuffmc - amphibolite and mica schist	<p>Project Features</p> <ul style="list-style-type: none">Site BoundaryMile Marker <p>Substations</p> <ul style="list-style-type: none">ProposedExisting	<p>Other Features</p> <p>Cities or Towns</p> <ul style="list-style-type: none">County SeatOther <p>Water Bodies</p> <ul style="list-style-type: none">Water BodiesRivers
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Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Geologic Landscape

Figure H-1



Source(s): Esri, National Earthquake Information Center, PacifiCorp, USGS

Disclaimer: No warranty is made as to the accuracy or completeness of the data shown, and its use is not intended for other than the stated purpose.

Z:\UtilServ\Sams Valley\Reports\Exhibit H_Geologic and Soil Stability\FIG H-2_Historical Seismicity and Potentially Active Faults.mxd December 2017

Project Features

- Analysis Area (50-mile buffer of Site Boundary)
- Site Boundary

Faults

Age

- Mid to Late Quaternary
- Quaternary

Volcanoes

- Volcanoes

Earthquakes

Magnitude

- 2.5 - 3.0
- 3.1 - 4.0
- 4.1 - 5.0
- 5.1 - 6.0

Other Features

Cities or Towns

- County Seat
- Other

Interstates and Highways

- Interstates
- Highways

Water Bodies

- Water
- Rivers

PACIFICORP
A PIONEER ENERGY HOLDINGS COMPANY

Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Historical Seismicity and Potentially Active Faults

Figure H-2

Attachment H-1. Record of Correspondence with DOGAMI

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Tetra Tech Telephone Conversation Record

Call To:	Yumei Wang, PE	Date:	10/2/17
Association:	Oregon Department of	Title:	Geotechnical Engineer
Phone No.:	971-673-1551	Message Taken By:	Suzy Cavanagh, PG
Subject: Sams Valley Reinforcement Project			

I spoke with Yumei Wang about the Sams Valley Reinforcement Project in Grants Pass, Oregon. I explained that PacifiCorp is proposing to replace approximately 18 miles of the existing Grants Pass to Sams Valley 115 kV transmission line to include a double circuited 230 kV and 115 kV transmission line in its place. I also explained that the new transmission line structures will be place adjacent to the existing structures within the same right-of-way. The project also includes a new substation at Sams Valley and the 4.7-mile reconductoring of a small portion of the existing Whetstone to Meridian 230 kV transmission line and other related and supporting facilities

There will be new towers with new foundations, the existing substation will have new transformers and there will be a new substation in Sams Valley. We discussed conducting a literature search on geologic hazards (softer soils, landslides, etc.). Ms. Wang indicated that no site reconnaissance was needed at this point and that in-office studies would suffice. She requested that we lay out specific plans for what will be done in the future on the project and to not assume that they know what PacifiCorp is planning on doing.

She inquired whether Lidar will be flown to address landslides and that it should include large, global landslides. She also indicated that we should identify what hazards will be addressed such as normal faulting and how PacifiCorp will follow up with DOGAMI. She stated that PacifiCorp needs to conduct due diligence prior to construction to address public safety.

Ms. Wang also stated that new Oregon rules will be adopted very soon and that the main change is when the project is designed, it will need to take into account resilience and future climate change. She defined resilience as if a future disaster occurs, can the facilities recover from a disaster. If access roads are damaged, can damage be addressed quickly? Also, will groundwater change in the future and will wind loads get higher?

Ms. Wang cited a 2007 storm that occurred in the Pacific Northwest where a BPA tower went down and damaged 2 adjacent towers. The towers were not designed to be self-sufficient. They now need to be designed to withstand that force.

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Attachment H-2.
Probabilistic Seismic Hazard
Deaggregation – 475-Year Return Time

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Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the [U.S. Seismic Design Maps web tools](#) (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

^ Input

Edition

Dynamic: Conterminous U.S. 2014

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

42.447167

Time Horizon

Return period in years

475

Longitude

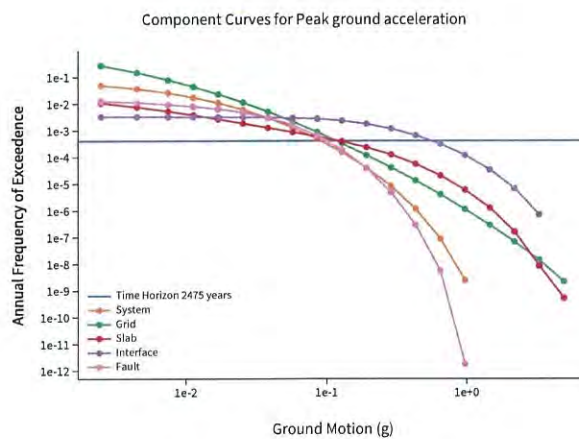
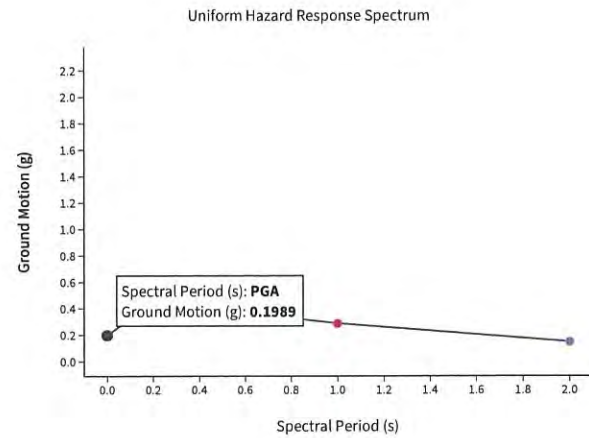
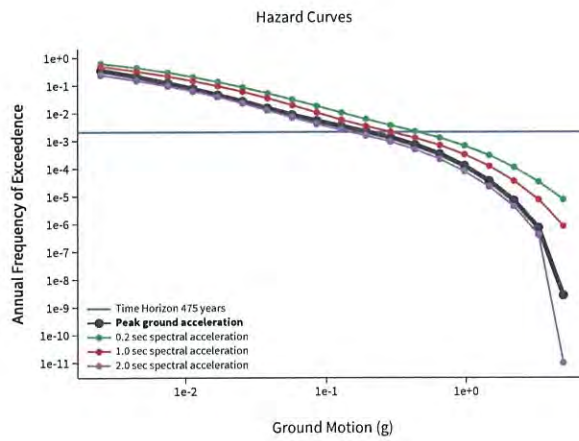
Decimal degrees, negative values for western long...

-123.278122

Site Class

259 m/s (Site class D)

^ Hazard Curve

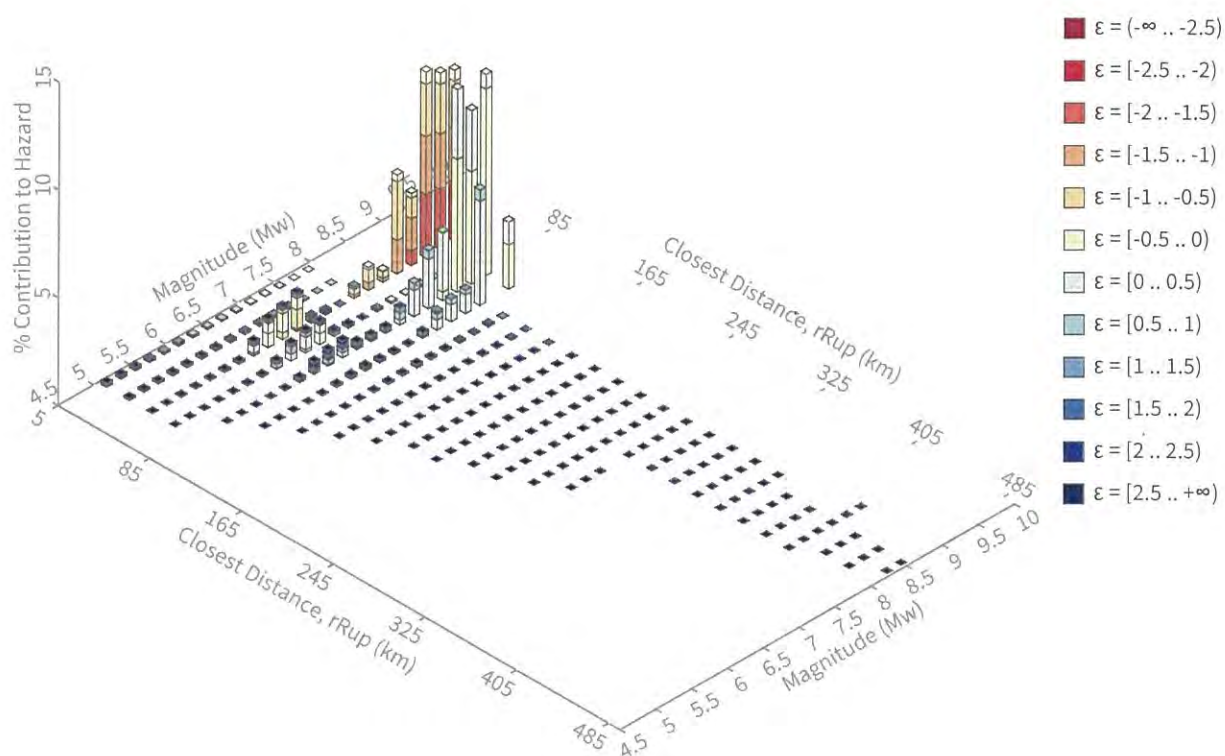


[View Raw Data](#)

^ Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 475 yrs

Exceedance rate: $0.0021052632 \text{ yr}^{-1}$

PGA ground motion: 0.19885875 g

Recovered targets

Return period: 478.59493 yrs

Exceedance rate: $0.0020894496 \text{ yr}^{-1}$

Totals

Binned: 100 %

Residual: 0 %

Trace: 1.22 %

Mean (for all sources)

r: 74.22 km

m: 8.44

ϵ_0 : -0.29σ

Mode (largest r-m bin)

r: 95.54 km

m: 8.69

ϵ_0 : 0σ

Contribution: 9.41 %

Mode (largest ϵ_0 bin)

Deaggregation Contributors

Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
sub0_ch_mid.in		Interface							24.91
	Cascadia Megathrust - whole CSZ Characteristic		95.56	8.89	-0.15	124.390° W	42.112° N	248.18	24.91
sub0_ch_bot.in		Interface							23.34
	Cascadia Megathrust - whole CSZ Characteristic		45.14	9.07	-1.28	123.662° W	42.119° N	221.00	23.34
sub0_ch_top.in		Interface							8.11
	Cascadia Megathrust - whole CSZ Characteristic		107.08	8.80	0.09	124.543° W	42.108° N	250.50	8.11
coastalOR_deep.in		Slab							6.24
sub3_ch_bot.in		Interface							3.04
	Cascadia Megathrust - Goldfinger Case D Characteristic		45.03	8.56	-1.00	123.662° W	42.119° N	221.00	3.04
sub2_ch_bot.in		Interface							2.79
	Cascadia Megathrust - Goldfinger Case C Characteristic		44.99	8.71	-1.08	123.662° W	42.119° N	221.00	2.79
sub2_ch_mid.in		Interface							2.40
	Cascadia Megathrust - Goldfinger Case C Characteristic		95.46	8.46	0.15	124.390° W	42.112° N	248.18	2.40
sub3_ch_mid.in		Interface							2.37
	Cascadia Megathrust - Goldfinger Case D Characteristic		95.49	8.29	0.27	124.390° W	42.112° N	248.18	2.37
sub1_GRb0_bot.in		Interface							2.12
	Cascadia floater over southern zone - Goldfinger Case B		50.44	8.40	-0.80	123.662° W	42.119° N	221.00	2.12
coastalOR_deep.in		Slab							2.08
sub1_GRb1_bot.in		Interface							1.90
	Cascadia floater over southern zone - Goldfinger Case B		52.61	8.28	-0.69	123.662° W	42.119° N	221.00	1.90
sub1_GRb0_mid.in		Interface							1.85
	Cascadia floater over southern zone - Goldfinger Case B		99.49	8.42	0.23	124.390° W	42.112° N	248.18	1.85
sub1_GRb1_mid.in		Interface							1.56

Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
	Cascadia floater over southern zone - Goldfinger Case B		101.35	8.31	0.33	124.390° W	42.112° N	248.18	1.56
sub1_ch_bot.in		Interface							1.26
	Cascadia Megathrust - Goldfinger Case B Characteristic		44.96	8.83	-1.15	123.662° W	42.119° N	221.00	1.26
sub1_ch_mid.in		Interface							1.16
	Cascadia Megathrust - Goldfinger Case B Characteristic		95.46	8.60	0.06	124.390° W	42.112° N	248.18	1.16

Ranges =

43.160°
to

41.734°

124.250°

to

122.306

**Attachment H-3.
Probabilistic Seismic Hazard
Deaggregation – 2,475-Year Return Time**

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Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the [U.S. Seismic Design Maps web tools](#) (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

^ Input

Edition

Dynamic: Conterminous U.S. 2014

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

42.447167

Time Horizon

Return period in years

2475

Longitude

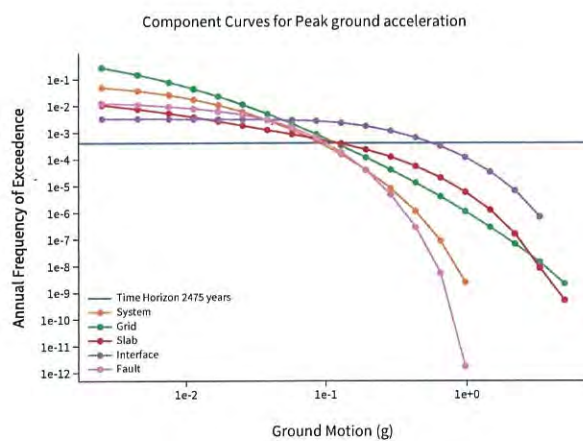
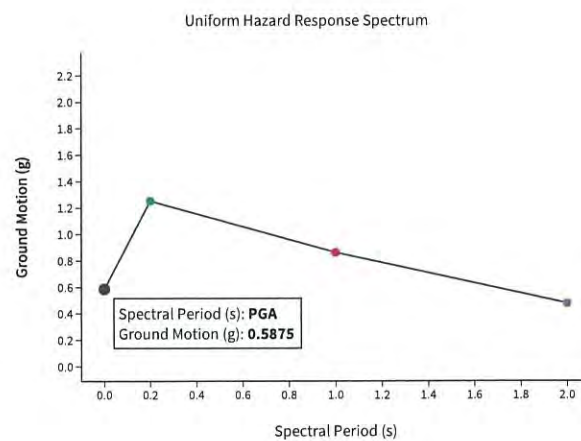
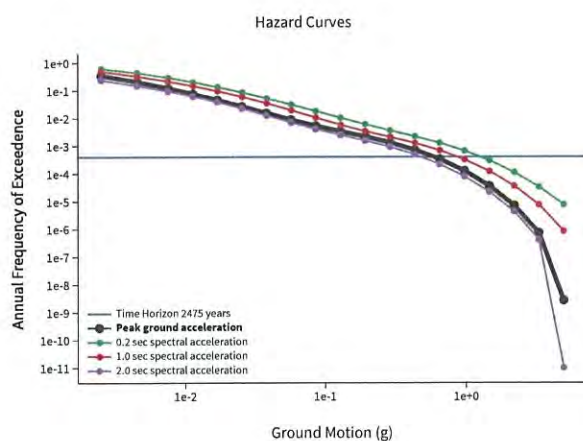
Decimal degrees, negative values for western long...

-123.278122

Site Class

259 m/s (Site class D)

^ Hazard Curve

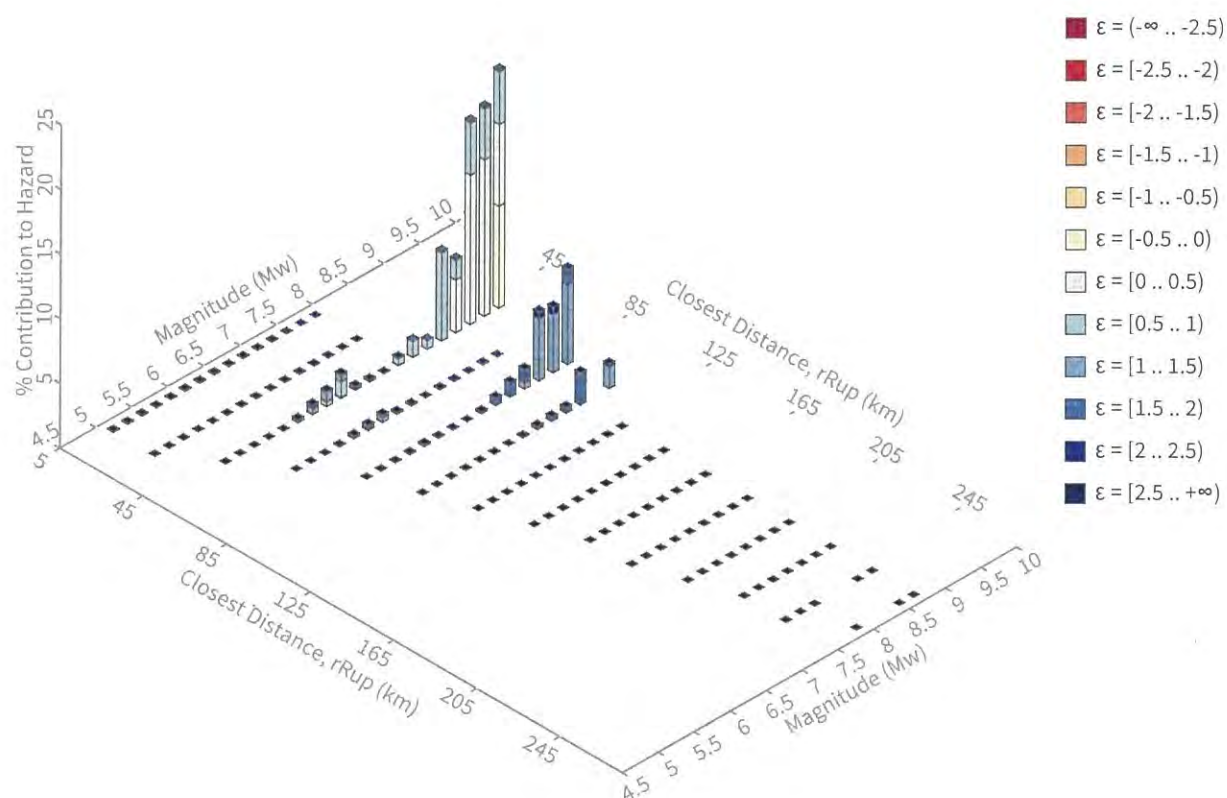


[View Raw Data](#)

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs

Exceedance rate: 0.0004040404 yr⁻¹

PGA ground motion: 0.58753846 g

Recovered targets

Return period: 2436.7968 yrs

Exceedance rate: 0.0004103748 yr⁻¹

Totals

Binned: 100 %

Residual: 0 %

Trace: 0.9 %

Mean (for all sources)

r: 59.84 km

m: 8.75

ϵ_0 : 0.71 σ

Mode (largest r-m bin)

r: 45.14 km

m: 9.34

ϵ_0 : 0.1 σ

Contribution: 18.41 %

Mode (largest ϵ_0 bin)

Deaggregation Contributors

Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
sub0_ch_bot.in		Interface							47.64
	Cascadia Megathrust - whole CSZ Characteristic		45.14	9.09	0.27	123.662° W	42.119° N	221.00	47.64
sub0_ch_mid.in		Interface							16.69
	Cascadia Megathrust - whole CSZ Characteristic		95.56	8.92	1.32	124.390° W	42.112° N	248.18	16.69
sub3_ch_bot.in		Interface							4.76
	Cascadia Megathrust - Goldfinger Case D Characteristic		45.03	8.57	0.60	123.662° W	42.119° N	221.00	4.76
sub2_ch_bot.in		Interface							4.74
	Cascadia Megathrust - Goldfinger Case C Characteristic		44.99	8.72	0.50	123.662° W	42.119° N	221.00	4.74
sub0_ch_top.in		Interface							4.22
	Cascadia Megathrust - whole CSZ Characteristic		107.08	8.82	1.52	124.543° W	42.108° N	250.50	4.22
coastalOR_deep.in		Slab							3.98
sub1_GRb0_bot.in		Interface							2.84
	Cascadia floater over southern zone - Goldfinger Case B		46.72	8.44	0.71	123.662° W	42.119° N	221.00	2.84
sub1_GRb1_bot.in		Interface							2.30
	Cascadia floater over southern zone - Goldfinger Case B		47.47	8.32	0.79	123.662° W	42.119° N	221.00	2.30
sub1_ch_bot.in		Interface							2.28
	Cascadia Megathrust - Goldfinger Case B Characteristic		44.96	8.85	0.42	123.662° W	42.119° N	221.00	2.28
coastalOR_deep.in		Slab							1.33
sub2_ch_mid.in		Interface							1.13
	Cascadia Megathrust - Goldfinger Case C Characteristic		95.46	8.47	1.60	124.390° W	42.112° N	248.18	1.13

**Attachment H-4.
Response Spectrum – Site Class D “Stiff
Soil”**

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Design Maps Summary Report

User-Specified Input

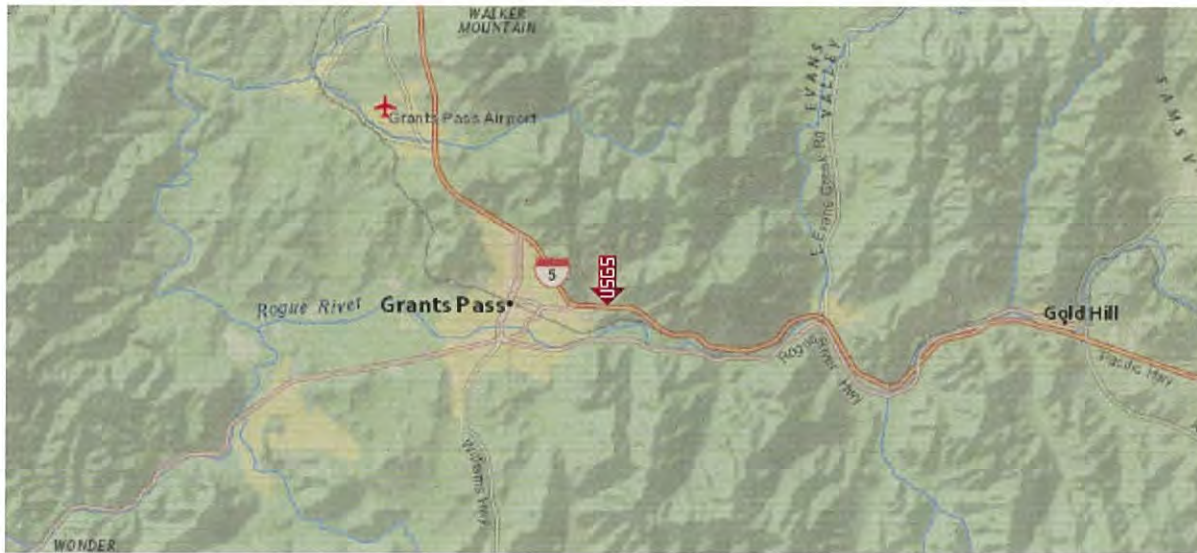
Report Title Sams Valley Reinforcement Project - Grants Pass Substation
Tue November 7, 2017 22:24:05 UTC

Building Code Reference Document 2012/2015 International Building Code
(which utilizes USGS hazard data available in 2008)

Site Coordinates 42.44717°N, 123.27812°W

Site Soil Classification Site Class D – “Stiff Soil”

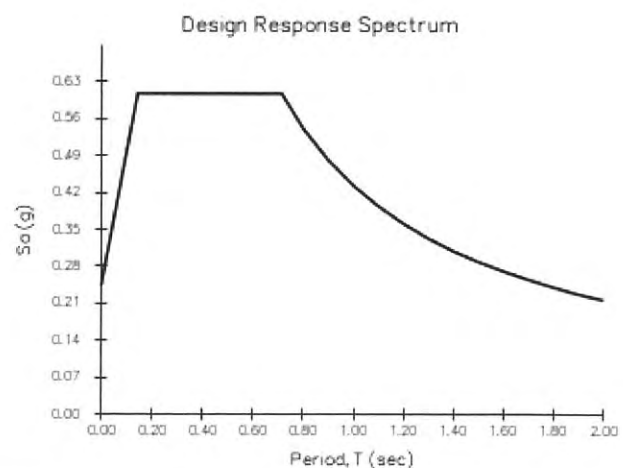
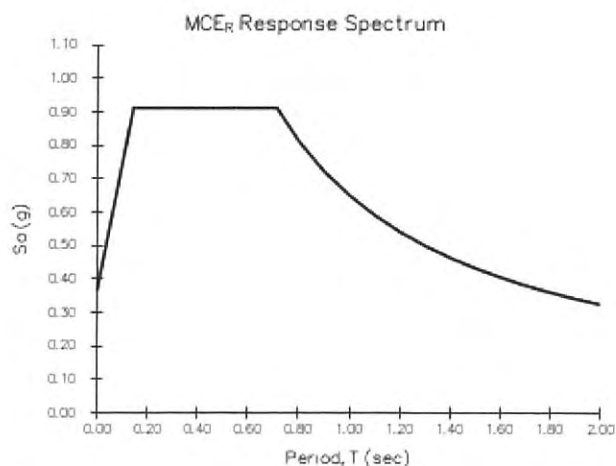
Risk Category I/II/III



USGS–Provided Output

$S_s = 0.763 \text{ g}$	$S_{MS} = 0.912 \text{ g}$	$S_{DS} = 0.608 \text{ g}$
$S_1 = 0.408 \text{ g}$	$S_{M1} = 0.650 \text{ g}$	$S_{D1} = 0.433 \text{ g}$

For information on how the S_s and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.



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**Attachment H-5.
Response Spectrum – Site Class C “Very
Dense Soil and Soft Rock”**

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Design Maps Summary Report

User-Specified Input

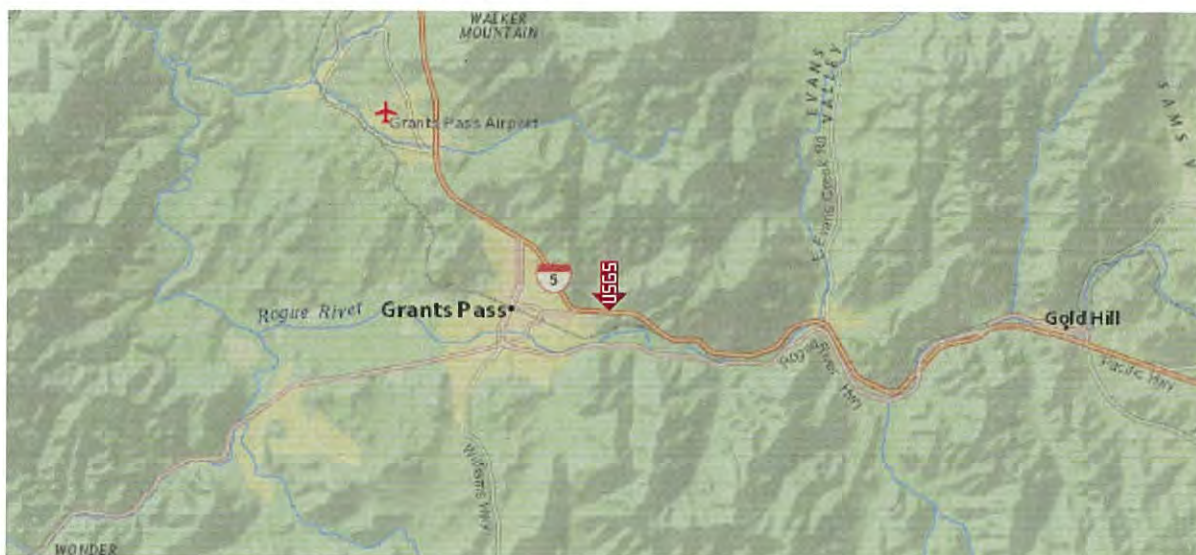
Report Title Sams Valley Reinforcement Project - Grants Pass Substation
Wed November 8, 2017 17:00:21 UTC

Building Code Reference Document 2012/2015 International Building Code
(which utilizes USGS hazard data available in 2008)

Site Coordinates 42.44717°N, 123.27812°W

Site Soil Classification Site Class C - "Very Dense Soil and Soft Rock"

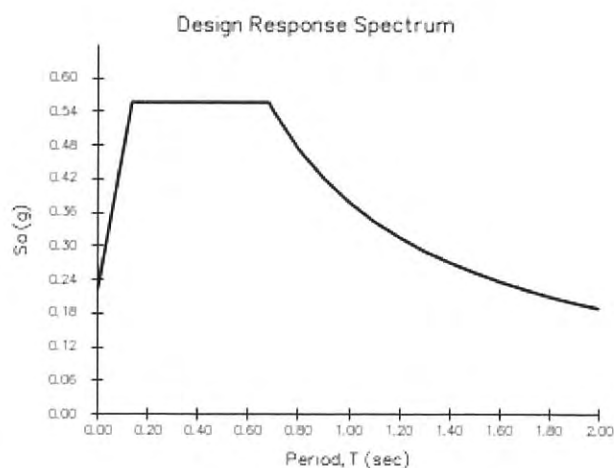
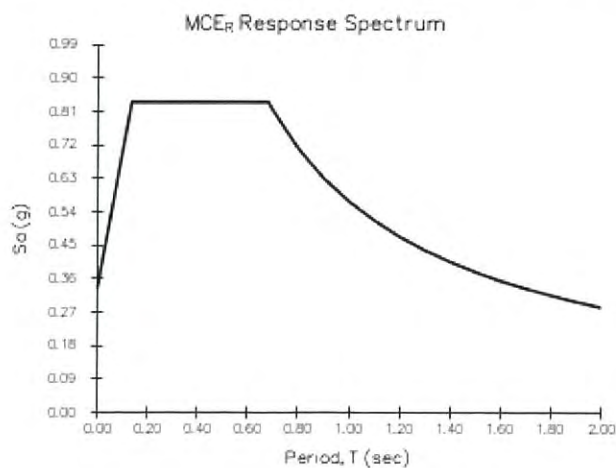
Risk Category I/II/III



USGS-Provided Output

$S_s = 0.763 \text{ g}$	$S_{MS} = 0.836 \text{ g}$	$S_{DS} = 0.557 \text{ g}$
$S_1 = 0.408 \text{ g}$	$S_{M1} = 0.568 \text{ g}$	$S_{D1} = 0.379 \text{ g}$

For information on how the S_s and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.



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Exhibit I

Soil Conditions

Sams Valley Reinforcement Projects December 2017

Prepared for



PacifiCorp

Prepared by



Tetra Tech, Inc.

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List of Attachments

Attachment I-1. Soil Map Book

Acronyms and Abbreviations

BMP	Best Management Practice
ESCP	Erosion and Sediment Control Plan
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rules
Project	Sams Valley Reinforcement Projects

1.0 Introduction

Exhibit I was prepared to meet the submittal requirements for the Sams Valley Reinforcement Projects (Project), per Oregon Administrative Rule (OAR) 345-021-0010(1)(i), related to soil conditions. The analysis in this exhibit focuses on the Project described in the *Written Request for Amendment #4 Eugene–Medford 500 kV Transmission Line*.

2.0 Site Certificate Condition Compliance

PacifiCorp recommends the following new condition for this resource:

- **Soil Protection Condition 1:** PacifiCorp will develop a Project-specific Erosion and Sediment Control Plan (ESCP) that will be completed to fulfill requirements of the National Pollutant Discharge Elimination System permit 1200-C.

3.0 Identification and Description of Soil Types – OAR 345-021-0010(1)(i)(A)

OAR 345-021-0010(1)(i) Information from reasonably available sources regarding soil conditions and uses in the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0022, including:

OAR 345-021-0010(1)(i)(A) Identification and description of the major soil types in the analysis area.

Shallow subsurface soil conditions were identified in the proposed project site vicinity using the Natural Resources Conservation Service (NRCS) website soil maps (NRCS 2017). The survey describes soil conditions in the upper 5 feet of the subsurface profile and classifies land use. Twenty-nine soil units were identified by the NRCS within the Site Boundary. A general description of each soil unit mapped in the project area is provided in Table I-1 below. Attachment I-1 provides the figures showing the NRCS soil unit index for the project vicinity and the Project relative to the NRCS soil map units.

Table I-1. General Description of Mapped Soil Units in Project Area

Soil Unit	Setting Within Project Area	Approximate Thickness	Formation Setting	Permeability	Runoff	Hazard for Erosion
Agate-Winlow complex	0 to 5 percent slopes, fan terraces	2 feet	Alluvium derived from igneous, metamorphic and sedimentary rock	Moderate	Moderate to high	Moderate
Beekman-Colestine gravelly loams	50 to 80 percent, hillslopes	2 feet	Colluvium derived from metasedimentary and metavolcanic rock	Moderate	Moderate to High	Moderate
Brockman clay loam	7 to 12 percent slopes, alluvial fans	unknown	Clayey alluvium derived from peridotite and serpentinite	Moderate	High	Moderate
Camas-Newberg-Evans complex	0 to 3 percent slopes, flood plains	unknown	Gravelly alluvium	Rapid	Low	Low
Caris-Offenbacher gravelly loams	50 to 80 percent, hillslopes	2 feet	Colluvium derived from metavolcanic and/or metasedimentary rock	Moderate	Moderate to high	High
Carney-Tablerock complex	20 to 35 percent slopes, alluvial fans, hillslopes	2 feet	Alluvium and colluvium derived from tuff breccia	Very slow	High	Moderate
Carney clay	1 to 5 percent slopes, alluvial fans	2 feet	Alluvium and colluvium derived from tuff breccia	Very slow	High	Low to Moderate
Carney cobbly clay	20 to 35 percent slopes, alluvial fans, hillslopes	2 feet	Alluvium and colluvium derived from tuff breccia	Very slow	High	Low to Moderate
Central Point sandy loam	0 to 3 percent slopes, low stream terraces	unknown	Alluvium	Moderately rapid	Low	Low to Moderate
Coker clay	0 to 3 percent slopes, alluvial fans	unknown	Clayey alluvium derived from tuff breccia	Very Slow	High	Low
Debenger-Brader loams	1 to 15 percent slopes, knolls, ridges	2 feet	Colluvium derived from sandstone	Moderate	Moderate to high	Moderate

Table I-1. General Description of Mapped Soil Units in Project Area

Soil Unit	Setting Within Project Area	Approximate Thickness	Formation Setting	Permeability	Runoff	Hazard for Erosion
Debenger loam	7 to 12 percent slopes, alluvial fans, hillslopes	2 feet	Alluvium and/or colluvium derived from sedimentary rock	Moderate	Moderate to high	High
Dubakella very stony clay loam, rocky	12 to 35 percent slopes, hillslopes	2 feet	Colluvium and/or residuum weathered from serpentinite	Moderately slow	High	Moderate
Gregory silty clay loam	0 to 3 percent slopes, stream terraces	4 feet	Alluvium derived from metavolcanics and metasedimentary rock	Moderately slow	Moderate to high	Moderate
Manita loam	7 to 35 percent slopes, alluvial fans, hillslopes	4 feet	Alluvium and colluvium derived from metavolcanic and metasedimentary rock	Moderate	Moderate to high	Moderate
McMullin-Rock outcrop complex	35 to 60 percent slopes, hillslopes	1 foot	Colluvium derived from metasedimentary rock and igneous rock	Moderate	High	High
Medford silty clay loam	0 to 3 percent slopes, alluvial fans, stream terraces	unknown	Alluvium derived from metavolcanics and/or metasedimentary rock	Moderately slow	Moderate to high	Moderate
Pearsoil-Dubakella complex	35 to 60 percent slopes, hillslopes	1 foot	Colluvium and residuum derived from serpentinite and peridotite	Moderate	High	Moderate
Provig-Agate complex	5 to 15 percent slopes, dissected fan terraces	unknown	Stratified alluvium	Moderate	Moderate to high	Moderate
Riverwash	flood plains	unknown	Alluvium	--	--	--
Ruch gravelly silt loam	2 to 20 percent slopes, alluvial fans	unknown	Alluvium derived from metavolcanics and metasedimentary rock	Moderate	Moderate to high	Moderate
Ruch silt loam	2 to 7 percent slopes, alluvial fans, hillslopes	unknown	Alluvium derived from metavolcanics and metasedimentary rock	Moderate	Moderate to high	Moderate

Table I-1. General Description of Mapped Soil Units in Project Area

Soil Unit	Setting Within Project Area	Approximate Thickness	Formation Setting	Permeability	Runoff	Hazard for Erosion
Selmac loam	2 to 20 percent slopes, basin floors, high stream terraces	1 foot	Stratified loamy and clayey alluvium	Moderately slow	Moderate to high	Moderate
Siskiyou gravelly sandy loam	35 to 60 percent slopes, mountain slopes	2 feet	Colluvium and residuum derived from granite and granodiorite	Moderately rapid	Low to Moderate	Low
Tablerock-Rock outcrop complex	35 to 110 percent slopes, hillslopes	5 feet	Colluvium derived from andesite and/or sandstone	Moderately slow	High	Moderate
Vannoy-Voorhies complex	35 to 55 percent slopes, MLRA 5, mountains	2 feet	Colluvium derived from metavolcanics and metasedimentary rock	Moderate	Moderate to high	Moderate
Vannoy silt loam	12 to 55 percent slopes, hillslopes	2 feet	Colluvium derived from metavolcanics and metasedimentary rock	Moderate	Moderate to high	High
Water	–	–	–	–	–	–
Witzel-Rock outcrop complex	30 to 75 percent slopes, mountain slopes	1 foot	Colluvium and residuum derived from metavolcanics and metasedimentary rock	Moderately slow	High	High

4.0 Current Land Use within the Analysis Area – OAR 345-021-0010(1)(i)(B)

OAR 345-021-0010(1)(i)(B) Identification and description of current land uses in the analysis area, such as growing crops, that require or depend on productive soils.

Land uses along the Project transmission line corridor primarily include shrub/grassland, followed by agriculture, forest, open space, developed land and wetlands or open water. The eastern half of the Project area is located in a relatively remote setting, composed of agricultural land, forest, and open space. The western half of the Project area passes through the cities of Rogue River and Grants Pass, and contains a more diverse mixture of land uses, including agricultural land, forest, parks/open spaces, residential, and industrial.

The properties to the north of the Sams Valley Substation are used for farming (field crop type activities) as well as vacant land. Properties to the south of the substation is owned by The Nature Conservancy. Properties to the west consist of a non-farm dwelling, farm land with field crops, and farm land. Properties to the east consist of non-farm dwellings and undeveloped land.

5.0 Project Soil Impacts – OAR 345-021-0010(1)(i)(C)

OAR 345-021-0010(1)(i)(C) Identification and assessment of significant potential adverse impact to soils from construction, operation and retirement of the facility, including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.

5.1 Soil Impacts During Construction

Construction activities can introduce the potential for increased erosion due to soil disturbance, loss of vegetation, compaction, and changes to surface drainage patterns. Erosion can be caused by increasing exposure to wind or water. Wind erosion is influenced by the wind intensity, vegetative cover, soil texture, soil moisture, grain size of unprotected soil surface, topography, and the frequency of soil disturbance. Wind erosion is not a significant concern in the Project area because of the cohesive surface soils, moisture content of the soil, and the erosion control measures that will be implemented to mitigate erosion potential. Water erosion is a function of primarily soil type, vegetative cover, precipitation, and slope inclination. If left unmitigated, erosion from rainfall would be a hazard during construction.

The runoff potential and water erosion hazard for the identified soils at the site range from low to high with higher erosion potentials associated with steeper slopes, especially on slopes exceeding 25 percent. U.S. Climate Data (2017) reports that the site vicinity receives approximately 31 inches of rainfall per year. The erosion potential and available precipitation, therefore, make site soils

sensitive to water erosion during winter and spring months when most of the precipitation occurs, particularly where slopes are steep.

The majority of soil erosion impacts would be of limited duration, occurring predominantly during the construction period, approximately 1 year. The expected construction start date for the substation portion of the Project is April 2019, and construction would continue for 9 months, ending in December 2019. This would avoid most of the rainy season. The areas used only for construction would be reclaimed when the best season exists for replanting, typically in the fall or spring. Reclamation activities may include regrading to original land contours, replacing topsoil, and revegetation (see Exhibit P).

5.2 Soil Impacts During Operation

Operations, maintenance, or repair activities may also require reclamation in small areas in or around the Project features. The impacts resulting from operations-related reclamation activities would be similar to those described above for construction-related reclamation, only on a much smaller scale. Existing gravel roads would be used to access Project features. PacifiCorp does not anticipate that significant soil disturbance or erosion would result from typical operations. The substation area would be covered with gravel and/or pavement that will have a low susceptibility to wind and water erosion. The planned construction methods would minimize future erosion by the placement and compaction of Oregon Department of Transportation type specification ground base, which would be covered with clean yard rock. This is required to be free of fines for electrical safety reasons.

5.3 Soil Impacts During Decommissioning

Potential impacts to soils from decommissioning would be similar to those described above for construction activities.

6.0 Mitigation Measures – OAR 345-021-0010(1)(i)(D)

OAR 345-021-0010(1)(i)(D) A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils.

6.1 Minimization and Best Management Practices

Potential adverse impacts to soil from construction, operations, and decommissioning of the proposed Project should be mitigated by adhering to Best Management Practices (BMPs) identified in the ESCP. Localized impacts to soils at and around tower locations, access roads, and at the substation in the temporary disturbance area will be minimized through the use of BMPs and restoration efforts to restore soil surfaces and vegetation following disturbances.

Soils at the Project area would be susceptible to water erosion. However, where the existing roadways are being used, water erosion would be minimal because of surface water drainage

systems and surfacing that are already in place. PacifiCorp will develop a project-specific ESCP that will be completed to fulfill requirements of the National Pollutant Discharge Elimination System permit 1200-C. In addition, as identified in Exhibit P (Fish and Wildlife Condition 1), a Reclamation and Revegetation Plan will be prepared for the Project.

Some minimization and BMPs that may be included in the Reclamation and Revegetation Plan and/or the ESCP may be, but are not necessarily limited to, the following:

- Roadway areas will be restored to their original grades, drainage condition, and rock surface.
- Exposed soil in overland segments that are affected by construction will be seeded when there is adequate soil moisture, and reseeded in the spring if a healthy cover crop does not grow.
- Straw mulch will be placed over the seeded areas to stabilize the soil surface until permanent vegetation is established.
- Sediment fences and check dams will remain in place and be maintained until the affected areas are well vegetated.
- Overland corridors will be constructed with waterbars adequately spaced so that surface drainage continues to natural drainage patterns, with minimal diversions through ditches and culverts.
- Regular maintenance of drainage facilities will be conducted to ensure continued proper operation.

Possible contamination from construction equipment or supplies such as lubricant and fuel will be controlled in accordance with PacifiCorp's spill prevention and management plan (see Exhibit G for Soil Condition 1). Sanitary wastes generated during construction will be limited to portable toilets, which will be serviced regularly by a qualified sewage disposal vendor (see Exhibit V).

The final design of the Project is not complete. The above discussion is intended to present a broad range of BMPs that may be implemented. The actual BMPs used for construction and operation will be decided during final design of the Project.

Operation and maintenance of the proposed Project would not have a significant impact on the soils because soil disturbance is not anticipated. Consequently, no measures to mitigate adverse impacts to the soil are necessary. However, monitoring of the system would be completed annually by PacifiCorp staff as part of an in-house regular maintenance program.

7.0 Monitoring Program – OAR 345-021-0010(1)(i)(E)

OAR 345-021-0010(1)(i)(E) The applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.

During construction, monitoring would occur in accordance with the requirements of the Reclamation and Revegetation Plan in Exhibit P (Fish and Wildlife Condition 1) and the ESCP as part of the 1200-C stormwater permit.

During operations, PacifiCorp would conduct regular (generally bi-annual) inspections of the Project as part of the company-wide transmission line inspection process. If during a regular inspection Project features are identified as resulting in erosion, PacifiCorp will take necessary corrective actions and additional mitigation measures.

8.0 Conclusions

Exhibit I includes the soils information required by OAR 345-021-0010(1)(i), and demonstrates that the design, construction, and operation of the Project, taking into account mitigation, are not likely to result in a significant adverse impact to soils.

9.0 References

NRCS (Natural Resources Conservation Service). 2017. Web Soil Survey. Soil maps website available at <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Jackson County data: Version 12, March 23, 2017. Josephine County data: Version 12, March 23, 2017, both accessed on October 2, 2017.

U.S. Climate Data. 2017. Climate Grants Pass – Oregon. Available at: <https://www.usclimatedata.com/climate/grants-pass/oregon/united-states/usor0146> (Accessed on October 3, 2017).

Attachment I-1. Soil Map Book

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Soil Types

- 100A - Kubli loam, 0 to 3 percent slopes
- 102B - Langellain-Brader loams, 1 to 7 percent slopes
- 102D - Langellain-Brader loams, 7 to 15 percent slopes
- 108D - Manita loam, 7 to 20 percent slopes
- 108E - Manita loam, 20 to 35 percent slopes
- 108F - Manita loam, 35 to 50 percent slopes
- 109E - Manita-Vannoy complex, 20 to 40 percent slopes
- 110E - McMullin gravelly loam, 3 to 35 percent slopes
- 113G - McMullin-Rock outcrop complex, 35 to 60 percent slopes
- 11B - Brockman clay loam, 2 to 7 percent slopes
- 11C - Brockman clay loam, 7 to 12 percent slopes
- 11G - Beekman-Colestine gravelly loams, 50 to 80 percent north slopes
- 127A - Medford silty clay loam, 0 to 3 percent slopes
- 128B - Medford clay loam, gravelly substratum, 0 to 7 percent slopes
- 12D - Brockman cobbly clay loam, 7 to 20 percent slopes
- 12G - Beekman-Colestine gravelly loams, 50 to 75 percent south slopes
- 133A - Newberg fine sandy loam, 0 to 3 percent slopes
- 139A - Padigan clay, 0 to 3 percent slopes
- 14 - Camas gravelly sandy loam
- 140G - Pearsoll-Dubakella complex, rocky, 20 to 60 percent slopes

- 146 - Pits, gravel
- 15 - Camas-Newberg complex
- 150E - Provig very gravelly loam, 15 to 35 percent slopes
- 151C - Provig-Agate complex, 5 to 15 percent slopes
- 152B - Randcore-Shoat complex, 0 to 5 percent slopes
- 154 - Riverwash
- 157B - Ruch silt loam, 2 to 7 percent slopes
- 158B - Ruch gravelly silt loam, 2 to 7 percent slopes
- 158D - Ruch gravelly silt loam, 7 to 20 percent slopes
- 16 - Central Point sandy loam
- 162D - Selmac loam, 7 to 20 percent slopes
- 163A - Sevenoaks loamy sand, 0 to 3 percent slopes
- 164B - Shefflein loam, 2 to 7 percent slopes
- 164D - Shefflein loam, 7 to 20 percent slopes
- 165E - Shefflein loam, 20 to 35 percent north slopes
- 166E - Shefflein loam, 20 to 35 percent south slopes
- 179F - Speaker-Josephine complex, 35 to 55 percent south slopes
- 17C - Brader-Debenger loams, 1 to 15 percent slopes
- 186H - Tablerock-Rock outcrop complex, 35 to 110 percent slopes
- 187A - Takilma cobbly loam, 0 to 3 percent slopes
- 188G - Tallowbox gravelly sandy loam, 35 to 70 percent north slopes
- 189G - Tallowbox gravelly sandy loam, 35 to 60 percent south slopes

- 195E - Vannoy silt loam, 12 to 35 percent north slopes
- 195F - Vannoy silt loam, 35 to 55 percent north slopes
- 196E - Vannoy silt loam, 12 to 35 percent south slopes
- 197F - Vannoy-Voorhies complex, 35 to 55 percent slopes, MLRA 5
- 198A - Winlo very gravelly clay loam, 0 to 3 percent slopes
- 1B - Abegg gravelly loam, 2 to 7 percent slopes
- 1C - Abegg gravelly loam, 7 to 12 percent slopes
- 208C - Xerorthents-Dumps complex, 0 to 15 percent slopes
- 21A - Camas sandy loam, 0 to 3 percent slopes
- 21F - Cornutt-Dubakella complex, 35 to 55 percent south slopes
- 22A - Camas gravelly sandy loam, 0 to 3 percent slopes
- 23A - Camas-Newberg-Evans complex, 0 to 3 percent slopes
- 25G - Caris-Offenbacher gravelly loams, 50 to 80 percent north slopes
- 26G - Caris-Offenbacher gravelly loams, 50 to 75 percent south slopes
- 27B - Carney clay, 1 to 5 percent slopes
- 27C - Debenger loam, 7 to 12 percent slopes
- 27D - Carney clay, 5 to 20 percent slopes
- 28D - Carney cobbly clay, 5 to 20 percent slopes
- 28E - Carney cobbly clay, 20 to 35 percent slopes
- 2A - Abin silty clay loam, 0 to 3 percent slopes

- 30E - Carney-Tablerock complex, 20 to 35 percent slopes
- 31A - Central Point sandy loam, 0 to 3 percent slopes
- 33A - Coker clay, 0 to 3 percent slopes
- 34 - Evans loam
- 35A - Cove clay, 0 to 3 percent slopes
- 42C - Holland sandy loam, cool, 7 to 12 percent slopes
- 44C - Debenger-Brader loams, 1 to 15 percent slopes
- 50E - Dubakella very stony clay loam, rocky, 12 to 35 percent slopes
- 53B - Manita loam, 2 to 7 percent slopes
- 53C - Manita loam, 7 to 12 percent slopes
- 53E - Manita loam, 20 to 35 percent slopes
- 54F - Manita loam, 35 to 50 percent north slopes
- 55A - Evans loam, 0 to 3 percent slopes
- 55F - Manita loam, 35 to 50 percent south slopes
- 57 - Newberg fine sandy loam
- 58F - Pearsoll-Rock outcrop complex, 20 to 60 percent slopes
- 61A - Foehlin gravelly loam, 0 to 3 percent slopes
- 64 - Riverwash
- 67B - Ruch gravelly silt loam, 2 to 7 percent slopes
- 67C - Ruch gravelly silt loam, 7 to 12 percent slopes
- 6B - Agate-Winlo complex, 0 to 5 percent slopes
- 6F - Beekman-Colestine complex, 50 to 80 percent north slopes

- 70F - Siskiyou gravelly sandy loam, 35 to 70 percent north slopes
- 71F - Siskiyou gravelly sandy loam, 35 to 60 percent south slopes
- 76A - Gregory silty clay loam, 0 to 3 percent slopes
- 77E - Vannoy silt loam, 20 to 35 percent slopes
- 78F - Vannoy silt loam, 35 to 55 percent north slopes
- 79F - Vannoy-Voorhies complex, 35 to 55 percent slopes, MLRA 5
- 83 - Wapato silt loam
- 84F - Witzel-Rock outcrop complex, 30 to 75 percent slopes
- 91E - Josephine-Pollard complex, 12 to 35 percent south slopes
- 92E - Josephine-Speaker complex, 12 to 35 percent north slopes
- 92F - Josephine-Speaker complex, 35 to 55 percent north slopes
- 93E - Josephine-Speaker complex, 12 to 35 percent south slopes
- 97A - Kerby loam, 0 to 3 percent slopes
- 98A - Kerby loam, wet, 0 to 3 percent slopes
- Water

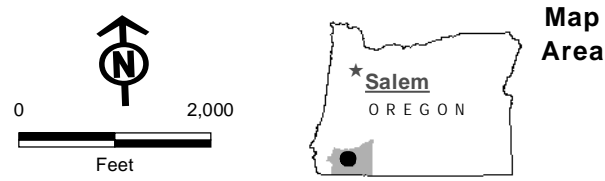
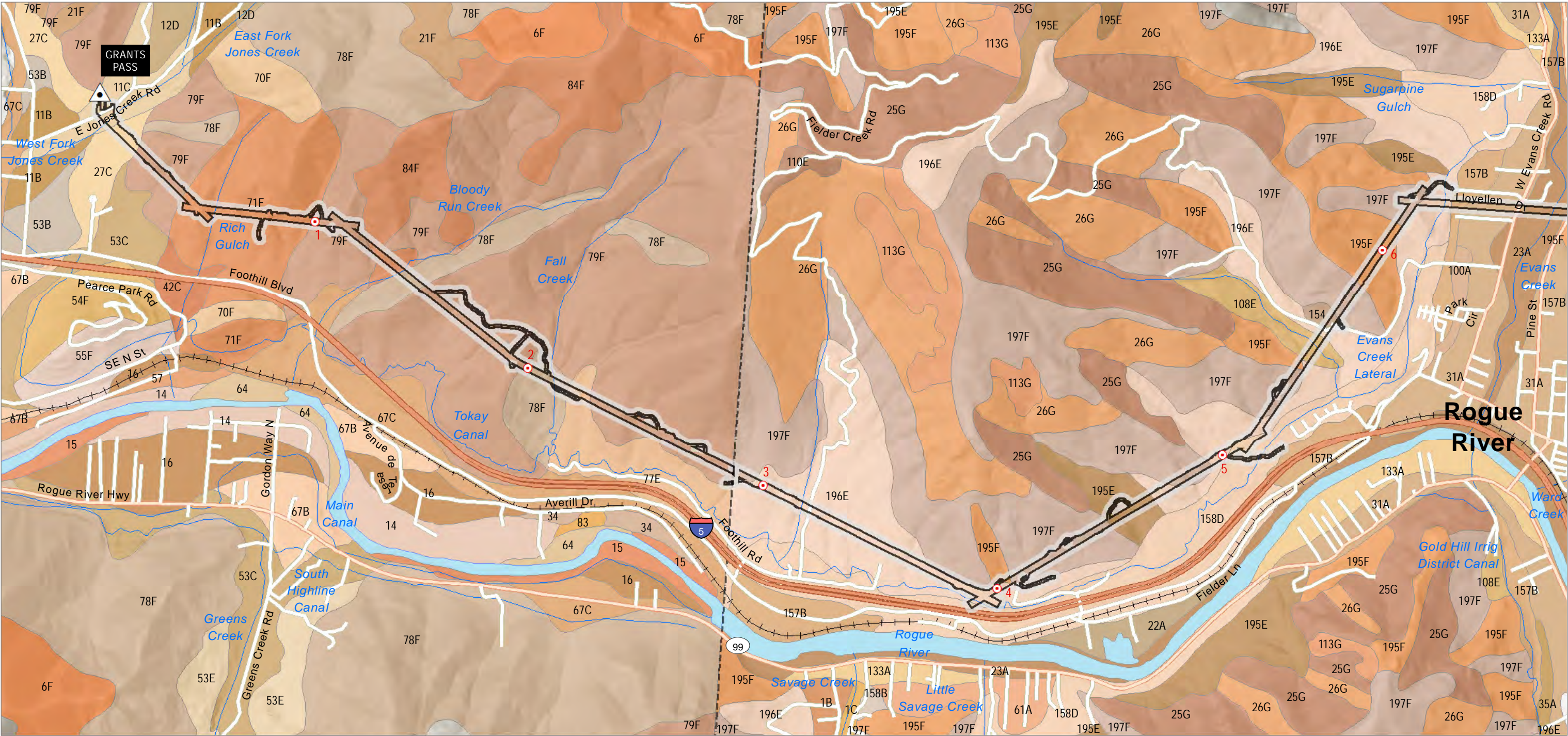


Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

Source(s): BLM, Esri, NRCS, PacifiCorp, USGS

Disclaimer: No warranty is made as to the accuracy or completeness of the data shown, and its use is not intended for other than the stated purpose.

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- | | |
|----------------------|-----------------------|
| Site Boundary | Other Features |
| Site Boundary | Highways |
| Mile Marker | Major Roads |
| Substations | Local Streets |
| Existing | Railroad |
| | Rivers |
| | County Line |



Sams Valley Reinforcement Projects
Josephine and Jackson Counties
Amendment #4

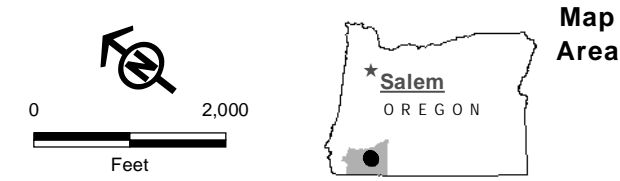
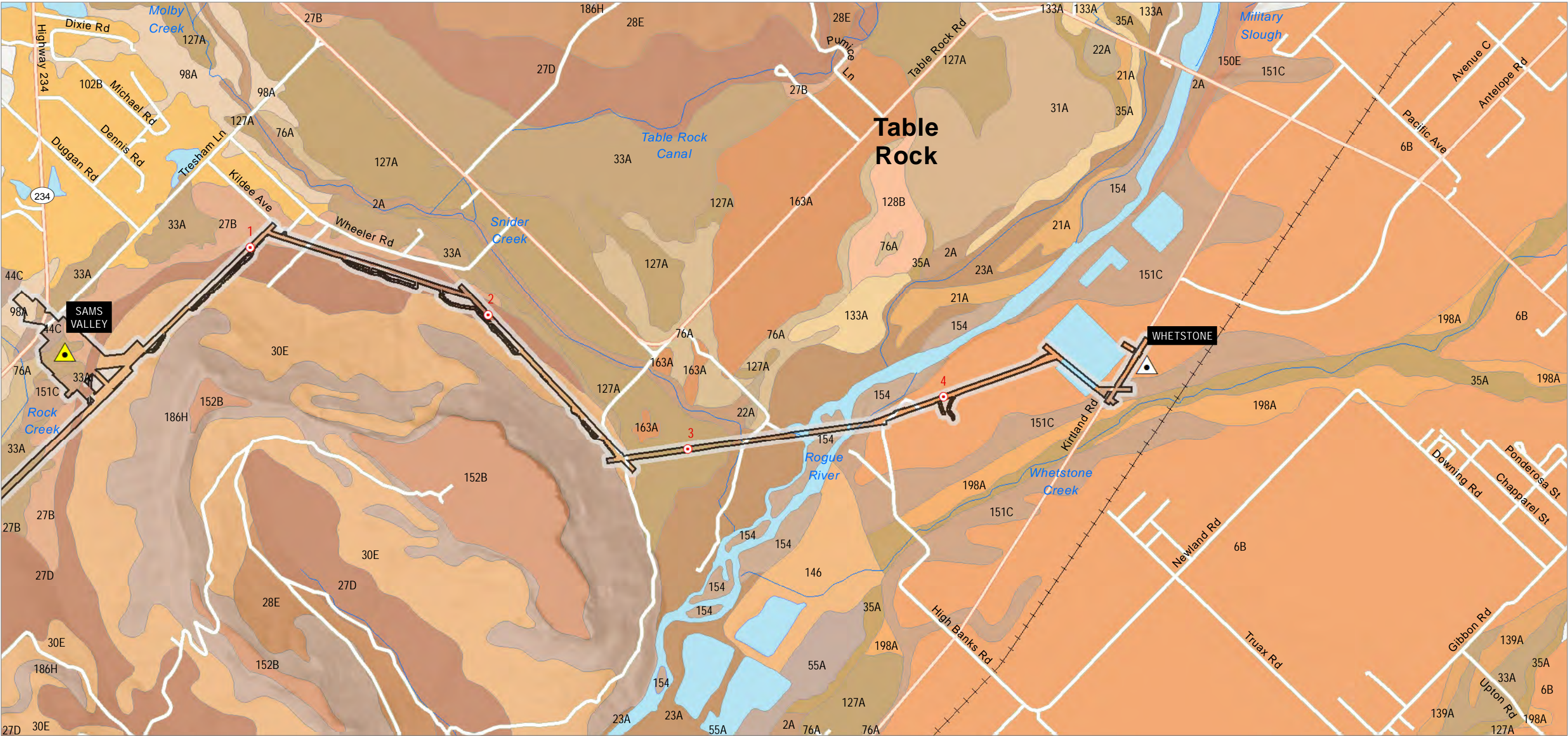
Attachment I-1 Soil Types

Map 1

Source(s): BLM, Esri, NRCS, PacificCorp, USGS

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- | Site Boundary | Other Features |
|---------------|----------------|
| Site Boundary | Major Roads |
| Mile Marker | Local Streets |
| Substations | Railroad |
| Proposed | Rivers |
| Existing | |

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