EXHIBIT F
PROPERTY OWNERSHIP

OAR 345-021-0010(1)(f)

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F-1 Property Owner Notification Lists and Corresponding Figure

F.1 INTRODUCTION

The Energy Facility Siting Council (EFSC) previously approved construction of the 404-megawatt (MW) Montague Wind Power Facility (Facility)[1] and found that the Facility complies with OAR 345-027-0060(1)(g), Property Owners Located Within or Adjacent to Facility Site. Montague Wind Power Facility, LLC (Montague) is constructing the Facility in phases. Phase 1 consists of up to 81 wind turbines generating 202 MW of power within the approved site boundary. Montague has already begun construction of Phase 1 under the conditions of the existing Site Certificate. Phase 2 consists of an expanded site boundary, modification of turbine types and construction schedule, and addition of a solar array and battery storage. The property owner lists and maps cited in this exhibit align with Section 5.3 (Property Owners Located Within or Adjacent to Facility Site) in *Request for Amendment No. 4 Project Description and OAR Division 27 Compliance*.

F.1 PROPERTY OWNER NOTIFICATION

OAR 345-021-0010(1)(f) *A list of the names and mailing addresses of all owners of record, as shown on the most recent property tax assessment roll, of property located within or adjacent to the site boundary as defined in OAR 345-001-0010. The applicant shall submit an updated list of property owners as requested by the Department before the Department issues notice of any public hearing on the application for a site certificate as described in 345-015-0220. In addition to incorporating the list in the application for a site certificate, the applicant shall submit the list to the Department in an electronic format approved by the Department. Property adjacent to the site boundary means property that is:*

(A) *Within 100 feet of the site boundary where the site, corridor or micrositing corridor is within an urban growth boundary.*

(B) *Within 250 feet of the site boundary where the site, corridor or micrositing corridor is outside an urban growth boundary and not within a farm or forest zone.*

(C) *Within 500 feet of the site boundary where the site, corridor or micrositing corridor is within a farm or forest zone*.

Response: The entire area within and surrounding the site boundary is zoned exclusive farm use by Gilliam and Morrow counties. Pursuant to OAR 345-021-0010(1)(f)(C), property owner notification is required within 500 feet of the site boundary. In addition to the required 500-foot notification, Montague has chosen to notify adjacent property owners between 500 and 1,000 feet of the site boundary.

F.2 NOTIFICATION LISTS AND CORRESPONDING FIGURE

Response: Attachment F-1 contains two tables and a figure. Table F-1 contains the names and mailing addresses of the property owners within 500 feet of the Facility site boundary. Table F-2 contains the names and mailing addresses of the property owners adjacent to Facility tax lots (between 500 and 1,000 feet of the site boundary). Figure F-1 shows the property owner tax lots within 500 feet of the Facility site boundary and, in a separate color, the property owner tax lots between 500 and 1,000 feet of the site boundary.

[1] EFSC. 2017. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

Montague obtained current property tax assessment rolls for Gilliam and Morrow counties to prepare Attachment F-1.

F.3 CONCLUSION

On the basis of the information presented in this exhibit, Montague has satisfied the requirements of OAR 345-027-0060(1)(g).

Attachment F-1
Property Owner Notification Lists and Corresponding Figure

Table F-1: Property Owners within 500 Feet of Facility Site Boundary

Table F-2: Property Owners Adjacent to Facility Tax Lots (Between 500 and 1,000 feet of Facility Site Boundary)

Figure F-1: Gilliam and Morrow County Tax Lots within 500 and 1,000 Feet of Site Boundary

Gilliam and Morrow County Property Owners within 500 feet of Site Boundary

Montague Wind Power Facility Request for Amendment

Parcel data and owner addresses provided by Gilliam County on 3/21/2019. Owner addresses provided by Morrow County on 3/28/2019.

Map Tax Lot	First Name	Last Name	Name 2	Company/Organization	C/O-Attn.	Address	City	State	Zip Code
01N20E0000-00500				4-D RANCH LLC		6808 SE ASH ST	PORTLAND	OR	97215
02N21E0000-01500				ALKALI FARMS CORP		PO BOX 61691	VANCOUVER	WA	98666
02N22E0000-02501				ALKALI FARMS CORP		101 E EIGHTH STREET #130	VANCOUVER	WA	98660
01N21E0000-01000	ROBERT F.	ATHEARN				333 ROSE COURT	MOUNT VERNON	WA	98273
01N21E0000-00900				ATHEARN ROBERT F. LIVING TRUST		333 ROSE COURT	MOUNT VERNON	WA	98273
01N21E0000-01900				ATHEARN ROBERT F. LIVING TRUST		333 ROSE COURT	MOUNT VERNON	WA	98273
01N22E0000-00800				ATHEARN ROBERT F. LIVING TRUST		333 ROSE COURT	MOUNT VERNON	WA	98273
01N21E0000-00600				BUREAU OF LAND MANAGEMENT		PO BOX 550	PRINEVILLE	OR	97754
01N22E0000-02100				BUREAU OF LAND MANAGEMENT		PO BOX 550	PRINEVILLE	OR	97754
01N22E0000-02800				BUREAU OF LAND MANAGEMENT		3050 NE 3RD STREET	PRINEVILLE	OR	97754
01N22E0000-03000				BUREAU OF LAND MANAGEMENT		PO BOX 550	PRINEVILLE	OR	97754
02N22E0000-00500				BUREAU OF LAND MANAGEMENT		PO BOX 550	PRINEVILLE	OR	97754
02N22E0000-01100				BUREAU OF LAND MANAGEMENT		PO BOX 550	PRINEVILLE	OR	97754
02N22E0000-02100				BUREAU OF LAND MANAGEMENT		PO BOX 550	PRINEVILLE	OR	97754
02N22E0000-02400				BUREAU OF LAND MANAGEMENT		PO BOX 550	PRINEVILLE	OR	97754
02N22E0000-03000				BUREAU OF LAND MANAGEMENT		3050 NE 3RD STREET	PRINEVILLE	OR	97754
01N22E0000-00100				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
01N22E0000-00501				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
01N22E0000-01701				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
02N22E0000-00600				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
02N22E0000-01301				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
02N22E0000-01400				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
02N22E0000-01500				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
02N22E0000-03500				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
03N22E0000-00700				CAITHNESS SHEPARDS FLAT LLC		565 5TH AVE 29TH FLOOR	NEW YORK	NY	10017
01N21E0000-01501	A. DAVID & PEGGY S.	CHILDS				1806 THOMPSON STREET	THE DALLES	OR	97058
01S21E0000-00201				COLUMBIA BASIN ELEC. CO-OP INC.		PO BOX 398	HEPPNER	OR	97836
01S22E0000-00300				CRUM RANCHES LLC.		PO BOX 121	IONE	OR	97843
02N22E0000-02900				CUSTARD BEVERLY		1951 E. 68TH ST.	TACOMA	WA	98404
01N22E0000-03200	ANDREW J.	DAVIDSON				PO BOX 16401	PORTLAND	OR	97292
01N22E0000-03202	GEORGE G.	DAVIDSON				PO BOX 342	HEPPNER	OR	97836
01S22E0000-00102	CHARLES LEE	DAVIDSON				350 N 1ST STREET	IRRIGON	OR	97844
02N21E0000-00100				EDP RENEWABLES NORTH AMERICA LLC		808 TRAVIS STE 700	HOUSTON	TX	77002
01S21E0000-00401				GILLIAM COUNTY HISTORICAL SOCIETY		PO BOX 377	CONDON	OR	97823
01S21E1100-00300				GRITSKI ROBERT & KRONNER KAREN		815 NW FOURTH ST	PENDLETON	OR	97801
01N21E0000-01703	JOHN L.	HABBERSTAD				23403 E MISSION AVE, STE 223	LIBERTY LAKE	WA	99019
01N22E0000-02500	KELWAYNE O.	HAGUEWOOD				59610 BASEY CANYON ROAD	HEPPNER	OR	97836
02N22E0000-03400	KEVEN	HAGUEWOOD				PO BOX 195	IONE	OR	97843
01N21E0000-00400	RICHARD E.	HARPER				PO BOX 8	IONE	OR	97843
01S22E0000-00400	RICHARD E.	HARPER				PO BOX 8	IONE	OR	97843
01S22E0000-00503	RICHARD E.	HARPER				PO BOX 8	IONE	OR	97843
02N21E0000-01300	WM. C. & JOYCE A.	HICKERSON				71983 HWY 19	ARLINGTON	OR	97812
01N20E0000-00300	JAMES & PHYLLIS	HOAG				9670 S.E. STARR QUARRY RD.	AMITY	OR	97101
02N20E0000-02701	JAMES & PHYLLIS	HOAG				9670 S.E. STARR QUARRY RD.	AMITY	OR	97101
02N20E0000-02702	JAMES & PHYLLIS	HOAG				9670 S.E. STARR QUARRY RD.	AMITY	OR	97101
01N21E0000-00804	TIMOTHY H. & DEBORAH L.	HOLTZ				PO BOX 224	IONE	OR	97843

Gilliam and Morrow County Property Owners within 500 feet of Site Boundary

Montague Wind Power Facility Request for Amendment

Parcel data and owner addresses provided by Gilliam County on 3/21/2019. Owner addresses provided by Morrow County on 3/28/2019.

Map Tax Lot	First Name	Last Name	Name 2	Company/Organization	C/O-Attn.	Address	City	State	Zip Code
01N21E0000-00806	TIMOTHY H. & DEBORAH L.	HOLTZ				PO BOX 224	IONE	OR	97843
02N21E0000-01704	TIMOTHY H. & DEBORAH L.	HOLTZ				PO BOX 224	IONE	OR	97843
02N20E0000-02700	HERBERT R. ETAL	HOLZAPFEL				PO BOX 1027	WILLOWS	CA	95988
02N21E0000-01701	HERBERT R. & VIRGINIA W.	HOLZAPFEL				PO BOX 1027	WILLOWS	CA	95988
01N20E0000-00100				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
01N20E0000-00200				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
01N20E0000-03204				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
01N20E0000-03205				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
01N21E0000-00500				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
02N20E0000-02800				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
02N20E0000-02901				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
02N21E0000-01200				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
02N21E0000-02100				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
01S21E0000-00200	JOSEPH K. & MYRA G.	IRBY				67907 HWY 19	ARLINGTON	OR	97812
01S22E0000-01200				K-3 RANCHES INC		92883 LOCUST GROVE LANE	WASCO	OR	97065
02N21E0000-00101	J.R.	KREBS				PO BOX 8	ARLINGTON	OR	97812
02N21E0000-00102	J.R.	KREBS				PO BOX 8	ARLINGTON	OR	97812
02N22E0000-00800	J.R.	KREBS				PO BOX 8	ARLINGTON	OR	97812
02N22E0000-00900	J.R.	KREBS				PO BOX 8	ARLINGTON	OR	97812
02N22E0000-00901	J.R.	KREBS				PO BOX 8	ARLINGTON	OR	97812
03N21E0000-00500	J.R.	KREBS				PO BOX 8	ARLINGTON	OR	97812
01N20E0000-02100	GLEMMA	LYNCH				18850 S.W. MAYJOHN CT. APT. B	BEAVERTON	OR	97007
01N20E0000-02100	GLEMMA	LYNCH				14394 MIDDLE ROCK CREEK LANE	ARLINGTON	OR	97812
02N22E0000-02700	OLIVE E.	MADDEN				34004 SE 34TH STREET	WASHOUGAL	WA	98671
01N20E0000-01000	JASON T. & BEVERLY K.	MARICK				14394 MIDDLE ROCK CREEK LN.	ARLINGTON	OR	97812
01N21E0000-01400	JASON T. & BEVERLY K.	MARICK				14394 MIDDLE ROCK CREEK LN.	ARLINGTON	OR	97812
01N21E0000-01600	JASON T. & BEVERLY K.	MARICK				14394 MIDDLE ROCK CREEK LN.	ARLINGTON	OR	97812
01N22E0000-03100	CHRISTOPHER	MASON				PO BOX 161523	BIG SKY	MT	59716
01N22E0000-03100	CHRISTOPHER	MASON				PO BOX 605	VICTOR	ID	83455
01S22E0000-00200	JOSEPH P. & JERI D.	MCELLIGOTT				PO BOX 4	IONE	OR	97843
01N22E0000-00500	RC & GAYLEEN	MILLER				PO BOX 490	ARLINGTON	OR	97812
01N22E0000-00600				MONTAGUE CEMETERY		UNDETERMINED PARTY_ADDRESS	UNDETERMINED CITY		
01N22E0000-00900				MONTY CRUM RANCHES LLC.		PO BOX 121	IONE	OR	97843
01N22E0000-01000				MONTY CRUM RANCHES LLC.		PO BOX 121	IONE	OR	97843
01N22E0000-01001				MONTY CRUM RANCHES LLC.		PO BOX 121	IONE	OR	97843
01N22E0000-01100				MONTY CRUM RANCHES LLC.		PO BOX 121	IONE	OR	97843
01N22E0000-02200				MONTY CRUM RANCHES LLC.		PO BOX 121	IONE	OR	97843
01S21E1100-00100	TYSON	MUNDY				PO BOX 187	ARLINGTON	OR	97812
03N21E0000-00506				NORTHWEST OPEN ACCESS NETWORK		7195 WAGNER WAY STE 104	GIG HARBOR	WA	98335
01S21E0000-02700	CARROLL W.	OLSEN				65848 UPPER ROCK CREEK RD	ARLINGTON	OR	97812
01S21E1100-00700	CARROLL W.	OLSEN				65848 UPPER ROCK CREEK RD	ARLINGTON	OR	97812
02N21E0000-01100				OREGON WASTE SYSTEMS INC.		PO BOX 1450	CHICAGO	IL	60690
02N21E0000-01800				OREGON WASTE SYSTEMS INC.		PO BOX 1450	CHICAGO	IL	60690
01N21E0000-00100				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
01N21E0000-00200				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
01N21E0000-00300				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209

Gilliam and Morrow County Property Owners within 500 feet of Site Boundary

Montague Wind Power Facility Request for Amendment

Parcel data and owner addresses provided by Gilliam County on 3/21/2019. Owner addresses provided by Morrow County on 3/28/2019.

Map Tax Lot	First Name	Last Name	Name 2	Company/Organization	C/O-Attn.	Address	City	State	Zip Code
01N22E0000-00700				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N21E0000-00100				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N21E0000-01400				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N21E0000-01600				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N21E0000-02400				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N21E0000-02500				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N22E0000-01001				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N22E0000-02600				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
03N21E0000-00503				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
01N23E0000-06300				PROUDFOOT RANCHES, INC.		PO BOX 28	IONE	OR	97843
01S23E0000-00900				PROUDFOOT RANCHES, INC.		PO BOX 28	IONE	OR	97843
02N21E0000-00700				QUARTER M RANCH LLC		61835 DART CREEK RD	ST HELENS	OR	97051
02N21E0000-00800				QUARTER M RANCH LLC		61835 DART CREEK RD	ST HELENS	OR	97051
02N21E0000-00900				QUARTER M RANCH LLC		61835 DART CREEK RD	ST HELENS	OR	97051
02N21E0000-01000				QUARTER M RANCH LLC		61835 DART CREEK RD	ST HELENS	OR	97051
01N20E0000-00800				RAMSAY RANCH & CO LLC		13270 MIDDLE ROCK CREEK LANE	ARLINGTON	OR	97812
01N21E0000-01300				RAMSAY RANCH & CO LLC		13270 MIDDLE ROCK CREEK LANE	ARLINGTON	OR	97812
02N22E0000-03100	ROBERT R. & PEGGY J.	REASONER				PO BOX 297	ARLINGTON	OR	97812
02N22E0000-03200	ROBERT R. & PEGGY J.	REASONER				PO BOX 297	ARLINGTON	OR	97812
02N22E0000-03201	ROBERT R. & PEGGY J.	REASONER				PO BOX 297	ARLINGTON	OR	97812
01N22E0000-02900	JOE D. & DONNA M.	RIETMANN				PO BOX 304	IONE	OR	97843
01N22E0000-02901	JOE D. & DONNA M.	RIETMANN				PO BOX 304	IONE	OR	97843
01N22E0000-02902	JOE D. & DONNA M.	RIETMANN				PO BOX 304	IONE	OR	97843
01S22E0000-00500	JOE D. & DONNA M.	RIETMANN				PO BOX 304	IONE	OR	97843
01S22E0000-00501	JOE D. & DONNA M.	RIETMANN				PO BOX 304	IONE	OR	97843
01S22E0000-00502	JOE D. & DONNA M.	RIETMANN				PO BOX 304	IONE	OR	97843
02N21E0000-01102	JERRY	RIETMANN				PO BOX 131	IONE	OR	97843
01S21E0000-02600	BARBARA J.	RIPER				1670 EDGEWOOD DR.	PALO ALTO	CA	94303
01N21E0000-01002	JIMMY I. & SARAH D.	RUCKER				68618 HWY 19	ARLINGTON	OR	97812
01N21E0000-01100	JIMMY I. & SARAH D.	RUCKER				69064 WEATHERFORD RD	ARLINGTON	OR	97812
01N21E0000-01200	JIMMY I. & SARAH D.	RUCKER				69064 WEATHERFORD RD	ARLINGTON	OR	97812
01S22E0000-01100				RUCKER FARMING		69064 WEATHERFORD RD	ARLINGTON	OR	97812
01N21E0000-00401				RUNCKEL LLC		2966 WINKEL WAY	WEST LINN	OR	97068
01N21E0000-00401				RUNCKEL LLC		117 FOOT HILLS RD.	LAKE OSWEGO	OR	97034
01N21E0000-00700				RUNCKEL LLC		117 FOOT HILLS RD.	LAKE OSWEGO	OR	97034
01N21E0000-01101				RUNCKEL LLC		24801 SW LADD HILL RD	SHERWOOD	OR	97140
01S21E0000-02601	ROBERT C. JR. & KATHRYN E.	SKINNER				PO BOX 393	IONE	OR	97843
01N22E0000-03201	MABEL L.	STAMATE				980 S.E. 5TH STREET	HERMISTON	OR	97838
01S22E0000-00100	MABEL L.	STAMATE				980 SE 5TH STREET	HERMISTON	OR	97838
01S22E0000-00101	JAMES A. & MABEL L.	STAMATE				980 SE 5TH STREET	HERMISTON	OR	97838
02N22E0000-02300				SUMNER PHYLLIS A. TRUST		71667 HWY 19 BOX 8	ARLINGTON	OR	97812
01N21E0000-00800	ROBERT K.	SUTTON				7707 WISCONSIN AVE #1102	BETHESDA	MD	20814
01N22E0000-01800	B. LAVELLE	UNDERHILL				PO BOX 266	DUFUR	OR	97021
01N20E0000-03200				UNION PACIFIC RAILROAD		1400 DOUGLAS STOP 1640	OMAHA	NE	68179-1640
01N20E0000-03208				UNION PACIFIC RAILROAD		1400 DOUGLAS STOP 1640	OMAHA	NE	68179-1640
01S21E0000-00300				UNION PACIFIC RAILROAD		1400 DOUGLAS STOP 1640	OMAHA	NE	68179-1640

Gilliam and Morrow County Property Owners within 500 feet of Site Boundary

Montague Wind Power Facility Request for Amendment

Parcel data and owner addresses provided by Gilliam County on 3/21/2019. Owner addresses provided by Morrow County on 3/28/2019.

Map Tax Lot	First Name	Last Name	Name 2	Company/Organization	C/O-Attn.	Address	City	State	Zip Code
02N21E0000-01210				WASTE MANAGEMENT		PO BOX 1450	CHICAGO	IL	60690
02N21E0000-02103				WASTE MANAGEMENT		PO BOX 1450	CHICAGO	IL	60690
01N21E0000-00802	JAMES H. & JUDITH J.	WEATHERFORD				208 W CARSON ST	CENTRALIA	WA	98531
01N21E0000-00805	FLORES ANN	WEATHERFORD				201 LAMKIN STREET #407	PUEBLO	CO	81003
01N21E0000-02601				WEATHERFORD JAMES EARL LIV TRUST		4012 N.E. 129TH PLACE	PORTLAND	OR	97230
01S21E0000-00600				WEATHERFORD JAMES EARL LIV TRUST		4012 N.E. 129TH PLACE	PORTLAND	OR	97230
01N21E0000-02000				WEATHERFORD SHUTLER PROPERTIES LLC		PO BOX 2350	THE DALLES	OR	97058
01N21E0000-02001				WEATHERFORD SHUTLER PROPERTIES LLC		PO BOX 2350	THE DALLES	OR	97058
01N21E0000-02002				WEATHERFORD SHUTLER PROPERTIES LLC		PO BOX 2350	THE DALLES	OR	97058
01N22E0000-02000				WEATHERFORD SHUTLER PROPERTIES LLC		PO BOX 2350	THE DALLES	OR	97058
01N21E0000-01500				WEEDMAN BROTHERS		PO BOX 386	WASCO	OR	97065
01N21E0000-02100				WEEDMAN FARMS LLC		PO BOX 386	WASCO	OR	97065
01N22E0000-01900				WEEDMAN FARMS LLC		PO BOX 386	WASCO	OR	97065
01S21E0000-00100				WEEDMAN FARMS LLC		PO BOX 386	WASCO	OR	97065
02N22E0000-02502	JAMES & MARTINA	WEISER				PO BOX 324	ARLINGTON	OR	97812
01S21E0000-00203	GARY M. & KAREN S.	WILDE				18048 MIDDLE ROCK CREEK LANE	ARLINGTON	OR	97812
01S21E0000-00400	GARY M. & KAREN S.	WILDE				18048 MIDDLE ROCK CREEK LANE	ARLINGTON	OR	97812
01S21E1000-00500	GARY M. & KAREN S.	WILDE				18048 MIDDLE ROCK CREEK LANE	ARLINGTON	OR	97812
01N21E0000-02300	CHET R.	WILKINS				66979 FRENCH CHARLIE ROAD	ARLINGTON	OR	97812
01N21E0000-02302	CHET R.	WILKINS				66979 FRENCH CHARLIE ROAD	ARLINGTON	OR	97812
02N22E0000-02500	DANIEL	WILLIAMS				PO BOX 155	IIWACO	WA	98624

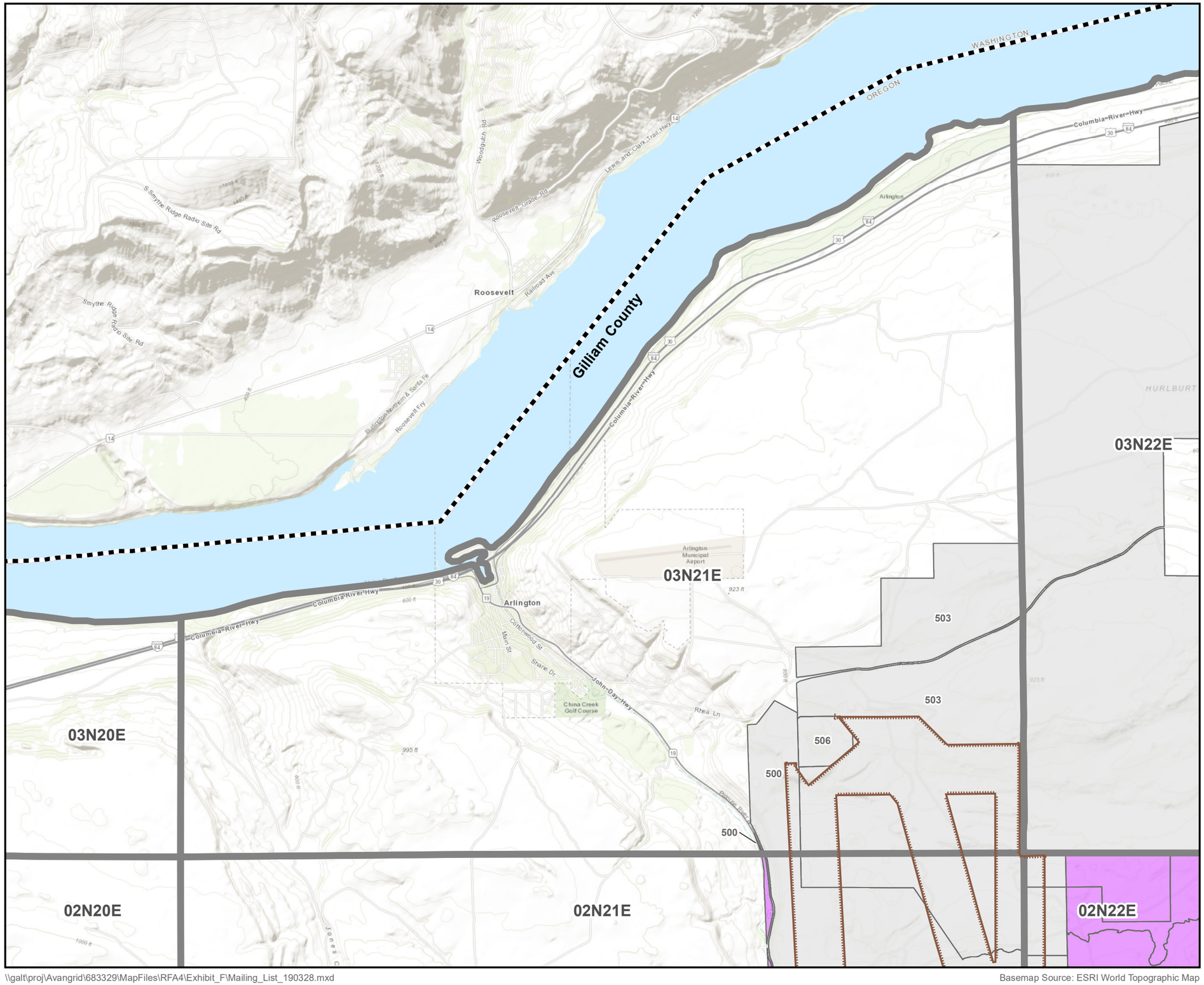
Gilliam County Property Owners Between 500 and 1,000 feet of Site Boundary

Montague Wind Power Facility Request for Amendment

Parcel data and owner addresses provided by Gilliam County on 3/21/2019. There are no Morrow County property owners between 500 and 1,000 feet of the site boundary per owner addresses provided by Morrow County on 3/28/2019.

Map Tax Lot	First Name	Last Name	Name 2	Company/Organization	C/O-Attn.	Address	City	State	Zip Code
02N21E0000-00100				EDP RENEWABLES NORTH AMERICA LLC		808 TRAVIS STE 700	HOUSTON	TX	77002
01N21E0000-01701	JOHN L.	HABBERSTAD				23403 E MISSION AVE, STE 223	LIBERTY LAKE	WA	99019
01N20E0000-00100				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
01N20E0000-00200				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
02N20E0000-02800				HOLZAPFEL LAND & CATTLE LP.		PO BOX 1027	WILLOWS	CA	95988
01S21E0000-00500				KLEINBACH HAROLD G.		3414 S GREEN LOOP	KENNEWICK	WA	99337
02N22E0000-00700	J.R.	KREBS				PO BOX 8	ARLINGTON	OR	97812
03N21E0000-00500	J.R.	KREBS				PO BOX 8	ARLINGTON	OR	97812
02N21E0000-01101				OREGON WASTE SYSTEMS INC		PO BOX 1450	CHICAGO	IL	60690
02N21E0000-00100				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N22E0000-00601				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
02N22E0000-00602				PEBBLE SPRINGS WIND, LLC.		1125 COUCH ST. SUITE 700	PORTLAND	OR	97209
01S21E1000-00201	PAUL D. & SHIRLEY A.	RHODES				67771 HWY 19	ARLINGTON	OR	97812
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02N21E0000-02300				WALTERS KENNETH A. FAMILY TRUST		69759 HWY 19	ARLINGTON	OR	97812
02N21E0000-02102				WASTE MANAGEMENT		PO BOX 1450	CHICAGO	IL	60690
01N21E0000-02600	ROBERT M. & CATHY S.	WEATHERFORD				PO BOX 2	ARLINGTON	OR	97812

Figure F-1
Gilliam and Morrow County Tax Lots within 500 and 1,000 Feet of Site Boundary
Sheet 01 of 12
Montague Wind Power Facility



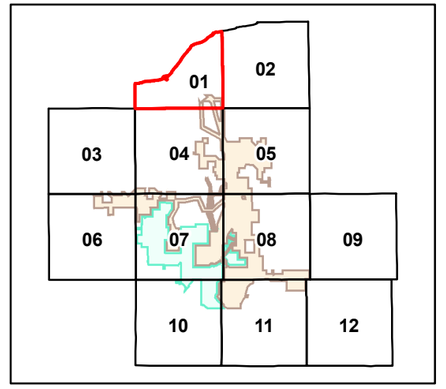
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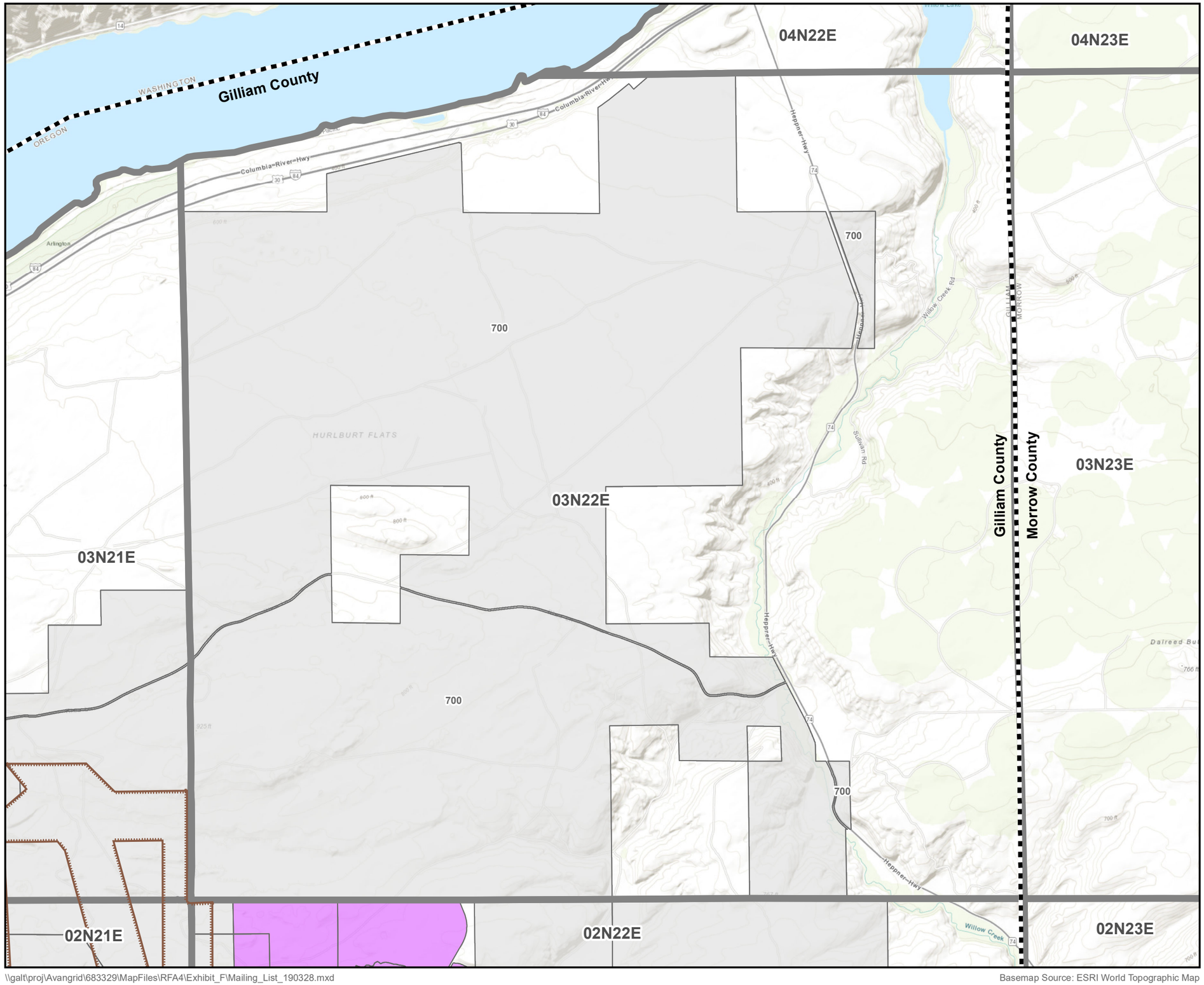
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Figure F-1
Gilliam and Morrow County Tax Lots within 500 and 1,000 Feet of Site Boundary
Sheet 02 of 12
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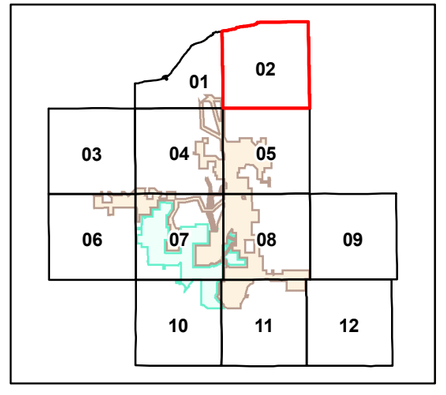
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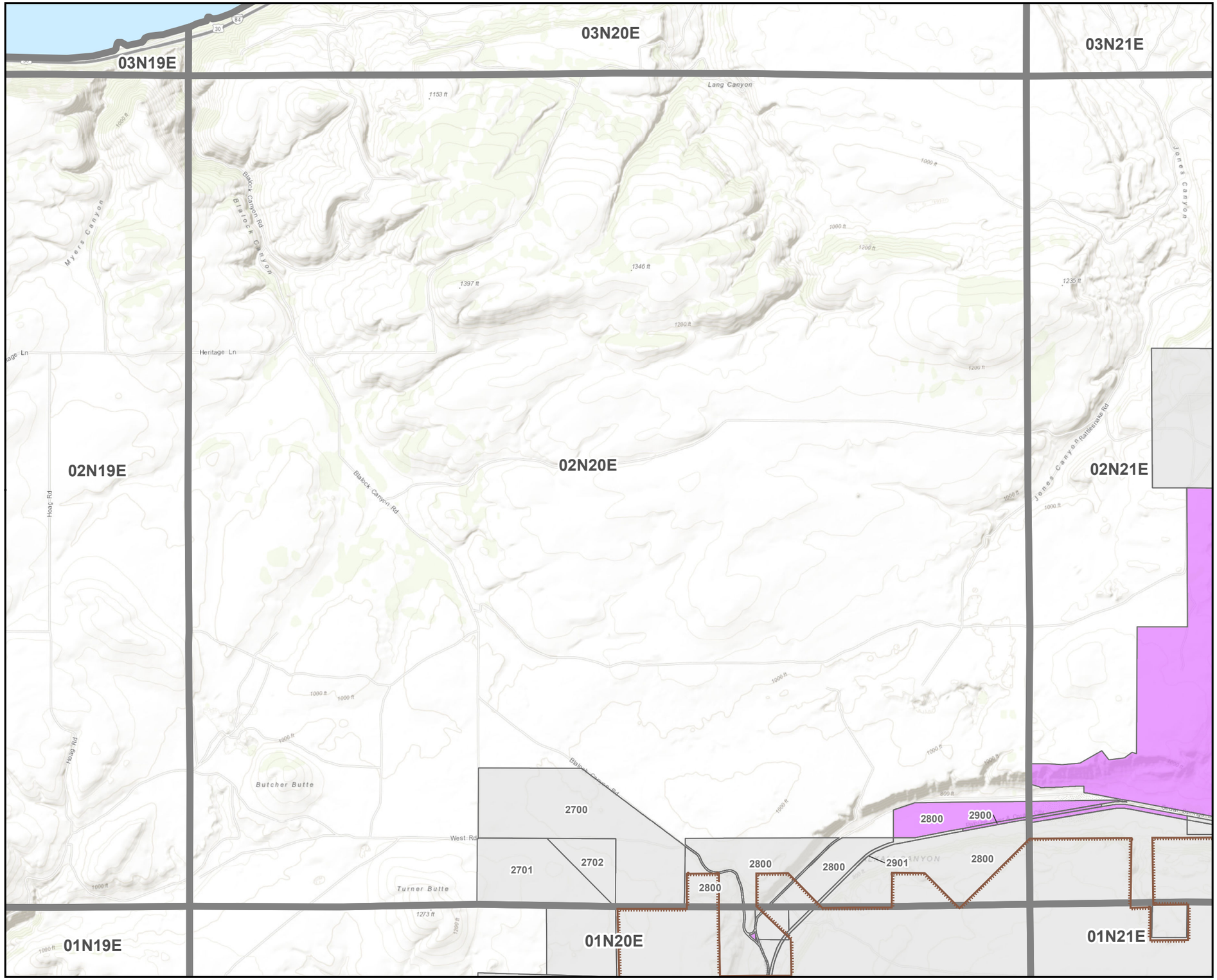
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Sheet 03 of 12
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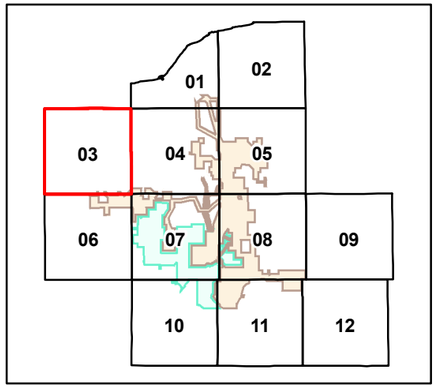
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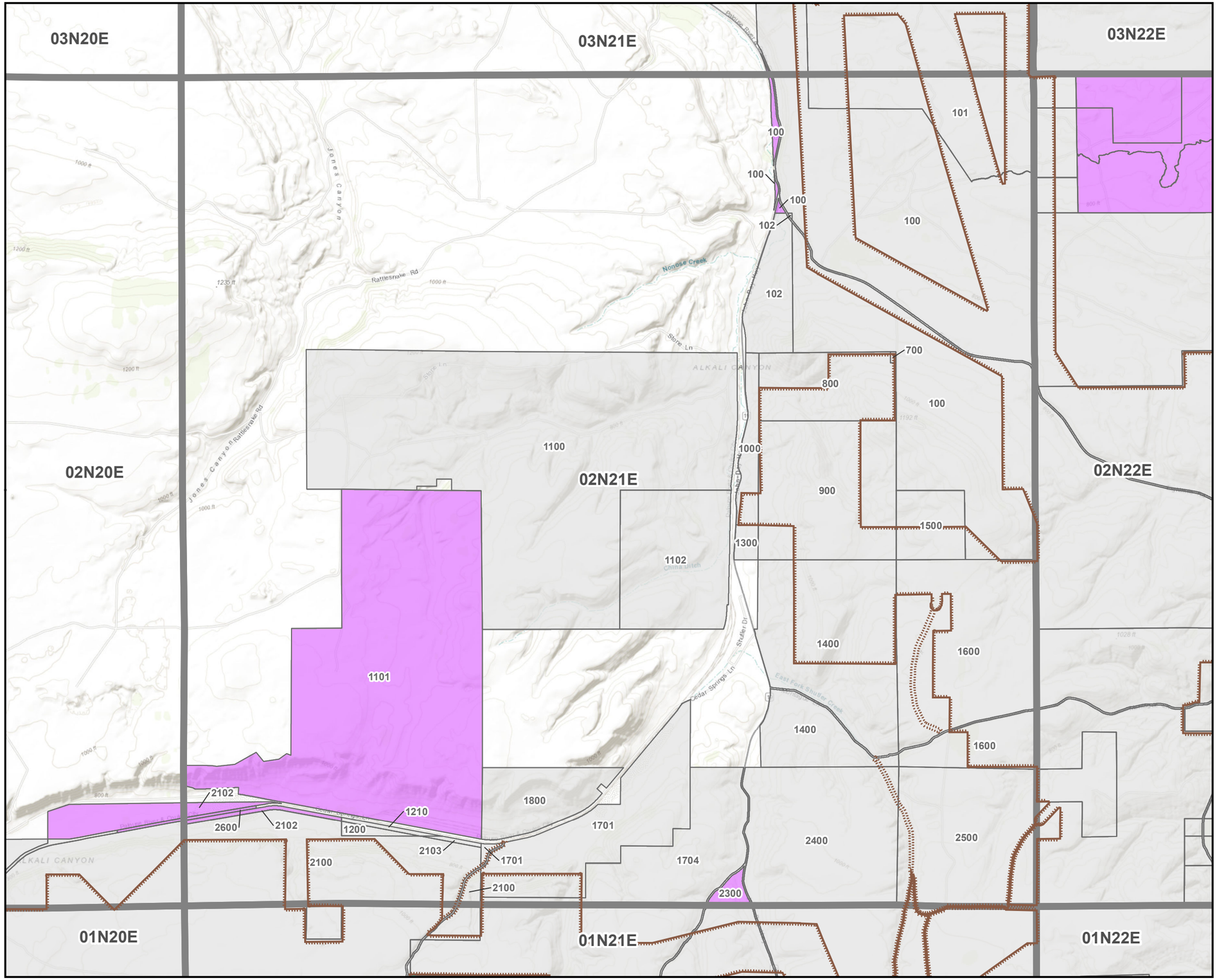
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Figure F-1
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Sheet 04 of 12
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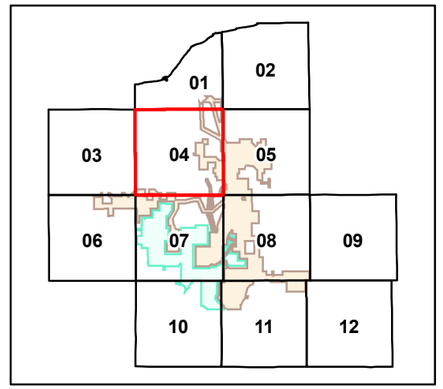
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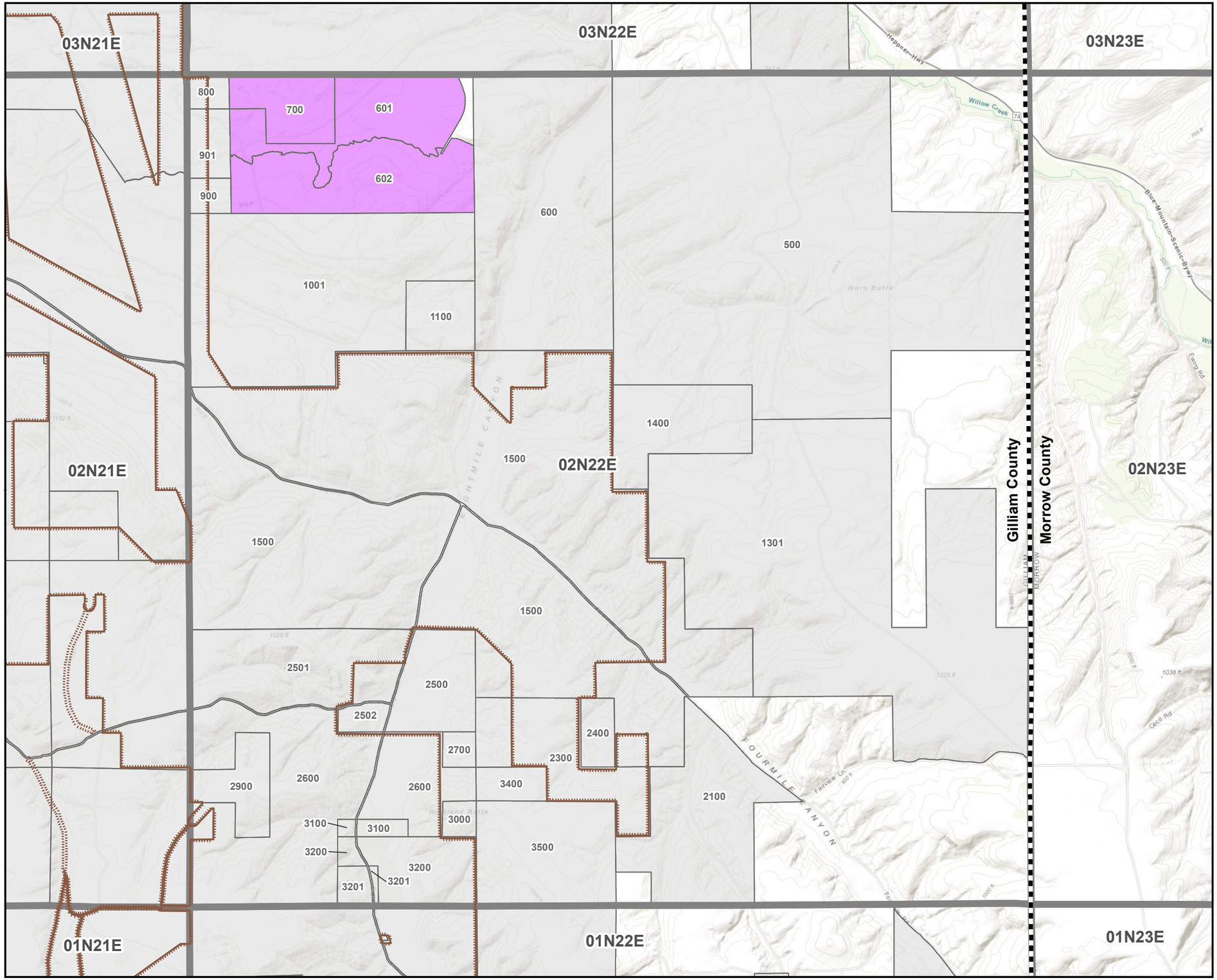
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Figure F-1
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Sheet 05 of 12
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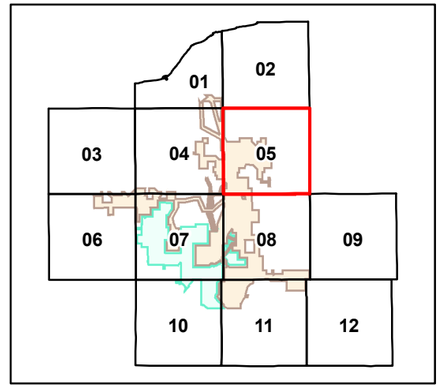
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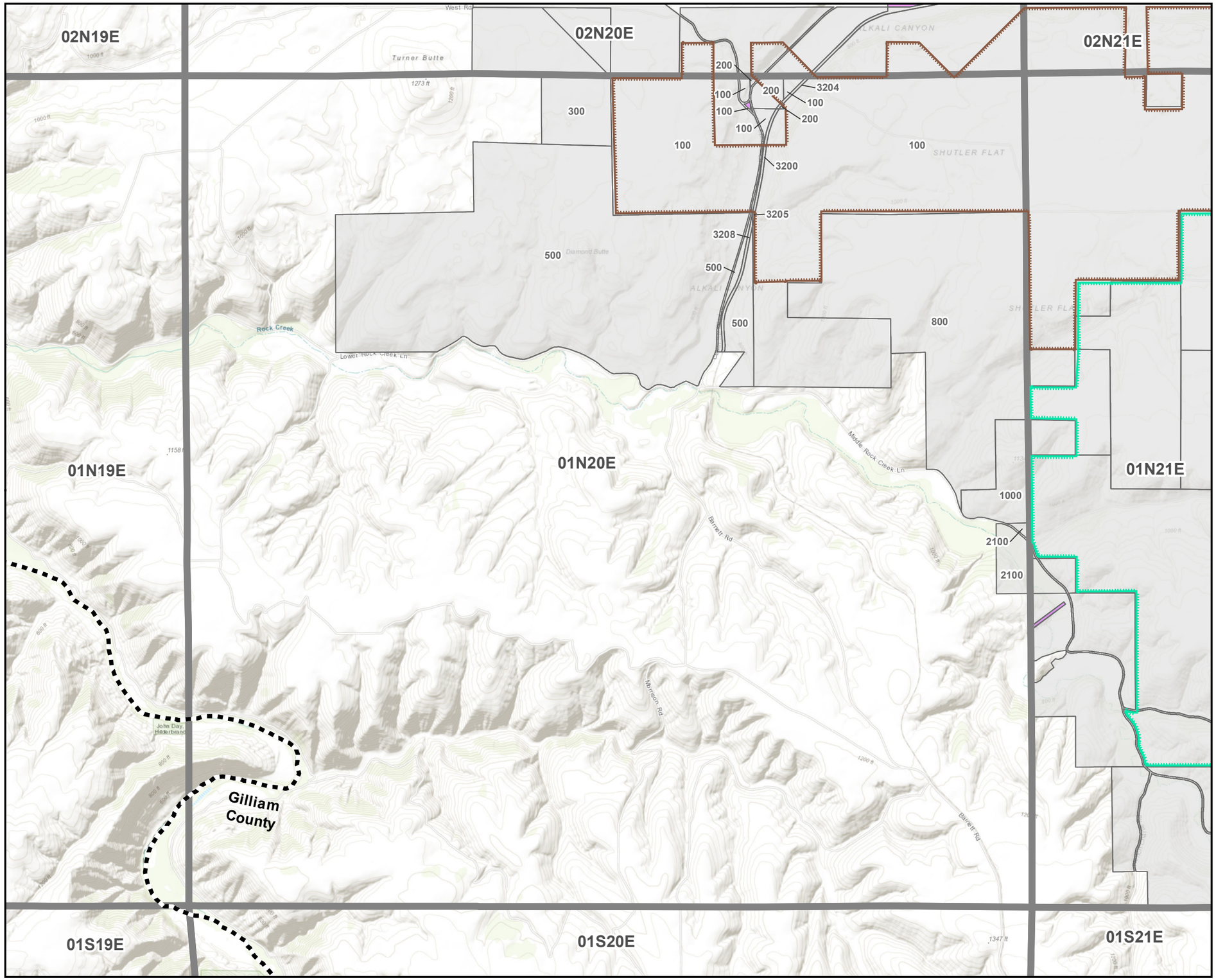
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Figure F-1
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Sheet 06 of 12
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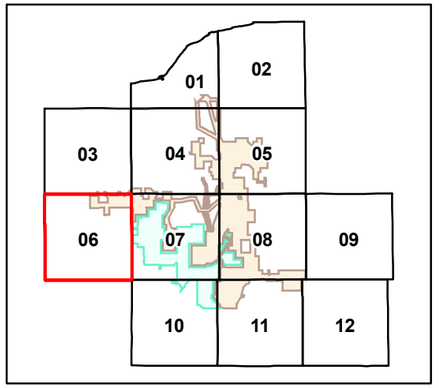
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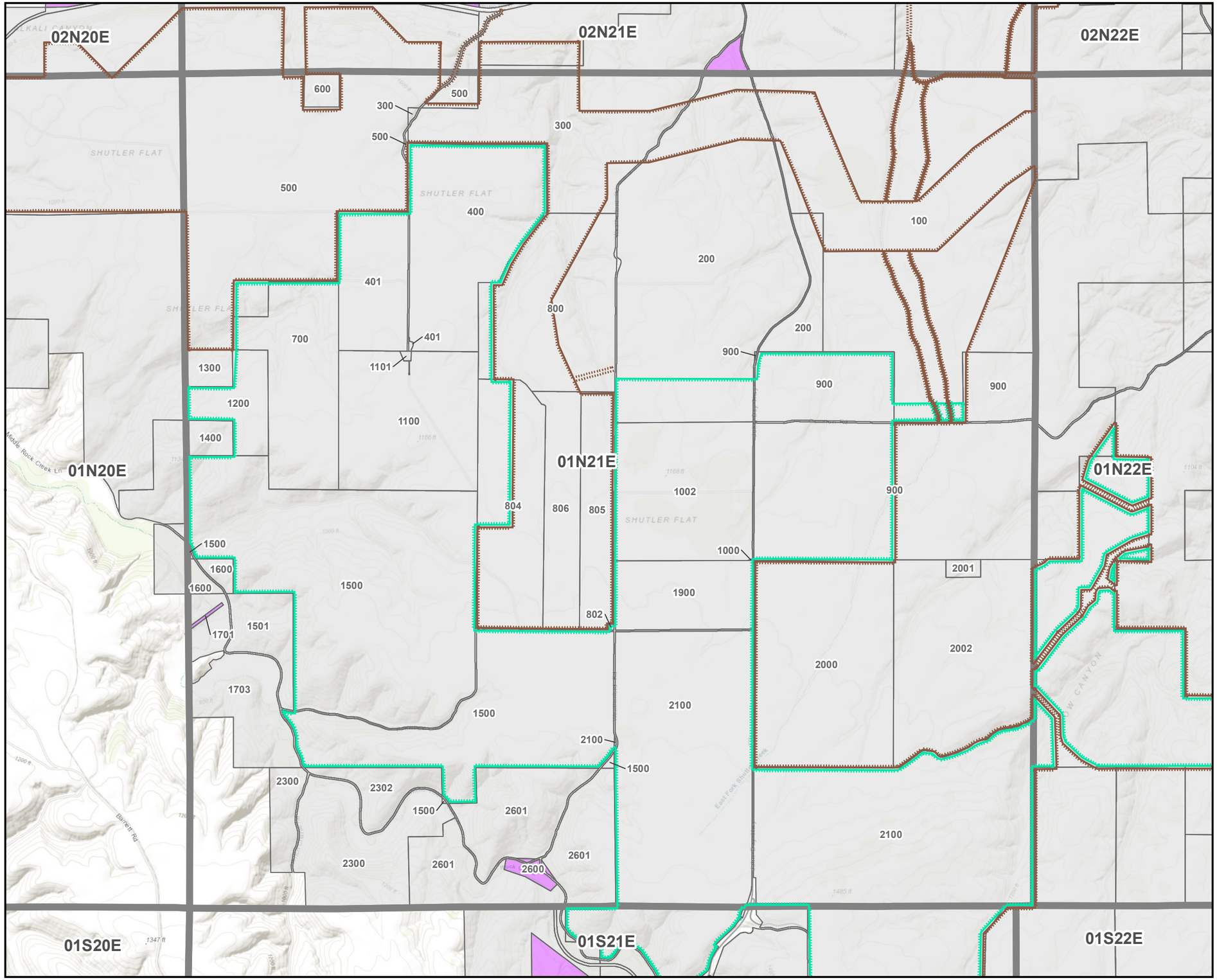
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Figure F-1
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Sheet 07 of 12
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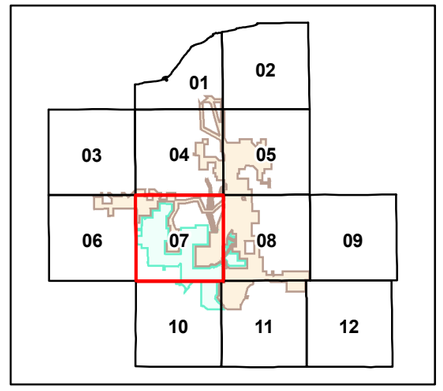
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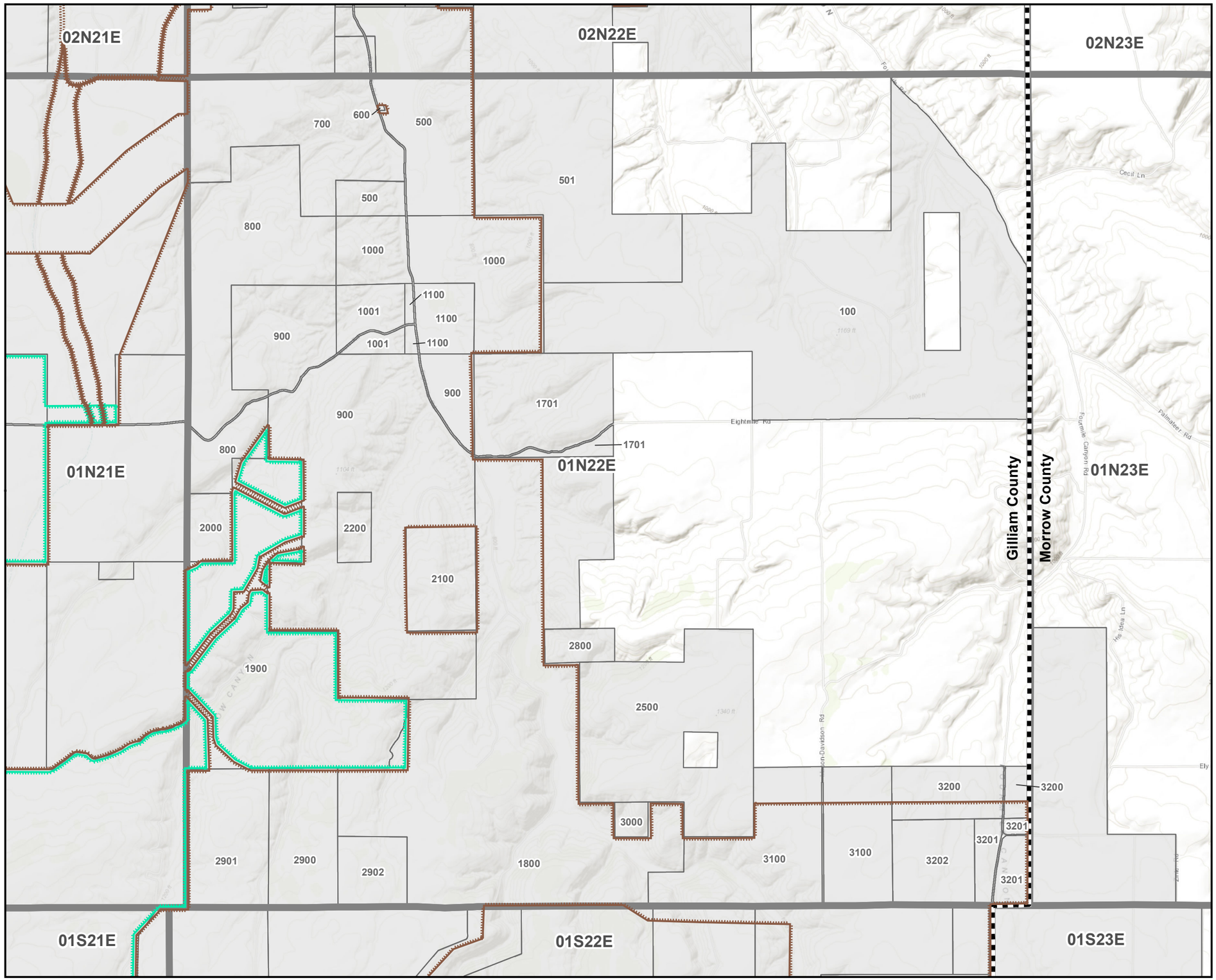
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Figure F-1
Gilliam and Morrow County Tax Lots within 500 and 1,000 Feet of Site Boundary
Sheet 08 of 12
Montague Wind Power Facility



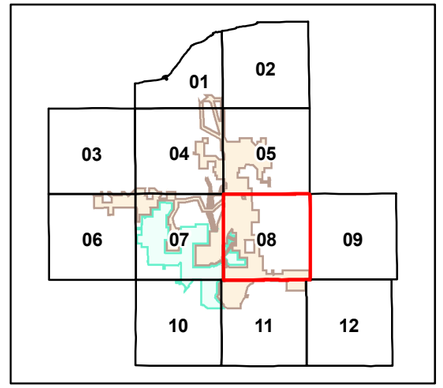
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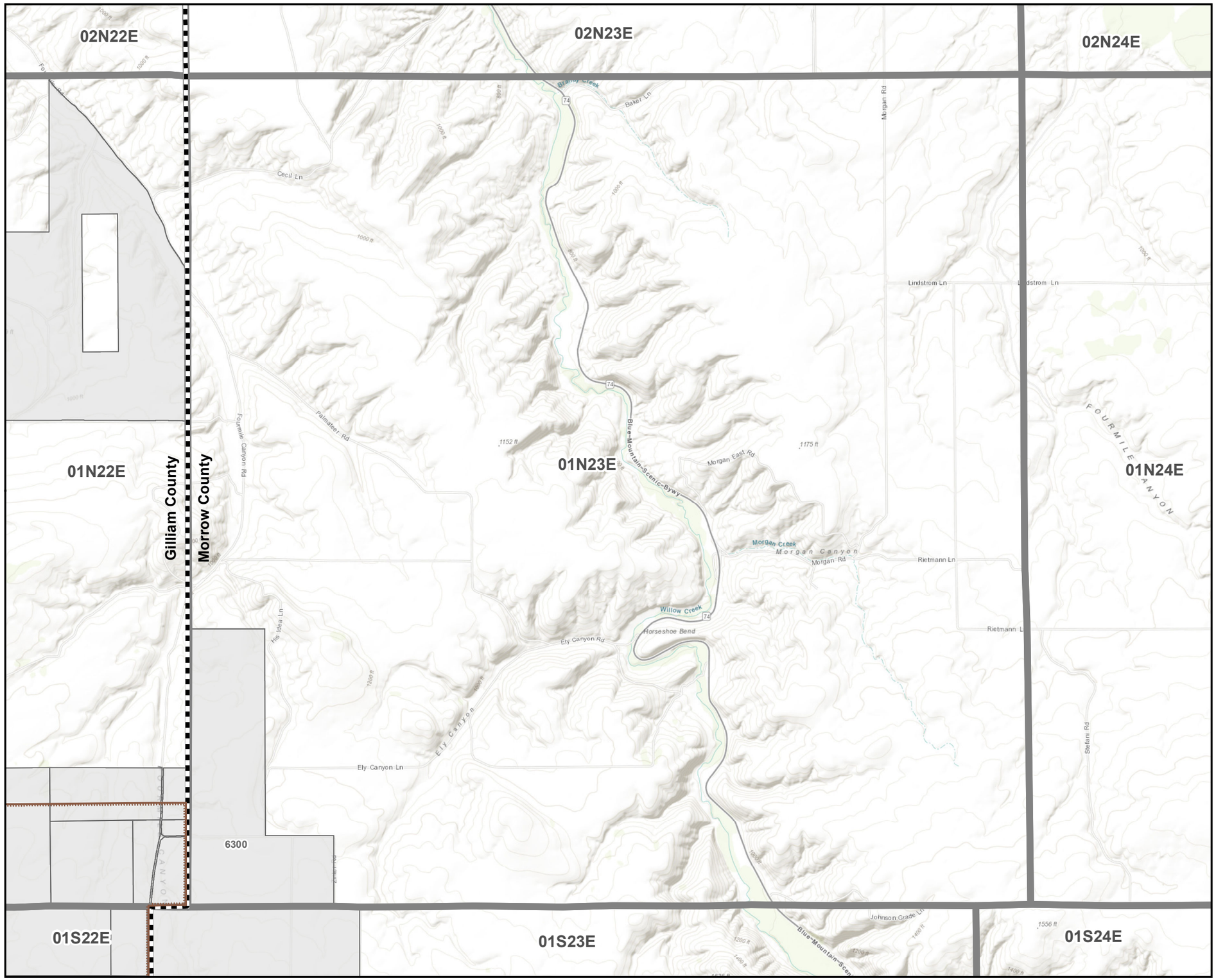
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Figure F-1
Gilliam and Morrow County Tax Lots within 500 and 1,000 Feet of Site Boundary
Sheet 09 of 12
Montague Wind Power Facility



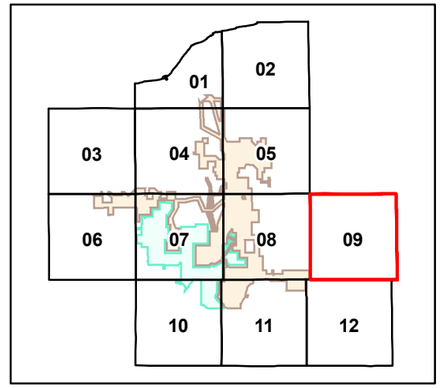
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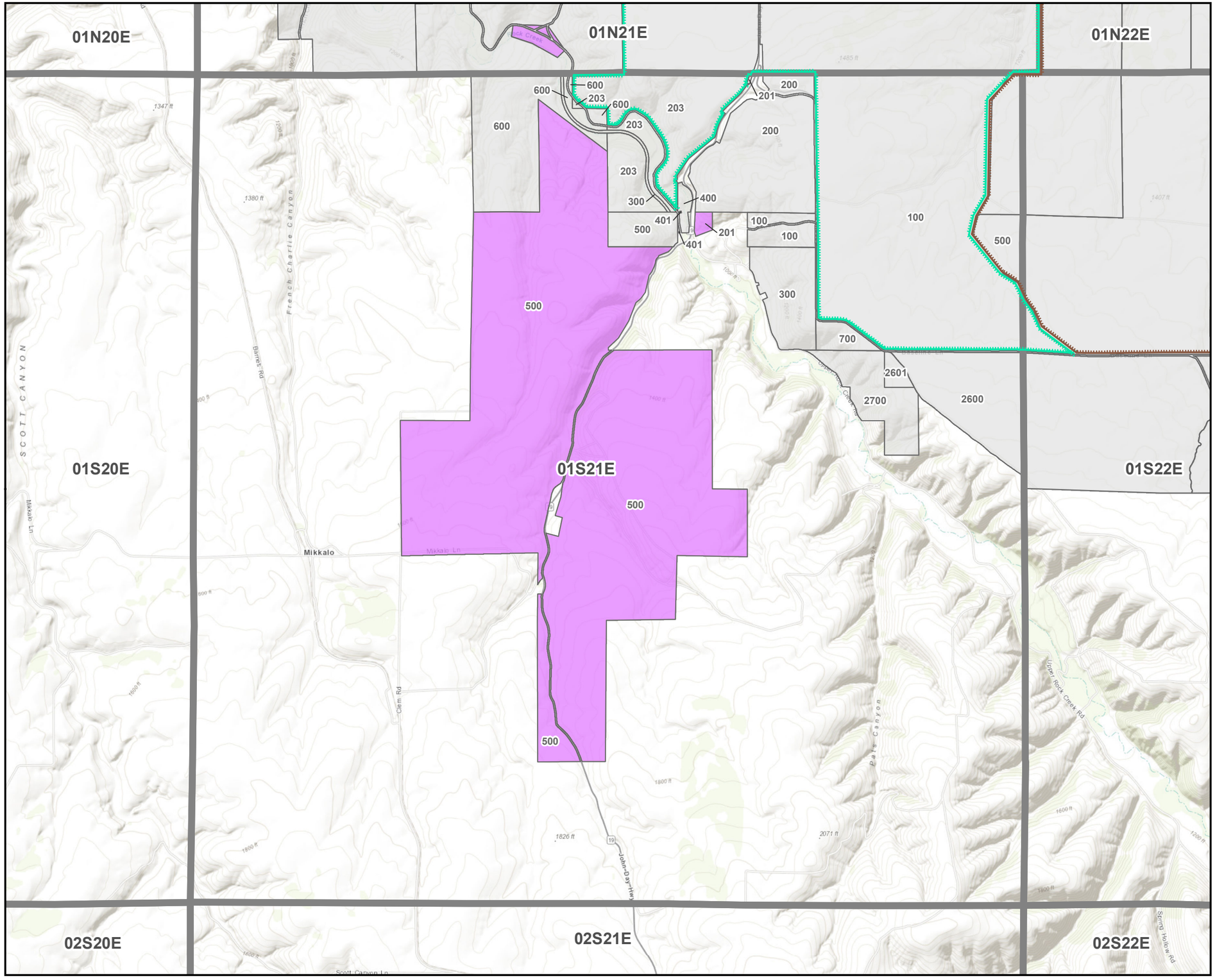
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Figure F-1
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Sheet 10 of 12
Montague Wind Power Facility



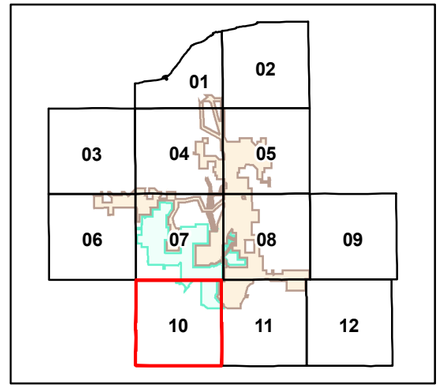
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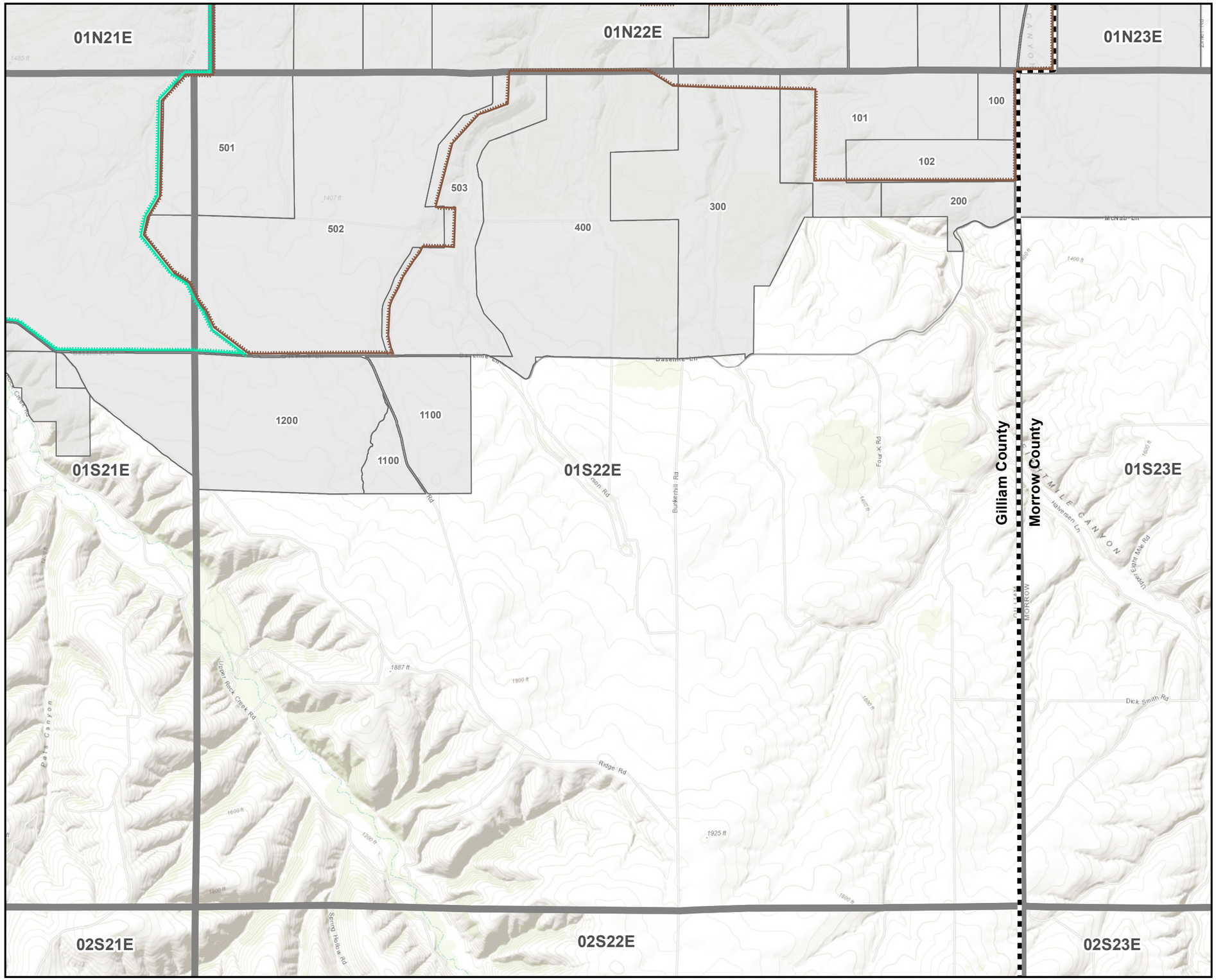
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Figure F-1
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Sheet 11 of 12
Montague Wind Power Facility



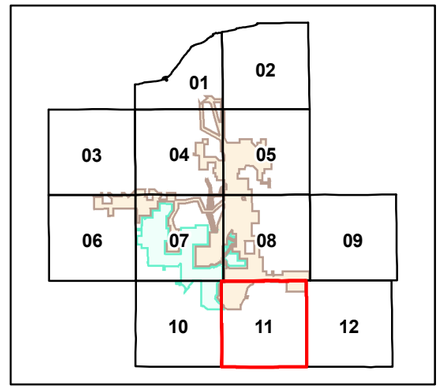
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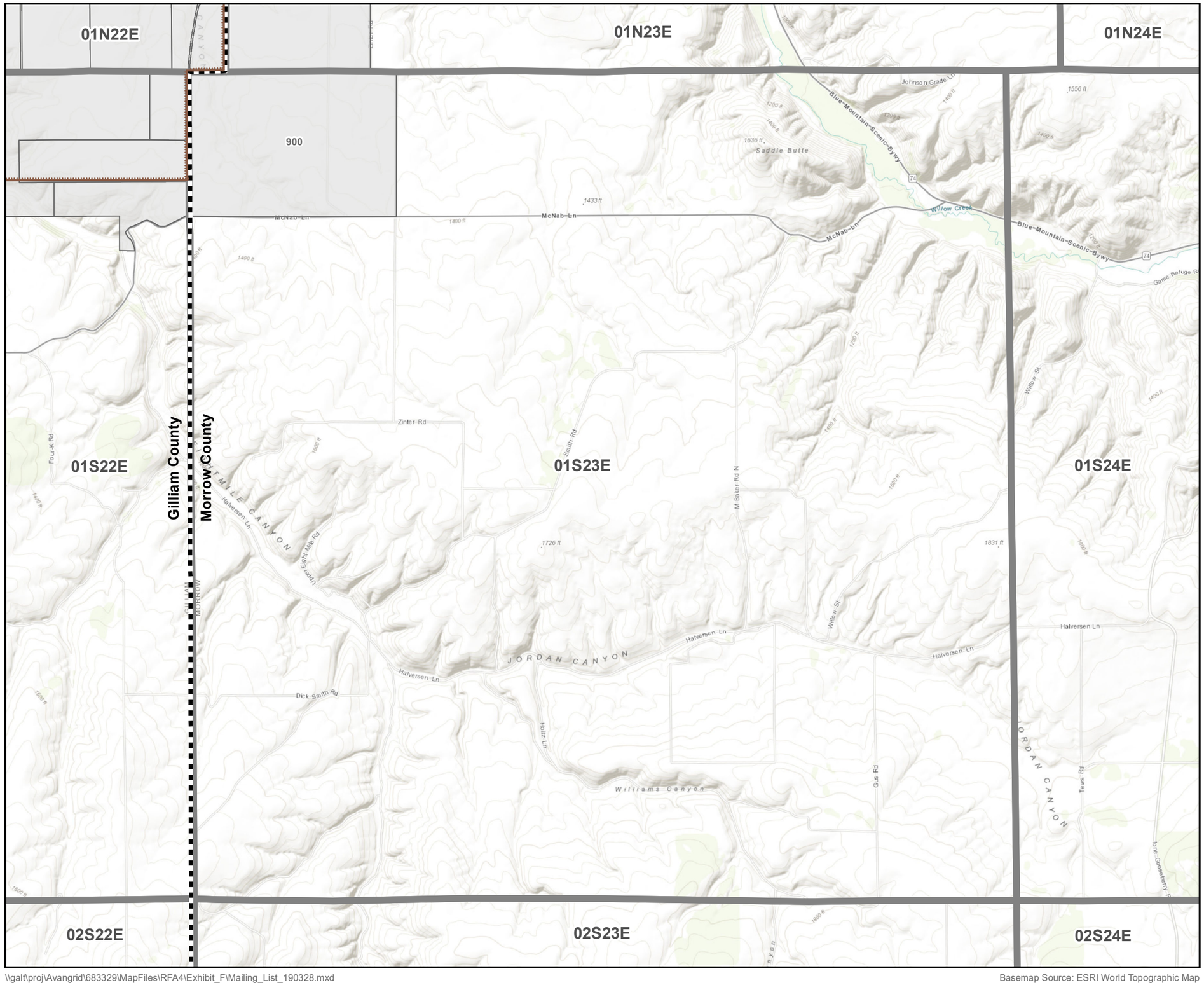
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Figure F-1
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Sheet 12 of 12
Montague Wind Power Facility



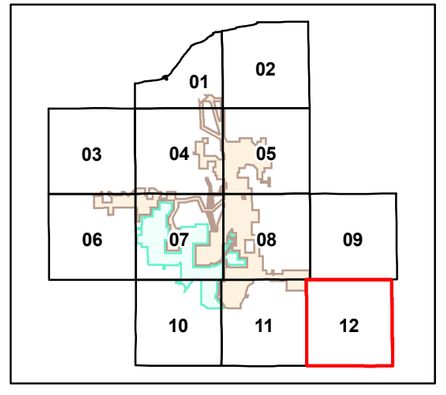
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Basemap Source: ESRI World Topographic Map

EXHIBIT G
MATERIALS ANALYSIS
OAR 345-021-0010(1)(g)

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G.1 INTRODUCTION

The Energy Facility Siting Council (EFSC; Council) previously approved construction of the 404-megawatt (MW) Montague Wind Power Facility (Facility)[1] and in doing so used information provided by Montague Wind Power Facility, LLC (Montague) in accordance with OAR 345-021-0010(1)(g). Montague is constructing the Facility in phases. Phase 1 consists of up to 81 wind turbines generating 202 MW of power within the approved site boundary. Montague has already begun construction of Phase 1 under the conditions of the existing Site Certificate. Phase 2 consists of an expanded site boundary, modification of turbine types and construction schedule, and addition of a solar array and battery storage. The information provided in this exhibit focuses on materials needed for construction and operation of Phase 2 and the three design scenarios described in *Request for Amendment No. 4 Project Description and OAR Division 27 Compliance* (referred to herein as RFA 4).

G.2 SUMMARY OF ANALYSIS RESULTS

The total amount of materials estimated for construction of the Facility as modified by RFA 4 is generally similar to, or less than, the amount estimated for the approved Facility. Improvements in turbine technology have resulted in the availability of turbines with greater individual generating capacity, which reduces the number of turbines needed and consequently reduces the associated steel, concrete, roads, and collector lines.

Analysis results specific to the requested modifications are summarized as follows:

- **Expansion of Site Boundary.** Expansion of the site boundary does not increase any materials.
- **Modification of Turbine Type.** Use of larger turbines for Phase 2 will result in similar or fewer material quantities than previously approved. Individual turbines may use more materials but there will be fewer turbines; therefore, fewer materials will be used overall. Use of larger turbines will not introduce new material that has not been previously analyzed and approved by the Council.
- **Modification of Construction Schedule.** Changing the construction schedule for Phase 2 will not affect material use or quantities.
- **Addition of Solar Array.** Materials used to construct the solar array foundations and support structures will consist of rock and gravel; water and concrete; steel; steel cabling; and other typical construction materials similar to those used for construction of wind turbines that the Council has already approved. New materials that may be used include photovoltaic (PV) solar modules composed of mono- or polycrystalline cells supported on galvanized steel and aluminum components. Final design and construction of the solar array in the solar micrositing area could result in the need for additional service roads and collectors than described in Exhibit B. However, these quantities will be small compared to the amounts estimated in this exhibit and generally are expected to be less than the amounts originally estimated for the approved Facility.
- **Addition of Battery Storage.** RFA 4 will introduce to the site one of two battery options – lithium-ion batteries or a flow battery package. Both technologies will use materials Montague previously identified (i.e., steel and concrete, and other typical construction

[1] EFSC. 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

materials for enclosures, as necessary). New materials will be added that were not previously considered, including chemicals enclosed in the battery units. These materials will be used and stored in a manner to protect the natural and built environments and the public as required by Site Certificate Conditions 55 and 56.

G.3 CONDITION COMPLIANCE

The Third Amended Site Certificate imposes Conditions 55 and 56 governing handling of potentially hazardous materials to avoid or minimize the potential for release. The conditions include requirements for planning, training, and reporting associated with hazardous materials management. The modifications proposed under RFA 4 do not affect Montague's ability to comply with the existing Site Certificate conditions. Montague will continue to comply with the conditions, and proposes the minor modification to Condition 55 shown below with underline. This change is needed because construction contractors may need to store small amounts of fuel onsite for refueling large equipment (e.g., cranes).

55 *The certificate holder shall handle hazardous materials used on the site in a manner that protects public health, safety and the environment and shall comply with all applicable local, state and federal environmental laws and regulations. The certificate holder shall not store diesel fuel or gasoline on the facility site <u>during facility operations</u>.*

G.4 INDUSTRIAL MATERIALS ANALYSIS AND INVENTORY

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.*

<u>Response</u>: Inventories of substantial quantities of industrial materials associated with Phase 2 construction and operation are presented in Tables G-1 and G-2, respectively. The actual quantities may vary. The types of materials used for wind turbine construction and operation are the same as those described in the Application for Site Certificate (ASC; Exhibit G) and the 2010 Final Order on the Application.[2] The change in turbine type, site boundary expansion, and shift in locations for wind turbines and related or supporting facilities does not affect the types of industrial materials to be used for Facility construction and operation. The site boundary expansion will change the quantities of related and supported facilities, and these changes are presented in Tables G-1 and G-2.

The change in turbine type and relocation of turbines to the expanded site boundary areas does not change the industrial materials flowing into and out of the Facility because the proposed turbine types use the same materials as previously described. The quantity of industrial materials associated with wind turbines will likely be less because fewer turbines will be constructed than were approved in the Final Order.

The Final Order on the Application used information from ASC Exhibit G to make findings and establish Site Certificate conditions regarding concrete mixing and gravel quantities (p. 16); measures to prevent releases of grease, antifreeze, degreasers, and hydraulic fluids to the environment (p. 18); measures to prevent accidental spills resulting from the use of small

[2] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility.* September 10.

quantities of turbine cleaners and herbicides (p. 58); the location of spill kits onsite during construction and operation (p. 60); quantities and handling of waste concrete during construction; and waste materials, oil, and antifreeze associated with turbine operations (pp. 124-125).[3] This Exhibit G response identifies changes to the 2010 inventory resulting from modifications to the Facility proposed under RFA 4.

Sections G.4.1 and G.4.2 describe changes to the types and quantities of materials to be used during construction and operation of the proposed Facility (Phase 2), as modified by this amendment request.

Tables G-1 and G-2, respectively, summarize the anticipated quantities of each material to be used for construction and operation of Phase 2, and the ultimate disposition of materials. Tables G-3 and G-4, respectively, summarize the anticipated total quantities of each substance to be used for construction and operation for both Phase 1 (as constructed) and Phase 2, compared to the anticipated total for the Facility as approved.

G.4.1 Construction Material Modifications

The Council previously considered the types of materials to be used for construction of the Facility (e.g., rock and gravel, concrete, and steel and steel cabling making up the wind turbines and electrical systems).[4] These same materials will also be used to construct the wind energy generation, solar, and battery storage elements of Phase 2. The discussion that follows focuses on the differences of quantities to be used, or different types of construction materials to be used, for Phase 2.

In addition to the construction materials identified previously, Montague may also introduce PV solar modules to the site composed of poly- or mono-crystalline cells supported on galvanized steel and aluminum components (Design Scenario C). The modules are inert and will not introduce any hazardous materials to the Facility.

Montague is considering one of two battery options – lithium-ion batteries or a flow battery package. Materials used to construct the battery storage components (i.e., steel and concrete) will be the same as those the Council previously considered. Use of either battery option will introduce the new metals and chemicals discussed in this exhibit.

Regardless of the technology selected, batteries will be manufactured offsite and will be shipped to the site as self-enclosed prefabricated modules, which will be installed and electrically connected onsite.

G.4.2 Material Types and Quantities

G.4.2.1 Construction

The primary construction materials for Phase 2 components are rock, gravel, water, concrete, steel, and assorted electrical equipment. Table G-1 provides an inventory of materials that will

[3] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility.* pp. 16, 18, 58, 60, 124-125. September 10.

[4] See, for example, EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility.* pp. 16 and 19. September 10.

be used during construction of Facility elements associated with Phase 2. The actual quantities may vary.

Rock and Gravel

Road construction for Phase 2 will use about 91,600 tons of rock and gravel, assuming that 3,400 tons of rock is needed per mile of 20-foot permanent access road, and 2,400 tons of rock is needed per mile of permanent expansion to existing road. The length of road and corresponding amount of rock and gravel will vary depending on the design scenario. Each wind turbine base will be surrounded by a gravel apron with a radius of up to 16 feet. Approximately 1,570 tons of rock and gravel will be used for the gravel aprons in Design Scenario A, the maximum wind turbine layout.

Rock and gravel will also be used as foundations for the Phase 2 collector substation, operations and maintenance (O&M) building, and battery storage area. Approximately 2,100 tons of rock will be used to cover approximately 4 acres surrounding the Phase 2 collector substation. Approximately 1,600 tons of gravel will be used to cover approximately 3 acres around the O&M building. Gravel will be used within the developed area of the battery storage system. Approximately 5 acres of the battery storage area will be graveled, using 2,600 tons of gravel. In addition to these permanent areas, multiple temporary staging areas will be covered with crushed gravel to facilitate construction. Montague expects to use three staging areas for a total of 22 acres, requiring approximately 11,500 tons of gravel. The gravel placed at staging areas will be removed following construction.

The construction contractor will acquire the rock and gravel from existing or new commercial gravel pit sources in Gilliam County or an adjacent county. The most conservative use of rock and gravel for Phase 2 construction will result from Design Scenario A, and will equate to about 113,000 tons.

Water and Concrete

During Phase 2 construction, an estimated 50,000 to 120,000 gallons of water will be applied daily to roads and construction areas for road compaction and dust reduction. The actual water usage will depend on site conditions and the length of the road. See Exhibit O for a more detailed discussion of water use and sources.

The amount of concrete and water used for concrete mixing will vary depending on the design scenario. Under Design Scenario A, construction of 81 of the smaller concrete foundations for 2.5-MW turbines, associated transformer support foundations, and battery pad foundations will require an approximate total of 937,000 gallons of water mixed into approximately 31,200 cubic yards of concrete.

Under Design Scenario B, construction of 48 of the larger concrete foundations for the larger 4.2-MW turbines, associated transformer support foundations, and battery pad foundations will require an approximate total of 1,225,200 gallons of water combined into approximately 40,840 cubic yards of concrete.

Under Design Scenario C, construction of the solar array is assumed to need approximately 660,000 gallons of water combined into 22,100 cubic yards of concrete for installation of 130,000 solar module tracking posts using concrete. Use of concrete for posts will depend on the soil type, but this analysis conservatively assumes that 50 percent of posts will require concrete. With the battery storage system, Design Scenario C will require an approximate total of 685,000 gallons of water combined into 22,716 cubic yards of concrete.

The battery storage system is proposed in each design scenario. Battery pad foundations are assumed to require approximately 5.9 cubic yards of concrete at each of 104 locations, for a total of 616 cubic yards of concrete. This will require approximately 25,000 gallons of water for each of the three design scenarios.

As described in Exhibit O, Phase 1 is assumed to need 18,500,000 gallons of water for construction; therefore, the combined water use for Phases 1 and 2 is approximately 36,800,000 gallons (assuming Design Scenario B for Phase 2). This amount is less than the originally estimated 37,000,000 gallons[5] for construction of the approved Facility.

Steel and Steel Cabling

The primary use of steel is for turbine towers. The amount of steel will vary depending on the number and type of turbines installed. For Design Scenario A, approximately 17,820 tons of steel will be required to construct 81 2.5-MW turbine towers. Design Scenario B will need approximately 15,840 tons of steel for 48 4.2-MW turbine towers. These estimates are based on approximately 220 tons of steel per 90-meter 2.5-MW turbine tower, or 330 tons of steel per 107-meter 4.2-MW turbine tower.

Large quantities of steel will also be needed for the solar array in Design Scenario C. The proposed solar array will use approximately 260,000 steel posts to support the solar module trackers. Assuming an average length of 8 feet for each post, it is estimated that these posts will require a total of 26,000 tons of steel (200 pounds per solar module support post).

Steel containers will house the battery storage system. The amount of steel will vary depending on the type and configuration of the battery system. However, this analysis assumes that 208 containers (double-stacked flow system), each containing approximately 3,750 pounds of steel, will be used.

Design Scenario C will result in the greatest consumption of steel, with a total of approximately 26,400 tons.

Other Typical Construction Materials

A number of other materials will be brought onsite to construct the Phase 2 wind turbines, solar array, battery storage system, and other related or supporting facilities. For example, transformers placed at the foot of wind towers will contain non-polychlorinated biphenyl (non-PCB) mineral oil within sealed enclosures.

Electrical cable will be used to connect the turbines. Phase 2 will require a total of up to approximately 22.5 miles of underground collector cable, and up to approximately 9.4 miles of overhead collector cable.

The solar array will be constructed from prefabricated solar modules composed of polycrystalline cells supported on galvanized steel and aluminum components. Depending on the battery technology selected, additional elements associated with the battery storage area will include fire-suppression systems and the batteries themselves.

[5] EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 27. July 12.

Regardless of the design scenario selected, the Facility will include approximately 3.0 miles of new 230-kilovolt (kV) transmission line from the Phase 2 collector substation to the existing Phase 1 substation. The transmission system will be aboveground.

Under Design Scenario C only, the solar array will include 102 inverters and eight (8) 25-MW transformers.

Table G-1. Inventory of Materials to be Used During Phase 2 Facility Construction

Material/Chemical	Estimated Quantity for Design Scenario A	Estimated Quantity for Design Scenario B	Estimated Quantity for Design Scenario C	Ultimate Disposition
Rock/gravel for construction	91,600 tons for approximately 22 miles of new road and 7 miles of existing road improvements	87,200 tons for approximately 20 miles of new road and 8 miles of existing road improvements	8,000 tons for approximately 3.3 miles of existing road improvements	Maintained as onsite roadbed or graveled area associated with the access roads and road improvements
	2,100 tons of rock for approximately 4 acres of rocked areas associated with the Phase 2 collector substation	Same as Design Scenario A	Same as Design Scenario A	Maintained as onsite graveled area associated with Phase 2 collector substation
	1,600 tons for approximately 3 acres of graveled areas associated with the Phase 2 O&M building	Same as Design Scenario A	Same as Design Scenario A	Maintained as onsite graveled area associated with O&M building
	2,600 tons for approximately 5 acres of graveled areas associated with Phase 2 battery storage system	Same as Design Scenario A	Same as Design Scenario A	Maintained as onsite graveled area associated with battery storage
	11,500 tons for approximately 22 acres of temporary staging areas	Same as Design Scenario A	Same as Design Scenario A	Gravel temporary staging areas will be removed following Phase 2 construction
	1,570 tons for the gravel aprons (16-foot radius) surrounding the tower base of 81 wind turbines	930 tons for the gravel aprons (16-foot radius) surrounding the tower base of 48 wind turbines	Not applicable	Maintained as onsite graveled areas associated with the wind turbines
Gravel for construction of 20-foot-wide service roads within fenced solar array	Not applicable	Not applicable	14,150 tons for approximately 4.2 miles of new service roads and farm access route within fenced solar array	Maintained as onsite roadbed associated with service roads within fenced solar array
Water for dust control and road compaction	50,000 to 120,000 gallons per day	Same as Design Scenario A	Same as Design Scenario A	Absorbed or evaporated
Water for concrete mixing	937,000 gallons	1,225,200 gallons	685,000 gallons	Incorporated into concrete
Concrete for turbine, transformer, and solar module support post foundations	31,200 cubic yards (365 cubic yards per turbine foundation; 13 cubic yards per transformer support foundation, 5.9 cubic yards per battery container foundation)	40,840 cubic yards (825 cubic yards per turbine foundation; 13 cubic yards per transformer support foundation, 5.9 cubic yards per battery container foundation)	22,720 cubic yards (4.6 cubic feet per solar module support post foundation, 5.9 cubic yards per battery container foundation)	Incorporated into turbine foundation pads, turbine transformer pads, and solar array post foundations

Table G-1. Inventory of Materials to be Used During Phase 2 Facility Construction

Material/Chemical	Estimated Quantity for Design Scenario A	Estimated Quantity for Design Scenario B	Estimated Quantity for Design Scenario C	Ultimate Disposition
Steel (includes wind turbine towers, battery storage containers, and steel posts supporting solar modules)	18,200 (220 tons per turbine, 3,750 pounds per battery container)	16,230 (330 tons per turbine, 3,750 pounds per battery container)	26,000 (200 pounds per solar module support post, 3,750 pounds per battery container)	Incorporated into turbine towers, battery storage containers, and solar array posts
Nacelles (includes turbine, rotor, blades, hub, and gearbox)	81	48	Not applicable	Mounted on turbine towers
Wind turbine electrical transformers	81	48	Not applicable	Mounted on concrete pad adjacent to turbine tower
Meteorological towers – wind	4	4	Not applicable	Aboveground structure
34.5-kV underground electrical collection system	Approximately 22.5 miles	Approximately 22.4 miles	Approximately 4 miles	Buried underground
34.5-kV overhead electrical collection system	Approximately 9.4 miles	Approximately 9.4 miles	Not applicable	Aboveground electrical collection system and support structures
230-kV transmission line	3.0 miles	3.0 miles	3.0 miles	Aboveground connection and support structures from the Phase 2 collector substation to the Phase 1 substation
Phase 2 collector substation	1 unit	1 unit	1 unit	Aboveground structure
O&M building	1 unit	1 unit	1 unit	Aboveground structure and graveled parking area
Solar array	Not applicable	Not applicable	1 unit (867,000, solar modules)	Aboveground structure
Battery storage containers	Approximately 208 containers	Approximately 208 containers	Approximately 208 containers	Aboveground structure
Lithium-ion battery racks	Approximately 950 racks	Approximately 950 racks	Approximately 950 racks	Aboveground structure
Transformers	Not applicable	Not applicable	8	Aboveground structure
Inverters	Not applicable	Not applicable	102	Aboveground structure
Underground electrical cabling needed to connect the solar modules to the inverters and transformers	Not applicable	Not applicable	Approximately 4 miles	Buried underground

Table G-1. Inventory of Materials to be Used During Phase 2 Facility Construction

Material/Chemical	Estimated Quantity for Design Scenario A	Estimated Quantity for Design Scenario B	Estimated Quantity for Design Scenario C	Ultimate Disposition
within the solar array				
Solar area fencing	Not applicable	Not applicable	Approximately 7 miles	Aboveground structure
Solar modules	Not applicable	Not applicable	Approximately 867,000 units	Aboveground structure

G.4.2.2 Operation

Table G-2 provides an inventory of industrial materials that will be used during operation of Facility elements associated with Phase 2. The actual quantities may vary.

Wind Energy Generation

With respect to operational materials associated with wind energy generation in two design scenarios, the types of materials are the same as the Council originally considered in its 2010 approval. No substantial quantities of industrial materials will be brought onto or removed from the Facility site during operations. The only materials that will be brought onto the site will relate to maintenance or replacement of Facility elements (e.g., nacelle or turbine components, electrical equipment). The only materials that will be removed from the site will be parts or elements replaced during maintenance activities.

Solar Array

No substantial quantities of industrial materials will be brought onto or removed from the Facility site during operation of the solar array. The only materials that will be brought onto or removed from the site will relate to maintenance or replacement of damaged equipment (e.g., solar module components, electrical equipment). The materials replaced and removed will not constitute significant amounts. Table G-2 lists materials and amounts that will be used for O&M of the solar array components.

Solar modules may require periodic washing to minimize the effects of solar module dust and dirt on energy production (referred to as soiling). For the purpose of this analysis, it is conservatively assumed that all modules will be washed twice a year and require 430,000 gallons per wash, for a total of approximately 860,000 gallons per year. Water will be applied via tanker truck and will not have any cleaning solvents in it. Washwater will be discharged by evaporation and seepage into the ground.

Battery Storage System

The types and quantities of industrial materials used during operation of the battery storage system are listed in Table G-2. A lithium-ion system will require regular change-out of batteries as they degrade over time, whereas a flow battery system will need infrequent maintenance.

If a lithium-ion system is used, the batteries will be replenished at a rate depending on usage. For example, a battery that is cycled more often will degrade faster than one that is used less often. For this analysis, it is assumed that the battery will be fully discharged each day and that all batteries will need to be replaced every 7 years, or six times over the life of the Facility (40 years). This assumption likely overestimates the number of batteries that will flow into and out of the Facility, because not all batteries will be replaced during each replenishment cycle (e.g., fewer batteries will need replacing early in the Facility life). A group of lithium-ion battery cells will comprise a “rack.” Because approximately 950 battery racks will be needed for the proposed 100-MW storage system, 5,700 battery racks will be used over operation term of the battery storage system.

Lithium-ion battery systems typically are air cooled and do not have a liquid component. However, some lithium-ion battery systems are liquid cooled, such as the Tesla Powerpack, which uses coolant similar to automotive antifreeze. The coolant, if used, is recirculated through a closed system to cool the batteries.

If a flow battery system is used, it will require infrequent replacement of the electrolyte solutions because there is negligible degradation of the battery (i.e., electrolyte solutions) over time. This analysis assumes that about 7,000 gallons of electrolyte solution will be used per 1 MW of storage and it will be replaced every 20 years. Therefore, about 1,400,000 gallons of solution will be replaced during the life of Phase 2.

Table G-2. Inventory of Materials to be Used During Phase 2 Facility Operation

Material/Chemical	Estimated Quantity Used During Operation	Ultimate Disposition
Wind Turbines		
Mineral oils (turbine lubricant and transformer coolant)	3 gallons per turbine	Stored in O&M building; added to turbine as needed
Synthetic oils (turbine lubricant, gear oil)	10 gallons per turbine	Stored in O&M building; added to turbine as needed
Simple Green (general cleaner)	3 gallons per turbine	Stored in O&M building
WD-40; grease (general lubricant)	5 gallons per turbine	Stored in O&M building
Ethylene glycol (antifreeze)	3 gallons per turbine	Stored in O&M building
Round-up and 2,4-D (weed control)	0—subcontract out for weed control	Stored in O&M building
Solar Array		
Simple Green (general cleaner)	0.5 gallon per year per installed MW	Stored in O&M building
Water	430,000 gallons per wash (twice per year) in Design Scenario C only	Evaporation and infiltration into ground
Battery Storage		
Lithium-ion battery[a]	9.5 battery racks per 1 MW replaced every 7 years	Disposed of at a licensed facility[b]
Liquid coolant	7,600 gallons of liquid coolant replaced every 7 years	Disposed of at a licensed facility[b]
Electrolyte solution	7,000 gallons per 1 MW replaced every 20 years	Disposed of at a licensed facility[b]

[a] If lithium-ion batteries are selected, electrolyte solution will not be required. Similarly, if flow batteries are selected, lithium-ion batteries will not be required.

[b] A licensed facility is permitted and operated in compliance with applicable Resource Conservation and Recovery Act and Toxic Substances Control Act regulations administered by the U.S. Environmental Protection Agency or the Oregon Department of Environmental Quality, such as Waste Management's Columbia Ridge Landfill or Chemical Waste Management facility near Arlington, Oregon.

G.5 HAZARDOUS SUBSTANCES

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.*

Response: An inventory of hazardous substances associated with Facility construction and operation was used to support selected findings in the Final Order on the Application. The Final Order used this information to make findings and establish Site Certificate conditions regarding measures to prevent releases of grease, antifreeze, degreasers, and hydraulic fluids to the environment (p. 18); measures to prevent accidental spills resulting from the use of small quantities of turbine cleaners and herbicides (p. 58); and the location of spill kits onsite during

construction and operation (p. 60).[6] This response identifies changes to the 2010 inventory resulting from modifications to Facility locations and components described in RFA 4.

Construction

Potentially hazardous substances that may be used for construction include unused solvents; spent vehicle and equipment fluids and components (e.g., used oil, used hydraulic fluids, spent fluids, oily rags, and spent lead acid or nickel-cadmium batteries). Montague will implement spill control measures outlined in the Site Certificate.

Hazardous materials will be used in a manner that is protective of human health and the environment and will comply with all applicable local, state, and federal environmental laws and regulations. Accidental releases of hazardous materials (e.g., vehicle fuel during construction or lubricating oil for turbines) will be prevented or minimized through proper containment of these substances during use and transportation to the Facility site, and they will be used primarily within the turbines themselves, where any spill will be contained. Any oily waste, rags, or dirty or hazardous solid waste will be collected in sealable drums and removed for recycling or disposal by a licensed contractor.

In the unlikely event of an accidental hazardous materials release, any spill or release will be cleaned up and the contaminated soil or other materials disposed of and treated according to applicable regulations. See Exhibit CC for a list of applicable regulations. Spill kits containing items such as absorbent pads will be located on equipment and in onsite temporary storage facilities to respond to accidental spills, if any were to occur. Employees handling hazardous materials will be instructed in the proper handling and storage of these materials, as well as where spill kits are located.

G.5.2 Operation

Hazardous materials will be used in a manner that is protective of human health and the environment and will comply with all applicable local, state, and federal environmental laws and regulations. The modifications proposed in RFA 4 do not affect Montague's ability to comply with applicable Site Certificate conditions. Use of the battery storage system will introduce new industrial materials that may include hazardous materials. For example, lithium-ion batteries present a flammability hazard and require cooling systems to prevent overheating. Flow batteries use electrolyte solution that is nonflammable and nonexplosive, and do not require an associated cooling system. The battery storage system, regardless of type, will have intergraded safety systems that monitor battery performance to detect malfunctions and implement response measures (such as notifying operators, depowering the system, or deploying fire suppression devices). Batteries will be housed in leak-proof containers to prevent inadvertent releases of hazardous materials. O&M staff will conduct inspections of the battery cells for damage.

In the unlikely event of an accidental hazardous materials release, any spill or release will be cleaned up and the contaminated soil or other materials disposed of and treated according to applicable regulations. Employees will be trained to be aware of the potential hazards of the contents of the module through the availability of Material Safety Data Sheets, and to handle such releases in accordance with applicable regulations. See Exhibit CC for a list of applicable

[6] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 18, 58, 60. September 10.

regulations. Spill kits containing items such as absorbent pads will be located on equipment and in onsite temporary storage facilities to respond to accidental spills, if any were to occur. Employees handling hazardous materials will be instructed in the proper handling and storage of these materials, as well as where spill kits are located. Montague will report spills or releases of hazardous materials during construction or operation to the Department.

Montague will implement fire and safety plans in consultation with the North Gilliam Rural Fire Protection District to minimize the risk of fire and to respond appropriately to any fires that occur on the Facility site. The plans will cover equipment located at the site, including the new solar array and battery storage. Montague will meet annually with local fire protection agency personnel to discuss emergency planning and will invite local fire protection agency personnel to observe any emergency drills. Montague will provide an updated site plan to fire protection agency personnel to identify the location of the new solar array and battery storage. Fire prevention and response training that Montague provides to Facility employees will include information regarding fire prevention and response activities at the new solar array and battery storage.

For the replacement of batteries during operation, Montague will follow the handling guidelines of 49 *Code of Federal Regulations* 173.185 – Department of Transportation Pipeline and Hazardous Material Administration related to the shipment of lithium-ion batteries. The regulations include requirements for prevention of a dangerous evolution of heat; prevention of short circuits; and prevention of damage to the terminals. They also require that no battery will come into contact with other batteries or conductive materials. Battery suppliers will be responsible for transporting batteries to and from the Facility in accordance with applicable regulations.

Adherence to the requirements and regulations (including personnel training, safe interim storage, and segregation from other potential waste streams) will minimize safety hazards related to transport, use, or disposal of batteries.

G.6 NONHAZARDOUS WASTE MATERIALS

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

Response: Plans to manage nonhazardous waste materials during construction and operation were used to support selected findings within the 2010 Final Order on the Application and to establish Site Certificate conditions regarding quantities and handling of waste concrete and stormwater during construction, as well as waste materials, oil, and antifreeze associated with turbine operations.[7] This RFA 4 response identifies changes to the management plan resulting from modifications to Facility locations and components described in RFA 4.

G.6.1 Construction

As identified in the Final Order on the Application, solid waste materials such as excess construction materials or steel will be generated during construction.[8] Montague identified measures for minimizing recycling and reusing waste generated during construction, and for

[7] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 124-125. September 10.

[8] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 123-124. September 10.

disposing of waste concrete.[9] The Council adopted Condition 111 summarizing Montague's solid waste management plans during construction.

Excess construction materials similar to those generated by construction of the wind turbines will be generated from construction of the solar array and battery storage. These materials will include scrap steel, wood, and concrete waste. Excess construction materials will be recycled or disposed of as required by Site Certificate conditions.

Construction stormwater will be generated at the location of the solar array and battery storage construction sites. Such stormwater will be covered under the Facility's National Pollutant Discharge Elimination System 1200-C construction permit and its associated erosion and sediment control plan. Portable toilets provided for construction of Phase 2 will also serve the solar array and battery storage construction activities.

G.6.2 Operation

The Council also addressed solid waste generated during operation and its disposition in its Final Order on the Application.[10] The Council adopted Condition 112 summarizing Montague's solid waste management plans during operation. The Final Order also addressed the generation of wastewater during construction and operation, including stormwater discharges, sewage/septic wastes, and acknowledging the lack of industrial wastewater produced as a result of wind energy operations.

The same types of solid and liquid nonhazardous waste will be generated as a result of construction and operation of Phase 2 wind energy components. Montague will manage such wastes in accordance with Site Certificate conditions.

The solar array and battery storage system will rely on the O&M building constructed as part of Phase 2. Therefore, it will not generate any additional sewage streams. Administrative activities related to the solar array and battery storage system will be conducted at the O&M building, and the same office wastes will be generated and managed as for the wind energy component.

Some washing of solar panels may be conducted (see Exhibit O). This limited quantity of washwater will evaporate or will infiltrate into the ground near the point of use. No additional industrial wastewater streams will be generated at the solar array.

If the flow battery system is selected, operation of the system will require periodic replacement of the electrolyte solution. Based on manufacturer descriptions, spent electrolyte fluid is nonhazardous and can be treated and disposed of at a licensed facility.

G.7 CONCLUSION

Table G-3 summarizes the material types and quantities originally anticipated for construction of the Facility, compared to the combined types and quantities for Phase 1 (as constructed) and Phase 2 (as modified by this amendment request).

[9] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 124. September 10.

[10] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 124. September 10.

Table G-3. Combined Inventory of Materials to be Used During Facility Construction

Material/ Chemical	Original Estimated Total for Approved Facility	Phase 1 (as constructed)	Phase 2 (as modified by this amendment request)	Combined New Total
Rock/gravel for construction	Approximately 536,000 tons.	Approximately 140,000 tons of gravel for new roads and turbine pads.	Approximately 113,000 tons of gravel for new roads, turbine pads, battery storage area, Phase 2 substation (Design Scenario A).	Approximately 253,000 tons.
Water for dust control and road compaction	Approximately 35,000,000 gallons.	Approximately 17,500,000 gallons.	Approximately 17,050,000 gallons.	Approximately 34,550,000 gallons.
Water for concrete mixing	Up to 2.8 million gallons.	1,100,000 gallons.	Up to 1,225,200 gallons (Design Scenario B).	Approximately 2,325,000 gallons.
Concrete	Up to 95,000 cubic yards.	Up to 31,000 cubic yards.	Up to 40,840 cubic yards (Design Scenario B).	Approximately 72,000 cubic yards.
Steel	Approximately 59,000 tons.	Approximately 18,000 tons.	Approximately 26,400 tons (Design Scenario C).	Approximately 44,400 tons.
Nacelles (includes rotor, blades, hub, and gearbox)	Up to 269 units.	81 units.	Up to 81 units (Design Scenario A).	Up to 162 units.
Wind turbine electrical transformers	Up to 269 units.	81 units.	Up to 81 units (Design Scenario A).	Up to 162 units.
Meteorological towers – wind, all design scenarios	Up to 8 units.	2 units.	Up to 4 units (Design Scenarios A, B).	Up to 6 units.
34.5-kV underground electrical collection system	Approximately 76 miles.	29.3 miles.	Up to 22.5 miles (Design Scenario A).	Approximately 52 miles.
34.5-kV overhead collection system	Approximately 15 miles.	5.1 miles.	Approximately 9.4 miles (Design Scenarios A, B).	Approximately 14.5 miles.
230-kV transmission line	Up to 19 miles.	10.8 miles.	3.0 miles.	Approximately 13.8 miles.
Facility collector substations	2 units.	1 unit.	1 unit.	2 units.
O&M building	Up to 2 units.	0 units.	1 unit.	1 unit.
Battery storage containers	0	0	Approximately 208 containers.	Approximately 208 containers.
Lithium-ion battery racks	0	0	Approximately 950 racks.	Approximately 950 racks.
Solar area fencing	0	0	Approximately 7 miles (Design Scenario C).	Approximately 7 miles.
Solar modules	0	0	Approximately 867,000 units (Design Scenario C).	Approximately 867,000units.

As shown in Table G-3, the use of rock and gravel, water, concrete, steel, collector lines, and transmission line for the Facility overall as a result of RFA 4 will be similar to or less than the use of these materials originally anticipated for the full Montague Facility as previously approved. As modified, the Facility will also now include battery storage containers, solar modules, and fencing around the solar area, and may include lithium-ion battery racks.

Table G-4 summarizes the material types and quantities originally anticipated for operation of the Facility, compared to the combined types and quantities for Phase 1 and Phase 2 (as modified by this amendment request).

Table G-4. Combined Inventory of Materials to be Used During Facility Operation

Material/Chemical	Estimated Quantity for Approved Facility	Estimated Quantity for Phase 1 Operation	Estimated Quantity for Phase 2 Operation	Estimated Quantity for Amended Facility Operation
Mineral oils (turbine lubricant and transformer coolant)	807 gallons (3 gallons per turbine).	243 gallons (3 gallons per turbine).	243 gallons (3 gallons per turbine).	486 gallons (3 gallons per turbine).
Synthetic oils (turbine lubricant, gear oil)	2,690 gallons (10 gallons per turbine).	810 gallons (10 gallons per turbine).	810 gallons (10 gallons per turbine).	1,620 gallons (10 gallons per turbine).
Simple Green (general cleaner)	807 gallons (3 gallons per turbine).	243 gallons (3 gallons per turbine).	243 gallons (3 gallons per turbine).	486 gallons (3 gallons per turbine).
WD-40; grease (general lubricant)	1,345 gallons (5 gallons per turbine).	405 gallons (5 gallons per turbine).	405 gallons (5 gallons per turbine).	810 gallons (5 gallons per turbine).
Ethylene glycol (antifreeze)	807 gallons (3 gallons per turbine).	243 gallons (3 gallons per turbine).	243 gallons (3 gallons per turbine).	486 gallons (3 gallons per turbine).
Round-up and 2,4-D (weed control)	0—subcontract out for weed control.	0—subcontract out for weed control.	0—subcontract out for weed control.	0—subcontract out for weed control.
Water for turbine blade washing	40,350 gallons (50 gallons per blade) per occurrence.	12,150 gallons (50 gallons per blade) per occurrence.	12,150 gallons (50 gallons per blade) per occurrence.	24,300 gallons (50 gallons per blade) per occurrence.
Water for solar array washing	0	0	Up to 430,000 gallons per wash (twice per year).	Up to 430,000 gallons per wash (twice per year).
Lithium-ion battery	0	0	9.5 battery racks per 1 MW replaced every 7 years.	9.5 battery racks per 1 MW replaced every 7 years.
Liquid coolant	0	0	7,600 gallons of liquid coolant replaced every 7 years	7,600 gallons of liquid coolant replaced every 7 years
Electrolyte solution	0	0	7,000 gallons per 1 MW replaced every 20 years.	7,000 gallons per 1 MW replaced every 20 years.

Note: If lithium-ion batteries are selected, electrolyte solution will not be required. Similarly, if flow batteries are selected, lithium-ion batteries will not be required.

Based on the information presented in this exhibit, Montague has satisfied the requirements of OAR 345-021-0010(1)(g).

G.8 REFERENCES

Energy Facility Siting Council (EFSC). 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. September 10.

Energy Facility Siting Council (EFSC). 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

Energy Facility Siting Council (EFSC). 2017b. *Final Order on Request for Contested Case and Amendment #3 of the Site Certificate for the Montague Wind Power Facility.* July 12.

EXHIBIT H
GEOLOGY AND SEISMICITY

OAR 345-021-0010(1)(h)

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H.1 INTRODUCTION

The Energy Facility Siting Council (EFSC; Council) previously approved construction of the 404-megawatt (MW) Montague Wind Power Facility (Facility)[1] and found that the Facility complies with the Structural standard required in OAR 345-022-0020. Montague Wind Power Facility, LLC (Montague) is constructing the Facility in phases. Phase 1 consists of up to 81 wind turbines generating 202 MW of power within the approved site boundary. Montague has already begun construction of Phase 1 under the conditions of the existing Site Certificate. Phase 2 consists of an expanded site boundary, modification of turbine types and construction schedule, and addition of a solar array and battery storage. The analysis in this exhibit focuses on Phase 2 and the three design scenarios described in *Request for Amendment No. 4 Project Description and OAR Division 27 Compliance* (referred to herein as RFA 4). The OARs in this exhibit reflect modifications to the Structural standard adopted by the Council on October 18, 2017. The analysis in Exhibit H addresses the amended rules.

H.2 SUMMARY OF ANALYSIS RESULTS

The evidence provided in this analysis demonstrates that the expanded site boundary, modified turbine types and construction schedule, and addition of a solar array and battery storage will not result in significant adverse impacts to geologic and seismic features for the following reasons:

- **Expansion of Site Boundary:** The proposed expanded site boundary consists of surficial and bedrock elements and seismic hazards that are similar to those within the approved site boundary. Montague has demonstrated this RFA 4 analysis that the Phase 2 can be designed, engineered, and constructed to avoid dangers to human safety resulting from the geological and soil hazards of the site pursuant to OAR 345-022-0020(1)(d).
- **Modification of Turbine Type:** Larger turbines can be designed and constructed in the same manner as previously described and approved by the Council. Foundations will be spread-footing or caisson type and will be designed for site-specific geology after completing geotechnical investigations.
- **Modification of Construction Schedule:** Construction timing does not affect the analysis of geological hazards.
- **Addition of Solar Array:** The solar array will not introduce any new potential adverse geologic impacts or structural hazards to the public.
- **Addition of Battery Storage:** The battery storage will not introduce any new potential adverse geologic impacts or structural hazards to the public.

H.3 CONDITION COMPLIANCE

The Third Amended Site Certificate imposes six conditions (12, 13, 14, 52, 53, and 54) designed to control and mitigate potential adverse geologic impacts during Facility construction and operation. In October 2017, EFSC approved amendments to the Structural standard, which require modifications to Conditions 12, 13, and 14. The modifications are represented with underlining and strikeout below. The rulemaking did not result in required modifications to Conditions 52 or 53. However, Montague requests the modification of Condition 52 as shown below to reflect Facility phasing, and the modification of Condition 53 as shown below to reflect

[1] EFSC. 2017. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

current codes. Montague can comply with each listed condition and no new conditions are proposed.

12 The certificate holder shall design, engineer and construct the facility to avoid dangers to human safety and the environment presented by seismic hazards affecting the site that are expected to result from all maximum probable seismic events. As used in this rule "seismic hazard" includes ground shaking, ground failure, landslide, liquefaction triggering and consequences (including flow failure, settlement buoyancy, and lateral spreading), cyclic softening of clays and silts, fault rupture, directivity effects and soil-structure interaction. For coastal sites, this also includes tsunami hazards and seismically-induced coastal ~~inundation, fault displacement and~~ subsidence.

13 The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if site investigations or trenching reveal that conditions in the foundation rocks differ significantly from those described in the application for a site certificate. After the Department receives the notice, the Council may require the certificate holder to consult with the Department of Geology 1 and Mineral Industries and the Building Codes Division ~~and~~ to propose and implement corrective or mitigation actions.

14 The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if shear zones, artesian aquifers, deformations or clastic dikes are found at or in the vicinity of the site. After the Department receives notice, the Council may require the certificate holder to consult with the Department of Geology and Mineral Industries and the Building Codes Division to propose and implement corrective or mitigation actions.

52 Before beginning construction of the facility or a phase of the facility, the certificate holder shall conduct a site-specific geotechnical investigation and shall report its findings to the Oregon Department of Geology & Mineral Industries (DOGAMI) and the Department. The certificate holder shall conduct the geotechnical investigation after consultation with DOGAMI and in general accordance with DOGAMI open file report 00-04 "Guidelines for Engineering Geologic Reports and Site-Specific Seismic Hazard Reports."

53 The certificate holder shall design and construct the facility in accordance with requirements of the current Oregon Structural Specialty Code ~~(OSSC 2007)~~ and ~~the 2006~~ International Building Code.

H.4 ANALYSIS AREA

The analysis area for Structural standards is the area within the site boundary. "Site boundary" as defined in OAR 345-001-0010(55) means "*the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all corridors and micrositing corridors proposed by the applicant*." Because RFA 4 includes a proposed expansion to the original site boundary, the analysis area encompasses the area within the approved and proposed expanded Facility site boundary. Figure H-1 shows the analysis area for RFA 4.

H.5 GEOLOGICAL AND SOIL STABILITY WITHIN ANALYSIS AREA

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)(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.*

H.5.1 Geologic Report and Consultation with DOGAMI

Response: Consultation with the Oregon Department of Geology and Mineral Industries (DOGAMI) was conducted in 2010 as part of preparation of the original ASC. A site-specific geotechnical study was conducted for the Phase 1 area in 2017 and the report was provided to DOGAMI (Barr, 2017). Montague met with DOGAMI on September 29, 2017, to discuss the geological considerations for Phase 2, and the analysis in this exhibit is based on information requested by DOGAMI during these consultations. A site visit was conducted on September 7, 2017, to confirm surface geologic and geotechnical details of the site specific to the proposed expanded site boundary.

While preparing this exhibit, CH2M consulted DOGAMI publications and other guideline documents from the Oregon State Board of Geologist Examiners (2014).

In September 2017, CH2M spoke with Yumei Wang at DOGAMI (Wang, 2017, pers. comm.). The general details of the analysis area terrain and geology were discussed, in light of the current ruling language and the prior work that has been completed at the site by CH2M and Barr (2017). The group also discussed any geologic concerns that DOGAMI might have, and CH2M's recommendations for geotechnical exploration prior to construction. Discussion focused on foundation types and design criteria, as well as hazards related to ground shaking, landslide potential, and soil conditions at the site.

Consistent with Site Certificate Condition 52, Montague will consult with DOGAMI prior to planning and initiating the Phase 2 site-specific geotechnical exploration.

H.5.2 Topographic Setting

The topographic setting for the proposed expanded site boundary is the same as the setting for the original site boundary. A summary is provided below.

The proposed Facility is located approximately 5 miles south of Arlington, Oregon, in Gilliam County. The Facility is located in the Columbia Plateau Physiographic Province, which consists of a large plateau underlain by a series of basalt flows. The top of the plateau tends to be relatively flat to gently rolling, but streams have dissected the plateau into steep-sided canyons. Elevations at the site range from approximately 600 feet in Alkali Canyon and Rock Creek to 1,200 feet above mean sea level on the plateau under the south side of the site. Most of the site is upon a relatively flat plateau, with drainages eroded into it by ephemeral streams. The proposed expanded site boundary is concentrated along the small canyons and plateaus that border Rock Creek.

Ephemeral streams flow generally north to northwest from the site toward the Columbia River, which is located northwest of the site boundary. Drainages include Rock Creek, Alkali Canyon, Eightmile Canyon, Fourmile Canyon, and several smaller unnamed tributary drainages, as shown on Figure H-1.

H.5.3 Regional Geologic Setting

The regional geologic setting for the proposed expanded site boundary is the same as the setting described for the original site boundary. A summary is provided below.

The Columbia Plateau is underlain by a series of layered basalt flows extruded from vents (located mainly in southeastern Washington and northeastern Oregon) during the Miocene epoch (between 7 million and 16 million years before present [B.P.]) (Swanson et al., 1979). Collectively, these basalt flows are known as the Columbia River Basalt Group. On the basis of lithological properties, geochemistry, and magnetic polarity, the Columbia River Basalt Group has been subdivided into a number of formations and members. The individual basalt flows are up to 300 feet thick, and are infrequently separated by soil interbed deposits that are typically less than a few feet thick. These flood basalts cover an area of more than 77,220 square miles in Washington, Oregon, and western Idaho (Hooper et al., 2002; Camp et al., 2003).

At the end of the most recent glaciation, massive outburst floods (the Missoula Floods) poured down the Columbia River. Elevations of floodwaters reached over 1,000 feet in the vicinity of the Facility site. The floods both scoured the bedrock in the area and deposited silt, sand, gravel, and boulders. Ice-rafted "erratics," i.e., boulders of distant origin transported by the great floods, provide evidence of inundation and maximum prehistoric flood heights. Wind reworked the sandy and silty material into a mantle of loess.

A variety of sedimentary materials that range from Pliocene to Miocene (2 million to 7 million years B.P.) are interbedded within the individual flows of the Columbia River Basalt Group. The basalt is often mantled with wind-blown loess deposits.

H.5.4 Site Geologic Setting

Figure H-1 shows a map of the geology in the vicinity of the proposed expanded site boundary and previously approved site boundary, adapted using GIS and release 6 of the DOGAMI geologic data compilation (DOGAMI, 2017). The following descriptions of the geologic units found in the area are summarized from Bela, 1982.

H.5.4.1 Surficial Geologic Units

Surficial geologic units in the vicinity of the proposed expanded site boundary consist primarily of windblown loess deposits. Loess is comprised of an accumulation of wind-blown silt and lesser and variable amounts of sand and clay that is often loosely cemented by calcium carbonate. Based on observations from the site visit, the loess is typically tan to light brown and composed of silt-sized particles. It mantles much of the upland surfaces and hillslopes of the Deschutes Plateau. Note that loess is not typically shown on geologic maps of the Facility vicinity (Figure H-1), primarily because the geologic map is intended to show structural and stratigraphic relationships (as noted by Bela, 1982).

Within the proposed expanded site boundary, the steeper slopes have little or no loess due to erosion, but on the flatter plateau surfaces, as much as 15 to 30 feet of loess may have been deposited, based on well driller reports. Furthermore, the results of the site-specific geotechnical exploration conducted within the Phase 1 portions of the Facility (Barr, 2017) confirmed the prevalence of loess within the Facility boundaries. In this report, loess was encountered in every soil boring and test pit advanced within the Facility, from less than 5 feet up to 18 feet below the ground surface.

H.5.4.2 Bedrock Geologic Units

Bedrock geologic units for the proposed expanded site boundary are generally the same as for the original site boundary, with additional detail as provided below.

The bedrock at the site includes weak sedimentary rock overlying basalt bedrock. The geologic map prepared by Bela (1982) along with formation descriptions has been used in the following sections, and from site observations made during the site reconnaissance.

The Alkali Canyon Formation of The Dalles Group underlies most of the flat plateau proposed expanded portion of the Facility site. This unit consists of a semiconsolidated to well-consolidated basaltic cobble gravel with lesser but variable amounts of fine tuffaceous sediment. The unit is highly variable laterally. Exposures of the Alkali Canyon Formation showed that the material consists of rounded, basaltic, stratified, weakly-cemented, fine gravel to cobbles.

The Priest Rapids and Frenchman Springs Members of the Wanapum Basalt are exposed across the site along the valley walls of Rock Creek and the eastern portion of the proposed expanded site boundary, east of Highway 19. The Priest Rapids Member basalt flows are described as fine- to coarse-grained basalt with reversed magnetic polarity. They contain phenocrysts of olivine and plagioclase. The Priest Rapids member is about 100 feet in thickness. The Frenchman Springs Member is fine- to medium-grained basalt with normal magnetic polarity and is approximately 300 to 500 feet thick across the region.

H.5.4.3 Structural Geology

No potentially active faults have been mapped within the site area (Personius et al, 2003, Bela, 1982.). Based on site observations and geologic mapping, the basalt flows that underlie the site are flat-lying. Geologic structure is not expected to impact or influence the construction and operation of the site.

Faults associated with the northwest-trending Turner Butte anticline are mapped southwest of the site along Rock Creek (dashed lines on Figure H-1). The Willow Creek Monocline is an east-northeast trending fold that is mapped to the east of the Phase 2 area (Bela, 1982). This fold is exposed in a roadcut on the east side of Highway 19 north of Olex. In this exposure, conglomerate layers of the Alkali Canyon Formation are tilted to the northeast.

Potentially active faults are discussed in Section H.8.

H.5.4.4 Groundwater/Springs

The depth to groundwater is anticipated to vary based on local ground surface elevations. Based on a well log search of the area (OWRD, 2017), “first water” is typically more than 400 to 500 feet deep on the plateau surface in the proposed expanded site boundary. Locally and seasonally perched groundwater may possibly be present, depending on local irrigation practices.

H.6 DESCRIPTION AND SCHEDULE OF SITE-SPECIFIC GEOTECHNICAL WORK

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.*

Response:

Work Performed to Prepare This Exhibit. CH2M conducted a limited geological site reconnaissance of the proposed expanded Facility to observe the existing features at the site and look for evidence of past or potential geologic hazards. The site reconnaissance included evaluation of existing exposures of soil and rock (typically in road cuts, quarries, and drainages), classification of soils, and observation of typical slopes in the proposed turbine and transmission line areas.

A detailed literature review of the regional geology including the entire site boundary was also performed, including evaluation of published literature and geologic mapping. This literature review included a detailed evaluation of seismic hazards at the site, which is presented in Section H.8.

Future Work. At an appropriate stage in the development (either prior to or at an early stage of the Phase 2 construction process), additional subsurface explorations must be completed to confirm the anticipated soil conditions at turbine locations and within the solar micrositing area to provide final design recommendations. The final design geotechnical investigation will consist primarily of the following tasks:

- Reviewing available data from previous geotechnical explorations in the vicinity of the approved and proposed expanded site boundary
- Reviewing available geologic information from published sources
- Conducting a geotechnical field exploration at locations of proposed facilities, including soil borings, test pits, infiltration tests, and possibly geophysical testing
- Collecting additional soil samples for classification and laboratory testing and conducting laboratory tests on selected soil samples, if necessary

Geotechnical analyses will be used to calculate bearing capacity of the soils, conduct stability analyses, and provide engineering recommendations for construction of the structures.

H.7 TRANSMISSION LINES AND PIPELINES

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.*

Response: The proposed new 230-kilovolt transmission line layout within the expanded site boundary will extend from the Phase 2 collector substation to the Phase 1 substation (see Figure H-1).

On the basis of geologic mapping, landslide database, flat terrain underlain by silty soil and basalt flows, and observations made during the site reconnaissance, the tower foundations for the Phase 2 transmission line can be constructed along this proposed corridor without adverse effects or danger from potentially unstable slopes, potentially liquefiable soils, or long-term erosion hazards.

Before beginning construction of the Facility or a phase of the Facility, Montague will conduct a site-specific geotechnical investigation along the modified 230-kV transmission line route and report the investigation findings to DOGAMI and ODOE in compliance with Site Certificate Condition 52 in the redline of the Third Amended Site Certificate (see Attachment 2 to RFA 4).

H.8 SEISMIC HAZARD ASSESSMENT

OAR 345-021-0010(1)(h)(E) *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 a 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 measure if the site is located in the DOGAMI-defined tsunami evacuation zone.

Response:

H.8.1 Maximum Considered Earthquake Ground Motion

The 2016 U.S. Geological Survey (USGS) National Seismic Hazard Mapping project (USGS, 2016a) developed ground motions using a probabilistic seismic hazard analysis that covered the area within the Facility site boundary. Though these motions are not considered site-specific, they provide a reasonable estimate of the ground motions within the Facility site boundary. Based on the USGS data, the 500- and 5,000-year earthquakes have bedrock peak ground accelerations of 0.08g and 0.27g, respectively, where "g" is the acceleration of gravity.

For new construction, the site should be designed for the Maximum Considered Earthquake (MConE) event, according to the 2012 *International Building Code* (IBC) as amended by the OSSC (International Code Council and State of Oregon, 2014). This code adheres to the 2015 National Earthquake Hazards Reduction Program Seismic Design Provisions (Federal Emergency Management Agency, 2015), and the 2016 USGS Seismic Hazard Mapping project (USGS, 2016a). This event has a 2 percent probability of exceedance in 50 years (or an approximately 2,475-year return period). For the Facility, this event has an estimated peak ground acceleration (PGA) of 0.19g at the bedrock surface based on the USGS Seismic Hazard Mapping project. This value of PGA on rock is an average representation of the acceleration for all potential seismic sources (crustal, intraplate, or subduction) mapped as active at the time of the study (USGS, 2016a).

Seismic design parameters were developed in accordance with the IBC. Based on existing subsurface information (including a preliminary review of borings drilled for adjacent facilities, geologic mapping, and nearby well logs), the Facility will be conservatively designed for Site Class B (S_B; rock profile), according to IBC requirements. Once site-specific geotechnical subsurface information is collected, the actual site class determination may improve or worsen. Final site class determination cannot be made until further site exploration is performed during the site-specific geotechnical investigation in compliance with Site Certificate Condition 52 in the redline of the Third Amended Site Certificate (see Attachment 2 to RFA 4). Table H-1 summarizes the current recommended seismic design parameters for the MConE event.

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

Site Class	Controlling Earthquake Magnitude	Peak Horizontal Ground Acceleration on Bedrock	Soil Amplification Factor, Fa	Peak Horizontal Ground Acceleration at Ground Surface
S_B (475-year return)	6.0	0.08g	1.00	0.08g
S_B (2,475-year return)	6.0	0.19g	1.00	0.19g

Notes:

Earthquake magnitude in this table is a mean representation of all known seismic sources. The peak ground acceleration is assumed to be roughly 40 percent of the 0.2-second spectral acceleration, following the recommendations of the IBC.

Fa = sail amplification factor

g = acceleration from gravity

10 Percent Exceedance in 50 Years (475-Year Return Interval):

- Short period (0.2-second) spectral response acceleration at the ground surface, S_{MS} = 0.19g for Site Class S_B
- 1-second period spectral response acceleration at the ground surface, S_{M1} = 0.06g for Site Class S_B

2 Percent Exceedance in 50 Years (2,475-Year Return Interval):

- Short period (0.2-second) spectral response acceleration at the ground surface, S_{MS} = 0.45g for Site Class S_B
- 1-second period spectral response acceleration at the ground surface, S_{M1} = 0.19g for Site Class S_B

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

H.8.2 Earthquake Sources

The potential seismic hazards in the vicinity of the Facility site result from three seismic sources: Cascadia Subduction Zone (CSZ) interplate events, CSZ intraslab events, and crustal events (Geomatrix, 1995).

Two of the potential seismic sources, interplate and intraslab events, are related to the subduction of the Juan de Fuca plate beneath the North American plate. Interplate events are caused by the frictional interface between these two tectonic plates. Intraslab events, which originate within the subducting Juan de Fuca plate, are generally associated with normal faulting that results from bending stresses built up within the plate as it is subducted beneath the North American plate. The combination of these factors is often referred to as the CSZ source mechanism. The CSZ is located beneath western Oregon, Washington, and British Columbia. The two source mechanisms associated with the CSZ are currently thought to be capable of producing maximum earthquakes with moment magnitudes of approximately 9.0 and 7.2 for the interplate and intraslab events, respectively (Geomatrix, 1995; USGS, 2016a, 2016b).

Earthquakes caused by movements along crustal faults, generally in the upper 10 to 15 miles of the earth's crust, result in the third seismic source mechanism. In the vicinity of the Facility site,

earthquakes occur within the crust of the North American tectonic plate when built-up stresses near the surface are released through fault rupture.

No potentially active faults are mapped within the Facility site boundary (Figure H-2). A number of late-Quaternary-age faults are mapped in the vicinity of the Facility site, as shown in Figure H-2. The fault that presents the largest potential for seismic contribution to the Facility is the Mill Creek fault (Lidke and Bucknam, 2002). This is the only late-Quaternary-age fault (<15,000 years old) mapped within 50 miles of the Facility site boundary. Other middle-Quaternary-age faults (<750,000 years old) in the area include the Arlington-Shutler Butte fault and the Horse Heaven Hills fault (Personius and Lidke, 2003).

Table H-2 summarizes information about the Mill Creek fault, which has the most recent rupture history.

Table H-2. Potentially Active Faults

Fault	Distance to Facility (miles)a	Fault Length (miles)	Most Recent Movement (years before present)	Slip-Rate Category
Mill Creek Fault	53	12	approx. 700 to 7,000	<0.2 mm/year

[a] Closest mapped distance to Facility.

Note:

mm = millimeter

The PGA within the Facility site boundary resulting from a seismic event on one of these source mechanisms was estimated using information the USGS developed in its seismic hazard mapping database (USGS, 2016a). This information includes estimated PGA at a theoretical soft rock/stiff soil interface for different probabilities of exceedance. The USGS database also provides the seismic deaggregation information for the seismic hazard, including estimates of the mean earthquake moment magnitude and mean epicentral distance associated with a given probability of exceedance at a given location.

The Maximum Probable Earthquake (MPE) is considered to be an earthquake that has a 10 percent probability of exceedance in 50 years (a nominal 475-year recurrence interval). The MConE is considered to be an earthquake with a nominal 2,475-year recurrence interval (a 2 percent probability of exceedance in 50 years). Figures H-3 and H-4 show the probabilistic seismic hazard deaggregation for the MPE and MConE events, respectively.

The Maximum Credible Earthquake (MCE) is the maximum event that each source is believed to be capable of producing. To provide an estimate of the MCE events from each principal source mechanism, the maximum moment magnitude for each fault was estimated using the relationship developed by Wells and Coppersmith (1994), which relates magnitude to fault length (USGS, 2016a) and distance from the Facility site boundary. These analysis parameters were summarized for the potentially active fault near the Facility site boundary (shown in Table H-2). In addition to these estimated magnitudes for crustal faults, Table H-3 summarizes the magnitudes for the random, unnamed crustal event from the USGS gridded hazard and from the CSZ intraslab and interplate events.

Table H-3. Earthquake Source Characterization Parameters

Earthquake Source	Maximum Moment Magnitude	Epicentral Distance (miles [km])
Random Hazard (Shallow Gridded WUS)	5.9	9 [15]
Crustal	6.0 to 6.6	9 to 53 [15 to 85]
Intraslab	7.2	>165 [>260]
Interplate	9.0	>192 [>310]

Notes:

The magnitudes for all crustal events are determined from the fault length/distance by Wells and Coppersmith (1994).

km = kilometer

WUS = Western United States gridded (random) crustal source

H.8.3 Recorded Earthquakes

Figure H-2 displays the location, approximate magnitude, and year of all recorded earthquakes within 50 miles of the Facility site boundary. These historical seismic events have been grouped by magnitude, and are displayed using different-sized icons based on the strength of the event. Because of the high number of events in the vicinity of the Facility site, several of the icons overlap in the figure.

Figure H-2 provides a summary of all recorded earthquakes known to have caused Modified Mercalli Intensity (MMI) III shaking intensity or greater within the Facility site boundary, regardless of epicentral distance from the Facility site boundary. For reference, an intensity of MMI III is associated with shaking that is "noticeable indoors, but may not be recognized as an earthquake." An intensity of MMI V is "felt by nearly everyone; many awakened." (USGS, 2013). The largest recorded earthquake within 50 miles (80 kilometers [km]) of the Facility site boundary was the magnitude 4.2 event that occurred in 2010 approximately 45 miles (72 km) northwest of the Facility site boundary (USGS, 2016b). This earthquake caused intensity MMI III shaking within the Facility site boundary. The greatest historical event known for the area is the January 26, 1700, Cascadia megathrust earthquake, which occurred along North America's west coast between Vancouver Island and northern California (USGS, 2005). This is the only event with an estimated intensity of MMI V within the Facility site boundary. Several other significant historical events that occurred more than 50 miles from the site (1949, 1965, 1980, 1992, and 2001) may have resulted in an intensity of MMI III within the Facility site boundary, with magnitudes ranging from 6.8 to 7.2. These events were located in Oregon and Washington.

Information in Table H-3 was developed by screening information from earthquake databases provided by DOGAMI (Madin, 1994), Berg and Baker (1963), and the USGS Earthquake Hazards Program, Earthquake Search Databases (USGS, 2016b). For earthquakes that were reported in terms of magnitude, a relationship between PGA and MMI (Kramer, 1996; Wald et al., 1999) was used to define a PGA associated with an MMI III event. A distance-attenuation relationship then was used to determine the combination of earthquake magnitude and distance producing an intensity of MMI III at the Facility. The Abrahamson & Silva 2008 next generation attenuation (NGA) model was used to develop the magnitude-distance information (Campbell et al., 2009) for seismic events in the northwest United States capable of producing accelerations at the Facility strong enough to cause MMI III intensity shaking.

H.8.4 Median Ground Response Spectrum

Figure H-5 compares the USGS-derived, IBC 2012/American Society of Civil Engineers 7 design spectral response accelerations for the MConE and MPE (for Site Class B), with the MCE spectral response occurring on the CSZ source mechanisms and on the crustal fault identified in Table H-2, and using the inputs summarized in Table H-3. The NGA model inputs for the crustal fault sources are summarized in Table H-3, and are based on the magnitude-distance relationship developed by Wells and Coppersmith (1994). For the CSZ sources, the geometric characterization is based on the modeling done by McCrory et al. (2006). Weighting of each of these models mimics the 2008 USGS National Seismic Hazards Mapping scheme (USGS, 2008). An epicentral depth of 20 km is used for the interpolate source, and a 50-km depth is used for the intraslab source. Figure H-5 compares the response on the bedrock surface between the design spectra and the median response spectra from the principal sources. Therefore, all plots in Figure H-5 are presented at the bedrock surface (or the B/C Site Class boundary identified within the IBC, where no site-specific amplification is applied to spectral accelerations).

The majority of the structures at the proposed Facility are anticipated to have a short fundamental period (less than 0.3 s). Towers for the wind turbines will have a longer period. Regardless, all structures will be designed according to the provided spectral response of the Facility location, and Montague will consider the higher accelerations for the deterministic response in addition to the probabilistic IBC response spectra.

Further, no Quaternary active faults (Holocene-age) have been mapped within the Facility site boundary. These faults are shown on the seismicity map (Figure H-2 in Exhibit H) but the middle-Quaternary-age faults (less than 750,000 years old), such as the Arlington-Shutler Butte fault and the Horse Heaven Hills fault, are not included in the seismic analysis. These faults are not considered to be active according to the USGS definition of an active fault (USGS, 2018).

H.8.5 Seismic Hazards Expected to Result from Seismic Events

For facilities designed to the current IBC and OSSC guidelines for Site Class B, 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). For this event, the Facility will be designed for no 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 will be minimal.

Seismic hazards associated with a design seismic event could potentially include ground shaking and instability from landslides or subsurface movement. Impacts on the Facility from these hazards are anticipated to be low, as discussed below.

Potential for Fault Displacements. The probability of a fault displacement within the Facility site boundary is considered to be nonexistent because of the absence of known or mapped potentially active faults in the immediate area and, particularly, within the Facility site boundary. Unknown faults could exist, or new fault ruptures could form during a significant seismic event, but the likelihood of either occurrence is low based on the lack of active faults identified during previous geologic investigations.

Potential for Ground Shaking. Ground shaking is expected within the Facility site boundary given the seismic setting. However, the probability of damage to structures from ground shaking is considered to be low because the seismic hazard potential is relatively low and, based on preliminary information, the area within the Facility site boundary is likely classified as Site Class B (International Code Council, 2012). Facility components will be designed for the seismic

potential of the area. Little or no structural damage is anticipated from MMI III intensity shaking, which is the predominant level of ground shaking anticipated within the Facility site boundary based on the historical record. Higher intensity shaking (MMI IV or MMI V) is not anticipated to cause significant damage to the Facility components. For comparison, MMI VII shaking is considered to result in "negligible damage in buildings of good design and construction." The period of historical record (1700 to present) is relatively brief from a geologic standpoint, and larger events (including greater intensity shaking) within the Facility site boundary are a possibility. Based on the historical record from 1700 to present, no earthquakes at the Facility site resulted in MMI VII intensity shaking.

Liquefaction Potential. Based on review of existing reports and subsurface information within the Facility site boundary, and site observations that indicate discontinuous loess and shallow and/or exposed bedrock within the Facility site boundary, liquefaction potential is estimated to be nonexistent because of the lack of groundwater or saturated sediments, coupled with the relatively low ground-shaking potential within the Facility site boundary.

Behavior of Subsurface Materials. Risk of landslides or seismically induced landslides within the Facility site boundary is anticipated to be low because of the flat terrain of the site and shallow, stable bedrock. Slopes within the Facility site boundary are generally less than 5 percent. No landslides have been mapped or were observed within the Facility site boundary.

Adverse Effects from Groundwater or Surface Water. The Facility site lies on loess consisting primarily of thin silt and silty clay overlying gravel with varying amounts of silt and sand. In the areas previously explored by drilling (Barr, 2017), no groundwater was identified within the Facility site boundary. Although the Facility site lies near the Columbia River, flood hazard potential from the Columbia River or surface water is anticipated to be nonexistent because no major surficial drainage pathways exist within the Facility site boundary. Tsunami hazard is anticipated to be nonexistent.

Because of the potential for seismic-induced hazards within the Facility site boundary, mitigation measures to address these hazards in the siting, design, and construction of the Facility are necessary in order to protect against ground shaking and instability. The design of the Facility components can readily accommodate the level of seismic energy described in Section H.8.4, Median Ground Response Spectrum.

H.9 NONSEISMIC HAZARD ASSESSMENT

OAR 345-021-0010(1)(h)(F) *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 paragraph (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 a 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.*

Response: Potential nonseismic geologic hazards at the site could include slope instability, erosion instability, collapse potential of loess, and volcanic eruptions. Each hazard is discussed

briefly below. Possible mitigation measures that could be used to address potential geologic hazards are discussed in Section H.9.

H.9.1 Slope Instability

No landslides are shown within the site boundaries on the Statewide Landslide Information Database for Oregon (SLIDO) database. The closest mapped landslides on the SLIDO database are located at the lower end of Eightmile Canyon, where it intersects Highway 74, northeast of the Facility site boundary.

The only slopes near the proposed Phase 2 area are along the Rock Creek drainage and associated tributaries. Based on geologic mapping and site reconnaissance observations, these slopes are formed in flat-lying basalt flows with very little soil cover. No existing landslides were observed on these slopes, and these slopes are not considered to be susceptible to landslides.

H.9.2 Erosion Potential

The rate and magnitude of soil erosion by water are controlled by rainfall intensity and runoff, soil erodibility, and vegetation cover. Data from the NRCS indicate that the predominant silt loam soils on the site have an erodibility rating of 0.64, which indicates high water erosion potential. Wind Erodibility Groups (WEGs) are used to predict the susceptibility of soil to blowing and the amount of soil lost as a result of blowing. Wind Erodibility Groups range from 1 to 8, where 1 is the most susceptible and 8 is the least susceptible to wind erosion. The silt loam soils at the site are in WEGs 3 and 5, which indicates moderate to moderately high susceptibility to wind erosion.

The Facility will comply with the requirements of a National Pollutant Discharge Elimination System (NPDES) stormwater construction permit. The NPDES permit requires development of an erosion control plan and implementation of erosion control best management practices (BMPs).

Section H.9.5 describes mitigation measures for potential soil erosion. Exhibit I includes a more detailed discussion of soil properties and mitigation measures that will be used to offset potential erosion, and the NPDES permit.

H.9.3 Collapse Potential of Loess

Because of the nature of its depositional formation, loess has a structure that is sometimes susceptible to collapse and/or swelling. This occurs from saturation and rearrangement of the soil particles, and can have a detrimental effect on foundations constructed on loess. Although loess soils within the Facility site boundary may become temporarily saturated near the ground surface during spring thaw or a heavy rainstorm, the overall stratum of loess soils are unlikely to maintain long-term saturation because of their position above the groundwater table and floodplain.

Facility construction is not expected to cause saturation of materials that have not previously experienced saturation. In addition, loess materials used for construction of embankments are not expected to retain a high void ratio structure that is subject to collapse or swell after excavation, placement, and compaction. Therefore, the collapse and swell potential is anticipated to be minimal for the loess soils. However, during design the collapse and swell potential of the loess should be further evaluated through laboratory testing and analysis.

H.9.4 Volcanic Eruption

The Pacific Northwest region is home to a large number of active volcanoes along the Cascade Mountain Range. The closest volcanic mountains to the Facility are as follows, with distances to the Facility site boundary:

- Mount St. Helens— 102 miles
- Mount Rainier—115 miles
- Mount Jefferson—97 miles
- Mount Adams—75 miles
- Mount Hood—75 miles

Impacts on the Facility from volcanic activity can be either direct or indirect. Direct impacts include the effects of lava flows, blast, ash fall, and avalanches of volcanic products (Waldron, 1989). Indirect effects include mudflows, flooding, and sedimentation (Waldron, 1989).

Mount St. Helens is the most active volcano in the Cascade Mountains. Mount St. Helen's high frequency of eruptions during the recent geologic past and its two eruptive episodes of the past three decades indicate a high probability of renewed eruptive activity. The May 18, 1980, eruption was the most economically destructive volcanic event in U.S. history (Driedger et al., 2010).

Because of the distance to potentially active volcanoes, no direct or indirect impacts of volcanic activity are expected to occur within the Facility site boundary. Impacts are typically restricted to within 50 miles of the erupting volcano. However, depending on the prevailing wind direction at the time of a volcanic eruption and the source of the eruption, ash fallout in the region surrounding the Facility may occur.

H.9.5 Disaster Resilience

The State of Oregon uses 2012 IBC (International Code Council, 2012), with current amendments by the OSSC and local agencies. 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 and local agencies. Montague will design the Facility to meet or exceed the minimum standards required by the design code and maintain core operations without interruption from a design basis earthquake. Critical structures will be designed for continued occupation and operation for a MConE; noncritical structures will require assessment following the MConE. Montague will evaluate the Oregon Resilience Plan during design of Facility components, and design for appropriate operation and operation recovery times.

The flat terrain and basalt bedrock that underlie the area within the Facility site boundary are not expected to be prone to seismically induced landslides. No structures will be built on steep slopes that could be prone to instability, thus avoiding potential impacts.

As discussed above, nonseismic geologic hazards could potentially include slope instability and ensuing landslides, soil erosion, collapsed loess potential, and volcanic eruptions. Typical mitigation measures for nonseismic hazards include avoidance of potential hazards, creation of detailed geologic hazard maps to aid in laying out facilities, characterizing the subsurface soils to determine soil strength and foundation conditions, and provision of warnings in the event of hazards. More detailed discussions of possible mitigation measures for each potential hazard are discussed below.

Landslides. To mitigate potential landslide hazards, areas that have potential of slope instability will be identified and delineated during the final design geotechnical investigation, and the turbines will be located safe distances from steep slopes so that if slope failure were to occur, the turbines and their associated foundation structures would not be impacted. The Facility components typically will not be located on unstable slopes or landslide-prone terrain. The turbines and other Facility components will be located primarily on top of relatively flat plateau areas, and not on steep slopes.

Montague evaluated the Facility area for potential landslide hazards as follows:

- The project geologist conducted aerial imagery reconnaissance, a landslide database search, and a site reconnaissance. No Light Detection and Ranging (known as LiDar) coverage is available of the Facility site.
- No landslides were observed in the site vicinity during the site reconnaissance. The slopes were underlain by shallow, flat-lying basalt flows. These are interpreted to be stable.
- No borings or trenching were necessary because no landslides were observed.
- The most appropriate mitigation for landslides is slope setbacks. During final design, the turbines and transmission towers will be located an appropriate distance from the crests of slopes to avoid damage if a slope failure were to occur.

Site-specific geotechnical surveys will be conducted prior to construction in compliance with Site Certificate Condition 52.

Soil Erosion. To reduce the potential for soil erosion, construction of roads and turbine foundation will be regulated by an erosion control plan and NPDES 1200-C construction permit (see Exhibit I, Attachment I-1) that will require best management practices to minimize possible impacts from erosion or other impacts to soils. Exhibit I lists the suggested BMPs to reduce the potential for soil erosion. Work on the access roads will include grading and regraveling of existing roads, and construction of new roads. Erosion control measures will meet local, county, and state erosion control measures, including procedures described in Exhibit I.

Collapsing Soils/Piping. Potentially collapsible soils (such as loess) will be identified during the final geotechnical exploration, and the collapse potential will be evaluated by laboratory testing. If necessary, collapse potential of loess will be mitigated by construction techniques (overexcavating and replacing with structural fill, wetting, compacting) during subgrade preparation.

Volcanic Eruptions. In the event of a volcanic eruption that could damage or affect Facility components, the components will be shut down until safe operating conditions returned. If an eruption were to occur during construction, a temporary shutdown most likely would be required to protect equipment and human health.

Power Outages. During power outages, the need for backup emergency power is limited to the substation and O&M Building to ensure the safe operation of the Facility. This includes normal substation lighting, which will be available while the backup generator is in operation. Emergency lights on the tops of the transmission poles are not planned, nor is lighting of transmission line poles required by the Federal Aviation Administration, as the structures are less than 200 feet in height.

Per Site Certificate Condition 90, the 230-kV and 34.5-kV transmission lines will be designed to the standards of the Utility Safety and Reliability Section of the Oregon Public Utility Commission to ensure that the specifications are consistent with applicable codes and standards.

Final Design Geotechnical Exploration. A detailed geotechnical exploration of the Facility will be conducted prior to construction. The exploration will assess subsurface soil and geologic conditions, and provide information that will be used to identify geological or geotechnical hazards and facilitate design of turbine foundations and foundations of other related and

supporting facilities. The exploration will also provide data for the installation of underground collector cables and overhead collector and transmission lines.

H.9.6 Future Climate Conditions

General predictions on future climate conditions at the Facility that may impact geologic hazards include greater-intensity rainfall events, fluctuations in typical annual snowpack (above or below normal), and warmer average annual temperatures. Increased deviation from climatic norms may impact erosion from runoff and wind, soil moisture and groundwater levels, and overall stability of slopes at the site.

Future climate conditions should not have a major impact on the geologic, geotechnical, and seismic conditions at the Facility. Specifically, sea level rise will not affect Facility construction or operation. Increased rainfall intensity and long-term precipitation increases could lead to an increase in soil erosion compared to historical erosion. Existing ancient landslides could become reactivated by saturation that occurs as a result of increased annual precipitation; however, no ancient landslides were observed at the site. Future drought conditions and any associated loss of vegetation could increase the potential for dust storms. Critical structures and Facility components will be designed for continuous operation in dust storms and dusty conditions, whether by a scheduled maintenance program or by prevention with sealed components and structures.

Design of structures using BMPs during construction combined with long-term erosion protection and maintenance will result in an additional degree of conservatism when considering the design code parameters and factors of safety, to account for future climate extremes during the 40-year, or longer, design life of the Facility.

Montague will design the Facility for the appropriate design life based on required State of Oregon structural and electrical code requirements. A longer design life (e.g., 50-year and 100-year) will be considered during design. The reference to a 40-year design life relates to Montague's assumption for the useful life of the Facility and corresponds with lease agreements with landowners.

H.10 CONCLUSION

The risk of seismic and geological hazards to human safety at the proposed Facility is low. The Council has previously adopted site certificate conditions that help to prevent or minimize safety risks to the public. Montague has adequately characterized the site in accordance with OAR 345-022-0020(1)(a) and considered seismic events and amplification for the Facility's specific soil profile. The Facility will include improved roadways, wind turbine towers, and underground collector cables. There will be no continually staffed facilities other than the Facility office (operations and maintenance building). In general, the area is to remain in agricultural use and therefore the probability of a large seismic event occurring while the Facility is occupied is much lower than a normal building or facility. As a result, there is minimal risk to human safety due to geological hazards. Moreover, because the Facility is not critical infrastructure such as a petroleum pipeline or an earthen dam, the risks to human safety related to seismic hazards are minimal.

Further, Montague has demonstrated that the Facility can be designed, engineered, and constructed to avoid dangers to human safety in case of a design seismic event by adhering to IBC requirements. These standards require that under the design earthquake, the factors of safety used in 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 Facility components will either be relocated or 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 Facility, adherence to the IBC requirements will ensure that appropriate protection measures for human safety are met.

Montague 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 Facility, in the absence of a seismic event, will not adversely affect or aggravate the geological or soil conditions of the Facility site or vicinity. The risks posed by nonseismic geologic hazards are generally considered to be low because the Facility components will be located on relatively flat plateau and stable uplands. The primary landslide hazard is on slopes, where no structures will be placed.

Soil erosion hazard that could result from water and wind action will be minimized with the implementation of an engineered erosion control plan. Montague has demonstrated that the Facility can be designed, engineered, and constructed to avoid dangers to human safety resulting from the geological and soil hazards of the site pursuant to OAR 345-022-0020(1)(d). Site-specific studies have been conducted, additional geotechnical investigation and analysis will be performed once the final locations of the turbines are selected, and adequate measures will be implemented to control erosion. As stated in Section H.3, Montague can comply with each listed condition and no new conditions are proposed. Montague requests that Conditions 52 and 53 be modified to refer to Facility phasing and current codes, respectively. No other conditions require modification to address the changes proposed in RFA 4. 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 Facility.

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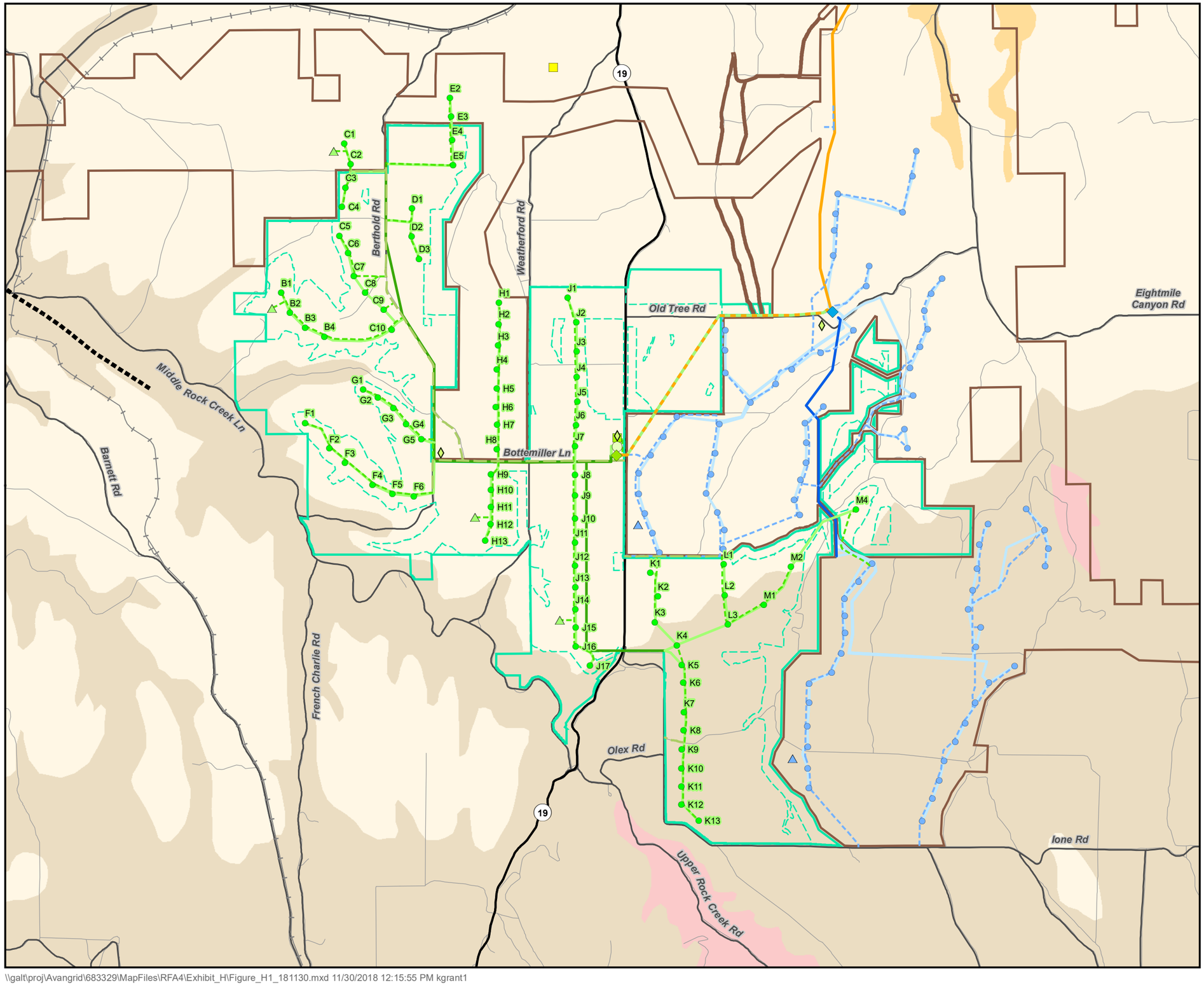
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Figures

Figure H-1
Geology Map
Phase 2 Design Scenario A:
2.5-MW Turbine Layout
(Maximum 202-MW Turbine Layout)
Montague Wind Power Facility



Legend

- Approved Site Boundary/Micrositing Corridor
- Proposed Expanded Site Boundary
- Proposed Expanded Micrositing Corridor
- Existing Shared LJIIB O&M Building
- Fault

Geology Map Unit Formation

- Alkali Canyon Formation
- Grande Ronde Basalt
- Saddle Mountain Basalt
- Wanapum Basalt

Phase 2 (Features within the Approved and Proposed Expanded Site Boundary and Micrositing Corridor)

- Proposed Turbine
- Meteorological Tower
- Phase 2 Collector Substation
- Battery Storage System
- O&M Building
- Temporary Laydown Area
- Modified 230-kV Transmission Line Route
- 34.5-kV Overhead Collector Line
- 34.5-kV Underground Collector Line
- New Access Road
- Facility Use of Existing Road

Phase 1 (Features Constructed within the Approved Site Boundary and Micrositing Corridor)

- Turbine
- Meteorological Tower
- Phase 1 Substation
- Approved 230-kV Transmission Line
- 34.5-kV Overhead Collector Line
- 34.5-kV Underground Collector Line
- Access Road

Basemap Features

- Interstate/Highway
- Public Road
- Other Road
- Major Railroad Line

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AVANGRID RENEWABLES

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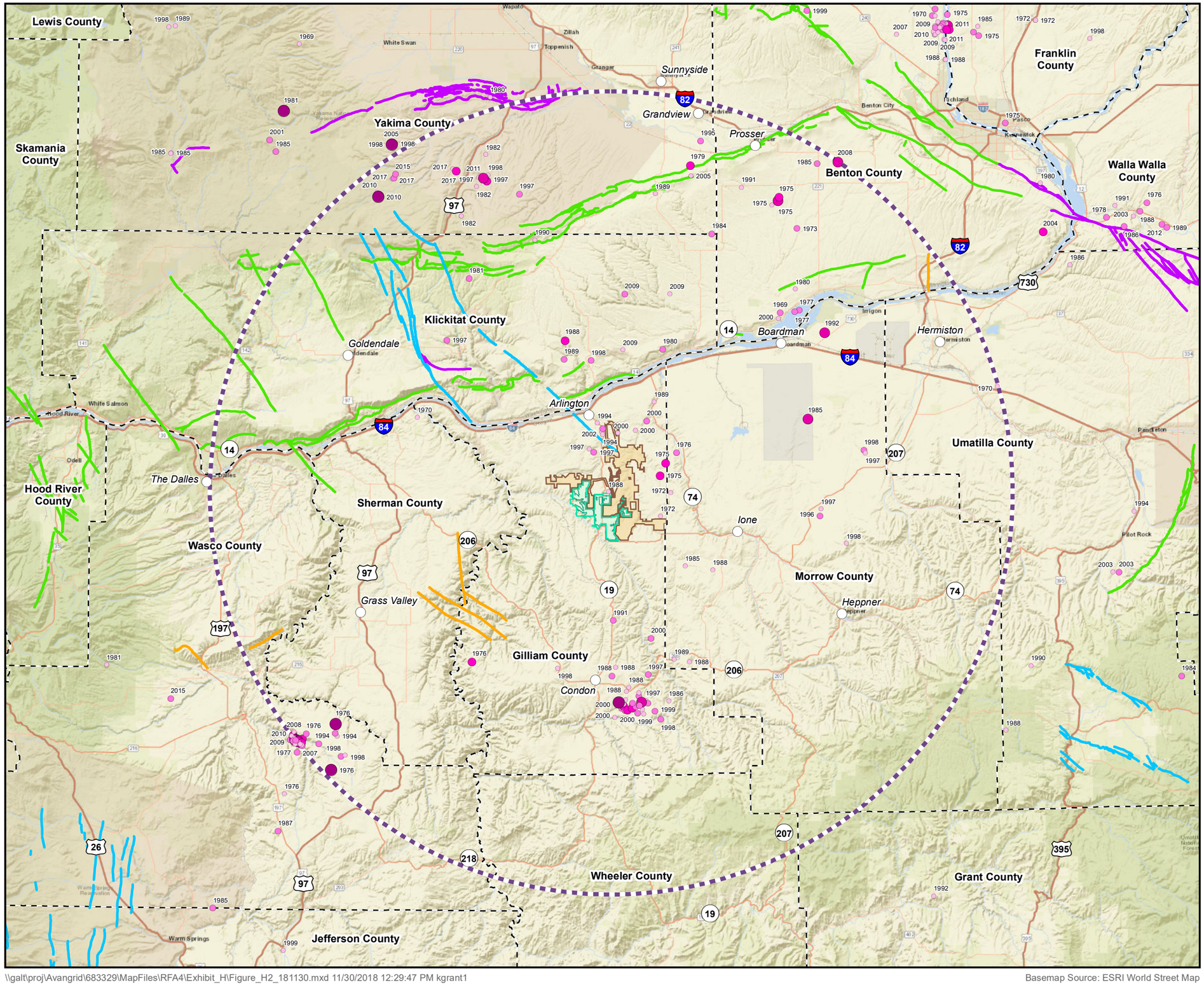


Figure H-2
Historical Earthquakes and Quaternary Faults
Montague Wind Power Facility

Legend

- Approved Site Boundary
- Approved Micrositing Corridor
- Proposed Expanded Site Boundary
- Proposed Expanded Micrositing Corridor
- Approximate 50-mile Buffer of Approved and Proposed Expanded Site Boundaries

Historical Earthquakes

Magnitude

- 2.5 - 2.7
- 2.7 - 3.2
- 3.2 - 3.6
- 3.6 - 3.9
- 3.9 - 5.0

Quaternary Faults and Associated Folds

- Latest Quaternary (<10,000 years)
- Middle and Late Quaternary (<750,000 years)
- Undifferentiated Quaternary (<1,600,000 years)
- Class B (Age Suspect or Older than Quaternary)

Basemap Features

- County Boundary
- City/Town

Sources:
1) Historical Earthquakes: United States Geological Survey Earthquake Catalog, accessed October 2017. https://earthquake.usgs.gov/earthquakes/search
2) Quaternary Faults and Associated Folds: United Sates Geological Survey Quaternary Fault and Fold Database, accessed October 2017. https://earthquake.usgs.gov/hazards/qfaults

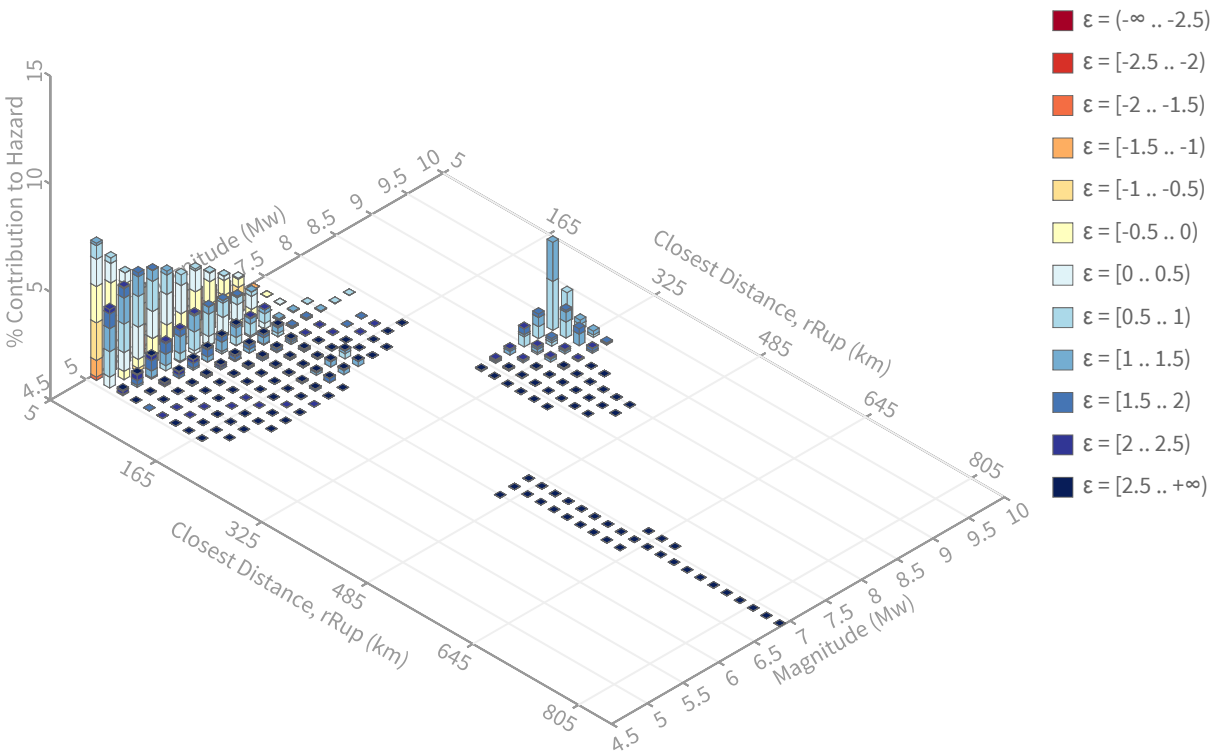
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Basemap Source: ESRI World Street Map



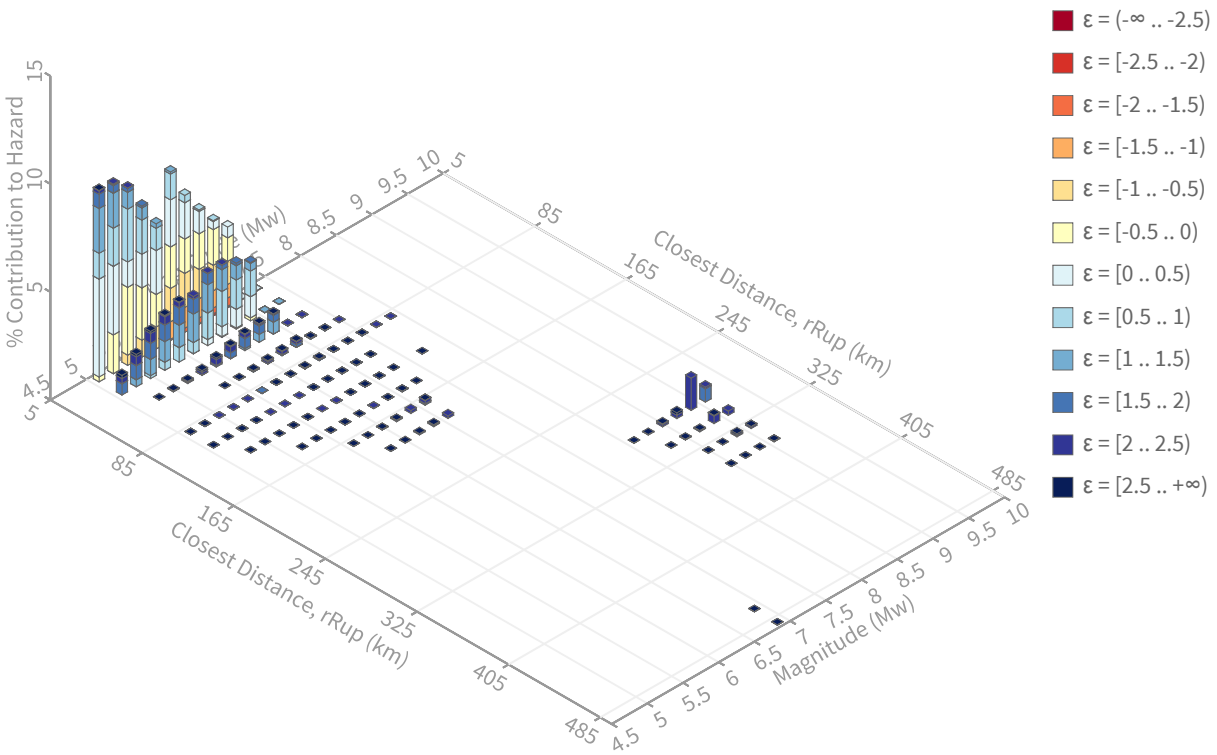
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FIGURE H-3

Probabilistic Seismic Hazard Deaggregation for the 10 Percent/50-year (475-year Recurrence Interval) Maximum Probable Earthquake Event

MONTAGUE WIND POWER FACILITY



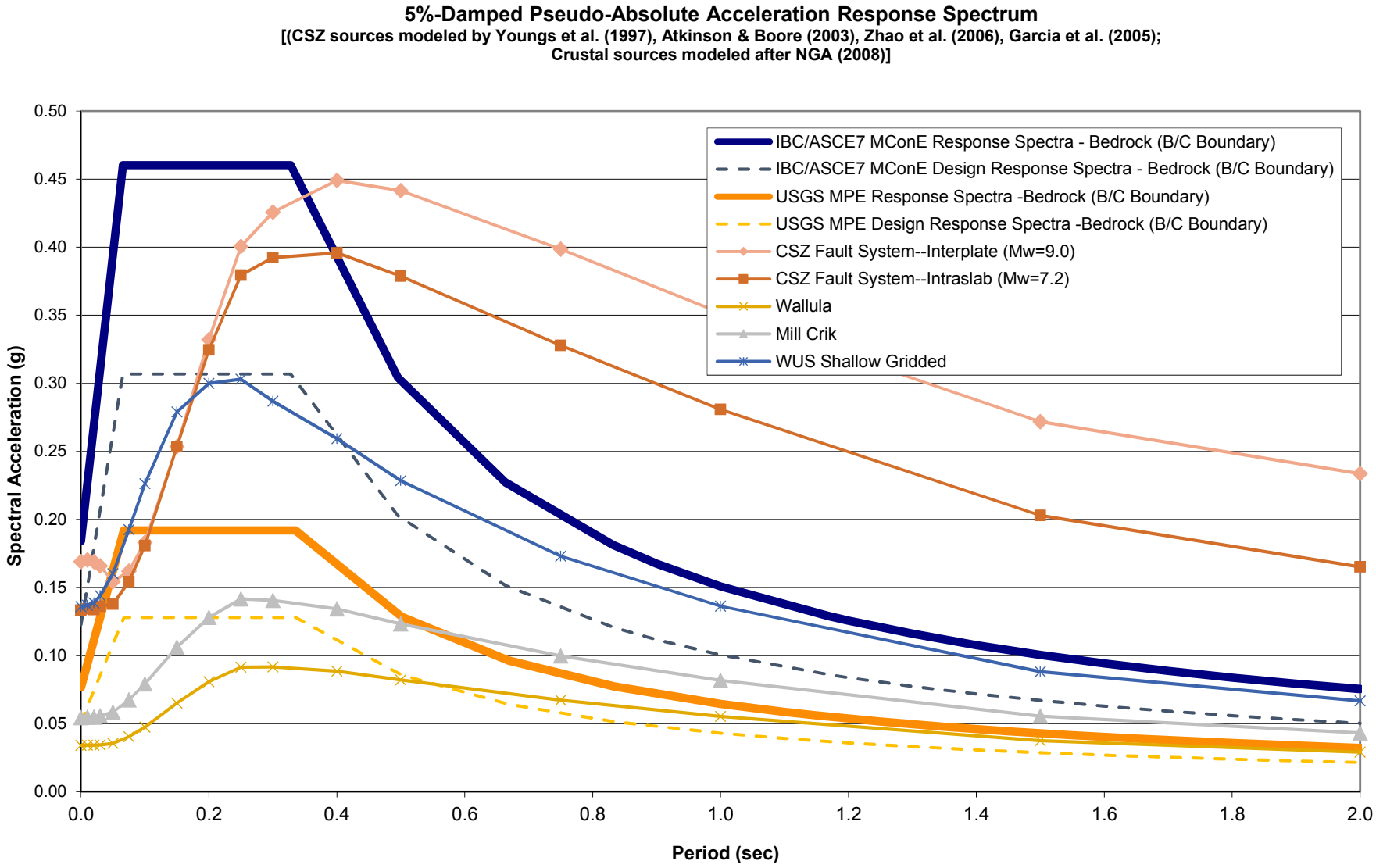
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FIGURE H-4

Probabilistic Seismic Hazard Deaggregation for the 2 Percent/50-year (2,475-year Recurrence Interval) Maximum Considered Earthquake Event

MONTAGUE WIND POWER FACILITY



AVANGRID RENEWABLES

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FIGURE H-5
Median Ground Response Spectra Plots
MONTAGUE WIND POWER FACILITY

EXHIBIT I
SOILS

OAR 345-021-0010(1)(i)

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I.1 INTRODUCTION

The Energy Facility Siting Council (EFSC; Council) previously approved construction of the 404-megawatt (MW) Montague Wind Power Facility (Facility)[1] and found that the Facility complies with the Soil Protection standard required in OAR 345-022-0022. Montague Wind Power Facility, LLC (Montague) is constructing the Facility in phases. Phase 1 consists of up to 81 wind turbines generating 202 MW of power within the approved site boundary. Montague has already begun construction of Phase 1 under the conditions of the existing Site Certificate. Phase 2 consists of an expanded site boundary, modification of turbine types and construction schedule, and addition of a solar array and battery storage. The analysis in this exhibit focuses on Phase 2 and the three design scenarios described in *Request for Amendment No. 4 Project Description and OAR Division 27 Compliance* (referred to herein as RFA 4).

I.2 SUMMARY OF ANALYSIS RESULTS

The Council addressed the Soil Protection standard in the Final Order on the Application, Final Order on Amendment 1, Final Order on Amendment 2, and Final Order on Amendment 3 and found that the design, construction, and operation of the Facility, when taking into account mitigation and condition compliance, will not result in a significant adverse impact to soils.

The evidence provided in the analysis conducted under RFA 4 demonstrates that the expanded site boundary, different turbine types, solar array, and battery storage will not result in significant adverse impacts to soils. The analysis results are summarized as follows:

- **Expansion of Site Boundary:** The potential for erosion during construction will be minimized by adherence to an erosion and sediment control plan and National Pollutant Discharge Elimination System (NPDES) 1200-C general stormwater discharge permit for construction, and by the proposed mitigation measures described in Section I.7. Areas of vegetation removal will be reclaimed through reseeding of native vegetation or crops to protect against loss of soil to wind and water erosion.
- **Modification of Turbine Type:** Montague will use the same best management practices (BMPs) during the installation of turbines as previously approved by the Council. Larger turbines may require larger foundations but fewer turbines will be installed. Therefore, the overall permanent and temporary disturbance to soils will be less than previously approved (see Table C-1 in Exhibit C).
- **Modification of Construction Schedule:** The change in construction schedule does not affect the soils analysis.
- **Addition of Solar Array:** Construction impacts for the solar array will be consistent with the construction impacts described for the approved wind facility. Extensive grading of the solar site is not anticipated and Montague will use the same construction techniques and BMPs as approved for the wind facility. The soil types affected by solar construction are the same soil types previously considered within the approved site boundary. Solar array operation will have no impact on soil erosion, and ground disturbance is not anticipated to occur during solar operations.
- **Addition of Battery Storage:** As with the solar array addition cited in the paragraph above, the anticipated construction impacts for Phase 2, including a possible battery storage system, will be consistent with the construction impacts described for the approved Facility

[1] EFSC. 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

(for example, substation construction). Montague will use the same construction techniques and BMPs, and the soil types and current uses are the same as within the approved site boundary. Battery storage system operation will have no impact on soil erosion, and ground disturbance is not anticipated to occur during battery operations.

I.3 CONDITION COMPLIANCE

The Third Amended Site Certificate imposed nine Site Certificate conditions (38, 44, 55, 56, 80, 81, 82, 85, and 92) to control and mitigate potential adverse impact to soils and to mitigate the risk of soil contamination during construction and operation. The modifications proposed under RFA 4 do not affect Montague's ability to comply with the existing Site Certificate conditions and no new conditions are needed to manage potential impacts on soils. However, Montague requests the deletion of Condition 44 because it duplicates the requirements in Condition 92 (see Exhibit P for additional detail). Condition 44 is not required as a specific mandatory condition prescribed in OAR 345-027-0020 or 345-027-0023.

I.4 IDENTIFICATION AND DESCRIPTION OF SOIL TYPES

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.*

Response: The analysis area for Exhibit I encompasses the area within the approved and proposed expanded Facility site boundary. The near-surface soils at the Facility and in the Facility vicinity were identified using the Natural Resources Conservation Service (NRCS) Soil Survey of Gilliam County, Oregon (NRCS, 2009). The NRCS soil survey data are representative of soil conditions in the upper 3 to 5 feet of the site because soil classifications were obtained by NRCS via discrete sampling methods and, therefore, are intended to represent average conditions in the vicinity (NRCS, 2008). Soil types in the proposed expanded site boundary were also confirmed, where possible, by visual examinations of existing exposures at the site.

Nonirrigated soil classifications generally were used because most of the land within the proposed expanded site boundary is not irrigated. Irrigated soil classifications are limited to two areas attached to existing water rights within the proposed expanded site boundary. One area occurs within a square-mile section of land consisting of crop circles irrigated by central pivots. A second, smaller area is located along an approximately 0.5-mile portion of the modified 230-KV transmission line route north of and adjacent to Old Tree Road. Potential disturbances to irrigated soils are addressed in Section I.6.6 and in Exhibit K.

Figure I-1 shows the soil survey map for the area within and around the proposed Phase 2 site boundary. The majority of the Facility components are located on three primary soil types, or units, that cover the low-relief surface of the plateau: the Ritzville Silt Loam, Willis Silt Loam, and Warden Silt Loam. These soil units are typically well-drained, moderately permeable, fertile silt loams generally formed in loess deposits (which include primarily wind-blown silt with lesser and variable amounts of sand and clay) deposits on the flatter plateau surfaces. The site vicinity receives between 9 and 14 inches of precipitation annually, most of which occurs between October 1 and March 31. Table I-1 provides a summary of the properties of the major soil units within the Facility site boundary. Below are detailed descriptions of the units (Hosler, 1984).

Ritzville Series — This soil unit consists of deep, well-drained soils formed in loess and volcanic ash, on uplands within the Facility area. Typically, the surface layer and subsoil are each dark brown silt loam, about 12 and 19 inches thick, respectively. The substratum is a brown silt loam

to a depth of 60 inches or more. Permeability of the Ritzville soil is moderate. Available water capacity is about 10 to 12.5 inches. Effective rooting depth is 60 inches or more. Runoff is slow for slopes less than 7 percent, and medium for slopes 7 to 20 percent. The hazard of water erosion is high. The hazard of wind erosion is moderate.

Warden Series — This soil unit is located on uplands within the Facility area, and consists of very deep, well-drained soils formed in loess and the underlying calcareous, lacustrine silts. The surface layer is dark brown silt loam about 3 inches thick. The subsoil is dark brown to brown silt loam about 18 inches thick. The substratum is a brown to grayish brown, partially calcareous silt loam to a depth of 60 inches or more. Permeability of the Warden soil is moderate. Available water capacity is about 11.5 to 12.5 inches. Effective rooting depth is 60 inches or more. Runoff is slow to medium for slopes less than 20 percent. The hazard of water erosion is high. The hazard of wind erosion is low to moderate.

Willis Silt Loam — This soil unit consists of moderately deep, well-drained soils formed in loess, on terraces within the Facility area. The surface layer is dark brown silt loam about 2 inches thick. The subsoil is dark brown silt loam about 17 inches thick. The substratum is a dark brown silt loam to a depth of approximately 26 inches, and the soil is underlain by calcareous hardpan. Permeability of the Warden soil is moderate. Available water capacity is about 4 to 8.5 inches. Effective rooting depth is 20 to 40 inches. Runoff is medium. The hazard of water erosion is high. The hazard of wind erosion is low to moderate.

Table I-1. Physical Properties of Predominant Soils within the Facility Site Boundary

Soil Series/Map Unit	USDA Soil Texture/Description	Slopes (percent)	Soil Erodibility Factor (K)[a]	Wind Erodibility Group[b]	Shrink-Swell Potential	Frost Action Potential
Ritzville Silt Loam	Dark brown silt loam to silt.	0 – 12	0.64	3	Low	High
Warden Silt Loam	Dark brown silt loam and calcareous grayish silt loam.	2 – 12	0.64	5	Low	High
Willis Silt Loam	Dark brown silt loam, underlain by silica hardpan.	2 – 12	0.64	5	Low	High

[a] Erodibility Factor (K) = susceptibility of a soil to sheet and rill erosion by water. Ranges from 0.02 to 0.69; the higher the number the more erosion potential.

[b] Wind Erodibility Group (WEG) = susceptibility of soil to blowing and the amount of soil lost as a result of blowing. WEGs range from 1 to 8, where 1 is the most susceptible and 8 is the least susceptible to wind erosion.

I.5 IDENTIFICATION AND DESCRIPTION OF LAND USES

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.*

Response: The land uses within the Facility site boundary consist of private agricultural land generally used for dryland wheat production or rangeland. Land use within the site boundary is zoned exclusive farm use under the Gilliam County Development Code (see Exhibit K). Some agricultural lands within the site boundary have also been enrolled in the Conservation Reserve Program.

Within the site boundary and analysis area, the Willis unit is generally used as rangeland and wildlife habitat (mule deer, birds, and small mammals). The Ritzville Unit is used for grain, winter

wheat and hay, and as rangeland where slopes are too steep for cultivation. The Warden silt loam is used for small grain, potatoes, corn, and alfalfa hay, and as rangeland and wildlife habitat (Hosler, 1984).

I.6 IDENTIFICATION AND ASSESSMENT OF IMPACTS ON SOILS

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.*

Response: Under the three design scenario layouts discussed in RFA 4, up to approximately 661 acres will be temporarily affected by Phase 2 construction (temporary disturbance under Design Scenario A, maximum wind turbine layout; see overview Table C-1 and detailed Table C-3 in Exhibit C), and up to approximately 1,207.6 acres will be permanently affected by the Phase 2 footprint (permanent disturbance under Design Scenario C, solar layout; see overview Table C-1 and detailed Table C-6 in Exhibit C). As discussed in the following paragraphs, other types of soil impacts, such as erosion, resulting from construction, operation, and retirement activities will be limited. The potential impacts from erosion will be minimal and are addressed through erosion control measures required by the Facility's NPDES 1200-C construction permit. Montague has received and maintains an active NPDES 1200-C construction permit (see Attachment I-1 for the permit and Attachment I-2 for the Oregon Department of Environmental Quality [DEQ] renewal letter under DEQ file number 119651). Montague's NPDES 1200-C construction permit is active through December 14, 2020 (Garner, 2018). An action plan for implementation of the permit will be prepared specific to the final design when complete. Mitigation measures will be implemented during construction to limit erosion from wind or water. Permanent erosion control measures will be emplaced to avoid ongoing wind and water erosion. These measures are discussed in detail in Section I.7 and in the conceptual erosion and sediment control plan for the solar array (Attachment I-3).

I.6.1 Wind and Water Erosion Impacts

The rate and magnitude of soil erosion by water are influenced by rainfall intensity and runoff, soil erodibility, and vegetation cover. Soil erosion potential within the proposed expanded (Phase 2) site boundary typically is low to moderate for undisturbed soils, given the presence of existing vegetation. However, as a result of steady, relatively high wind speeds in the area, areas of vegetation removal could potentially expose soils to accelerated water and wind erosion until stabilized. Shallow excavations for underground cables, roadways, solar array, and turbine pad construction will require removal of surface vegetation before construction that could temporarily expose the soils to wind and water erosion during construction. These conditions will prevail for a relatively limited time period until trenches are backfilled and pads are constructed.

Data from the NRCS indicate that the predominant silt loam soils on the site have an erodibility rating of 0.64, which indicates high water erosion potential (Table I-1). Wind Erodibility Groups (WEGs) are used to predict the susceptibility of soil to blowing and the amount of soil lost as a result of blowing. Wind Erodibility Groups range from 1 to 8; where 1 is the most susceptible and 8 is the least susceptible to wind erosion. The silt loam soils at the site are in WEGs 3 and 5, which indicates moderate to moderately high susceptibility to wind erosion.

I.6.2 Construction Impacts

Phase 2 turbine construction will require the use of heavy equipment and haul trucks to deliver aggregates, concrete, water, turbine components, cranes, support structures, and similar

construction supplies as the original permitted and approved Facility. Exhibit U contains a discussion of projected trips during construction. The repeated traffic of heavy machinery could cause localized soil compaction, resulting in temporary loss in agricultural productivity where the trucks are forced to leave existing access roads. Potential loss in agricultural productivity caused by compaction will only occur on a temporary basis during construction and be restored after construction.

The solar array and battery storage pads will require additional access roads. The construction of the solar array may include concrete foundations for support posts, but any additional concrete truck trips will be offset by a reduction in concrete truck trips needed for wind turbine foundation construction.

Aggregates for Facility components will be obtained from existing, permitted, commercially producing quarries. Associated rock-crushing activities will occur at the quarries before transporting to the site. Accordingly, no soil or rock will be disturbed to create new quarry sites.

Because the construction of roads, foundations, and other Facility components for the wind turbine generators and solar panels, and battery storage pad will be engineered, Facility components are subject to the requirements of a NPDES 1200-C construction permit and other pertinent construction and operation permits and pollution control. In accordance with these regulations, Montague will implement an erosion and sediment control plan and erosion control BMPs during Facility construction and operation.

The anticipated construction impacts for Phase 2, including possible solar panels and battery storage pads, will be consistent with the construction impacts described for the approved Facility. Montague will use the same construction techniques and BMPs, and the soil types and current uses are the same as within the approved site boundary.

I.6.3 Operations Impacts

Potential impacts to soils from Facility operation were described in the Final Order on the Application.[2] These impacts could include erosion due to drainage of stormwater or repair or maintenance of underground facilities, and inadvertent spills of small amounts of chemicals used at the Facility. Once constructed, operations will be confined to the gravel apron surrounding each turbine site and the gravel roads, including any road within and surrounding the wind turbine generators, solar array, and battery storage pads. These are similar to operational impacts that Montague previously evaluated under the Final Order on the Application.

For the proposed solar components, Facility operations will have no impact on soil erosion. General Facility operations will be constrained to the access roads. No ground disturbance is anticipated to occur during Facility operations. Transformers for the solar array and battery storage system will be ground-mounted units constructed on concrete pads with secondary sill containment traps designed to minimize the possibility of accidental leakage. Transformers may use Shell DIALA (R) A Oil (mineral oil used as transformer coolant) or a comparable product from another manufacturer such as seed oil. Both of these oil types are considered nontoxic. Transformer coolant does not contain polychlorinated biphenyls or compounds listed as extremely hazardous by the U.S. Environmental Protection Agency. The small quantity and nontoxic nature of the oils combined with the fact that the transformers will be included in secondary containment on concrete pads will minimize risk effects of potential spills on soils. In the unlikely event of a spill, Montague will follow the pollution-management BMPs included in Section I.7.

[2] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 57-60. September 10.

During operations, solar modules may be washed twice annually and the washwater will be released to the ground and allowed to evaporate and infiltrate. The washwater will not be heated or include detergents. The Water Pollution Control Facility (WPCF) 1700-B permit covers equipment-cleaning activities that discharge washwater by means of evaporation, seepage, or irrigation, including both fixed and mobile washing operations. Montague's third-party contractor will conduct the washing activities and seek coverage under the WPCF-1700-B permit from DEQ following completion of construction and before initiating any washing activities. Washing of solar panels will not create erosion because washwater will quickly evaporate before it can cause erosion issues.

For battery storage, operation and maintenance will mainly consist of minimal procedures that do not requiring tampering with the battery cell components. Both battery storage systems will be stored in completely contained, leak-proof modules on a concrete pad to capture any leaks that may occur. O&M staff will conduct inspections of the battery systems according to the manufacture's recommendations, which are assumed to be monthly inspections. In addition, consistent with the Final Order on the Application,[3] a spill prevention, containment, and countermeasures plan may be developed as required prior to construction and operation to manage, prevent, contain, and control potential releases, and provide provisions for quick and safe cleanup of hazardous materials.

Operation and maintenance of the battery storage system will comply with Site Certificate Conditions 55, 60, and 80 (see Attachment 2 to RFA 4). Condition 55 requires Montague to handle hazardous materials used on the site in a manner that protects public health, safety, and the environment and complies with applicable local, state, and federal environmental laws and regulations. Condition 60 requires Montague to develop and implement fire safety plans in consultation with the North Gilliam County Rural Fire Protection District to minimize the risk of fire and to respond appropriately to any fires that occur on the facility site. Condition 80 requires Montague to develop an Erosion and Sediment Control Plan with best management practices for spill prevention and response procedures.

In the unlikely event of an accidental hazardous materials release, any spill or release will be cleaned up and the contaminated soil or other materials disposed of and treated according to applicable regulations. Employees will be trained to be aware of the potential hazards of the system content through the availability of Material Safety Data Sheets, and to handle such releases in accordance with applicable regulations. See Exhibit CC for a list of applicable regulations. Spill kits containing items such as absorbent pads will be located on equipment and in onsite temporary storage facilities to respond to accidental spills, if any were to occur. Employees handling hazardous materials will be instructed in the proper handling and storage of these materials, as well as where spill kits are located. Montague will report spills or releases of hazardous materials during construction or operation to ODOE.

Consequently, no additional erosion potential or spill risks will result from implementation of the changes proposed under RFA 4. The proposed changes do not alter Montague's ability to comply with erosion control and spill management conditions in the Site Certificate. Therefore, no new risks are anticipated to occur to during Facility operations as a result of the changes proposed under RFA 4.

[3] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 57-60. September 10.

I.6.4 Retirement Impacts

In the event of Facility retirement, potential erosion hazards will be similar to those occurring during Facility construction, except additional retirement and restoration activities will be required to restore the area disturbed by the solar components. During retirement activities, soil may be exposed to accelerated erosion because of vegetation reduction during the removal of the turbine pads, underground cables, solar array, battery storage system, and roadways.

I.6.5 Hazardous Material Impacts

The Facility is not anticipated to cause the deposition of salts or chemicals, land application of effluent, or chemical spills. There will be no cooling towers or other facilities that cause salt deposition. No liquid effluent will be produced. Chemicals including lubricating oils and cleaners for the turbines, and pesticides for weed control will be used within the Facility site boundary. These materials are discussed further in Exhibit G, and Exhibit G includes a discussion of precautions to be taken in handling hazardous materials such as lubricating oils.

I.6.6 Other Soil Limitations

The Olex, Ritzville, and Willis soil series are classified as "prime farmland if irrigated" provided an adequate and dependable supply of irrigation water are available. Four large, one smaller, and one partial crop circle have been identified within the proposed expanded site boundary and are assumed to be irrigated. These irrigated soils are located within a square mile area (less than 640 acres) and are in the Ritzville silt loam with zero to 12 percent slopes.

The approximately 0.5-mile portion of the modified 230-KV transmission line along Old Tree Road will cross portions of irrigated soils in the Ritzville silt loam with 2 to 7 percent slopes, Warden silt loam with 2 to 5 percent slopes, and Willis silt loam with 2 to 5 percent slopes. As stated in Exhibit K in the discussion of high-value soils under Section K.4.3, Overview of Soil Classifications, and as shown in Tables K-1 and Table K-2, Phase 2 will impact approximately 2.7 acres of irrigated Class 1 and Class 2 soil under Design Scenario A and less than 0.01 acre of Class 2 soil under Design Scenario C. These are the only impacts to Class 1 and 2 soils within the proposed expanded site boundary. Specifically, under Design Scenario A, Turbines J2-J5 and 34 transmission line poles will permanently impact high-value farmland soils. Under Design Scenario C, transmission line poles will permanently impact less than 0.01 acre of high-value farmland soils. The specific J-string turbines cross an area with irrigated crop circles, but, per the underlying lease agreement with the landowner, the turbines cannot be sited *in* irrigated crop circles. These turbines are located outside of the irrigated crop circles and allow the landowner to continue the current farming operations without interference. Montague will mitigate for potential disturbances to irrigated prime farmland as discussed in Section I.7.

I.7 DESCRIPTION OF PROPOSED MITIGATION MEASURES

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

Response: The Council previously summarized control and impact mitigation measures in the Final Order on the Application.[4] Although temporary and permanent impacts from turbine, solar array, battery storage, and building footprints are unavoidable, impacts from roads will be minimized by using existing roads to the extent practicable. Rigorous reclamation measures will

[4] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 59. September 10.

be implemented to restore the near-surface soils and soils temporarily disturbed by the Facility operations, consistent with the revegetation plan required by Site Certificate Condition 92. Construction of roads, turbine foundations, solar panel support structures, and other related or supporting facilities will be regulated by an erosion and sediment control plan and NPDES 1200-C construction permit that will require BMPs to minimize possible impacts from erosion or other impacts to soils (see Attachment I-1 for the permit, Attachment I-2 for the DEQ renewal letter under DEQ file number 119651, and Attachment I-3 for the conceptual solar array erosion and sediment control plan). Soil impacts will be minimized under the NPDES permit.

These BMPs are the same as previously proposed and approved and do not require modification as a result of any of the changes proposed under RFA 4. Mitigation BMPs for solar components will be similar to mitigation measures proposed for the wind turbine generator construction. However, consistent with the current revegetation plan, an additional paragraph has been added to describe segregation of topsoils during construction.

Erosion control measures will meet local, county, and state erosion control standards (DEQ, 2005; ODOT, 2005), and include the procedures described in Exhibit I. In general, the following BMPs will be considered before construction begins:

- **Stabilized Construction Entrance/Exit**: Stabilized construction entrance/exits will be installed at newly constructed roads and construction laydown areas. The stabilized construction entrance/exits will be inspected and maintained for the duration of Facility life.
- **Existing Vegetation:** To the extent practicable, existing vegetation will be preserved.
- **Silt Fencing:** Silt fencing will be installed on contour downgradient of excavations, turbine footings, the operations and maintenance (O&M) building, and the substations. Silt fencing will also be installed around the perimeter of material stockpiles and construction staging areas.
- **Straw Wattles:** Straw wattles may be installed to decrease the velocity of sheet flow stormwater along the downgradient edge of access roads adjacent to slopes or sensitive area.
- **Mulching:** Mulch will be provided to immediately stabilize soil exposed as a result of land-disturbing activities and during the reseeding of disturbed areas.
- **Stabilization Matting:** Jute matting, straw matting, or turf reinforcement matting may be used to stabilize slopes that could become exposed during installation of access roads, or to stabilize intermittent streams disturbed during construction of road crossings.
- **Soil Binders and Tackifiers:** Soil binders and tackifiers may be used on exposed slopes to stabilize them until vegetation is established.
- **Concrete Washout Area:** Concrete chutes and trucks will be washed out in dedicated areas near the turbine and solar panel support foundation construction areas. Concrete washout will be handled to prevent concrete washout water from leaving a localized area, and to ensure that the restored surface soil maintains positive infiltration.
- **Stockpile Management:** Soil from excavations will be temporarily stockpiled and used as backfill at the completion of turbine footings. Stockpiled will have silt fencing as perimeter control and covered with a thick layer of mulch or plastic sheeting.
- **Revegetation:** At the completion of land-disturbing activities for each phase of work, the site will be revegetated with an approved seed mix. The seed will be applied with mulch to protect the seeds as the grass establishes.

- **Dams and Sediment Traps:** Check dams and sediment traps will be used during the construction of low-impact ford crossings or culvert installations to minimize downstream sedimentation during construction of the stream crossings.
- **Pollutant Management:** During construction, source control measures will be implemented to reduce the potential of chemical pollution to surface water or groundwater during construction. Fuels and oils will be stored in a dedicated area, and construction vehicles will be fueled and maintained only in dedicated areas. The handling, storage, and disposal of materials will be consistent with federal, state, and local ordinances. Spill kits will be located on-site during construction and operation for use in the event of an accidental spill of hazardous materials.
- **Topsoil Conservation:** High-value farmland soils will be protected and conserved in accordance with OAR 660-033-0130(37), as described in Exhibit K (Land Use). Where topsoil or other high-value farmland soils are present at the surface of road or trench excavations (particularly in irrigated agricultural areas), this material will be identified and segregated from the remainder of the soils to be excavated. Topsoil will be stockpiled separately from the additional excavation spoils (either adjacent to the trench or road, or hauled off to be stockpiled and stored elsewhere), and then placed back at the surface of trenches as the final stage of backfilling. NRCS policy and procedures on prime and unique farmlands are published in the *Federal Register*, Volume 43, Number 21, dated January 31, 1978.
- **Runoff**: Pervious soils and gravel aprons will surround each turbine pedestal engine to minimize runoff. Any runoff will be directed to a roadside drainage ditch constructed with vegetative buffer strips, check dams, and other erosion control structures
- **Soil Compaction**: Haul truck traffic will be kept to improved road surfaces to limit soil compaction and disturbance. Soil compaction will be mitigated by scarifying and reseeding affected areas after construction is completed.
- **Dust Control**: Dust will be controlled during construction through water applications to disturbed ground, by graveling of permanent roadways, imposing construction and operation speed limits of 20 miles per hour, and rescheduling work around especially windy days. Additional measures to control dust are discussed in Exhibit K.
- **Retirement**: Should the Facility be retired, structures will be removed to 3 feet below the ground surface and soil surfaces will be reseeded (with the exception of the improved farm roads). Retirement requirements include strict implementation of erosion control measures when soil is exposed to prevent erosion. The retirement plan is described in Exhibit W.

I.8 MONITORING PROGRAM

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

Response: Impacts to soils from Facility construction and operation will be limited because of the mitigation efforts described and required by an erosion and sediment control plan and NPDES 1200-C construction permit. Accordingly, a formal monitoring program is not merited. Visual observations will be made during Facility construction and operation. If problem areas are observed, mitigation and reclamation measures will be implemented, and a formal monitoring program established in the problem areas.

I.9 CONCLUSION

The Council previously found in the Final Order on the Application[5] that the design, construction, and operation of the proposed Facility, taking mitigation into account, are not likely to result in a significant adverse impact to soils, and as a result the Facility complies with the Soil Protection standard. The evidence above demonstrates that the changes proposed under RFA 4 do not alter the basis for the Council's prior conclusion. Therefore, the Council may rely on its earlier analysis to find that the design, construction, and operation of the Facility, taking into account the proposed mitigation measures, are not likely to result in a significant adverse impact to soils.

I.10 REFERENCES

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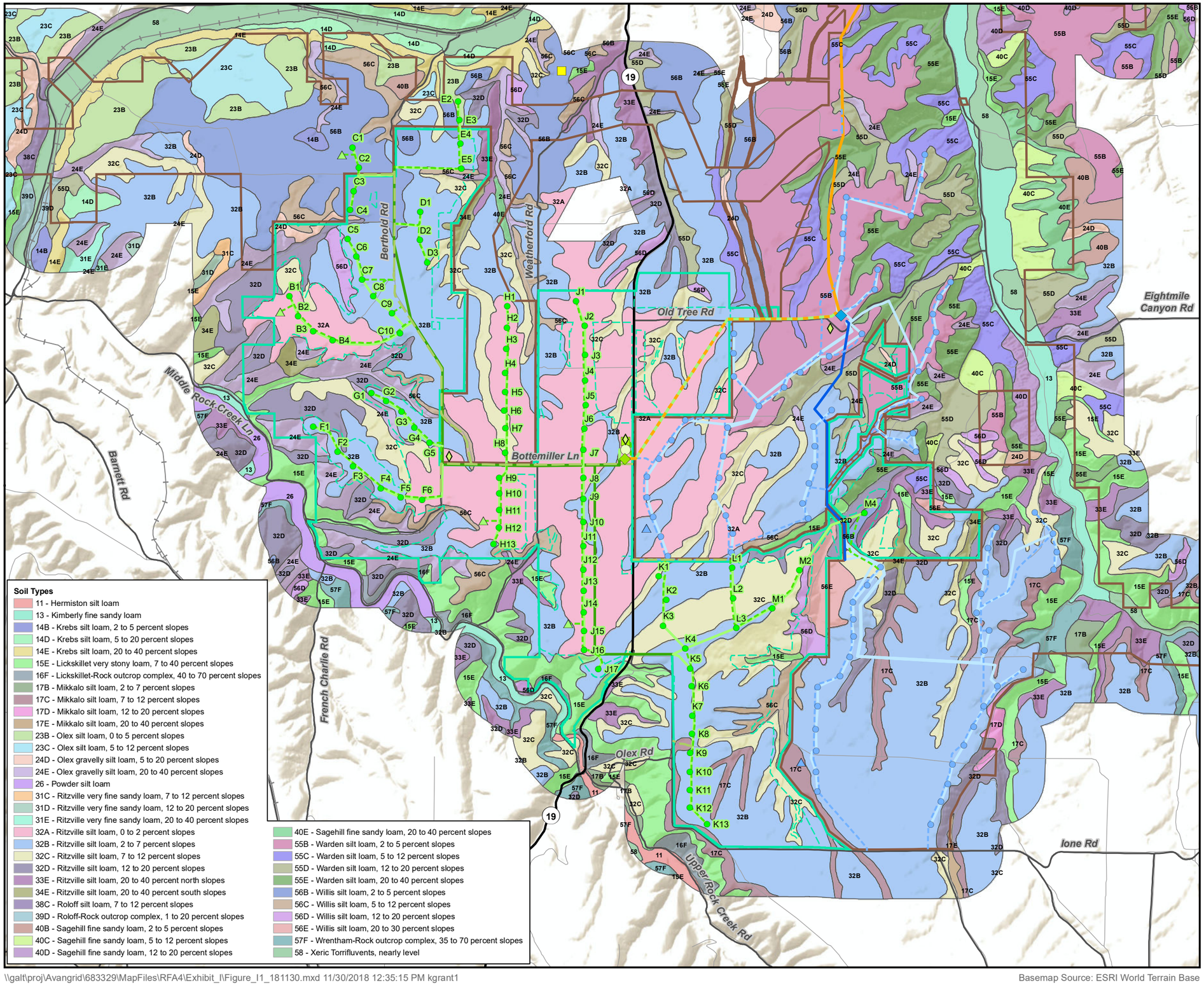
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[5] EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 60. September 10.

Figure

Figure I-1
Soils
Phase 2 Design Scenario A:
2.5-MW Turbine Layout
(Maximum 202-MW Turbine Layout)
Montague Wind Power Facility



Legend

- Approved Site Boundary/Micrositing Corridor
- Proposed Expanded Site Boundary
- Proposed Expanded Micrositing Corridor
- Existing Shared LJIIB O&M Building

Phase 2 (Features within the Approved and Proposed Expanded Site Boundary and Micrositing Corridor)

- Proposed Turbine
- Meteorological Tower
- Phase 2 Collector Substation
- Battery Storage System
- O&M Building
- Temporary Laydown Area
- Modified 230-kV Transmission Line Route
- 34.5-kV Overhead Collector Line
- 34.5-kV Underground Collector Line
- New Access Road
- Facility Use of Existing Road

Phase 1 (Features Constructed within the Approved Site Boundary and Micrositing Corridor)

- Turbine
- Meteorological Tower
- Phase 1 Substation
- Approved 230-kV Transmission Line
- 34.5-kV Overhead Collector Line
- 34.5-kV Underground Collector Line
- Access Road

Basemap Features

- Interstate/Highway
- Public Road
- Other Road
- Major Railroad Line

Soil Types

- 11 - Hermiston silt loam
- 13 - Kimberly fine sandy loam
- 14B - Krebs silt loam, 2 to 5 percent slopes
- 14D - Krebs silt loam, 5 to 20 percent slopes
- 14E - Krebs silt loam, 20 to 40 percent slopes
- 15E - Lickskillet very stony loam, 7 to 40 percent slopes
- 16F - Lickskillet-Rock outcrop complex, 40 to 70 percent slopes
- 17B - Mikkalo silt loam, 2 to 7 percent slopes
- 17C - Mikkalo silt loam, 7 to 12 percent slopes
- 17D - Mikkalo silt loam, 12 to 20 percent slopes
- 17E - Mikkalo silt loam, 20 to 40 percent slopes
- 23B - Olex silt loam, 0 to 5 percent slopes
- 23C - Olex silt loam, 5 to 12 percent slopes
- 24D - Olex gravelly silt loam, 5 to 20 percent slopes
- 24E - Olex gravelly silt loam, 20 to 40 percent slopes
- 26 - Powder silt loam
- 31C - Ritzville very fine sandy loam, 7 to 12 percent slopes
- 31D - Ritzville very fine sandy loam, 12 to 20 percent slopes
- 31E - Ritzville very fine sandy loam, 20 to 40 percent slopes
- 32A - Ritzville silt loam, 0 to 2 percent slopes
- 32B - Ritzville silt loam, 2 to 7 percent slopes
- 32C - Ritzville silt loam, 7 to 12 percent slopes
- 32D - Ritzville silt loam, 12 to 20 percent slopes
- 33E - Ritzville silt loam, 20 to 40 percent north slopes
- 34E - Ritzville silt loam, 20 to 40 percent south slopes
- 38C - Roloff silt loam, 7 to 12 percent slopes
- 39D - Roloff-Rock outcrop complex, 1 to 20 percent slopes
- 40B - Sagehill fine sandy loam, 2 to 5 percent slopes
- 40C - Sagehill fine sandy loam, 5 to 12 percent slopes
- 40D - Sagehill fine sandy loam, 12 to 20 percent slopes
- 40E - Sagehill fine sandy loam, 20 to 40 percent slopes
- 55B - Warden silt loam, 2 to 5 percent slopes
- 55C - Warden silt loam, 5 to 12 percent slopes
- 55D - Warden silt loam, 12 to 20 percent slopes
- 55E - Warden silt loam, 20 to 40 percent slopes
- 56B - Willis silt loam, 2 to 5 percent slopes
- 56C - Willis silt loam, 5 to 12 percent slopes
- 56D - Willis silt loam, 12 to 20 percent slopes
- 56E - Willis silt loam, 20 to 30 percent slopes
- 57F - Wrentham-Rock outcrop complex, 35 to 70 percent slopes
- 58 - Xeric Torrifluvents, nearly level

N W E S

0 0.5 1 2

Miles

AVANGRID RENEWABLES

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Basemap Source: ESRI World Terrain Base

Attachment I-1
NPDES 1200-C General Stormwater Discharge Permit for Construction (DEQ File Number 119651)

Oregon
Theodore R. Kulongoski, Governor

Department of Environmental Quality
Eastern Region - Pendleton Office
700 SE Emigrant Avenue, Suite 330
Pendleton, OR 97801
Office (541) 276-4063
Fax (541) 278-0168
Toll Free 1-800-304-3513
Relay Service 1-800-735-2900

October 12, 2010

Sara Parsons
Iberdrola Renewables
1125 NW Couch St., Suite 700
Portland, OR 97209

Re: NPDES Storm Water Discharge Permit No. 1200-C
File No.: 119651
Site Loc.: Montague Wind Power Facility
1.5 Miles South of Arlington, Oregon
Gilliam County

The Department of Environmental Quality (DEQ) has received your application for registration to the National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit 1200-C permit. We have completed our review of the application and your assignment to the enclosed permit is now effective.

Please submit Renewal Application if your project will extend beyond November 30, 2010:
Please note that the NPDES 1200-C permit expires November 30, 2010. You **must** fill out and return the renewal application (enclosed) to maintain permit coverage beyond November 30, 2010. *There is no fee for the renewal application.*

If the permit renewal application is not completed and submitted to DEQ by the expiration date of the permit, your current registration will expire and you will have to re-apply as if you were a new applicant and pay $1,510.00 fees. In addition, construction would have to stop until your new application is processed and you are re-registered to the permit.

Updates to Erosion and Sediment Control Plan need to be submitted to DEQ or DEQ's Agent:
If you make a change to any portion of your Erosion and Sediment Control Plan or find it inadequate after it has been implemented, you are required to make the necessary improvements to prevent sediments from leaving the site and file an update (also called an "action plan" in the permit) with DEQ.

Submit Notice of Termination when construction is completed:
To avoid paying additional permit fees, , please fill out the enclosed Notice of Termination form and send it to DEQ when you have completed your project. DEQ will cancel your permit registration when disturbed soils at your site are established with vegetation and the potential for erosion is minimized to the maximum extent practicable. Until your Notice of Termination form has been submitted and approved, you will be billed an annual fee for each year this permit remains in effect.

If you have any questions about the permit or renewal application, please call Jackie Ray, Permit Coordinator in the Eastern Region Pendleton office at (541) 278-4605.

Sincerely,

Cheryll Hutchens-Woods

Cheryll Hutchens-Woods
Interim Water Quality Manager
Eastern Region

CHW:jmr
Encl. Permit, Renewal Form, and Notice of Termination
ec: Nathan Williams, CH2M Hill

GENERAL PERMIT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
STORMWATER DISCHARGE PERMIT

Oregon Department of Environmental Quality
811 SW Sixth Avenue, Portland OR 97204
Telephone: (503) 229-5279 or 1-800-452-4011 (toll free in Oregon)

Issued pursuant to ORS 468B.050 and Section 402 of the Federal Clean Water Act

REGISTERED TO:
File No. 119651 GEN12C
Iberdrola Renewables, Inc.
1125 NW Couch St., Suite 700
Portland,OR 97209

Registered 10-12-10
Gilliam County
EPA No. ORR10-C817
LLID: 1201684456300
River Mile: 2.10-D

Site Loc. Montague Wind Power Facility
1.5 Miles South of Arlington, Oregon

SOURCES COVERED BY THIS PERMIT:

Construction activities including clearing, grading, excavation, and stockpiling that will disturb one or more acres and may discharge to surface waters or conveyance systems leading to surface waters of the state. Also included are activities that disturb less than one 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 and may discharge to surface waters or conveyance systems leading to surface waters of the state. Oregon Administrative Rules (OAR) 340-045-0015 and 0033(5) require all owners or operators responsible for these sources to register under this permit or obtain an individual permit.

This permit does not authorize in-water or riparian work regulated by the Federal Clean Water Act Section 404 permit program. These types of activities are regulated by the Oregon Department of State Lands, U.S. Army Corp of Engineers, and the Department of Environmental Quality Section 401 certification program. Unless specifically authorized by this permit, by another National Pollutant Discharge Elimination System (NPDES) or Water Pollution Control Facilities (WPCF) permit, or by OAR, any other direct or indirect discharge to waters of the state is prohibited, including discharges to an underground injection control (UIC) system.

Lauri Aunan, Administrator
Water Quality Division

Issued: December 28, 2005
Expiration Date: November 30, 2010

PERMITTED ACTIVITIES

Until this permit expires, is modified or revoked, the permit registrant is authorized to construct, install, modify, or operate erosion and sediment control measures and stormwater treatment and control facilities, and to discharge stormwater and certain specified non-stormwater discharges to surface waters of the state in conformance with all the requirements, limitations, and conditions set forth in the permit including attached schedules as follows:

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Schedule B	- Minimum Monitoring Requirements	12
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Schedule D	- Special Conditions	15
Schedule E	- (Not Applicable)	NA
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Attachment I-2
DEQ Renewal Letter for NPDES 1200-C General Stormwater Discharge Permit for Construction (DEQ File Number 119651)

Oregon
Kate Brown, Governor

Department of Environmental Quality
Eastern Region - Pendleton Office
800 SE Emigrant Ave, Suite 330
Pendleton, OR 97801
Phone: (541) 276-4063
Fax: (541) 278-0168
Relay Service: 711

February 12, 2016

Sara Parsons
Iberdrola Renewables, LLC
1125 NW Couch St., Suite 200
Portland, OR 97209

Re: Renewal of NPDES 1200-C Construction Stormwater Permit Coverage
File #119651
Montague Wind Power Facility, 1.5 miles South of Arlington, Oregon
Gilliam County

DEQ has renewed your 1200-C permit coverage for the above-referenced site. This permit is valid until December 14, 2020.

Important permit provisions

Please read your permit carefully and comply with permit requirements.

- Continue implementation of your Erosion and Sediment Control Plan (ESCP) to prevent sediment (dirt) from leaving the site (*Schedule A of 1200-C*).
- Inspect erosion and sediment controls *daily* when there is runoff; and every two weeks during active periods. Record these inspections and maintain records on site (*Schedule B of 1200-C*).
- Report to DEQ when major changes are made to your ESCP or when permit conditions are violated (*Schedule A of 1200-C*).
- Implement permit conditions specific to projects as a Common Plan of Development.
- Protect 50-foot natural buffers around waters of the state unless additional BMP's are installed *(Schedule A.7 of 1200-C, permit pages 7-8).*

Change in project owner or operator?

If the legally responsible entity for this site changes, permit coverage must be transferred to the new entity. Use the *DEQ Permit Transfer* form; a transfer fee will be required.

Terminate permit coverage to avoid fees

To avoid paying additional fees, terminate permit coverage using the *DEQ Notice of Termination* form when soil are stabilized, all discharge from construction ceased and temporary erosion and sediment controls have been removed and disposed of properly. Submit photo-documentation to DEQ (*Schedule D of 1200-C*).

For DEQ forms and assistance

Please visit the DEQ website at http://www.deq.state.or.us/wq/stormwater/construction.htm.

If you have any questions, please contact Krista Ratliff at (541) 633-2033 or at ratliff.krista@deq.state.or.us for more information.

Sincerely,

Don Butcher
Water Quality Permit Manager
Eastern Region

cc: file

State of Oregon
Department of
Environmental
Quality

GENERAL PERMIT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
STORMWATER DISCHARGE PERMIT

Oregon Department of Environmental Quality
811 SW Sixth Avenue, Portland OR 97204
Telephone: (503) 229-5279 or 1-800-452-4011 (toll free in Oregon)

Issued pursuant to ORS 468B.050 and Section 402 of the Federal Clean Water Act

REGISTERED TO:
File No. 119651 GEN12C
Iberdrola Renewables, LLC
1125 NW Couch St., Suite 200
Portland, OR 97209

Date: 2/12/2016
Gilliam County
EPA: ORR10-C817
LLID: 1201684456300
River Mile: 2.1

Location: Montague Wind Power Facility, 1.5 miles South of Arlington, Oregon,

SOURCES COVERED BY THIS PERMIT:

The *legally authorized representative* (see Definitions) for construction activities (as defined below) that may discharge to surface waters or conveyance systems leading to surface waters of the state must register for coverage under this permit with DEQ before any land disturbance occurs, unless the construction activities are automatically covered as described in the 1200-CN permit.

- Construction activities including clearing, grading, excavation, materials or equipment staging and stockpiling that will disturb one or more acres and may discharge to surface waters or conveyance systems leading to surface waters of the state.
- Construction activities including clearing, grading, excavation, materials or equipment staging and stockpiling that will disturb less than one 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 and may discharge to surface waters or conveyance systems leading to surface waters of the state.
- This permit also authorizes discharges from any other construction activity (including construction activity that disturbs less than one acre and is not part of a common plan of development or sale) designated by DEQ, where DEQ makes that designation based on the potential for contribution to an excursion of a water quality standard or for significant contribution of pollutants to waters of the state.

This permit does not authorize the following:

- In-water or riparian work, which is regulated by other programs and agencies including the Federal Clean Water Act Section 404 permit program, the Oregon Department of State Lands, the Oregon Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, the U.S. Army Corp of Engineers, the National Marine Fisheries Service, and the Department of Environmental Quality Section 401 certification program.
- Post-construction stormwater discharges that originate from the site after completion of construction activities and final stabilization.
- Discharges to underground injection control (UIC) systems.

Lydia Emer, Operations Administrator

Effective: December 15, 2015
Expiration Date: December 14, 2020

PERMITTED ACTIVITIES

Until this permit expires, is modified or revoked, the permit registrant is authorized to construct, install, modify, or operate erosion and sediment control measures and stormwater treatment and control facilities, and to discharge stormwater and certain specified non-stormwater discharges to surface waters of the state or conveyance systems leading to surface waters of the state only in conformance with all the requirements, limitations, and conditions set forth in the permit including attached schedules as follows:

Unless specifically authorized by this permit, by regulation issued by EPA, by another NPDES permit, or by Oregon Administrative Rule, any other direct or indirect discharge to waters of the state is prohibited, including discharges to an underground injection control system.

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SCHEDULE A
CONTROLS AND LIMITATIONS

CONSTRUCTION ACTIVITIES REQUIRED TO REGISTER FOR PERMIT

1. Registering New Construction Activities

a. Applicants seeking registration for coverage under this permit for construction activities that will disturb one or more acres must submit a complete application to DEQ or Agent at least thirty (30) calendar days before the planned land disturbance, unless otherwise approved by DEQ or Agent (see Schedule **D** for description of Agent). The application must include:

i. One paper copy and one electronic copy of the following:
(1) A complete DEQ-approved application form;
(2) An Erosion and Sediment Control Plan (ESCP);
(3) A Land Use Compatibility Statement (LUCS) indicating that the proposed activities are compatible with the local government's acknowledged comprehensive plan; and

ii. Applicable permit fees.

b. Applicants seeking registration for coverage under this permit for construction activities that will disturb less than one acre that are part of a larger common plan of development or sale must, at least thirty (30) calendar days before the planned land disturbance, submit to DEQ or Agent:

i. A complete DEQ-approved application form;

ii. One copy of an ESCP that covers the individual lot(s); and

iii. Applicable permit fees.

c. Applicants seeking registration for coverage under this permit for construction activities that disturb or are likely to disturb five (5) or more acres over the life of the project, are subject to a 14-calendar day public review period before permit registration is granted. The public review period will not begin if the application form or ESCP are incomplete.

d. DEQ or Agent will notify the applicant in writing if registration is approved or denied. Permit coverage does not begin until the applicant receives written notice that the registration is approved. If registration is denied or the applicant does not wish to be regulated by this permit, the applicant may apply for an individual permit in accordance with OAR 340-045-0030.

e. Until termination has been approved by DEQ or Agent, permit registrants for permitted activities that disturb one acre or more must pay an annual fee.

f. Permitted activities for projects that disturb less than one acre and utilize the small lot fee structure are covered under the permit for 2 (two) years. To continue coverage beyond 2 years, the permit registrant must submit a DEQ-approved application form and (if needed) an updated ESCP; and pay the applicable permit fee.

2. Renewal Application for Permit Coverage

a. An owner or operator of construction activities registered under the 1200-C permit that expires in 2015 must submit to DEQ or Agent a complete renewal application, using a DEQ-approved renewal application form before expiration of the 1200-C permit to ensure uninterrupted permit coverage for construction stormwater discharges.

b. If renewal is denied or the applicant does not wish to be regulated by this permit, the registrant may apply for an individual permit in accordance with OAR 340-045-0030.

3. Transfer of Permit Registration

a. To transfer permit registration, the new owner or permit registrant must submit a DEQ-approved transfer form and applicable fees prior to permit expiration and within thirty (30) calendar days of the planned transfer.

b. If ownership changes (through sale, foreclosure or other means) and the previous owner cannot be found:
   i. The new owner must register for coverage under the permit (Schedule A, Paragraph 1) if the site is not stabilized.
   ii. The new owner must register for coverage under the permit (Schedule A, Paragraph 1) prior to any additional land disturbance.
   iii. The new owner does not need to register for coverage under the permit if the site meets the conditions for termination (see Schedule B) and there is no ongoing or additional land disturbance planned.
   iv. DEQ will attempt to contact the previous owner at the address on record. If there is no response, after sixty (60) calendar days DEQ may terminate the previous owner's permit coverage.

4. Authorized Stormwater Discharges

Subject to compliance with the terms and conditions of this permit, and provided that all necessary controls are implemented to minimize sediment transport, the following stormwater discharges from construction sites are authorized (unless otherwise prohibited by local ordinances):

a. Stormwater associated with construction activity described in the "Sources Covered" section of the permit.

b. Stormwater from support activities at the construction site (for example, concrete or asphalt operations, equipment staging yards, material storage areas, excavated material disposal areas and borrow areas) provided:
   i. The support activity is directly related to the construction site covered by this NPDES permit;
   ii. The support activity is not a commercial operation serving multiple unrelated construction projects by different permit registrants;
   iii. The support activity does not operate beyond the completion of the construction activity at the last construction project it supports; and
   iv. Appropriate control measures are used to ensure compliance with discharge and water quality requirements.

5. Authorized Non-Stormwater Discharges

If the terms and conditions of this permit are met, all necessary controls are implemented to minimize sediment transport, the discharge is not contaminated, and the discharge is not prohibited by local ordinance, the following non-stormwater discharges from construction sites are authorized:

a. Water from emergency firefighting activities;
b. Fire hydrant flushings;
c. Potable water including water line flushing;
d. Vehicle washing and external building washing that does not use solvents, detergents or hot water;
e. Pavement wash waters where stockpiled material, spills or leaks of toxic or hazardous materials have not occurred (unless all stockpiled and spilled material has been removed) and where solvents, detergents or hot water are not used. Directing pavement wash waters into any surface water, storm drain inlet, or stormwater conveyance is prohibited, unless the conveyance is connected to a sediment basin, sediment trap, or similarly effective control;
f. Water used to control dust;

g. Air conditioning or compressor condensate;
h. Construction dewatering activities (including groundwater dewatering and well drilling discharge associated with the registered construction activity), provided that:
   i. The water is land applied in a way that results in complete infiltration with no potential to discharge to a surface water of the state, or
   ii. Best Management Practices (BMPs) or a treatment system approved by DEQ or Agent is used to ensure compliance with discharge and water quality requirements (see 9.d);
i. Foundation or footing drains where flows are not contaminated with process materials such as solvents; and
j. Landscape irrigation.

For other non-stormwater discharges, a separate permit may be needed. The disposal of wastes to surface waters or on-site is not authorized by this permit.

6. Prohibited Discharges

Discharges of the following are not authorized by this permit:
a. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
b. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
c. Soaps or solvents used in vehicle and equipment washing.
d. Concrete truck wash-out, hydro-demolition water, and saw-cutting slurry.

7. Control Measures

It is the responsibility of the permit registrant to implement BMPs as needed for weather conditions.
a. Erosion Prevention
   The permit registrant must control stormwater volume and velocity within the site to minimize soil erosion. The permit registrant must prevent or minimize the disturbance of sediment.
   i. Avoid or minimize excavation and bare ground activities during wet weather.
   ii. Temporarily stabilize soils at the end of the shift before holidays and weekends, if needed. It is the permit registrant's responsibility to ensure that soils are stable during rain events at all times of the year.
   iii. Clearing and Grading.
   Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming sources of erosion. Minimize the disturbance of steep slopes. Minimize erosion during and after soil disturbance using BMPs such as temporary seeding and planting, final vegetative cover, mulches, compost blankets, erosion control blankets and mats, and soil tackifiers.
   iv. Wind Erosion/Dust Control. Water or use a soil-binding agent or other dust control technique as needed to avoid wind-blown soil.
   v. Vegetative Erosion Control.
      (1) Preserve existing vegetation and re-vegetate open areas when practical.
      (2) Do not remove temporary sediment control practices until final vegetative cover or permanent stabilization measures are established.
      (3) Identify the type of seed mix (percentages of the various seeds of annuals, perennials and clover) and other plantings used to establish temporary or final vegetative cover.

b. Natural Buffer Zone
   i. If a water of the state is within the project site or within 50 feet of the project boundary, and a natural buffer exists within 50 feet of the water of the state,
      (1) The permit registrant must:
         (a) Maintain any existing natural buffer within the 50-foot zone for the duration of permit coverage; or
         (b) Maintain less than the entire existing natural buffer, and provide additional erosion and sediment controls (beyond those required in other sections of this general permit). In addition to other applicable requirements of this permit, the permit registrant must implement one or more of the BMPs listed below to control and treat sediment and turbidity. The selected BMP(s) must be identified in the ESCP as addressing this condition of the permit, and the rationale for choosing the selected BMP(s) must also be provided.
            (i) Compost berms, compost blankets, or compost socks;
            (ii) Erosion control mats;
            (iii) Tackifiers used in combination with perimeter sediment control BMPs;
            (iv) Water treatment by electro-coagulation, flocculation, or filtration; and/or
            (v) Other substantially equivalent sediment or turbidity BMP approved by DEQ or Agent.
      (2) In addition, the permit registrant must:
         (a) Ensure that all discharges from covered activities to the water of the state are treated by the site's erosion and sediment controls before entering the natural buffer. Use velocity dissipation devices if necessary to prevent erosion in the natural buffer.
         (b) Delineate and clearly mark off (with flags, tape or similar marking devices) all natural buffer zones.
   ii. Stormwater control features (for example, stormwater conveyance channels, storm drain inlets, and sediment basins) are not "waters of the state" for the purposes of triggering this requirement.
   iii. Areas that the permit registrant does not own or that are otherwise outside the permit registrant's operational control may be considered areas of undisturbed natural buffer for purposes of this requirement. However, the permit registrant is only required to retain and protect from construction activities the portion of the buffer area that is under the permit registrant's control.
   iv. The Natural Buffer Zone requirements do not apply if:
      (1) No natural buffer exists due to development that occurred prior to the initiation of planning for the current project; or
      (2) There is no discharge of stormwater to the water of the state through the area between the disturbed portions of the site and the surface water located within the project site or within 50 feet of the site. This includes situations where the permit registrant has implemented control measures, such as a berm or other barrier, that will prevent such discharges; or
      (3) There is a CWA Section 404 permit and 401 WQC issued for the project; or
      (4) Construction is for a water-dependent structure or water access areas (for example, pier, boat ramp, or trail).
   v. Pre-existing conditions
      (1) The permit registrant is not required to enhance the quality of the vegetation that already exists in the buffer, or provide vegetation if none exists.
      (2) Any preexisting structures or impervious surfaces are allowed in the natural buffer provided the permit registrant retains and protects from disturbance any natural buffer area outside the preexisting disturbance.

c. Runoff Control
The permit registrant must control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and streambank erosion. The permit registrant must minimize sediment discharges from the site. The permit registrant must prevent or minimize scouring by means such as diverting, collecting, conveying or controlling flow. BMPs used for these purposes include diversion of run-on; trench drains, slope drains, french drains and subsurface drains; temporary diversion dikes; earthen berms; grass-lined or armored channels (such as turf reinforcement mats); drainage swales; energy dissipaters; rock outlet protection; drop inlets; and check dams. Note that any underground injection must comply with OAR Chapter 340, Division 44.

d. Sediment Control
The permit registrant must prevent or minimize sediment transport by means such as filtration and settling.
   i. Control sediment as needed along the site perimeter and at all operational internal storm drain inlets at all times during construction, both internally and at the site boundary by using BMPs such as sediment fences, buffer zones, sediment traps, rock filters, compost berms/compost socks, fiber wattles, storm drain inlet protection, and temporary or permanent sedimentation basins; and, when discharging from basins and impoundments, by utilizing outlet structures that withdraw water from the surface, unless infeasible.
   ii. Sediment Tracking and Transport Control.
   The permit registrant must prevent or minimize tracking of sediment onto public or private roads using BMPs such as:
      (1) Establish graveled (or paved) exits and parking areas prior to any land disturbing activities.
      (2) Gravel all unpaved roads located onsite.
      (3) Use an exit tire wash.
      (4) Cover all sediment loads leaving the site.
      (5) When trucking saturated soils from the site, either use water-tight trucks or drain loads on site.

e. Pollution Prevention and Control.
   i. Pollution Prevention.
   The permit registrant must design, implement, and maintain pollution prevention measures to minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater.
      (1) Use BMPs to prevent or minimize pollution of stormwater or to treat flow from dewatering, ponded water, paving, and temporary bridges.
      (2) Use BMPs to prevent or minimize stormwater from being exposed to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid and other oils from vehicles and machinery; as well as debris, fertilizer, pesticides and herbicides, paints, solvents, curing compounds and adhesives.
   ii. Stockpile Erosion and Sediment Control Practices.
      (1) Both on-site stockpiles and stockpiles located away from the construction activity but still under the control of the permit registrant must be protected to prevent significant amounts of sediment or turbid water from discharging to surface waters or conveyance systems leading to surface waters.
      (2) As needed based on weather conditions, at the end of each workday soil stockpiles must be stabilized or covered, or other BMPs must be implemented to prevent discharges to surface waters or conveyance systems leading to surface waters.

(3) In developing these practices, at a minimum the following must be considered: diversion of uncontaminated flows around stockpiles, use of cover over stockpiles, and installation of sediment fences (or other barriers that will prevent the discharge of sediment or turbidity) around stockpiles.

iii. Solid Waste and Hazardous Materials Management.
Implement the following BMPs when applicable: written spill prevention and response procedures, employee training on spill prevention and proper disposal procedures, spill kits available on site, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies.

f. Additional BMP Requirements During Inactive Periods.
   i. If all construction activities cease at the site for thirty (30) calendar days or more, the entire site must be stabilized using temporary seeding, vegetation, a heavy mulch layer, or another method.
   ii. On any significant portion of the site, if construction activities cease for fourteen (14) calendar days or more, install temporary covering such as blown straw and a tackifier, loose straw, compost mulch, temporary vegetative cover, crushed rock or gravel base.

8. Implementation of Control Measures

a. Permit registrants must implement the ESCP (Paragraph A.12). Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit.
b. Permit registrants must prevent the discharge of significant amounts of sediment to surface waters or conveyance systems leading to surface waters. The following conditions indicate that a significant amount of sediment has left or is likely to leave the site, and are prohibited:
   i. Earth slides or mud flows;
   ii. Concentrated flows of stormwater such as rills, rivulets or channels that cause erosion when such flows are not filtered, settled or otherwise treated to remove sediment;
   iii. Sediment laden or turbid flows of stormwater that are not filtered or settled to remove sediments and turbidity;
   iv. Deposits of sediment at the construction site in areas that drain to unprotected stormwater inlets or to catch basins that discharge to surface waters. Inlets and catch basins with failing sediment controls due to lack of maintenance or inadequate design are considered unprotected;
   v. Deposits of sediment from the construction site on any property (including public and private streets) outside of the construction activity covered by this permit.
c. Permit registrants must ensure the control measures or practices described in the ESCP are implemented according to the following sequence:
   i. Before Construction.
      (1) Identify, mark, and protect (with construction fencing or other means) critical riparian areas and vegetation including important trees and associated rooting zones and vegetation areas to be preserved.
      (2) Identify, mark and protect vegetative buffer zones between the site and sensitive areas (for example, wetlands), and other areas to be preserved, especially in perimeter areas.
      (3) Hold a pre-construction meeting of project construction personnel that includes the inspector required by condition A.12.b.iii to discuss erosion and sediment control measures and construction limits.
      (4) Stabilize site entrances and access roads including, but not limited to construction entrances, roadways and equipment parking areas.
      (5) Install perimeter sediment control, including storm drain inlet protection as well as all sediment basins, traps, and barriers.

(6) For projects involving concrete, permit registrants must establish concrete truck and other concrete equipment washout areas before beginning concrete work.
(7) Establish material and waste storage areas, and other non-stormwater controls.
(8) Stabilize stream banks and construct the primary runoff control measures to protect areas from concentrated flows.

ii. During Construction.

(1) Land Clearing, Grading and Roadways. Permit registrants must:
(a) Begin land clearing, excavation, trenching, cutting or grading only after installing applicable sediment and runoff control measures.
(b) Provide appropriate erosion and sediment control BMPs for all roadways including gravel roadways.
(c) Install additional control measures as work progresses as needed.
(d) Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion.

(2) For projects involving concrete, permit registrants must:
(a) Wash concrete trucks and equipment off site (in an appropriately protected area) or in designated concrete washout areas only.
(b) Direct all wash water into a pit or leak-proof container. The pit does not need to be lined or leak-proof, but the pit or container must be designed so that no overflows can occur due to inadequate sizing or precipitation. Concrete wash water must not adversely affect groundwater.
(c) Handle (for example, through disposal, reuse or recycling) wash water as waste. Do not dispose of concrete wash water or wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams.
(d) Do not dump excess concrete on site, except in designated concrete washout areas.
(e) Handle (for example, through disposal, reuse or recycling) hardened concrete waste consistent with handling of other construction wastes.
(f) Concrete spillage or concrete discharge to surface waters of the state is prohibited.

(3) Surface Stabilization. Permit registrants must:
Apply temporary stabilization measures (for example, mulching or temporary seeding), final vegetative cover, or permanent stabilization measures immediately on all disturbed areas as work is completed. Stabilization of disturbed areas must be initiated immediately whenever any earth disturbing activities have permanently ceased on any portion of the site. However, temporary or permanent stabilization measures are not required for areas that are intended to be left unvegetated or unstabilized following construction (such as dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials), provided that measures are in place to eliminate or minimize erosion.

iii. Termination. Before termination of permit coverage, permit registrants must:

(1) Provide final vegetative cover or permanent stabilization measures on all exposed areas (see Section D.3).
(2) Immediately after seeding or planting the area to be vegetatively stabilized, the permit registrant must select, design, and install non-vegetative erosion controls (such as mulch or rolled erosion control products) that provide cover to the area while vegetation is becoming established, to the extent necessary to prevent erosion of the seeded or planted area.
(3) Remove and properly dispose of construction materials and waste, including sediment retained by temporary BMPs.
(4) Remove all temporary control measures as areas are stabilized, unless doing so conflicts with local requirements.

9. BMP Maintenance

a. The permit registrant must establish and promptly implement procedures for maintenance and repair of erosion and sediment control measures.

b. General Site Maintenance.
   i. Significant amounts of sediment that leave the site must be cleaned up within 24 hours, placed back on the site and stabilized, or disposed of properly. In addition, the source(s) of the sediment must be controlled to prevent continued discharge within 24 hours. Any in-stream cleanup of sediment must be performed according to requirements and timelines set by the Oregon Department of State Lands.
   ii. Sediment must not be intentionally washed into storm sewers or drainage ways. Methods such as vacuuming, dry mechanical sweeping, or manual sweeping must be used to cleanup released sediments.
   iii. Fertilizer application rates must follow manufacturer's guidelines and the application must be done in such a way to minimize discharge of nutrients to surface waters.

c. Maintenance of Erosion and Sediment Controls. Permit registrants must:
   i. Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height.
   ii. Other sediment barriers (such as biobags): remove sediment before it reaches two inches depth above ground height.
   iii. Catch basins: clean before sediment retention capacity has been reduced by fifty percent.
   iv. Sediment basins: remove trapped sediments before design capacity has been reduced by fifty percent.

d. Treatment Systems.
   If an active treatment system (for example, electro-coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, the permit registrant must submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) to DEQ or Agent before operating the treatment system. The plan must be approved by DEQ or Agent before operating the treatment system. If approved, the treatment system must be operated and maintained according to manufacturer's specifications.

10. In-stream Water Quality Standards

a. The permit registrant must not cause or contribute to a violation of in-stream water quality standards.

b. In the absence of information demonstrating otherwise, DEQ expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards. If at any time the permit registrant becomes aware, or DEQ determines, that a discharge from the permitted activity is not being controlled as necessary to meet applicable water quality standards, the permit registrant must take corrective actions, and document the corrective actions as required in A.13.

11. Water Quality Requirements for TMDL and 303(d) Listed Waterbodies

In addition to other applicable requirements of this permit, if a permit registrant's construction project has the potential to discharge to a portion of a waterbody that is listed as impaired and requiring a TMDL for turbidity or sedimentation on the most recently EPA-approved Oregon 303(d) list or that has an established Total Maximum Daily Load (TMDL) for sedimentation or turbidity (available at www.deq.state.or.us/WQ/assessment/assessment.htm), the permit registrant must implement one or more of the BMPs listed below to control and treat sediment and turbidity. The selected BMP(s) must

be identified in the ESCP as addressing this condition of the permit, and the rationale for choosing the selected BMP(s) must also be provided.

a. Compost berms, compost blankets, or compost socks;
b. Erosion control mats;
c. Tackifiers used in combination with perimeter sediment control BMPs;
d. Established vegetated buffers sized at 50 feet (horizontally) plus an additional 25 feet (horizontally) per 5 degrees of slope;
e. Water treatment by electro-coagulation, flocculation, or filtration; and/or
f. Other substantially equivalent sediment or turbidity BMP approved by DEQ or Agent.

12. Erosion and Sediment Control Plan (ESCP)

a. Preparation.
   i. The permit registrant must ensure that an ESCP is prepared and revised as necessary to reflect site conditions for the construction activity regulated by this permit, and submit revisions to DEQ or Agent in accordance with requirements of this permit. The design, installation, and maintenance of erosion and sediment controls must be adequate to address factors such as the amount, frequency, intensity, and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site.
   ii. Qualifications to Prepare ESCP.
      (1) For construction activities disturbing 20 or more acres, the ESCP must be prepared and stamped by a Certified Professional in Erosion and Sediment Control, Certified Professional in Storm Water Quality, Oregon Registered Professional Engineer, Oregon Registered Landscape Architect, or Oregon Certified Engineering Geologist.
      (2) If engineered facilities such as sedimentation basins or diversion structures for erosion and sediment control are required, the ESCP must be prepared and stamped by an Oregon Registered Professional Engineer.

b. The ESCP must include the following elements:
   i. Name of the site.
   ii. Local Government Requirements. Include any procedures necessary to meet applicable local government erosion and sediment control or stormwater management requirements.
   iii. Erosion and Sediment Control Inspector.
      (1) Inspections must be conducted by a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact stormwater quality, is knowledgeable in the correct installation of the erosion and sediment controls, and is able to assess the effectiveness of any sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activity.
      (2) Beginning January 1, 2017, for projects that are five or more acres, inspections must be conducted by a person certified in an erosion and sediment control program that has been approved by DEQ. DEQ has approved the following programs:
         (a) Certified Professional in Erosion and Sediment Control,
         (b) Certified Professional in Storm Water Quality,
         (c) Washington State Certified Erosion and Sediment Control Lead, or
         (d) Rogue Valley Sewer Services Erosion and Sediment Control Certification.

(3) Inspections must be conducted by the Erosion and Sediment Control Inspector identified in the ESCP.
(4) Provide the following for all personnel that will conduct inspections:
(a) Name and title;
(b) Contact phone number and, if available, e-mail address; and
(c) Description of experience and training.

iv. Narrative Site Description.
(1) Description of the construction activity;
(2) Proposed timetable indicating when each erosion and sediment control BMP is to be installed and the duration that it is to remain in place;
(3) Estimates of the total area of the permitted site and the area of the site that is expected to undergo clearing, grading or excavation;
(4) Nature of the fill material to be used, and of the site soils prior to disturbance;
(5) Names of the receiving water(s) for stormwater runoff;
(6) The types of pollutants that could be found in stormwater and their likely sources;
(7) Any authorized non-stormwater discharges; and
(8) If a surface water of the state is within 50 feet of the permitted activities,
(a) Description of area within 50 feet of project site (including any natural buffer), and
(b) Description of approach to manage the natural buffer zone, if any (for example, maintain natural buffer, reduce natural buffer and increase BMPs, or eliminate flow through natural buffer).

v. Site Map and Drawings.
(1) The site map and drawings must be kept on site and must represent the actual BMP controls being used onsite;
(2) The site map must show sufficient roads and features for DEQ or Agent to locate and access the site;
(3) The site map and drawings must include (but is not limited to) the following features (as applicable):
(a) Total property boundary including surface area of the development;
(b) Areas of soil disturbance (including, but not limited to, showing cut and fill areas and pre- and post-development elevation contours);
(c) Drainage patterns before and after finish grading;
(d) Discharge points;
(e) Areas used for the storage of soils or wastes;
(f) Areas where vegetative practices are to be implemented;
(g) All erosion and sediment control measures or structures;
(h) Impervious structures after construction is completed (including buildings, roads, parking lots and outdoor storage areas);
(i) Springs, wetlands and other surface waters on site or adjacent to the site;
(j) Temporary and permanent stormwater conveyance systems;
(k) Onsite water disposal locations (for example, for dewatering);
(l) Storm drain catch basins depicting inlet protection, and a description of the type of catch basins used (for example, field inlet, curb inlet, grated drain and combination);
(m) Septic drain fields;
(n) Existing or proposed drywells or other UICs;
(o) Drinking water wells on site or adjacent to the site;
(p) Planters;
(q) Sediment and erosion controls including installation techniques;

(r) Natural buffer zones and any associated BMPs for all areas within 50 feet of a water of the state; and
(s) Detention ponds, storm drain piping, inflow and outflow details.

c. ESCP Revisions
   i. The ESCP must be accurate and reflect site conditions. Update the ESCP as needed to represent actual BMPs being used onsite.
   ii. ESCP revisions must:
      (1) Clearly identify any changes (such as type or design) to the BMPs identified in the ESCP, their location, maintenance required, and any other revisions necessary to prevent and control erosion and sediment runoff.
      (2) Include contact information and any applicable certification, training and experience for changes in Erosion and Sediment Control Inspector.
   iii. Approval of the revisions by DEQ or Agent prior to implementation is not required.
   iv. Submission of all ESCP revisions is not required. ESCP revisions must be submitted only if they are made for any of the following reasons:
      (1) Part of a Corrective Action (A.13).
      (2) Change in address of the permit registrant. Registrant must keep their address current with DEQ or Agent. Failure to do so may be used as grounds for termination of coverage.
      (3) Change (increase or decrease) in the size of the project.
      (4) Change (increase or decrease) in the size or location of disturbed areas.
      (5) Change to BMPs (for example, type, design or location).
      (6) Change in erosion and sediment control inspector.
   v. If submission of ESCP revisions is required, submit one paper copy and one electronic PDF to DEQ or Agent within 10 calendar days of the revision. These revisions should be submitted as revised pages of the ESCP or drawings only; it is not necessary to submit the entire ESCP. If the permit registrant does not receive a response to the revisions from DEQ or Agent within 10 calendar days of receipt, the proposed revisions are deemed accepted.
   vi. DEQ or Agent may require the permit registrant to revise the ESCP at any time. The permit registrant must submit the revisions according to the timeframe specified by DEQ or Agent.

13. Corrective Actions

a. The permit registrant must take corrective actions if any of the following occur:
   i. Significant amounts of sediment or turbidity (as described in A.8.b) are visible downstream of the permitted activities in:
      (1) A conveyance system leading to surface waters;
      (2) Surface waters 50 feet or more downstream of the discharge point; or
      (3) Surface waters at any location where more than one-half of the width of the receiving surface waters is affected.
   ii. The construction activity causes or contributes to a violation of in-stream water quality standards (A.10.a).
   iii. DEQ or the Agent requires the permit registrant to take corrective actions to prevent or control the discharge of significant amounts of sediment or turbidity to surface waters or to conveyance systems that discharge to surface waters.
b. If corrective actions are required, the permit registrant must do all of the following:
   i. Source(s) of sediment must be controlled within 24 hours to prevent continued or additional discharges. Immediately, but no later than 24 hours after initial detection, take corrective actions or implement additional effective BMPs until the significant amounts of sediment or turbidity are no longer visually detectable and to ensure that the requirements of Conditions A.8.b and A.10.a are met;

ii. Document in the inspection records the corrective actions taken; and
iii. Evaluate the control measures and practices to determine the cause of the noncompliance. Submit a written report to DEQ or Agent within 10 calendar days of identifying the need to take corrective action as required in condition 13.a above. This report must include:
   (1) The site common name and DEQ file number.
   (2) Identification of outfalls that were out of compliance.
   (3) Names of personnel conducting inspections.
   (4) A description of the noncompliance and its cause.
   (5) The period of noncompliance.
   (6) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance (such as specific BMPs that will be implemented or increased inspection frequency).
   (7) ESCP revisions, if revisions were required to prevent and control erosion and sediment discharges.

SCHEDULE B
MINIMUM MONITORING AND RECORDKEEPING REQUIREMENTS

1. Visual Monitoring

a. The following must be monitored visually by a designated Erosion and Sediment Control Inspector:
   i. All areas of the site disturbed by construction activity to ensure that BMPs are in proper working order.
   ii. Discharge point(s) identified in the ESCP for evidence of or the potential for the discharge of pollutants (including sediment and turbidity), and to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to surface waters. Where discharge points are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practical.
   iii. BMPs identified in the current ESCP to assess whether they are functioning properly.
   iv. Locations where vehicles enter or exit the site for evidence of off-site sediment tracking.
   v. Areas used for storage of materials that are exposed to precipitation for evidence of spillage or other potential to contaminate stormwater runoff.

b. All ESCP controls and practices must be monitored visually according to the following schedule:

Site Condition	Minimum Frequency
1. Active period	Daily when stormwater runoff, including runoff from snow melt, is occurring. At least once every fourteen (14) calendar days, regardless of whether stormwater runoff is occurring.
2. Prior to the site becoming inactive or in anticipation of site inaccessibility	Once to ensure that erosion and sediment control measure are in working order. Any necessary maintenance and repair must be made prior to leaving the site.
3. Inactive periods greater than fourteen (14) consecutive calendar days	Once every month.
4. Periods during which the site is inaccessible due to inclement weather	If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location.
5. Periods during which discharge is unlikely due to frozen conditions.	Monthly. Resume monitoring immediately upon melt, or when weather conditions make discharges likely.

c. Documentation of visual monitoring.
All visual monitoring must document the following:
i. Visual monitoring date and inspector's name.
ii. The construction site name as it appears on the registrant's permit.
iii. The file or site number.
iv. Weather conditions during the inspection, the approximate amount of precipitation since the last inspection, and approximate amount of precipitation during the last 24 hours.
v. Observations for each discharge location. If a discharge location is inaccessible due to safety hazard, document the hazard and record the inspections noted at a relevant discharge point or downstream location if practical.
(1) For each discharge point, make observations:
(a) At the discharge location if the discharge is to a conveyance system leading to surface waters;
(b) From the discharge point to 50 feet downstream if the discharge is to surface waters; and
(c) At any location where more than one-half of the width of the receiving surface water is affected.
(2) For each area observed, document the following:
(a) For turbidity and color, describe any apparent color and the clarity of the discharge, and any apparent difference in comparison with the surface waters.
(b) Describe any sheen or floating material, or record that it is absent. If present, it could indicate concern about a possible spill or leakage from vehicles or materials storage.
vi. Location(s) of BMPs in need of maintenance, inspections of all BMPs, including erosion and sediment controls, chemical and waste controls, locations where vehicles enter and exit the site, status of areas that are under temporary or final stabilization, soil stockpile areas, and non-stormwater pollution (for example, paints, oils, fuels, or adhesives) controls.
vii. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;
viii. Location(s) where additional BMPs are needed that did not exist at the time of inspection; and
ix. Corrective action required and implementation dates.
x. All revisions and documentation of reasons for changes or modifications to the ESCP and other corrective measures.

2. Recordkeeping

a. The permit registrant must keep the ESCP, all revisions to the ESCP, and all visual monitoring records on site.
b. Upon request, the permit registrant must deliver the above records to DEQ, Agent, or the local municipality within three (3) working days of the request.
c. During inactive periods of greater than seven (7) consecutive calendar days, the above records must be retained by the permit registrant but do not need to be at the construction site.
d. The permit registrant must retain all visual monitoring records for at least three (3) years after termination of permit coverage.

SCHEDULE D
SPECIAL CONDITIONS

1. Schedule Precedence

Schedule F contains General Conditions that are included in all general permits issued by DEQ. In the event of any inconsistency between Schedule F and any other schedule of the permit, the requirements in Schedules A through D take precedence.

2. Other Requirements

Registration under this permit does not relieve the permit registrant from all other permitting and licensing requirements. Prior to beginning construction activities, the permit registrant must obtain all other necessary approvals.

3. Termination of Permit Registration

a. To terminate permit coverage, project registrants must
   i. Complete and submit a Notice of Termination form to DEQ or Agent.
   ii. Resolve all outstanding compliance issues.
   iii. Pay all outstanding permit fees.

b. If the project never started (there were no permitted activities and no soil disturbance), there are no additional requirements. For all previously-active projects, permit registrants must also:
   i. Ensure that all final stabilization criteria are met.
   ii. Submit photo-documentation that depicts site stabilization, unless the site has been inspected by DEQ or Agent.
   iii. If portions of the property shown in the original ESCP have been sold, the permit registrant must submit an update of the ESCP depicting new site boundaries.
   iv. For a common plan of development or sale, all portions of the original common plan of development or sale that have been sold must either meet final stabilization criteria (D.3.c) or be covered by the 1200-C or 1200-CN.

c. Final stabilization is determined by satisfying the following criteria:
   i. There is no reasonable potential for discharge of a significant amount of construction related sediment or turbidity to surface waters.
   ii. Construction materials and waste have been removed and disposed of properly. This includes any sediment that was being retained by the temporary erosion and sediment controls.
   iii. All temporary erosion and sediment controls have been removed and disposed of properly, unless doing so conflicts with local requirements.
   iv. All soil disturbance activities have stopped and all stormwater discharges from construction activities that are authorized by this permit have ceased.
   v. All disturbed or exposed areas of the site are covered by either final vegetative stabilization or permanent stabilization measures. However, temporary or permanent stabilization measures are not required for areas that are intended to be left unvegetated or unstabilized following construction (such as dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials), provided that measures are in place to eliminate or minimize erosion.

d. Permanent stabilization measures are erosion prevention materials designed to provide long-term protection to underlying soils. This may include but is not limited to buildings, paving, riprap, gabions, or geotextiles.

e. Final vegetative stabilization means established and uniform (evenly distributed without large bare areas) perennial vegetation, which provides 70 percent or more coverage, with the following exceptions:
   i. DEQ or Agent may approve less than 70 percent coverage if vegetation is expected to expand, and suitable interim measures (such as mulch or bark) are in place.
   ii. For sites on which it is difficult to establish 70 percent density (for example, in arid, semiarid, and drought-stricken areas), the registrant must cover planted or seeded area with bio or photo degradable erosion controls designed to prevent erosion without active maintenance.
   iii. Sites located on land that is currently employed for farm use as defined in ORS 308A.056 (for example, pipelines across crop or range land, or staging areas for highway construction) that are restored to their preconstruction farm use are not subject to these final vegetative stabilization criteria. Areas disturbed that were not previously employed for farm use, and areas that are not being returned to preconstruction farm use, must meet the conditions for final vegetative stabilization.

4. Local Public Agencies Acting as DEQ's Agent

DEQ authorizes local public agencies to act as its Agent in implementing this permit if they entered into a Memorandum of Agreement (MOA). The Agent may be authorized to conduct the following activities, including but not limited to: application and ESCP review, inspections, monitoring data review, stormwater monitoring and enforcement.

5. Permit-Specific Definitions

a. *Agent* means a governmental entity that has an agreement with DEQ to administer this general permit within their jurisdictional boundaries.
b. *Agricultural Land* means cropland, grassland, rangeland, pasture, and other land on which agricultural or forest-related products or livestock are produced. Agricultural lands include cropped woodland, marshes, incidental areas included in the agricultural operation, and other types of land used for the production of livestock.
c. *Best Management Practices or BMPs* means schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, erosion and sediment control, source control, and operating procedures and practices to control site runoff, spillage or leaks, and waste disposal.
d. *Borrow Area* means the area from which material is excavated to be used as fill material in another area.
e. *Clean Water Act or CWA* means the Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, and 97-117; USC 1251 et seq.
f. *Conveyance System* means, for the purposes of this permit, a sewer, ditch, pipe, channel, swale or similar component that is designed to carry water; or any combination of such components.
g. *DEQ* means the Oregon Department of Environmental Quality.
h. *Detention* means the temporary storage of stormwater to improve quality or reduce the volumetric flow rate of discharge or both.
i. *Dewatering* means the removal and disposal of surface water or groundwater during site construction.
j. *Discharge Point* means the location where stormwater leaves the site. It includes the location where stormwater is discharged to surface water or a stormwater conveyance system.
k. *Erosion* means the movement of soil particles or rock fragments by water or wind.
l. *Erosion and Sediment Control BMPs* means BMPs that are intended to prevent erosion and sedimentation, such as preserving natural vegetation, seeding, mulching and matting, plastic

covering, sediment fences, and sediment traps and ponds. Erosion and sediment control BMPs are synonymous with stabilization and structural BMPs.

m. *Hazardous Materials* means the materials defined in 40 CFR part 302 Designation, Reportable Quantities, and Notification.

n. *Legally Authorized Representative* means the following (please see 40 CFR §122.22 for more detail, if needed):
   - For a corporation - president, secretary, treasurer, vice-president, or any person who performs principal business functions; or a manager of one or more facilities that is authorized in accordance to corporate procedure to sign such documents.
   - For a partnership - general partner.
   - For a sole proprietorship - Owner(s) [each owner must sign the application].
   - For a city, county, state, federal, or other public facility - principal executive officer or ranking elected official.
   - For a Limited Liability Company - Member [articles of organization].
   - For trusts – Acting trustee.

o. *Local Government* means any county, city, town, or service district.

p. *National Pollutant Discharge Elimination System or NPDES* means the national program under Section 402 of the Clean Water Act for regulation of point source discharges of pollutants to waters of the United States.

q. *Natural Buffer* means, for the purposes of this permit, an area of undisturbed natural cover surrounding surface waters within which construction activities are restricted. Natural cover includes the natural vegetation, exposed rock, and barren ground that existed prior to commencement of earth-disturbing activities.

r. *Natural Vegetation* means vegetation that occurs spontaneously without regular management, maintenance, or species introductions or removals. For purposes of this permit, this includes invasive species.

s. *Non-Stormwater Pollution Controls* means general site and materials management measures that directly or indirectly aid in minimizing the discharge of sediment and other construction related pollutants from the construction site.

t. *Owner or operator* means the owner or operator of any "facility or activity" subject to regulation under the NPDES program. Owners or operators may be individuals or other legal entities.
   i. Operator for the purposes of this permit, means any person associated with a construction project that meets either of the following two criteria:
      (1) The person has operational control over construction plans and specifications, including the authority to make modifications to those plans and specifications; or
      (2) The person has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a ESCP for the site or other permit conditions (for example, they are authorized to direct workers at a site to carry out activities required by the ESCP or comply with other permit conditions).
   ii. Owner for the purposes of this permit means any person with a legal interest in the permitted activities or the property on which the permitted activities occur.

u. *Permit Registrant* means the owner or operator of the construction activity regulated by this permit that has submitted an application and received notice of registration under this general permit by DEQ or Agent.

v. *Person* means not only individuals, but also includes, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the federal government and any agencies thereof.

w. *Pollutant* as defined in 40 CFR §122.2 means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, domestic sewage sludge (biosolids), munitions, chemical

wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, soil, cellar dirt and industrial, municipal, and agricultural waste discharge into water. It does not mean sewage from vessels within the meaning of section 312 of the FWPCA, nor does it include dredged or fill material discharged in accordance with a permit issued under section 404 of the FWPCA.

x. *Pollution or Water Pollution* as defined by ORS 468B.005(3) means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof.

y. *Runoff Controls* means BMPs that are designed to control the peak volume and flow rate or to prevent scour due to concentrated flows.

z. *Sediment* means mineral or organic matter, typically deposited by water, air, or ice.

aa. *Site* means the area where the construction activity is physically located or conducted.

bb. *Stormwater Conveyance* means a sewer, ditch, or swale that is designed to carry stormwater; a stormwater conveyance may also be referred to as a storm drain or storm sewer.

cc. *Stormwater as defined by 40 CFR §122.26(b)(13)* means stormwater runoff, snow melt runoff, and surface runoff and drainage.

dd. *Surface Runoff* means that portion of stormwater that does not infiltrate into the ground or evaporate, but instead flows onto adjacent land or watercourses or is routed to stormwater conveyance systems.

ee. *Surface Water* means all water naturally open to the atmosphere (for example, rivers, lakes, reservoirs, ponds, streams, impoundments, oceans, estuaries, springs, etc.).

ff. *Total Maximum Daily Load or TMDL* means a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet state water quality standards. It is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. Percentages of the TMDL are allocated by DEQ to the various pollutant sources.

gg. *Turbidity* means the optical condition of waters caused by suspended or dissolved particles or colloids that scatter and absorb light rays instead of transmitting light in straight lines through the water column. Turbidity may be expressed as nephelometric turbidity units (NTUs) measured with a calibrated turbidity meter.

hh. *Underground Injection Control* means any system, structure, or activity that is created to place fluid below the ground or sub-surface (for example, sumps, infiltration galleries, drywells, trench drains, drill holes, etc.)

ii. *Water or Waters of the State as defined by ORS 468B.005(8)* means lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.

SCHEDULE F
NPDES GENERAL CONDITIONS – INDUSTRIAL FACILITIES
October 1, 2015 Version

SECTION A. STANDARD CONDITIONS

A1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and the federal Clean Water Act and is grounds for an enforcement action. Failure to comply is also grounds for DEQ to terminate, modify and reissue, revoke, or deny renewal of a permit.

A2. Penalties for Water Pollution and Permit Condition Violations

The permit is enforceable by DEQ or EPA, and in some circumstances also by third-parties under the citizen suit provisions of 33 USC § 1365. DEQ enforcement is generally based on provisions of state statutes and Environmental Quality Commission (EQC) rules, and EPA enforcement is generally based on provisions of federal statutes and EPA regulations.

ORS 468.140 allows DEQ to impose civil penalties up to $25,000 per day for violation of a term, condition, or requirement of a permit. The federal Clean Water Act provides for civil penalties not to exceed $37,500 and administrative penalties not to exceed $16,000 per day for each violation of any condition or limitation of this permit.

Under ORS 468.943, unlawful water pollution in the second degree, is a Class A misdemeanor and is punishable by a fine of up to $25,000, imprisonment for not more than one year, or both. Each day on which a violation occurs or continues is a separately punishable offense. The federal Clean Water Act provides for criminal penalties of not more than $50,000 per day of violation, or imprisonment of not more than 2 years, or both for second or subsequent negligent violations of this permit.

Under ORS 468.946, unlawful water pollution in the first degree is a Class B felony and is punishable by a fine up to $250,000, imprisonment for not more than 10 years or both. The federal Clean Water Act provides for criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment of not more than 3 years, or both for knowing violations of the permit. In the case of a second or subsequent conviction for knowing violation, a person is subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

A3. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit. In addition, upon request of DEQ, the permittee must correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

A4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application must be submitted at least 180 days before the expiration date of this permit.

DEQ may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

A5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute.
b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts.
c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
d. The permittee is identified as a Designated Management Agency or allocated a wasteload under a total maximum daily load (TMDL).
e. New information or regulations.
f. Modification of compliance schedules.
g. Requirements of permit reopener conditions.
h. Correction of technical mistakes made in determining permit conditions.
i. Determination that the permitted activity endangers human health or the environment.
j. Other causes as specified in 40 CFR §§ 122.62, 122.64, and 124.5.

The filing of a request by the permittee for a permit modification, revocation or reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

A6. Toxic Pollutants

The permittee must comply with any applicable effluent standards or prohibitions established under Oregon Administrative Rules (OAR) 340-041-0033 and 307(a) of the federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

A7. Property Rights and Other Legal Requirements

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other private rights, or any infringement of federal, tribal, state, or local laws or regulations.

A8. Permit References

Except for effluent standards or prohibitions established under section 307(a) of the federal Clean Water Act and OAR 340-041-0033 for toxic pollutants, and standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

A9. Permit Fees

The permittee must pay the fees required by OAR.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

B1. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires

the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

B2. Need to Halt or Reduce Activity Not a Defense

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee must, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It is not a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs b and c of this section.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.

(1) Bypass is prohibited and DEQ may take enforcement action against a permittee for bypass unless:

i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventative maintenance; and

iii. The permittee submitted notices and requests as required under General Condition B3.c.

(2) DEQ may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, when DEQ determines that it will meet the three conditions listed above in General Condition B3.b(1).

c. Notice and request for bypass.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, a written notice must be submitted to DEQ at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required in General Condition D5.

B4. Upset

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent

caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of General Condition B4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
   (1) An upset occurred and that the permittee can identify the causes(s) of the upset;
   (2) The permitted facility was at the time being properly operated;
   (3) The permittee submitted notice of the upset as required in General Condition D5, hereof (24-hour notice); and
   (4) The permittee complied with any remedial measures required under General Condition A3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

B5. Treatment of Single Operational Upset

For purposes of this permit, a single operational upset that leads to simultaneous violations of more than one pollutant parameter will be treated as a single violation. A single operational upset is an exceptional incident that causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one federal Clean Water Act effluent discharge pollutant parameter. A single operational upset does not include federal Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational upset is a violation.

B6. Public Notification of Effluent Violation

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (for example, public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B7. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

B7. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from bypasses or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
c. Ensure immediate notification to the public, health agencies, and other affected entities (including public water systems). The response plan must identify the public health and other officials who will receive immediate notification;
d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
e. Provide emergency operations; and

f. Ensure that DEQ is notified of the public notification steps taken.

B8. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must be disposed of in such a manner as to prevent any pollutant from such materials from entering waters of the state, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

C1. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge. All samples must be taken at the monitoring points specified in this permit, and must be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points must not be changed without notification to and the approval of DEQ. Samples must be collected in accordance with requirements in 40 CFR part 122.21 and 40 CFR part 403 Appendix E.

C2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices must be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices must be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected must be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

C3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 unless other test procedures have been specified in this permit.

For monitoring of recycled water with no discharge to waters of the state, monitoring must be conducted according to test procedures approved under 40 CFR part 136 or as specified in the most recent edition of Standard Methods for the Examination of Water and Wastewater unless other test procedures have been specified in this permit or approved in writing by DEQ.

C4. Penalties for Tampering

The federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit may, upon conviction, be punished by a fine of not more than $10,000 per violation, imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

C5. Reporting of Monitoring Results

Monitoring results must be summarized each month on a discharge monitoring report form approved by DEQ. The reports must be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

C6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the discharge monitoring report. Such increased frequency must also be indicated. For a pollutant parameter that may be sampled more than once per day (for example, total residual chlorine), only the average daily value must be recorded unless otherwise specified in this permit.

C7. Averaging of Measurements

Calculations for all limitations that require averaging of measurements must utilize an arithmetic mean, except for bacteria which must be averaged as specified in this permit.

C8. Retention of Records

Records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities must be retained for a period of at least 5 years (or longer as required by 40 CFR part 503). Records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit must be retained for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of DEQ at any time.

C9. Records Contents

Records of monitoring information must include:

a. The date, exact place, time, and methods of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

C10. Inspection and Entry

The permittee must allow DEQ or EPA upon the presentation of credentials to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

C11. Confidentiality of Information

Any information relating to this permit that is submitted to or obtained by DEQ is available to the public unless classified as confidential by the Director of DEQ under ORS 468.095. The permittee may request that information be classified as confidential if it is a trade secret as defined by that statute. The name and address of the permittee, permit applications, permits, effluent data, and information required by NPDES application forms under 40 CFR § 122.21 are not classified as confidential [40 CFR § 122.7(b)].

SECTION D. REPORTING REQUIREMENTS

D1. Planned Changes

The permittee must comply with OAR 340-052, "Review of Plans and Specifications" and 40 CFR § 122.41(l)(1). Except where exempted under OAR 340-052, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers may be commenced until the plans and specifications are submitted to and approved by DEQ. The permittee must give notice to DEQ as soon as possible of any planned physical alternations or additions to the permitted facility.

D2. Anticipated Noncompliance

The permittee must give advance notice to DEQ of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

D3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and EQC rules. No permit may be transferred to a third party without prior written approval from DEQ. DEQ may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under 40 CFR § 122.61. The permittee must notify DEQ when a transfer of property interest takes place.

D4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

D5. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) within 24 hours from the time the permittee becomes aware of the circumstances, unless a shorter time is specified in the permit. During normal business hours, the DEQ regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).

The following must be included as information that must be reported within 24 hours under this paragraph:

a. Any unanticipated bypass that exceeds any effluent limitation in this permit;
b. Any upset that exceeds any effluent limitation in this permit;
c. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
d. Any noncompliance that may endanger human health or the environment.

A written submission must also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:

e. A description of noncompliance and its cause;
f. The period of noncompliance, including exact dates and times;
g. The estimated time noncompliance is expected to continue if it has not been corrected;

h. Steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and
i. Public notification steps taken, pursuant to General Condition B7.

DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

D6. Other Noncompliance
The permittee must report all instances of noncompliance not reported under General Condition D4 or D5, at the time monitoring reports are submitted. The reports must contain:
a. A description of the noncompliance and its cause;
b. The period of noncompliance, including exact dates and times;
c. The estimated time noncompliance is expected to continue if it has not been corrected; and
d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D7. Duty to Provide Information
The permittee must furnish to DEQ within a reasonable time any information that DEQ may request to determine compliance with the permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee must also furnish to DEQ, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it has failed to submit any relevant facts or has submitted incorrect information in a permit application or any report to DEQ, it must promptly submit such facts or information.

D8. Signatory Requirements
All applications, reports or information submitted to DEQ must be signed and certified in accordance with 40 CFR § 122.22.

D9. Falsification of Information
Under ORS 468.953, any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, is subject to a Class C felony punishable by a fine not to exceed $125,000 per violation and up to 5 years in prison per ORS chapter 161. Additionally, according to 40 CFR § 122.41(k)(2), any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or non-compliance will, upon conviction, be punished by a federal civil penalty not to exceed $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

D10. Changes to Discharges of Toxic Pollutant
The permittee must notify DEQ as soon as it knows or has reason to believe the following:
a. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:
   (1) One hundred micrograms per liter (100 µg/l);
   (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
   (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or

(4) The level established by DEQ in accordance with 40 CFR § 122.44(f).

b. That any activity has occurred or will occur that would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
   (1) Five hundred micrograms per liter (500 µg/l);
   (2) One milligram per liter (1 mg/l) for antimony;
   (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
   (4) The level established by DEQ in accordance with 40 CFR § 122.44(f).

SECTION E. DEFINITIONS

E1. *BOD or BOD_5* means five-day biochemical oxygen demand.
E2. *CBOD or $CBOD_5$* means five-day carbonaceous biochemical oxygen demand.
E3. *TSS* means total suspended solids.
E4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
E5. *FC* means fecal coliform bacteria.
E6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
E7. *Technology based permit effluent limitations* means technology-based treatment requirements as defined in 40 CFR § 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-041.
E8. *mg/l* means milligrams per liter.
E9. *µg/l* means microgram per liter.
E10. *kg* means kilograms.
E11. *m^3/d* means cubic meters per day.
E12. *MGD* means million gallons per day.
E13. *Average monthly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
E14. *Average weekly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
E15. *Daily discharge* as defined at 40 CFR § 122.2 means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge must be calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge must be calculated as the average measurement of the pollutant over the day.
E16. *24-hour composite sample* means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
E17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
E18. *Quarter* means January through March, April through June, July through September, or October through December.
E19. *Month* means calendar month.
E20. *Week* means a calendar week of Sunday through Saturday.

State of Oregon
Department of Environmental Quality
811 SW 6th Avenue, Portland, OR 97204

Notice of Termination

For NPDES General Permit to Discharge Stormwater Associated With Construction Activity

Use this form to end permit coverage once all soil disturbance activities have been completed and final stabilization of exposed soils has occurred. Please print in ink or type.
Submit photos that de pict site stabilization, unless the site has been inspected by DEQ or Agent.

PERMIT REGISTRANT

Name (authorized person meeting the signature requirements on the application):	Telephone:
Company (Legal Name - Permit Registrant):	
Mailing Address:	City, State, Zip Code:
E-mail Address:	File Number (located on face page of permit):

SITE LOCATION/ADDRESS

Site Common Name:

Street Address (or Location Description):

City (or nearest city):

County:

STATUS OF CONSTRUCTION ACTIVITY

☐ All soil disturbance activities by or for the registrant have been completed.

☐ The site has undergone stabilization of all exposed soils through vegetation, paving, or building construction (for a common plan of development or sale, all remaining disturbed areas are covered by either a small lot permit or the 1200-CN).

☐ All stormwater discharges from construction activities that are authorized by this permit are eliminated.

☐ All temporary erosion and sediment controls have been removed and properly disposed, unless local ordinance requires otherwise in the completion of the project.

Date above items were completed: _____

OR

☐ Project was cancelled with no disturbance taking place.

CERTIFICATION

Please read the certification statement carefully before signing.

I certify under penalty of law that all stormwater discharges associated with construction activity from this site that are authorized by this NPDES general permit have been eliminated. By submitting this Notice of Termination, I understand that I am no longer authorized to discharge stormwater associated with construction activity under this general permit, and that discharging pollutants to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that submittal of this Notice of Termination does not release a permittee from liability for any violations of this permit or the Clean Water Act.

_____ _____

Signature of Legally Authorized Representative | Date

_____

Name of Legally Authorized Representative (type or print)

Updated by: Mark Riedel-Bash
Rev: 4/29/14

INSTRUCTIONS FOR COMPLETING THE NOTICE OF TERMINATION FORM FOR THE NPDES GENERAL PERMIT TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION

This Notice of Termination Form is for a registrant that currently is assigned coverage under Oregon's NPDES general permit for the discharge of stormwater associated with construction activity. Use this form to end permit coverage once all soil disturbance activities have been completed by and for the registrant and stabilization of exposed soils has occurred. Please print in ink or type.

I. Permit Registrant

Complete as indicated. The permit registrant is the name of the company or person as it appears on the permit. Only the registrant or the registrant's legally authorized representative has authority to terminate permit coverage.

Note: If you are not the current registrant but should be, you need to transfer the permit. Please use the Transfer of Ownership form at http://www.deq.state.or.us/wq/stormwater/constappl.htm or contact DEQ at one of the offices listed below.

II. Site Address/Location

Complete as indicated. Also provide the city (or nearest city) and county for the construction site.

III. Construction Activity

Check the "boxes" to indicate that all stormwater discharges associated with construction activity have been eliminated, stabilization of the site is complete, and temporary erosion and sediment control measures have been properly disposed unless local codes require that they remain. Also, provide the date of completion for these activities. As an alternative to the preceding, if the site work was never started you can check the last box only. Your permit will not be terminated if these activities have not been completed or the construction activities started but the project was cancelled without completing the activities.

Photo-Documentation

Submit photo-documentation that depicts site stabilization, unless the site has been inspected by DEQ or Agent.

Certification

This statement should be read carefully by the registrant, owner or legally authorized representative. The person signing this form must print or type their name for clarity then sign and date the document on the lines provided.

Definition of Legally Authorized Representative:
See 40 CFR 122.22 for more detail. Also, please also provide the information requested in brackets *[ ]*

- **Corporation** - President, secretary, treasurer, vice-president, or any person who performs principal business functions; or a manager of one or more facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million that is authorized in accordance to corporate procedure to sign such documents
- **Partnership** - General partner *[list of general partners, their addresses and telephone numbers]*
- **Sole Proprietorship** - Owner(s) *[each owner must sign the application]*
- **City, County, State, Federal, or other Public Facility** - Principal executive officer or ranking elected official
- **Limited Liability Company** - Member *[articles of organization]*
- **Trusts** - Acting trustee *[list of trustees, their addresses and telephone numbers]*

Form Submittal and For More Information	Submit this form along with photo-documentation that depicts site stabilization to the appropriate regional office. There is no fee required for this action. If you have any questions, please contact the appropriate regional offices listed below.

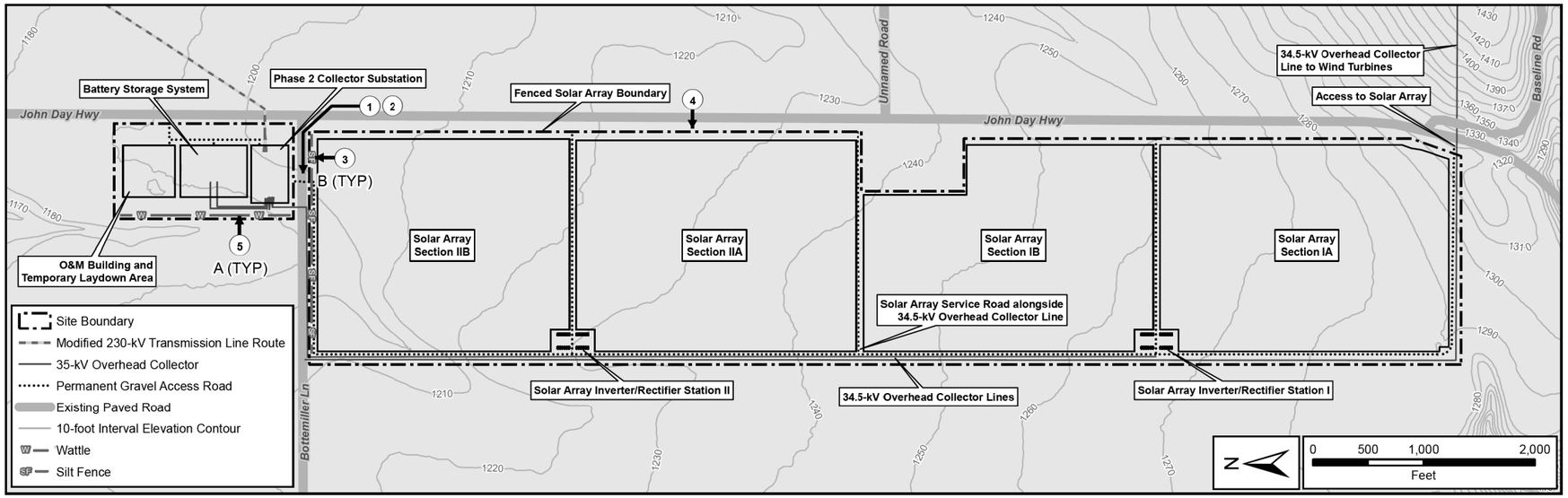
DEQ Northwest Region	DEQ Western Region		DEQ Eastern Region		
2020 SW 4th Avenue, Suite 400 Portland, OR 97201 (503) 229-5438 or (800) 452-4011	165 East 7th Avenue, Suite 100 Eugene, OR 97401 (541) 687-7326 or 1-800-452-4011		800 SE Emigrant Ave, Suite 330 Pendleton, OR 97801 (541) 278-4605 or 1-800-304-3513		
Clackamas	Benton	Lane	Baker	Hood River	Sherman
Clatsop	Coos	Lincoln	Crook	Jefferson	Umatilla
Columbia	Curry	Linn	Deschutes	Klamath	Union
Multnomah	Douglas	Marion	Gilliam	Lake	Wallowa
Tillamook	Jackson	Polk	Grant	Malheur	Wasco
Washington	Josephine	Yamhill	Harney	Marrow	Wheeler

Updated by: Mark Riedel-Bash
Rev: 4/29/14

Attachment I-3
Conceptual Erosion and Sediment Control Plan for the Solar Array

EROSION AND SEDIMENT CONTROL NOTES

1. THE EROSION CONTROL FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE FACILITIES SHALL BE MAINTAINED AND UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.
2. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION.
3. IDENTIFY, MARK, AND PROTECT (BY CONSTRUCTION FENCING OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS.
4. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED.
5. CONTROL BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND DOWNSTREAM CHANNELS AND STREAMBANKS.
6. CONTROL SEDIMENT AS NEEDED ALONG THE SITE PERIMETER AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION, BOTH INTERNALLY AND AT THE SITE BOUNDARY.
7. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK.
8. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS.
9. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL.
10. TEMPORARILY STABILIZE EXISTING BARE SOIL AREAS BY SPREADING STRAW MULCH AND PUNCHING IT IN TO THE GROUND WITH A DISC OR A HYDROSEEDER. SEED MIXTURE WILL GENERALLY BE THAT APPROVED BY ODFW AND GILLAM COUNTY, HOWEVER SPECIFIC SEED MIXTURES WILL BE APPLIED WHERE ADDITIONAL AGREEMENTS APPLY.
11. AS NEEDED BASED ON WEATHER CONDITIONS, AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS.
12. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND DURING WET WEATHER.

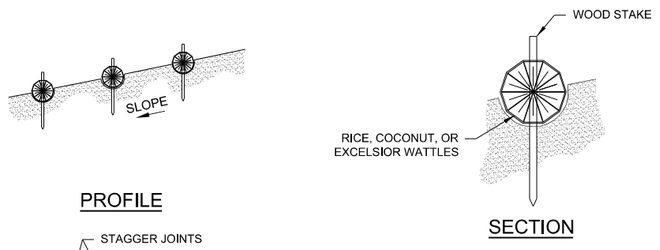


KEYED NOTES

1. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: CONSTRUCTION ENTRANCE, GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES.
2. WHERE PERMANENT ACCESS ROADS OR IMPROVED TEMPORARY CONSTRUCTION ACCESS ROADS ARE REQUIRED, CLEAN ANGULAR ROCK WILL BE USED AND MAINTAINED THROUGHOUT CONSTRUCTION DURATION TO PREVENT ROADS FROM BECOMING A SOURCE OF SEDIMENTATION. RESTORATION OF TEMPORARY CONSTRUCTION ACCESS ROADS WILL INCLUDE EITHER SPREADING MULCH, USING A TACKIFIER AND SEEDING, AND WILL OCCUR FOLLOWING CONSTRUCTION ACTIVITIES.
3. INSTALL SILT FENCE ON CONTOUR, ON AREAS DOWNGRADE OF LAND DISTURBING ACTIVITIES.
4. INSTALL PERIMETER SEDIMENT CONTROL, INCLUDING STORM DRAIN INLET PROTECTION AS WELL AS ALL SEDIMENT BASINS, TRAPS, AND BARRIERS PRIOR TO LAND DISTURBANCE.
5. WATTLES SHALL BE INSTALLED ALONG SLOPE CONTOURS OF DISTURBED SLOPES TO DECREASE RUNOFF VELOCITY. WATTLES WILL BE INSTALLED PERPENDICULAR TO FLOW AND PARALLEL TO THE SLOPE CONTOUR.

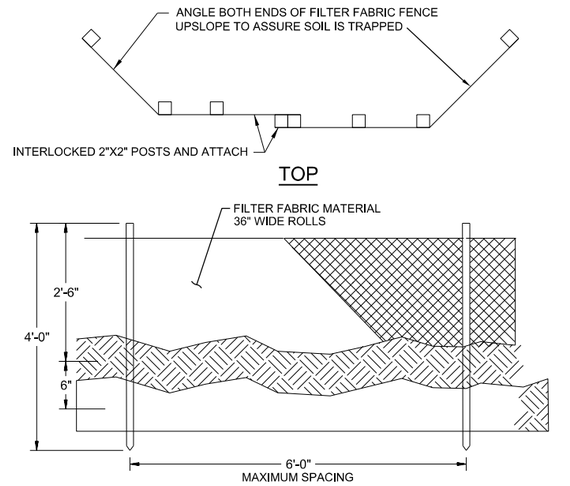
GENERAL NOTES

1. THE PREDOMINANT SOIL TYPE IN THIS AREA IS MODERATELY PRONE TO WIND EROSION AND HIGHLY PRONE TO WATER EROSION. THEREFORE, THE IMPLEMENTATION OF EROSION CONTROL PRACTICES MUST BE AN INTEGRAL PART OF ALL PHASES OF CONSTRUCTION.
2. THE EROSION CONTROL FACILITIES SHOWN ON THESE PLANS MUST BE CONSTRUCTED IN CONNECTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM OR ROADWAYS OUTSIDE OF PROJECT LIMITS AND VIOLATE APPLICABLE WATER STANDARDS.
3. A COMPREHENSIVE LIST OF AVAILABLE BMP OPTIONS BASED ON THE ODEQ 1200-C PERMIT APPLICATION AND ESCP GUIDANCE DOCUMENT HAVE BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE BMPS THAT WILL BE UTILIZED ARE NOT DETAILED ON THIS PRELIMINARY EROSION AND SEDIMENT CONTROL PLAN. AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE EROSION AND SEDIMENT CONTROL PLAN THESE DETAILS WILL BE PROVIDED.



NOTES:
1. STAKING SPECIFICATIONS
   A. 1"X2" WOODEN STAKES
   B. ADDITIONAL STAKES MAY BE INSTALLED ON DOWNHILL SIDE OF WATTLES, ON STEEP SLOPE OR HIGHLY EROSIVE SOILS.
2. SPACING IN ACCORDANCE WITH DETAIL 940.

A WATTLES
NTS



NOTES:
1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2" x 2" FIR, PINE, OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED UP HILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

INSTALL ALONG CONTOURS AS FOLLOWS	
% SLOPE	MAXIMUM SPACING
10R FLATTER	300
10% TO 15%	150
15% TO 20%	100
20% TO 30%	50
30% TO 50%	25

B FIELD FABRICATED SILT FENCE
NTS

NO.	DATE	DR	REVISION	CHK	APVD
DSGN	S.BARTOW	B.GYAOUROVA			

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REUSE OF DOCUMENTS:

MONTAGUE WIND POWER FACILITY
SOLAR ARRAY

EROSION CONTROL
EROSION AND SEDIMENTATION CONTROL PLAN AND DETAILS

PRELIMINARY NOT FOR CONSTRUCTION

1" = X'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOV 2018
PROJ	690495
DWG	DRAWING-NO
SHEET	ShtNum of XX