Oregon
Kate Brown, Governor

**Department of State Lands**
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
FAX (503) 378-4844
www.oregon.gov/dsl



May 3, 2018

Calico Resources USA Corp
Attn: Nancy Wolverson
665 Anderson St.
Winnemucca, NV 89445

Re: WD #2018-0115 Wetland Delineation Report for Grassy Mountain Mine Project Malheur County; T22S R44E (Sections 5-8), Tax Lot 100, T21S R44E (Section 3, 10, 11, 14, 15, 21-23, 28, 29, 32), Tax Lot 100, T20S R44E (Sections 1, 6, 7, 12-14, 23, 26-27, 34), Tax Lots 100 and 300, T19S 44E (Sections 22-23, 26, 35-36), Tax Lots 600 and 900

Dear Ms. Wolverson:

The Department of State Lands has reviewed the wetland delineation report prepared by EM Strategies for the site referenced above. Please note that the study area includes only a portion of the tax lots described above (see the attached map). Based upon the information presented in the report, we concur with the wetland and waterway boundaries as mapped in Figures 4a-4h of the report. Please replace all copies of the preliminary wetland map with these final Department-approved maps.

Superseded

Within the study area, two wetlands (Wetland 1-2) totaling approximately 0.20 acres, one waterway (J-H Canal), ten tributary drainages (Tributaries 1-10), and one reservoir (Schweizer Reservoir) were identified. Wetlands 1-2 and the J-H Canal are subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in the wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2 year recurrence interval flood elevation if OHWL cannot be determined). The ten tributaries and Schweizer Reservoir are exempt per OAR 141-085-0515(3) and -0515(7); therefore, are not subject to current state Removal-Fill requirements.

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will determine jurisdiction for purposes of the Clean Water Act. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you

work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. Please phone me at 503-986-5218 if you have any questions.

Sincerely,

Lauren Brown
Jurisdiction Coordinator

Approved by
Kathy Verble, CPSS
Aquatic Resource Specialist

Enclosures

Superseded

ec: Sarah Harrelson, EM Strategies, Inc.
Malheur County Planning Department (Maps enclosed for updating LWI)
Benny Dean, Corps of Engineers
Janet Gillaspie, Environmental Strategies, LLC
Randy Jones, DOGAMI
Bethany Harrington, DSL
Kirk Jarvie, DSL

# WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

Fully completed and signed report cover forms and applicable fees are required before report review timelines are initiated by the Department of State Lands. Make checks payable to the Oregon Department of State Lands. To pay fees by credit card, go online at https://apps.oregon.gov/DSL/EPS/program?key=4.

Attach this completed and signed form to the front of an unbound report or include a hard copy with a digital version (single PDF file of the report cover form and report, minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.** A single PDF of the completed cover from and report may be e-mailed to **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail DSL instructions on how to access the file from your ftp or other file sharing website.

## Contact and Authorization Information

☒ Applicant ☐ Owner Name, Firm and Address:
Calico Resources USA Corp
665 Anderson St.
Winnemucca, NV 89445

Business phone # (775) 625-3600
Mobile phone # (optional)
E-mail: nancy@paramountnevada.com

☒ Authorized Legal Agent, Name and Address (if different):
Same as Above
Attention: Nancy J Wolverson

Business phone # (775) 625-3600
Mobile phone # (optional) (775) 770-4615
E-mail: nancy@paramountnevada.com

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

**Typed/Printed Name:** Nancy J Wolverson **Signature:** Digitally signed by Nancy J Wolverson Date: 2018.03.01 11:08:18 -08'00'

Date: 03/01/2018 Special instructions regarding site access: ____

## Project and Site Information

Project Name: Grassy Mountain Mine Project

Latitude: 43.729922 Longitude: -117.337827
**decimal degree** - centroid of site or start & end points of linear project

Proposed Use: hard rock mining

Tax Map # Tax lots: 100, 300, 400, 600, 900
Tax Lot(s)

Tax Map #
Tax Lot(s)

Project Street Address (or other descriptive location)
Malheur County, Oregon, approximately 42 miles south-southwest of Vale, Oregon

Township 22S Range 41E Section see att QQ

Use separate sheet for additional tax and location information

City: n/a County: Malheur

Waterway: Malheur River River Mile: n/a



## Wetland Delineation Information

Wetland Consultant Name, Firm and Address:
Sarah M. Harrelson of EM Strategies, Inc.
1650 Meadow Wood Lane
Reno, NV 89502

Phone # (775) 826-8822
Mobile phone # (if applicable)
E-mail: sarah@emstrats.com

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.
**Consultant Signature:** Sarah M. Harrelson Date: 3/1/18

**Primary Contact** for report review and site access is ☐ Consultant ☐ Applicant/Owner ☒ Authorized Agent

Wetland/Waters Present? ☐ Yes ☐ No Study Area size: 1,762 acres Total Wetland Acreage: 0.29 acres

## Check Applicable Boxes Below

☐ R-F permit application submitted
☐ Mitigation bank site
☐ Industrial Land Certification Program Site
☐ Wetland restoration/enhancement project (not mitigation)
☒ Previous delineation/application on parcel
If known, previous DSL # WD2015-0432

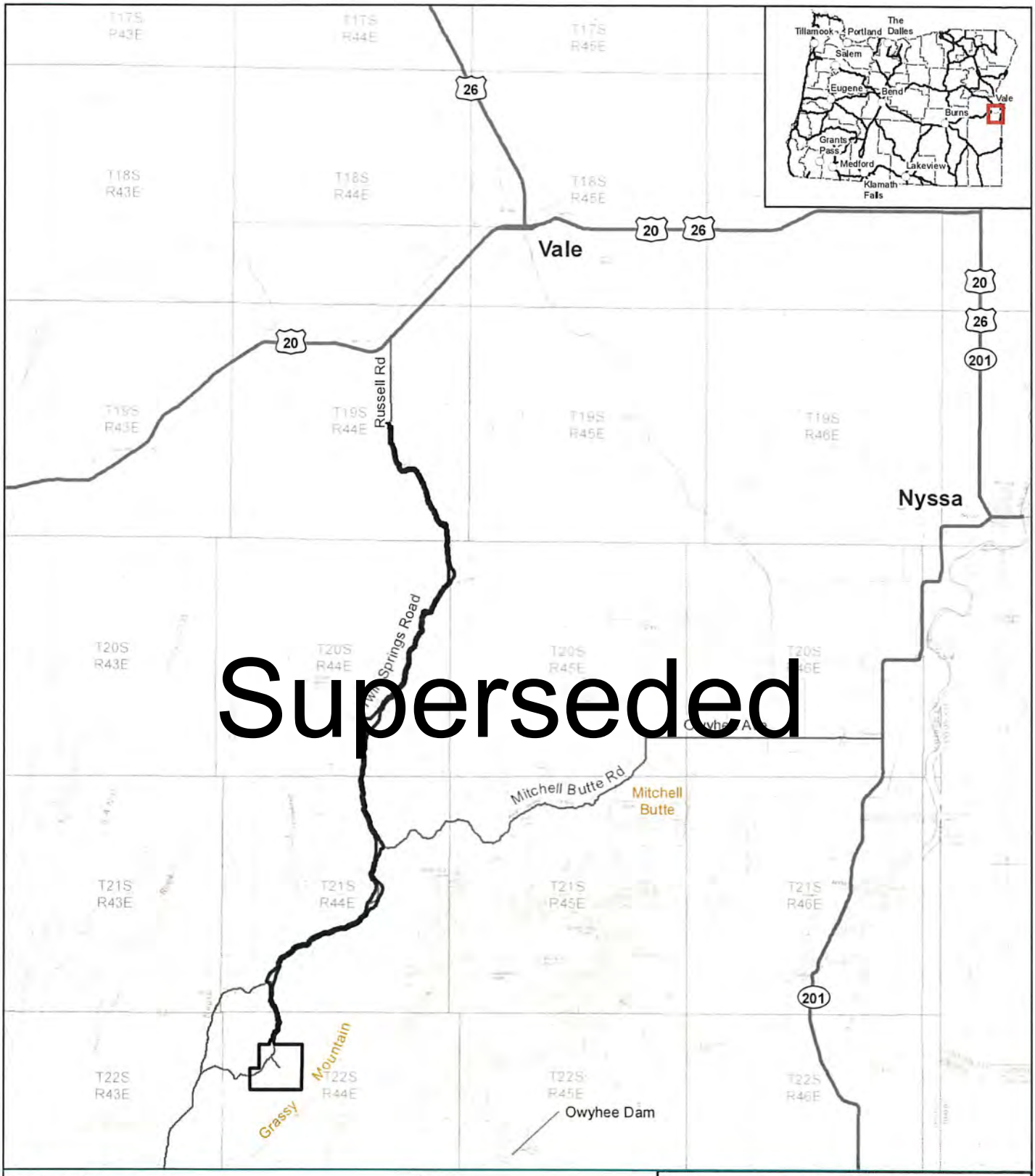
☒ Fee payment submitted $ $ 437
☐ Fee ($100) for resubmittal of rejected report
☐ Request for Reissuance. See eligibility criteria. (no fee)
DSL # ____ Expiration date ____
☐ LWI shows wetlands or waters on parcel
Wetland ID code ____

## For Office Use Only

DSL Reviewer: LB Fee Paid Date: ____/____/____ DSL WD # 2018-0115

Date Delineation Received: 3/1/18 Scanned: ☐ Electronic: ☒ DSL App.# ____

Project 59704






**Explanation**

Wetland Study Area

Existing Road

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Basemap:** Copyright© 2013 National Geographic Society, i-cubed

0 5,000 10,000 15,000 20,000 Feet

0 1 2 3 4 Miles

N

Projection: UTM Zone 11 North, NAD83, meters

# CALICO RESOURCES USA CORP.

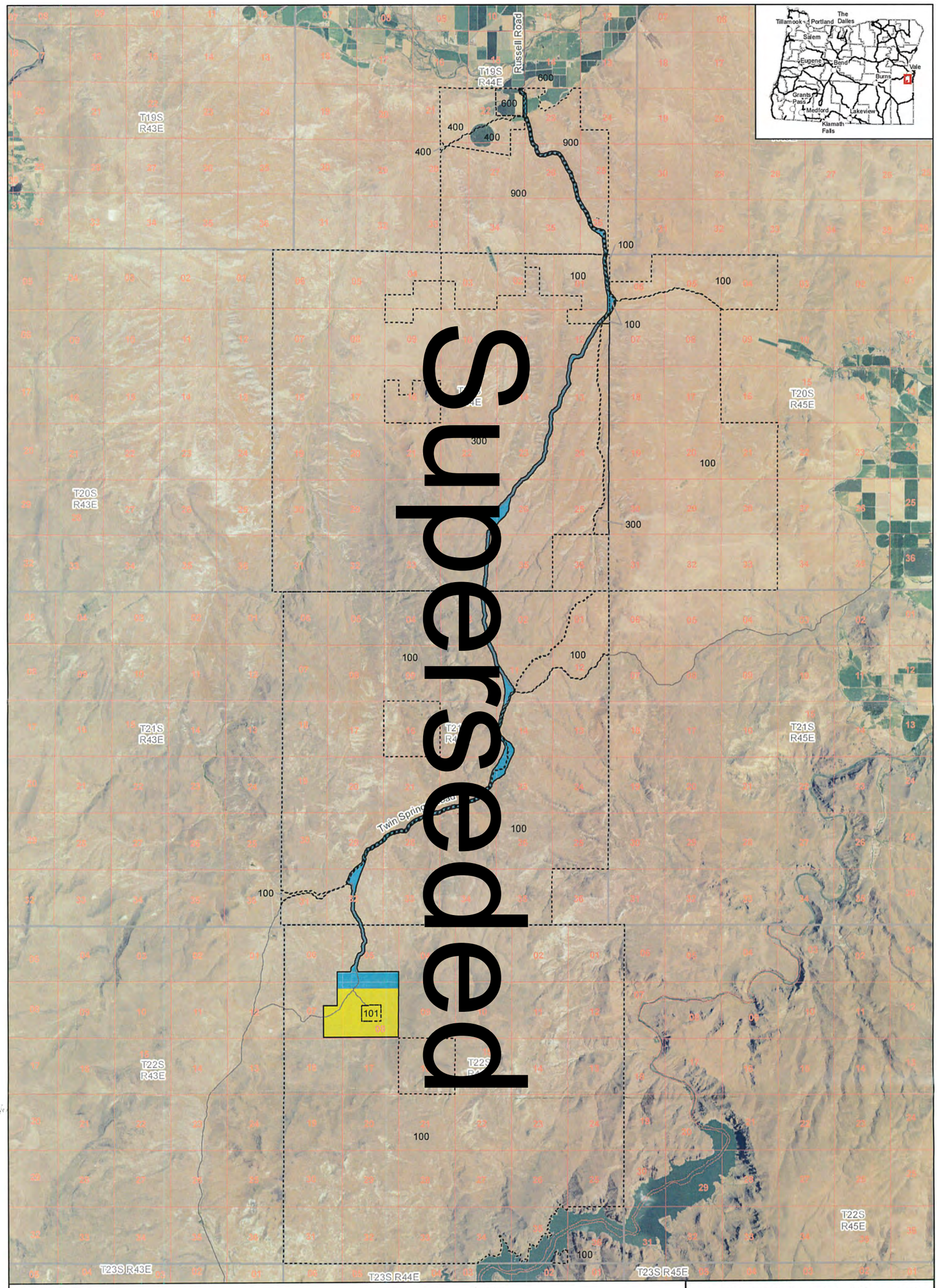
## GRASSY MOUNTAIN MINE PROJECT

## Location Map

Figure 1

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: USGS 100K quads: Boise, Brogan, Vale, Weiser | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig01_Location.mxd | |

EM STRATEGIES




**Explanation**

- Wetland Study Area
- Tax Lot
- Wetland Study Area (2017)
- HDR Wetland Study Area (2015)
- Existing Road

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

0 5,000 10,000 15,000 20,000 Feet
0 1 2 3 4 Miles

N

# CALICO RESOURCES USA CORP.

## GRASSY MOUNTAIN MINE PROJECT

### Wetland Study Areas and Tax Lots

Figure 2

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig02_StudyAreas.mxd | |

EM STRATEGIES

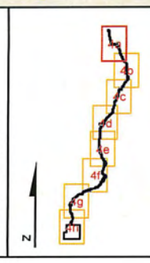

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Ephemeral Drainage
- Artificial Water Body (J-H Canal)

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.



**CALICO RESOURCES USA CORP.**

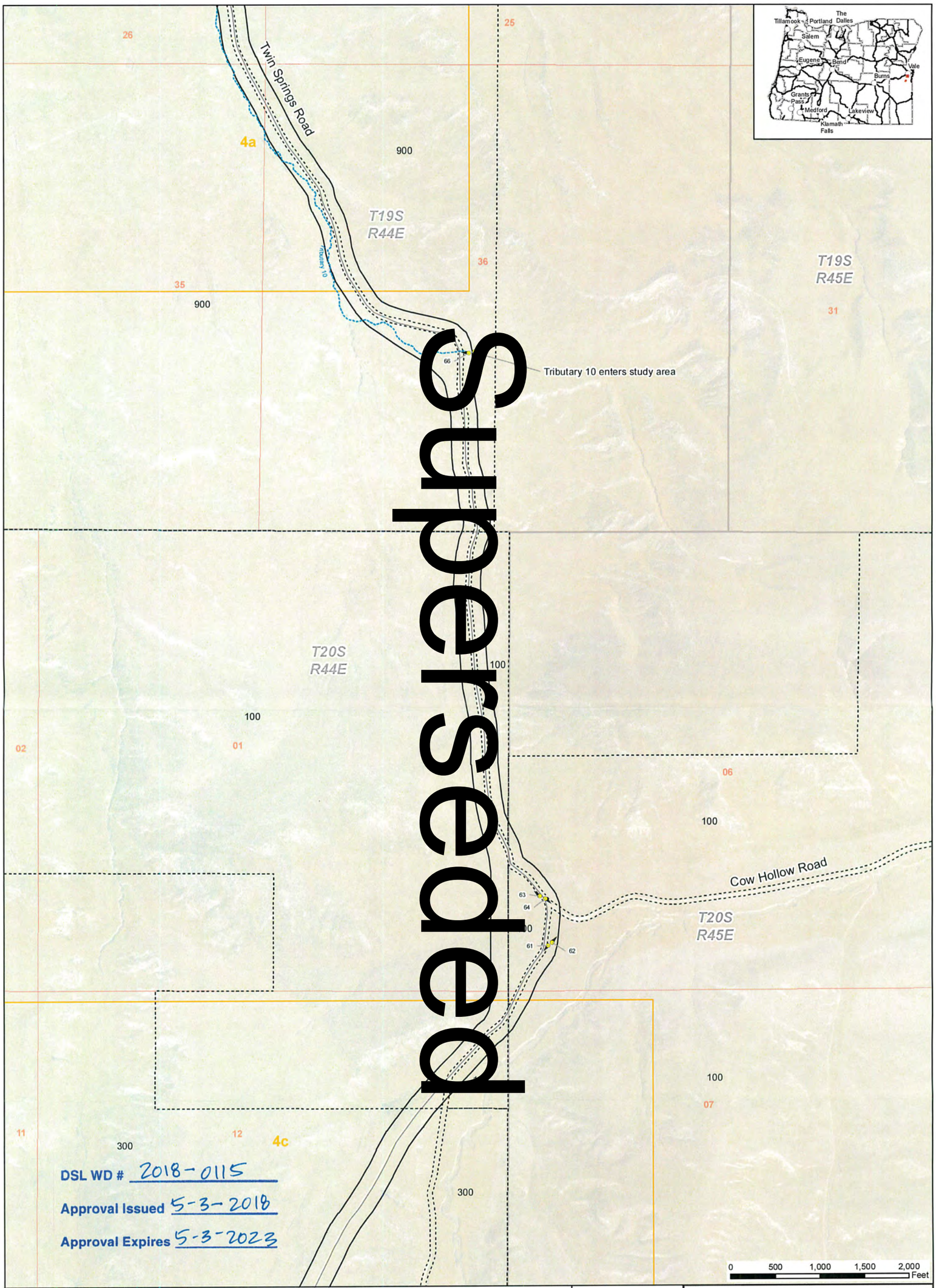
GRASSY MOUNTAIN MINE PROJECT

Wetland Map Book

Figure 4a

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES




Superseded

DSL WD # 2018-0115

Approval Issued 5-3-2018

Approval Expires 5-3-2023

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Ephemeral Drainage

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
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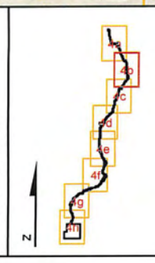



**CALICO RESOURCES USA CORP.**

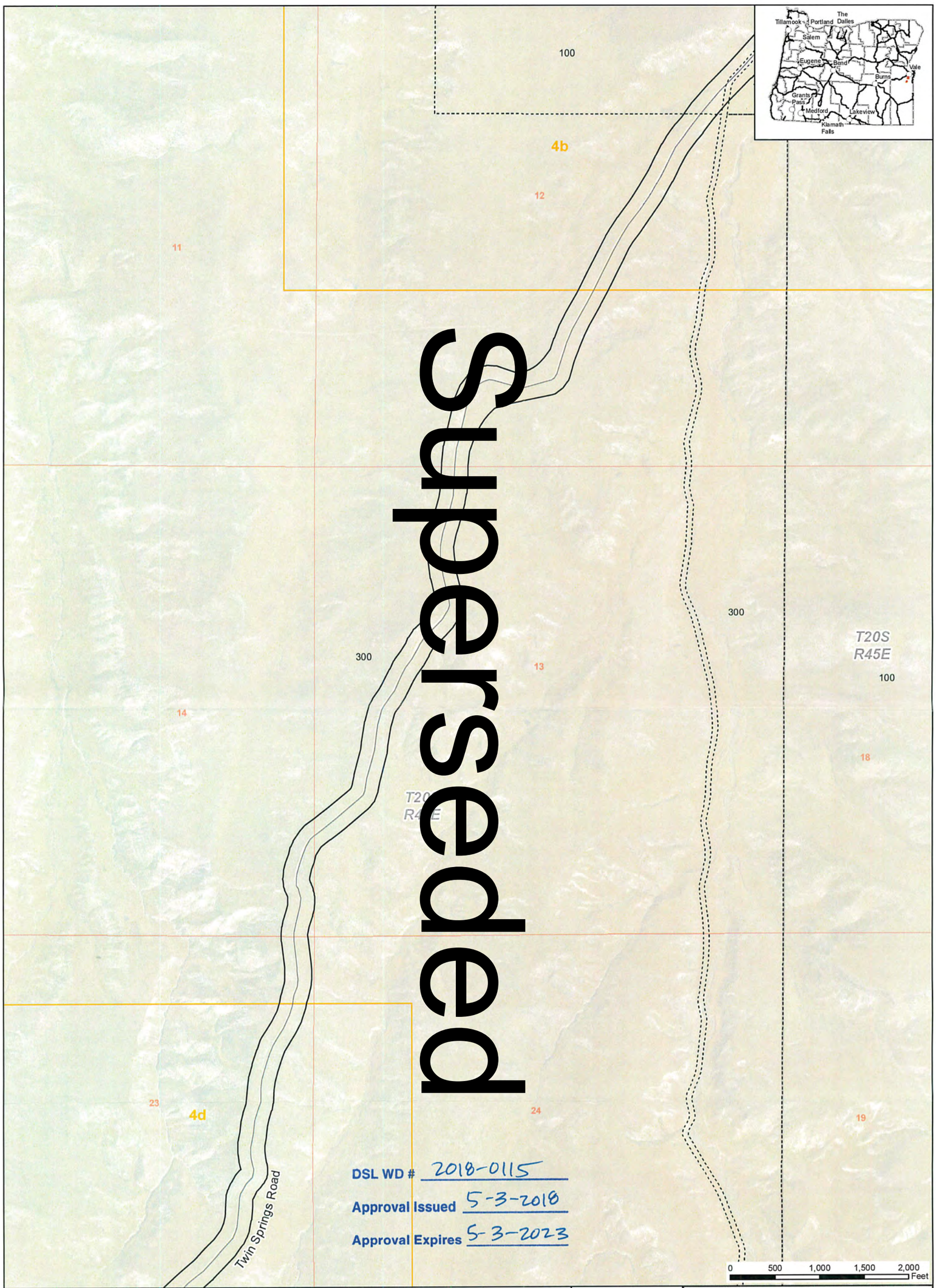
GRASSY MOUNTAIN MINE PROJECT

Wetland Map Book

Figure 4b

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES




Superseded

DSL WD # 2018-0115

Approval Issued 5-3-2018

Approval Expires 5-3-2023

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
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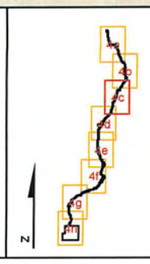



**CALICO RESOURCES USA CORP.**

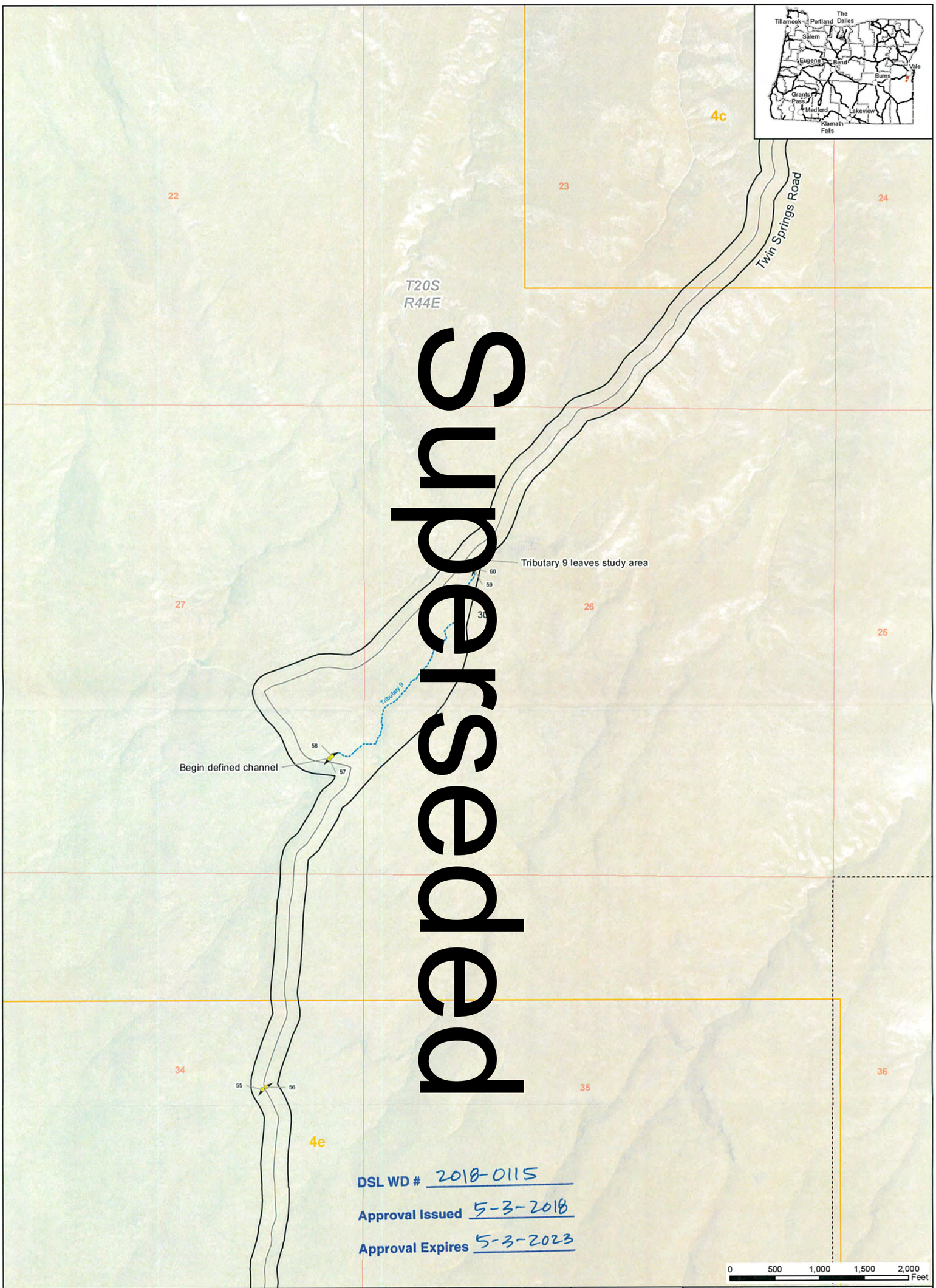
GRASSY MOUNTAIN MINE PROJECT

Wetland Map Book

Figure 4c

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES




**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Ephemeral Drainage

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
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# CALICO RESOURCES USA CORP.

## GRASSY MOUNTAIN MINE PROJECT

## Wetland Map Book

Figure 4d

| | | | |
|---|---|---|---|
| Date: | 01/23/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |

Base Map: 2016 NAIP 1 meter resolution
File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd

EM STRATEGIES


Superseded

T20S R44E

T21S R44E

34 35 03 02 01 10 11 12 15 14

55 56 54 52 53

4d 4f

300 100 100 100

Twin Springs Road

Mitchell Butte Road

DSL WD # 2018-0115

Approval Issued 5-3-2018

Approval Expires 5-3-2023

0 500 1,000 1,500 2,000 Feet

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
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**CALICO RESOURCES USA CORP.**

GRASSY MOUNTAIN MINE PROJECT

Wetland Map Book

Figure 4e

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES


**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Spring
- Soil Pit
- Wetland
- Ephemeral Drainage

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
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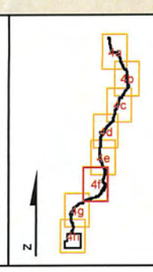



**CALICO RESOURCES USA CORP.**

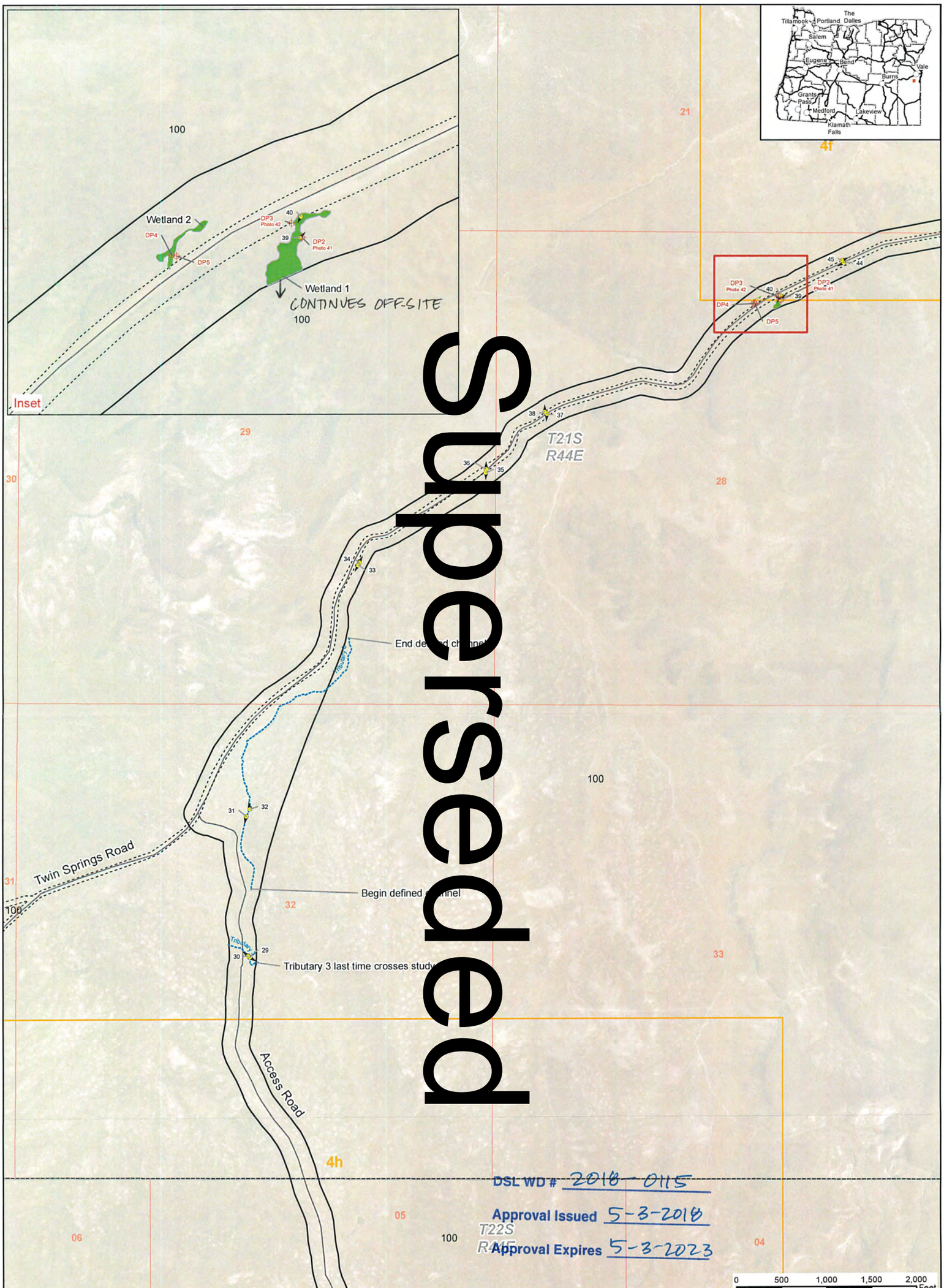
GRASSY MOUNTAIN MINE PROJECT

Wetland Map Book

Figure 4f

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES




superseded

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Soil Pit
- Wetland
- Ephemeral Drainage

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
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**CALICO RESOURCES USA CORP.**

GRASSY MOUNTAIN MINE PROJECT

Wetland Map Book

Figure 4g

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map:2016 NAIP 1 meter resolution | |
| File Name:3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES




DSL WD # 2018-0115

Approval Issued 5-3-2018

Approval Expires 5-3-2023

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Soil Pit
- Schweizer Reservoir
- Ephemeral Drainage
- Intermittent Drainage
- Embankment

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
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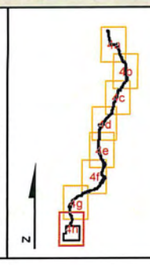


**CALICO RESOURCES USA CORP.**

GRASSY MOUNTAIN MINE PROJECT

Wetland Map Book

Figure 4h

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map:2016 NAIP 1 meter resolution | |
| File Name:3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES

# WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

Fully completed and signed report cover forms and applicable fees are required before report review timelines are initiated by the Department of State Lands. Make checks payable to the Oregon Department of State Lands. To pay fees by credit card, go online at https://apps.oregon.gov/DSL/EPS/program?key=4.

Attach this completed and signed form to the front of an unbound report or include a hard copy with a digital version (single PDF file of the report cover form and report, minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.** A single PDF of the completed cover from and report may be e-mailed to **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail DSL instructions on how to access the file from your ftp or other file sharing website.

## Contact and Authorization Information

☒ Applicant ☐ Owner Name, Firm and Address:
Calico Resources USA Corp
665 Anderson St.
Winnemucca, NV 89445

Business phone # (775) 625-3600
Mobile phone # (optional)
E-mail: nancy@paramountnevada.com

☒ Authorized Legal Agent, Name and Address (if different):
Same as Above
Attention: Nancy J Wolverson

Business phone # (775) 625-3600
Mobile phone # (optional) (775) 770-4615
E-mail: nancy@paramountnevada.com

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

**Typed/Printed Name:** Nancy J Wolverson **Signature:** Digitally signed by Nancy J Wolverson Date: 2018.03.01 11:08:18 -08'00'

Date: 03/01/2018 Special instructions regarding site access: _____

## Project and Site Information

Project Name: Grassy Mountain Mine Project

Latitude: 43.729922 Longitude: -117.337827
**decimal degree** - centroid of site or start & end points of linear project

Proposed Use: hard rock mining

Tax Map # Tax lots: 100, 300, 400, 600, 900
Tax Lot(s)

Tax Map #
Tax Lot(s)



Project Street Address (or other descriptive location):
Malheur County, Oregon, approximately 22 miles south-southwest of Vale, Oregon

Township 22S Range 44E Section see att QQ
Use separate sheet for additional tax and location information

City: n/a County: Malheur

Waterway: Malheur River River Mile: n/a

## Wetland Delineation Information

Wetland Consultant Name, Firm and Address:
Sarah M. Harrelson of EM Strategies, Inc.
1650 Meadow Wood Lane
Reno, NV 89502

Phone # (775) 826-8822
Mobile phone # (if applicable)
E-mail: sarah@emstrats.com

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.
**Consultant Signature:** Sarah M. Harrelson Date: 3/1/18

**Primary Contact** for report review and site access is ☐ Consultant ☐ Applicant/Owner ☒ Authorized Agent

Wetland/Waters Present? ☐ Yes ☐ No | Study Area size: 1,762 acres Total Wetland Acreage: 0.29 acres

## Check Applicable Boxes Below

☐ R-F permit application submitted
☐ Mitigation bank site
☐ Industrial Land Certification Program Site
☐ Wetland restoration/enhancement project (not mitigation)
☒ Previous delineation/application on parcel
If known, previous DSL # WD2015-0432

☒ Fee payment submitted $ $ 437
☐ Fee ($100) for resubmittal of rejected report
☐ Request for Reissuance. See eligibility criteria. (no fee)
DSL # _____ Expiration date _____
☐ LWI shows wetlands or waters on parcel
Wetland ID code _____

## For Office Use Only

DSL Reviewer: _____ Fee Paid Date: ___/___/___ DSL WD # _____

Date Delineation Received: ___/___/___ Scanned: ☐ Electronic: ☐ DSL App.# _____

**Project and Site Information:**

Township and Range Location:

The Wetland Study Area is located in all or portions of: Sections 5 through 8, Township 22 South, Range 44 East (T22S, R44E); Sections 3, 10, 11, 14, 15, 21 through 23, 28, 29, and 32, T21S, R44E; Sections 1, 12 through 14, 23, 26, 27, and 34; T20S, R44E; and Sections 22, 23, 26, 35, and 36, T19S, R44E, Willamette Meridian.

# CALICO RESOURCES USA CORPORATION

# GRASSY MOUNTAIN MINE PROJECT
# MALHEUR COUNTY, OREGON

# WETLAND DELINEATION REPORT

**February 2018**

*Prepared for:*

Calico Resources USA Corp.
665 Anderson Street
Winnemucca, Nevada 89445



*Prepared by:*

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**CALICO RESOURCES USA CORPORATION**
**GRASSY MOUNTAIN MINE PROJECT**
**WETLAND DELINATION REPORT**

## TABLE OF CONTENTS





## TABLES



## APPENDICES

# A. LANDSCAPE SETTING AND LAND USE

## Purpose

The purpose of this wetland delineation report is to characterize existing conditions prior to the start of proposed mining operations at the Calico Resources USA Corporation (Calico) Grassy Mountain Mine Project (Project), located in Malheur County, Oregon. In addition, this report delineates wetlands within and adjacent to the wetland study area.

## Project Location

The Project is located approximately 22 miles south-southwest of Vale (Appendix A, Figure 1), and is approximately 1,762 acres in size (Wetland Study Area) (Appendix A, Figure 2).

The Wetland Study Area is located in all or portions of: Sections 5 through 8, Township 22 South, Range 44 East (T22S, R44E) Willamette Meridian (WM); Sections 3, 10, 11, 14, 15, 21 through 23, 28, 29, and 32, T21S, R44E; Sections 1, 6, 7, 12 through 14, 23, 26, 27, and 34; T20S, R44E; and Sections 22, 23, 26, 35, and 36, T19S, R44E, WM, on lands administered by the Bureau of Land Management, Vale District Office (BLM), and private land controlled by others.

## Project Background



A portion of the Wetland Study Area was surveyed for wetlands and non-wetland waters by HDR Engineering, Inc. (HDR) in 2012, identified as Tax Lot 101 on Figure 2 in Appendix A. HDR did not identify any surface waters within the 2012 survey area (HDR 2012). HDR conducted an additional survey of a second portion of the Wetland Study Area in 2015 (Appendix A, Figure 2), which identified three ephemeral drainages and one pond (Schweizer Reservoir). Results of the 2015 survey are discussed in detail in Section E of this report. The remainder of the Wetland Study Area was surveyed by EM Strategies (EMS) in 2017 (Appendix A, Figure 2).

## Vegetation

With the exception of 0.3 mile of the northern portion of the Wetland Study Area which is active agriculture row crops, most of the vegetation within the Wetland Study Area is a desert-rangeland type with sagebrush and grasses as the dominant species (HDR 2015, EMS 2017). The area has been extensively grazed, and portions of the Wetland Study Area were re-seeded after a wildfire with a crested wheatgrass (*Agropyron cristatum*)-dominated seed mix. Five vegetation community types were identified within the Wetland Study Area during the 2015 and 2017 surveys:

1. Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*)/crested wheatgrass community;
2. Crested wheatgrass seeding community;
3. Bluebunch wheatgrass (*Pseudoroegneria spicata* ssp. *spicata*)/cheatgrass (*Bromus tectorum*)/annual community;
4. Mountain big sagebrush/bluebunch wheatgrass community; and

5. Burned yellow rabbitbrush (*Chrysothamnus viscidiflorus*)/bluebunch wheatgrass community.

**Topography**

Topography within the Wetland Study Area consists of large rolling hills and open valleys. Elevations range from 2,320 feet to 3,800 feet above mean sea level. Generally, slopes range from two to 15 percent.

**Geology and Soils**

Geology in the Wetland Study Area consists primarily of a thick sequence of arkosic sandstone, clayey siltstone, and reworked tuffs that are locally capped by olivine basalt flows (ACZ Inc. 1993). A Natural Resources Conservation Service (NRCS) soil survey was not available for the Wetland Study Area. Field investigations conducted by HDR in 2012 and 2015, and by EMS in 2017, determined that soils generally consist of rocky sandy loams. There are smaller areas of sandy clay soils.

**Land Use**

Past and current activities within the vicinity of the Wetland Study Area include mineral exploration, livestock grazing, and recreation.



## B. SITE ALTERATIONS

Site alterations within the Wetland Study Area include agricultural fields and heavy livestock grazing. Additional site alterations within the vicinity of the Wetland Study Area include many cut and fill roads used for vehicle access to various sites, and surface disturbance due to drill pads from past exploration activities which occurred between 1986 and 2017.

## C. PRECIPITATION DATA AND ANALYSIS

The nearest weather station is at the Owyhee Dam, station number 356405, located approximately 5.3 miles southeast of the Wetland Study Area. Although there was no precipitation during the May 18 through 21, 2017, site investigation, 0.43 inch was recorded for May 17, 2017 (NRCS 2017). The total amount of precipitation recorded for May 4 through 17 was 0.75 inch. Table 1 summarizes the percent of normal precipitation for the water year to date and the monthly percent of normal for each of the three months preceding the field investigation.

**Table 1. Summary of Precipitation Data at Owyhee Dam**

| Category | Feb | March | April | May | Water Year-to-Date (Jan-May) |
|---|---|---|---|---|---|
| Monthly Total Precipitation 2017 (inches)[1] | 0.91 | 1.67 | 1.34 | 0.76 | 8.17 |
| Monthly Normal 1981-2010 (inches)[1] | 0.76 | 0.89 | 0.96 | 1.16 | 4.69 |
| Percent of Normal | 120% | 188% | 140% | 66% | 174% |

[1]NRCS (2017)

## D. METHODS

This wetland delineation was performed according to the standards set forth in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Final Arid West Supplement* (Environmental Laboratory 2008). EMS reviewed existing literature, including United States Geological Survey (USGS) topographic maps, aerial imagery, NRCS soils data (not available for the Wetland Study Area), National Wetland Inventory (NWI) maps, and National Hydrography Dataset (NHD) hydrology data to evaluate the physical features of the Wetland Study Area. The data review facilitated the identification of potential wetland areas and prioritization of field survey areas. Stream channels were evaluated for flow duration and presence of an ordinary high-water mark (OHWM) using the methods outlined in the *Streamflow Duration Assessment Method for Oregon* (SDAM) (Nadeau 2011).

EMS conducted wetland field surveys May 18 through 21, 2017; HDR conducted wetland field surveys July 5, 2012, and April 7, 2015. Paired soil pits were used to evaluate the soils, vegetation, and hydrology of potential wetlands. Wetland and stream boundaries were mapped using a handheld Trimble GeoExplorer XH6000 global positioning system (GPS) unit. Photographs were taken at each soil pit and of the surrounding environment. GPS coordinates of each feature were recorded. United States Army Corps of Engineers (USACE) wetland delineation data forms were completed to record vegetation, soil, and hydrology conditions at each site. Data from the 2015 and 2017 surveys (no data from the 2012 survey were collected within the current Wetland Study Area) are included in the following appendices: wetland delineation data forms and SDAM forms are presented in Appendix B; and photos are presented in Appendix C.



## E. DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS

A total of two wetlands, two springs, one pond, one artificial waterway, and ten tributary drainages occur within the Wetland Study Area (Figures 4a through 4h). EMS identified two wetlands, two springs, one artificial waterway (J-H Canal) and ten tributary drainages within the 2017 survey area. HDR identified three tributary drainages and one pond (Schweizer Reservoir) within the 2015 survey area (HDR 2015). The three tributary drainages surveyed by HDR are contiguous with drainages surveyed by EMS. Both survey areas are shown on Figure 2 in Appendix A. Each of these waters is discussed in detail in the appropriate sections below and are illustrated on Figures 4a through 4h.

NWI Mapping

NWI mapping (United States Fish and Wildlife Service [USFWS] 1983) indicated the presence of two emergent wetlands and three ponds within or partially within the Wetland Study Area (Appendix A, Figures 3a through 3h). The NWI describes the wetlands as PEM1Ch (palustrine, emergent, persistent, seasonally flooded, diked/impounded) and PEM1B (palustrine, emergent, persistent, saturated). The ponds are described as PUBH (palustrine, unconsolidated bottom, permanently flooded), PUSCx (palustrine, unconsolidated shore, excavated), and PUSCh (palustrine, unconsolidated shore, seasonally flooded, diked/impounded). The third pond, designated PUSCh, corresponds to Schweizer Reservoir on USGS maps. Two palustrine emergent

wetlands (Wetlands 1 and 2), two springs (Springs 1 and 2), and one impounded area (Schweitzer Reservoir) were identified during the 2017 and 2015 field investigations.

Wetland 1

Wetland 1, shown on Figure 4g (Appendix A), covers approximately 0.25 acre (0.09 acre extends outside of the Wetland Study Area), and is mapped by the NWI as PEM1B (palustrine, emergent, persistent, and saturated; USFWS 1983). Vegetation in Wetland 1 consisted primarily of cheatgrass and Great Basin wild rye (*Leymus cinereus*); other species observed included Baltic rush (*Juncus balticus*), cursed buttercup (*Ranunculus sceleratus*), and bulbous bluegrass (*Poa bulbosa*). Wetland soil colors were dark and consisted of sandy clay with small amounts of muck and displayed the redox dark surface hydric soil indicator. Hydrology within Wetland 1 appeared to be associated with a small, unmapped spring complex and consisted of one inch of surface water, and a high water table within two inches of the surface within the soil pit.

Wetland 2

Wetland 2, shown on Figure 4g (Appendix A), covers approximately 0.04 acre occurring entirely within the Wetland Study Area, and is not mapped by the NWI (USFWS 1983). Vegetation in Wetland 2 consisted primarily of Great Basin wild rye and bulbous bluegrass; other species observed included fowl bluegrass (*Poa palustris*) and meadow barley (*Hordeum brachyantherum*). Wetland soil colors were dark and consisted of sandy loam and displayed the redox dark surface hydric soil indicator. Hydrology within Wetland 2 appeared to be associated with a small, unmapped spring complex and consisted of two inches of surface water, and a high water table within three inches of the surface within the soil pit.



Springs 1 and 2

At springs one and two, also shown on Figure 4g (Appendix A), bubbling water was observed at the surface. Neither of the springs are indicated on USGS maps. Spring 1 comes to the surface along the side of Twin Springs Road approximately 35 feet to the south of Wetland 2. Water was observed flowing along the surface of the ground along the side of the road for approximately 285 feet before sinking into the surrounding soil. The soil was mostly bare in the area of Spring 1, and no wetland vegetation was observed. Spring 2 is located within Wetland 2, and water was observed bubbling from Spring 2 and flowing into Wetland 2.

Non-wetland Waters

*Schweizer Reservoir*

The boundary of Schweizer Reservoir and the top of the embankment were delineated (Appendix A, Figure 4h). An upland soil pit (Soil Pit #8A-2015) was dug at the low point to confirm that the area did not meet wetland criteria (HDR 2015).

*Tributary Drainages*

Ten un-named tributary drainages and one artificial waterway (J-H Canal) occur within the Wetland Study Area. Each drainage was mapped using a GPS unit, assessed using SDAM, and upstream/downstream photos were taken. SDAM survey results of the drainages (Table 2) indicate that the ten drainages displayed characteristics of an ephemeral channel; a portion of Tributary 2 (Tributary 2b) showed characteristics of an intermittent channel; and the J-H Canal was found to be an artificial waterway created for the purposes of crop irrigation. SDAM forms for each drainage and upstream/downstream reach photographs are included in Appendix B and Appendix C, respectively.

The J-H Canal crosses the proposed Access Road approximately 0.4 mile from the northern boundary of the Wetland Study Area (Appendix A, Figures 3a and 4a). This waterway is used for irrigation of the adjacent agricultural fields and is approximately five percent vegetated (Appendix D, photos 71 and 72). An earthen berm, approximately ten feet in height, occurs on the right bank of the canal, and a water control structure was observed on the left bank. Historically, the canal appears on both the 1952 General Land Office Survey Plat map where it is labeled as "Ditch," and on the 1967 Vale West, Oregon USGS 7.5"-Series Topographic Quadrangle, where it is labeled as "J-H Canal." Currently, NWI classifies the canal as a riverine wetland (Appendix A, Figure 3a).

**Table 2. Summary of Non-Wetland Waters**



| Drainage Name | SDAM Determination | Channel Width (feet) | Map Sheet Number | Photo Number |
|---|---|---|---|---|
| Tributary 1 | Ephemeral | 2-5 | 4h | 1 and 2 |
| Tributary 2a[1] | Ephemeral | 2-4 | 4h | 5-8 and 10 |
| Tributary 2b | Intermittent | 6-21 | 4h | 3 and 4 |
| Tributary 3[2] | Ephemeral | 2-12 | 4g and 4h | 13-18 and 29-30 |
| Tributary 4[2] | Ephemeral | 1-4 | 4h | 19-23 |
| Tributary 5 | Ephemeral | 5-8 | 4h | 24 and 25 |
| Tributary 6 | Ephemeral | 4-14 | 4g | 31 and 32 |
| Tributary 7 | Ephemeral | 3-8 | 4f | 46 and 47 |
| Tributary 8 | Ephemeral | 2-6 | 4f | 48-51 |
| Tributary 9 | Ephemeral | 3-7 | 4d | 57-60 |
| Tributary 10 | Ephemeral | 2-20 | 4a and 4b | 65-70 |
| J-H Canal | Artificial Water Body | 13-30 | 4a | 71 and 72 |

[1] Tributary 2a was assessed by HDR during the 2015 survey.
[2] Portions of Tributaries 3 and 4 were assessed by HDR during the 2015 survey.

## F. DEVIATION FROM LOCAL WETLANDS INVENTORY OR NATIONAL WETLANDS INVENTORY

Local Wetlands Inventory mapping was not available for the Wetland Study Area; NWI maps are included in Figures 3a-3h (Appendix A). NWI mapping indicated the presence of two emergent wetlands within or partially within the Wetland Study Area. One of these wetlands was confirmed as being Wetland 1, delineated as part of this study (Appendix A, Figures 3g and 4g). However, data from soil pit DP1 (Appendix B) indicate that the second mapped emergent wetland

(Appendix A, Figures 3h and 4h), does not meet wetland criteria. In addition, the presence of Wetland 2, a spring-fed emergent wetland delineated during this study (DP4 and DP5, Appendix B), was not shown on NWI mapping (Appendix A, Figures 3g and 4g).

NWI mapping shows two freshwater ponds within the northern portion of the Wetland Study Area (Appendix A, Figure 3g and 3e). One of these features did not contain water at the time of investigation and appeared to be a small, bermed area that was used to capture water from seeps that feed Wetland 1, but had since been abandoned (Appendix A, Figure 3g). Vegetation in this area consisted of upland species such as cheatgrass and bulbous bluegrass. The second feature is an existing stock water pond that is located outside of the Wetland Study Area, and not inside as indicated by NWI mapping (Appendix A, Figure 3e). Photos of these features are included in Appendix D (photos 43 and 54).

NWI maps indicate numerous intermittent, temporarily flooded streambeds within the Wetland Study Area that, in general, flow from south to north. Based on the results of this study, these areas are ephemeral stream channels, not riverine wetlands. Ten ephemeral tributary drainages, one intermittent drainage, and one artificial water body (J-H Canal) that correspond with NWI mapping were delineated within the Wetland Study Area (Section E).

## G. MAPPING METHOD



The 2017 mapping has been prepared using wetland and stream boundaries that were recorded using a handheld GPS unit (Trimble GeoExplorer XH6000). For the 2017 field work, approximately 60 percent of positions were captured having a horizontal accuracy of less than 0.5 meter, and 91.5 percent of positions were captured having a horizontal accuracy of less than one meter after post-processing. For the 2013 field work, 93.8 percent of positions were captured having a horizontal accuracy of less than 0.5 meter after post-processing, and for the 2015 field work, 84.9 percent of positions were captured having a horizontal accuracy of less than 0.5 meter after post-processing.

## H. ADDITIONAL INFORMATION

Oregon Department of Fish and Wildlife (ODFW) data were analyzed to determine if there was a fish presence at any of the drainages within the Wetland Study Area. The nearest fish habitat to the Wetland Study Area was for redband (*Oncorhynchus mykiss*), located approximately 0.5 mile north of the north end of the Wetland Study Area (ODFW 2017). Given that all drainages observed within the Wetland Study Area are ephemeral or intermittent, it is unlikely that fish are present within any of the drainages within the Wetland Study Area. No fish were observed within the canal during field studies. A county soil survey map was not available for this location.

## I. RESULTS AND CONCLUSIONS

A total of two wetlands, two springs, one pond, one artificial waterway, and ten tributary drainages occur within the Wetland Study Area (Figures 4a through 4h). EMS identified two wetlands, two springs, one artificial waterway (J-H Canal) and ten tributary drainages within the 2017 survey area. HDR identified three tributary drainages and one pond (Schweizer Reservoir)

within the 2015 survey area (HDR 2015). The three tributary drainages surveyed by HDR are contiguous with drainages surveyed by EMS.

Two PEM wetlands, totaling 0.29 acre (0.09 acre of which occur outside of the Wetland Study Area), were delineated in the Wetland Study Area by EMS during the May 18 through 21, 2017, field surveys using methods recommended in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. Wetlands 1 and 2 are located within the Sagebrush Gulch drainage, which crosses a small portion of the Wetland Study Area (Appendix A, Figure 4g). The wetlands are associated with ground water seeps/springs located in the immediate area, but do not appear to be connected to any downstream waters. A total of ten drainages were identified within the Wetland Study Area by HDR and EMS during the 2015 and 2017 surveys. A portion of one of the drainages, Tributary 2b, has been determined to be intermittent. All other tributary channels are considered ephemeral. One artificial water body, the J-H Canal, was identified in the northern portion of the Wetland Study Area.

Wetlands in the Wetland Study Area do not have USACE jurisdictional status because they do not demonstrate a significant nexus to a traditional navigable water of the United States. A desktop analysis of drainages within the Wetland Study Area indicated that, in general, all the drainages flow north, eventually leading into the J-H Canal, which empties into the Malheur River approximately 5.5 miles northeast of the Wetland Study Area. The Malheur River flows into the Snake River, eventually feeding into the Columbia River. All ten drainages identified during the wetland study may be considered jurisdictional by the USACE if the connection to the Malheur River is confirmed via additional field studies.



The Oregon Department of State Lands (DSL), typically requires a permit for the placing of fill into "waters of the state." Waters of the state that meet jurisdictional requirements within the Wetland Study Area include Wetlands 1 and 2, and Tributary 2b. Ephemeral tributary drainages 1, 2a, and 3 through 10 do not meet DSL jurisdictional status because they have been determined to be ephemeral drainages.

## J. DISCLAIMER

This wetland delineation and report documents the best professional judgment and conclusions of the EMS wetland investigation team. This report should be considered a draft until it is reviewed and approved in writing by the Oregon DSL in accordance with Oregon Administrative Rules 141-090-0005 through 141-090-0055.

## K. REFERENCES

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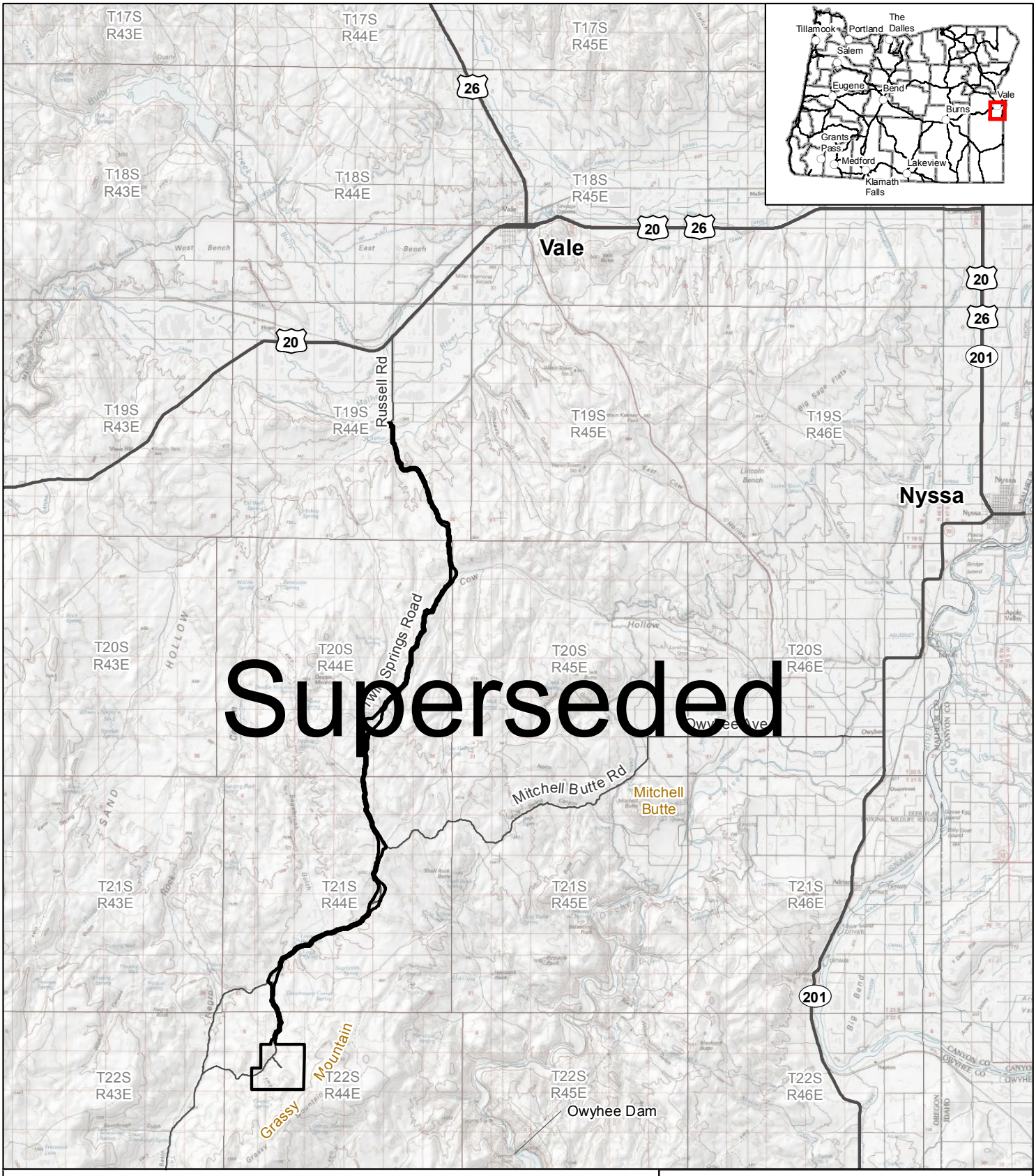
# APPENDIX A

## FIGURES




**Explanation**

- Wetland Study Area
- Existing Road

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Basemap:** Copyright:© 2013 National Geographic Society, i-cubed

0 5,000 10,000 15,000 20,000 Feet
0 1 2 3 4 Miles

N

Projection: UTM Zone 11 North, NAD83, meters

# CALICO RESOURCES USA CORP.

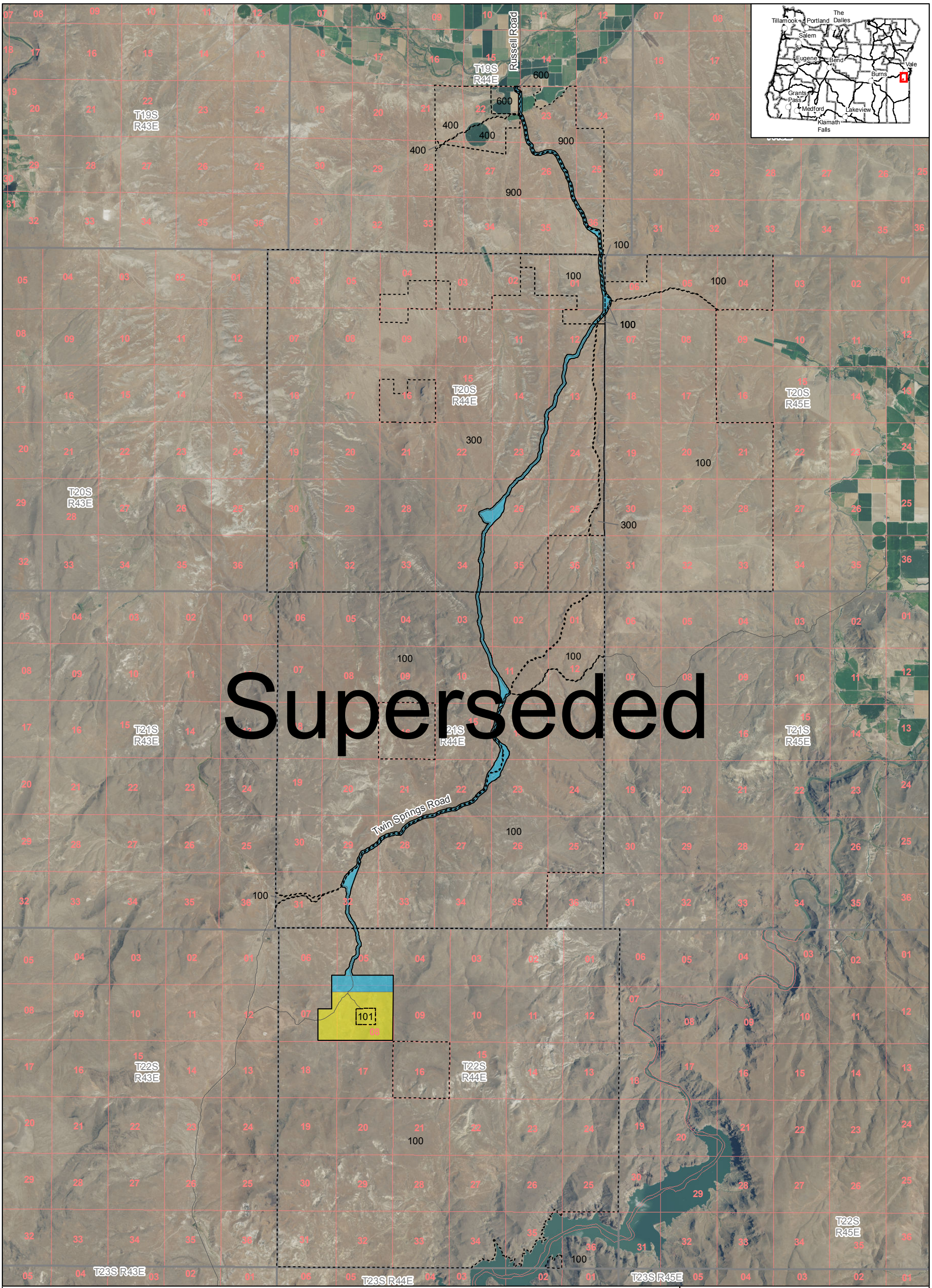
## GRASSY MOUNTAIN MINE PROJECT

## Location Map

Figure 1

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: USGS 100K quads: Boise, Brogan, Vale, Weiser | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig01_Location.mxd | |

EM STRATEGIES




Superseded

**Explanation**

- Wetland Study Area
- Tax Lot
- Wetland Study Area (2017)
- HDR Wetland Study Area (2015)
- Existing Road

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

0 5,000 10,000 15,000 20,000 Feet
0 1 2 3 4 Miles

N

# CALICO RESOURCES USA CORP.

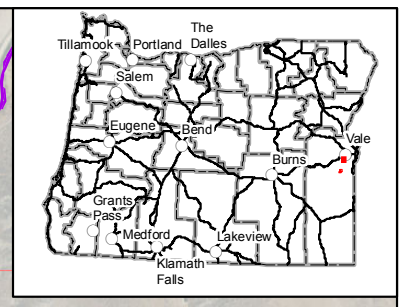
## GRASSY MOUNTAIN MINE PROJECT

## Wetland Study Areas and Tax Lots

Figure 2

| | | | |
|---|---|---|---|
| Date: | 01/19/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |
| Base Map: | 2016 NAIP 1 meter resolution | | |
| File Name: | 3678G_GrassyMtn_BL_WD_Fig02_StudyAreas.mxd | | |

EM STRATEGIES




Russell Road

J-H Canal

Twin Springs Road

T19S
R44E

14
15
22
23
24
25
26
27
34
35
36
3b

Superseded

0 500 1,000 1,500 2,000 Feet

**Explanation**

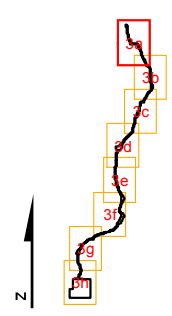
- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

**National Wetlands Inventory (NWI)**

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

**Sources:**
**NWI:** U.S. Fish & Wildlife Service
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

Projection: UTM Zone 11 North, NAD83, meters




# CALICO RESOURCES USA CORP.

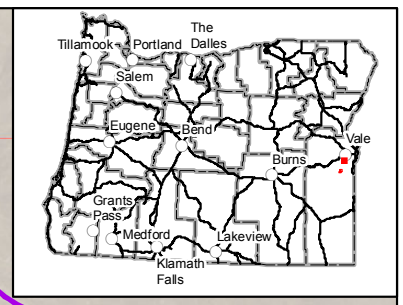
## GRASSY MOUNTAIN MINE PROJECT

## National Wetlands Inventory (NWI)

Figure 3a

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig03_NWI12k.mxd | |

EM STRATEGIES




Twin Springs Road

3a

T19S R44E

T19S R45E

26 25 36 35 31

Superseded

01 02 06

T20S R44E

T20S R45E

Cow Hollow Road

07 11 12

3c

0 500 1,000 1,500 2,000 Feet

**Explanation**

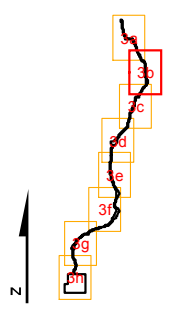
- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

**National Wetlands Inventory (NWI)**

- Freshwater Emergent Wetland
- Riverine

**Sources:**
**NWI:** U.S. Fish & Wildlife Service
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

Projection: UTM Zone 11 North, NAD83, meters




# CALICO RESOURCES USA CORP.

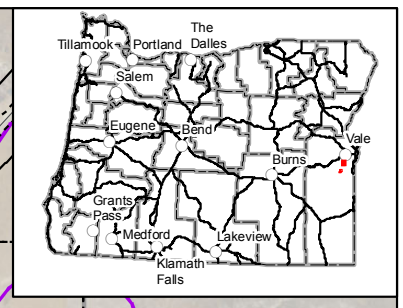
## GRASSY MOUNTAIN MINE PROJECT

## National Wetlands Inventory (NWI)

Figure 3b

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig03_NWI12k.mxd | |

EM STRATEGIES




3b

12

11

Superseded

T20S
R44E

T20S
R45E

13

14

18

23

3d

24

19

Twin Springs Road

0 500 1,000 1,500 2,000 Feet

**Explanation**

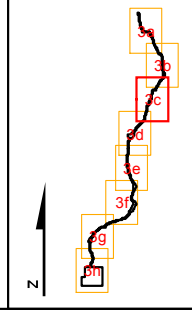
- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

**National Wetlands Inventory (NWI)**

- Freshwater Emergent Wetland
- Riverine

**Sources:**
**NWI:** U.S. Fish & Wildlife Service
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

Projection: UTM Zone 11 North, NAD83, meters




# CALICO RESOURCES USA CORP.

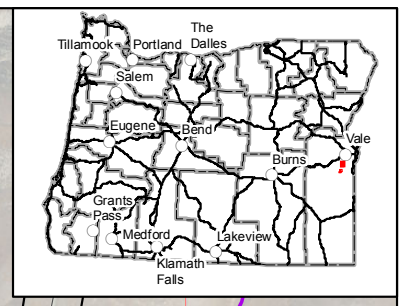
## GRASSY MOUNTAIN MINE PROJECT

## National Wetlands Inventory (NWI)

Figure 3c

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig03_NWI12k.mxd | |

EM STRATEGIES




22
23
24
27
26
25
34
35
36
3c
3e
Twin Springs Road
DM Spring
T20S
R44E

Superseded

0 500 1,000 1,500 2,000 Feet

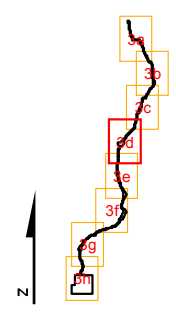
**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

**National Wetlands Inventory (NWI)**

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

**Sources:**
**NWI:** U.S. Fish & Wildlife Service
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway




Projection: UTM Zone 11 North, NAD83, meters

# CALICO RESOURCES USA CORP.

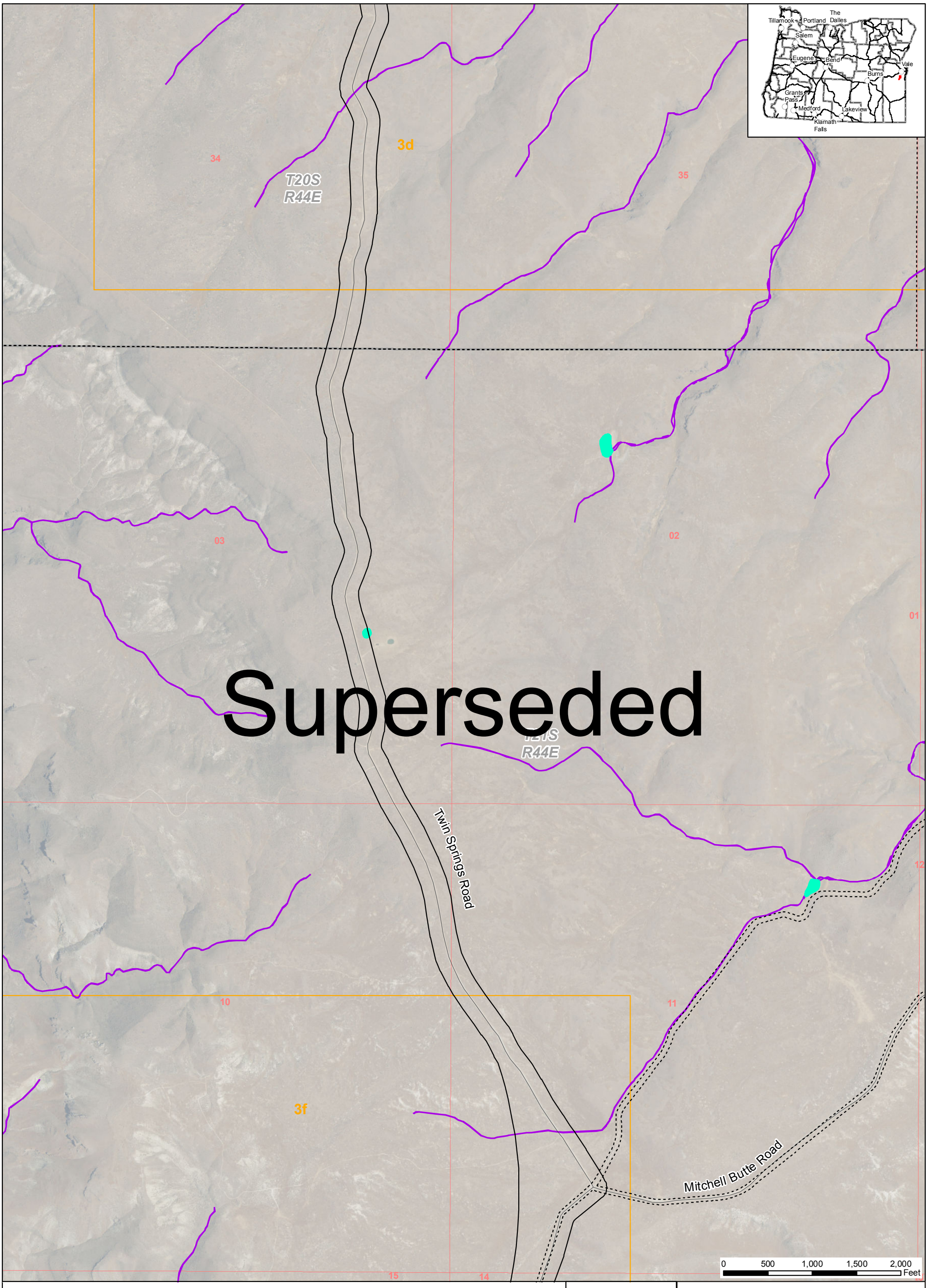
## GRASSY MOUNTAIN MINE PROJECT

## National Wetlands Inventory (NWI)

Figure 3d

| | | | |
|---|---|---|---|
| Date: | 01/19/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |
| Base Map: | 2016 NAIP 1 meter resolution | | |
| File Name: | 3678G_GrassyMtn_BL_WD_Fig03_NWI12k.mxd | | |

EM STRATEGIES




Superseded

**Explanation**

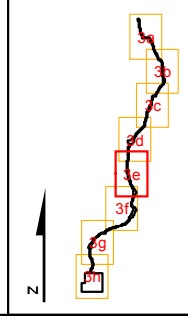
- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

**National Wetlands Inventory (NWI)**

- Freshwater Pond
- Riverine

**Sources:**
**NWI:** U.S. Fish & Wildlife Service
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

Projection: UTM Zone 11 North, NAD83, meters




# CALICO RESOURCES USA CORP.

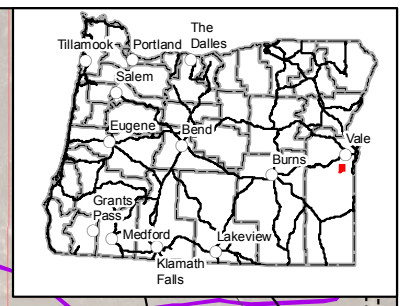
## GRASSY MOUNTAIN MINE PROJECT

## National Wetlands Inventory (NWI)

Figure 3e

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig03_NWI12k.mxd | |

EM STRATEGIES




09
10
3e
11
15
14
16
T21S
R44E
22
21
23
Twin Springs Road
3g
28
27
26



0 500 1,000 1,500 2,000 Feet

**Explanation**

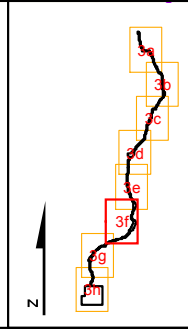
- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

**National Wetlands Inventory (NWI)**

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

**Sources:**
**NWI:** U.S. Fish & Wildlife Service
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

Projection: UTM Zone 11 North, NAD83, meters




# CALICO RESOURCES USA CORP.

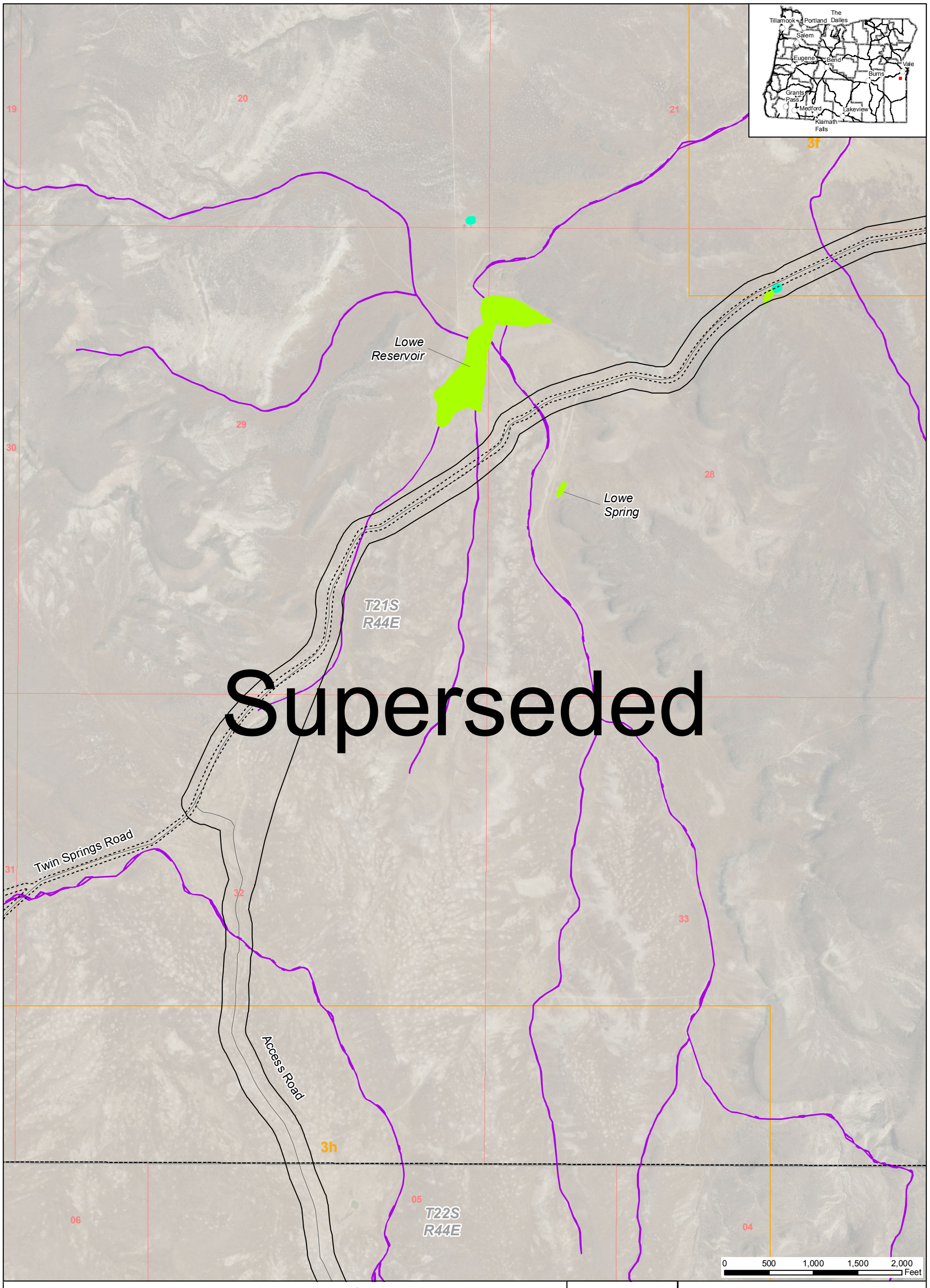
## GRASSY MOUNTAIN MINE PROJECT

## National Wetlands Inventory (NWI)

Figure 3f

| | | | |
|---|---|---|---|
| Date: | 01/19/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |
| Base Map: | 2016 NAIP 1 meter resolution | | |
| File Name: | 3678G_GrassyMtn_BL_WD_Fig03_NWI12k.mxd | | |

EM STRATEGIES






**Explanation**

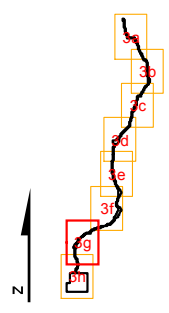
- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

**National Wetlands Inventory (NWI)**

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

**Sources:**
**NWI:** U.S. Fish & Wildlife Service
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

Projection: UTM Zone 11 North, NAD83, meters




# CALICO RESOURCES USA CORP.

## GRASSY MOUNTAIN MINE PROJECT

## National Wetlands Inventory (NWI)

Figure 3g

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig03_NWI12k.mxd | |

EM STRATEGIES


Superseded

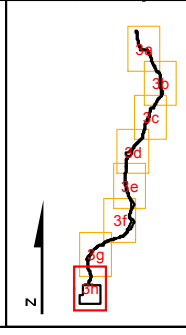
**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

**National Wetlands Inventory (NWI)**

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

**Sources:**
**NWI:** U.S. Fish & Wildlife Service
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway




Projection: UTM Zone 11 North, NAD83, meters

# CALICO RESOURCES USA CORP.

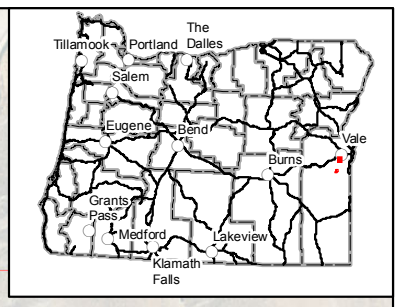
## GRASSY MOUNTAIN MINE PROJECT

## National Wetlands Inventory (NWI)

Figure 3h

| | |
|---|---|
| Date: 01/19/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig03_NWI12k.mxd | |

EM STRATEGIES







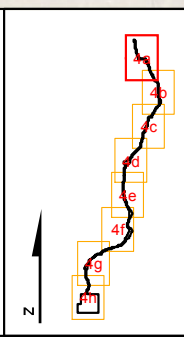

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Ephemeral Drainage
- Artificial Water Body (J-H Canal)

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.




# CALICO RESOURCES USA CORP.

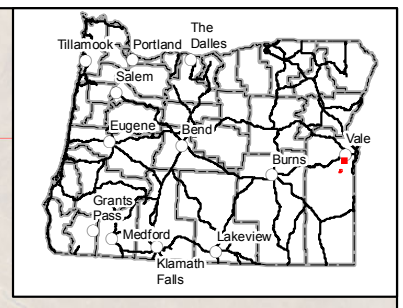
## GRASSY MOUNTAIN MINE PROJECT

## Wetland Map Book

Figure 4a

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES






Superseded

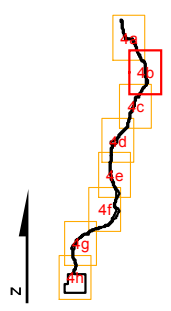
**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Ephemeral Drainage

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.




# CALICO RESOURCES USA CORP.

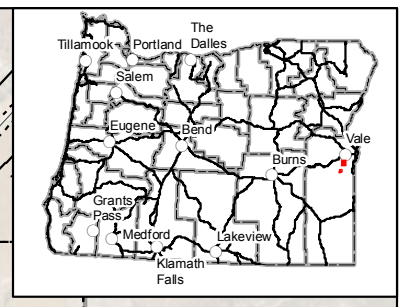
## GRASSY MOUNTAIN MINE PROJECT

## Wetland Map Book

Figure 4b

| | | | |
|---|---|---|---|
| Date: | 01/23/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |
| Base Map: | 2016 NAIP 1 meter resolution | | |
| File Name: | 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | | |

EM STRATEGIES




100

4b

12

11

300

13

14

T20S
R44E

300

T20S
R45E

100

18

Superseded

23

4d

24

19

Twin Springs Road

0 500 1,000 1,500 2,000 Feet

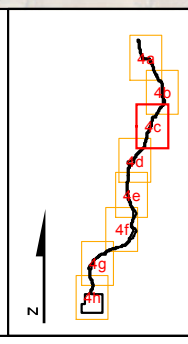
**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.




# CALICO RESOURCES USA CORP.

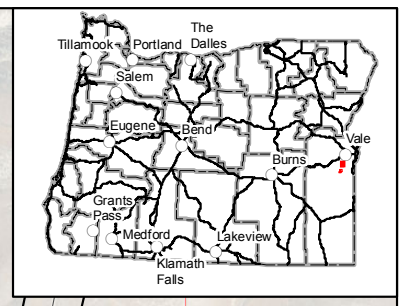
## GRASSY MOUNTAIN MINE PROJECT

## Wetland Map Book

Figure 4c

| | | | |
|---|---|---|---|
| Date: | 01/23/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |
| Base Map: | 2016 NAIP 1 meter resolution | | |
| File Name: | 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | | |

EM STRATEGIES




22
23
24
27
26
25
34
35
36
4c
4e
T20S
R44E
Twin Springs Road
Tributary 9 leaves study area
60
59
300
Tributary 9
58
57
Begin defined channel
55
56



0 500 1,000 1,500 2,000 Feet

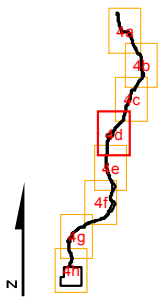
**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Ephemeral Drainage

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.




# CALICO RESOURCES USA CORP.

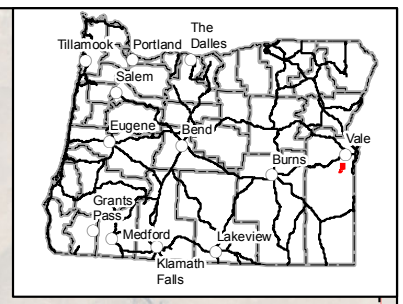
## GRASSY MOUNTAIN MINE PROJECT

## Wetland Map Book

Figure 4d

| | | | |
|---|---|---|---|
| Date: | 01/23/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |
| Base Map: | 2016 NAIP 1 meter resolution | | |
| File Name: | 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | | |

EM STRATEGIES







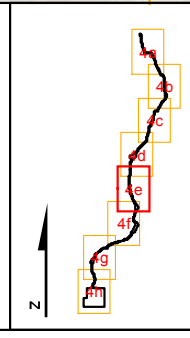

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.




# CALICO RESOURCES USA CORP.

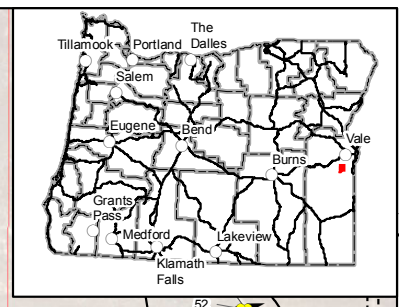
## GRASSY MOUNTAIN MINE PROJECT

## Wetland Map Book

Figure 4e

| | | | |
|---|---|---|---|
| Date: | 01/23/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |
| Base Map: | 2016 NAIP 1 meter resolution | | |
| File Name: | 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | | |

EM STRATEGIES






09
10
11
4e
15
14
16
21
22
23
28
27
26
4g
100
T21S
R44E
52
53
100
Tributary 8 enters study area
Tributary 8
50
51
Tributary 8 leaves study area
Twin Springs Road
Tributary 8 leaves study area
Tributary 8
48
49
47
46
Tributary 8 begin defined channel
DP3
Photo 42
DP2
Photo 41
40
39
45
44
0 500 1,000 1,500 2,000 Feet

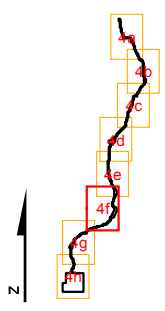
**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Spring
- Soil Pit
- Wetland
- Ephemeral Drainage

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.




# CALICO RESOURCES USA CORP.

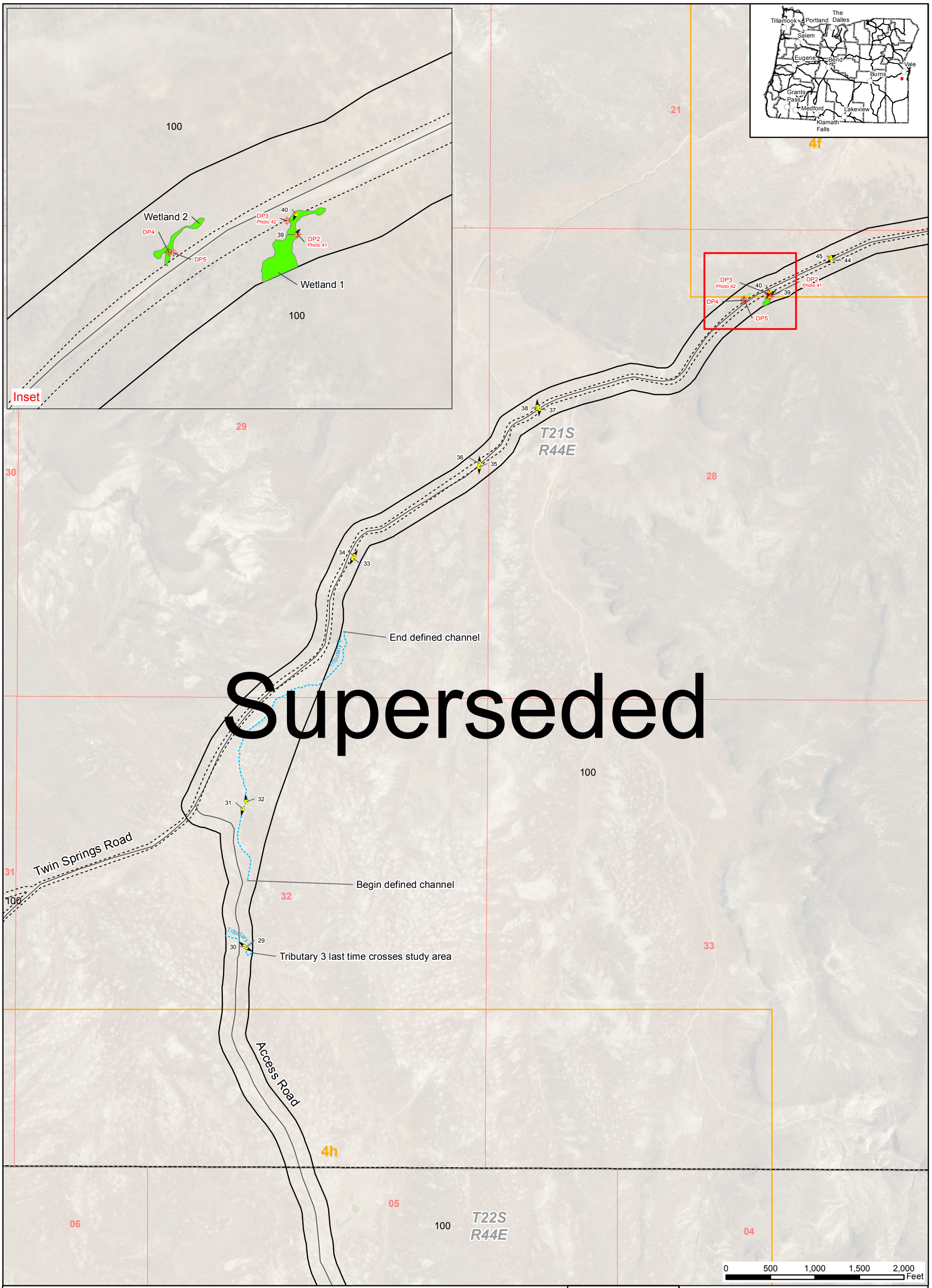
## GRASSY MOUNTAIN MINE PROJECT

## Wetland Map Book

Figure 4f

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES



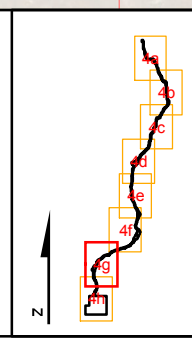

**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Soil Pit
- Wetland
- Ephemeral Drainage

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.




# CALICO RESOURCES USA CORP.

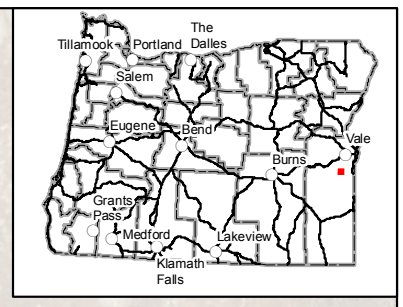
GRASSY MOUNTAIN MINE PROJECT

Wetland Map Book

Figure 4g

| | | | |
|---|---|---|---|
| Date: | 01/23/2018 | Drawn By: | JDB |
| Revised: | | Project No.: | 3678 |
| Base Map: | 2016 NAIP 1 meter resolution | | |
| File Name: | 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | | |

EM STRATEGIES






Access Road

T21S R44E

T22S R44E

31 32 05 06 04 07 09 08 18 17 16

100 100 101

4g

DP1 Photo 26

8A Photo 9 & 10

Tributary 3 re-enters & leaves study area

Tributary 3 leaves study area

Tributary 5 leaves study area

Tributary 2 leaves study area

Begin defined channel

Begin defined channel (EMS)

End of defined channel (HDR)

Schweizer Reservoir

Tributary 1 Tributary 2a Tributary 2b Tributary 3 Tributary 5

1 2 4 5 6 7 8 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

0 500 1,000 1,500 2,000 Feet

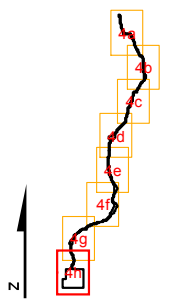
**Explanation**

- Wetland Study Area
- Tax Lot
- Map Extent
- Existing Road
- Photo Point
- Soil Pit
- Schweizer Reservoir
- Ephemeral Drainage
- Intermittent Drainage
- Embankment

Projection: UTM Zone 11 North, NAD83, meters

**Sources:**
**PLSS:** BLM
**Roads:** US Census Bureau
**Tax Lots:** Malheur County, OR Dept of Revenue
**Basemap:** NRCS/USDA Digital Gateway

**Accuracy (EMS):**
Wetlands survey fieldwork completed May 7, 2013. Locations captured using sub-meter resource grade GPS units with 93.8% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing Survey field work completed April 7, 2015. Locations captured using sub-meter resource grade equipment with 84.9% of positions captured having a horizontal accuracy of less than 1/2 meter after post-processing.
Wetlands survey fieldwork conducted May 18-21, 2017. Locations captured using sub-meter resource grade GPS unit with 60.3% of positions captured having a horizontal accuracy of less than 1/2 meter and 91.5% of positions captured having a horizontal accuracy of less than 1 meter after post-processing.




# CALICO RESOURCES USA CORP.

## GRASSY MOUNTAIN MINE PROJECT

## Wetland Map Book

Figure 4h

| | |
|---|---|
| Date: 01/23/2018 | Drawn By: JDB |
| Revised: | Project No.: 3678 |
| Base Map: 2016 NAIP 1 meter resolution | |
| File Name: 3678G_GrassyMtn_BL_WD_Fig04_Results12k.mxd | |

EM STRATEGIES

# APPENDIX B

## WETLAND AND SDAM DATA FORMS

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Grassy Mtn City/County: Malheur Sampling Date: 5/18/17
Applicant/Owner: Calico Resources Inc State: OR Sampling Point: DP1
Investigator(s): S.M. Harrelson (EMS) Section, Township, Range:
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): Northwestern Wheat's Range Lat: 4836882 Long: 470730.9 Datum: NAD83
Soil Map Unit Name: not available NWI classification: PEMICh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ____ | No X | Is the Sampled Area within a Wetland? Yes ____ No X |
| Hydric Soil Present? | Yes ____ | No X | |
| Wetland Hydrology Present? | Yes ____ | No X | |

Remarks:
Precipitation higher than average

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ____) | | | |
| 1. Artemisia tridentata | 15 | Y | n/a |
| 2. Chrysothamnus viscidiflorus | 1 | | n/a |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 16 = Total Cover | | |
| **Herb Stratum** (Plot size: 5') | | | |
| 1. Poa bulbosa | 10 | | FACU |
| 2. Bromus tectorum | 50 | Y | n/a |
| 3. Ceratocephala testiculata | 2 | | n/a |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 62 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____) | | | |
| 1. None | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No X

Remarks:

## SOIL

Sampling Point: DP1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10YR 3/3 | 100 | | | | | clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: hardpan

Depth (inches): 10

**Hydric Soil Present? Yes ____ No X**

Remarks:



## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ____ No ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

**Wetland Hydrology Present? Yes ____ No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DP2 Wetland 1

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Grassy Mtn 3678 City/County: Malheur Sampling Date: 5/19/17

Applicant/Owner: Calico Resources Inc State: OR Sampling Point: DP2

Investigator(s): S.M. Harrelson Section, Township, Range:

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): Columbia/Snake River Plateau Lat: 4940871 Long: 472381.8 Datum: NAD83

Soil Map Unit Name: Not available NWI classification: PEMIB

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes X No ____ | Is the Sampled Area within a Wetland? Yes X No ____ |
| Hydric Soil Present? | Yes X No ____ | |
| Wetland Hydrology Present? | Yes X No ____ | |

Remarks:
Precipitation higher than average

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | ____ = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: ____) | | | |
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | ____ = Total Cover | | |
| Herb Stratum (Plot size: 5') | | | |
| 1. Bromus tectorum | 50 | Y | N/L |
| 2. Leymus cinereus | 50 | Y | FAC |
| 3. Juncus balticus | 5 | | FACW |
| 4. Poa bulbosa | 3 | | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 108 = Total Cover | | |
| Woody Vine Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____



**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 5 | x 2 = | 10 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | 3 | x 4 = | 12 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 58 (A) | | 172 (B) |

Prevalence Index = B/A = 2.9

**Hydrophytic Vegetation Indicators:**

__ Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No ____

Remarks:

## SOIL

Sampling Point: DP2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2 | 10YR 3/1 | 98 | 10YR 3/6 | 2 | C | M | Sandy loam | w/ some muck (5%) |
| 2-12 | 10YR 3/3 | 100 | — | — | — | — | Sandy loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes X No ____

Remarks:

Very dark surface layer, some redox features evident w/ presence of muck



## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes X No ____ Depth (inches): 2

Water Table Present? Yes X No ____ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

**Wetland Hydrology Present?** Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Ground water seep w/ the presence of water flowing along the surface; standing water in hole to w/in 2" of surface

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Grassy Mtn City/County: Malheur Sampling Date: 5/21/17
Applicant/Owner: Calico Resources Inc State: OR Sampling Point: DP3
Investigator(s): S.M. Harrelson (EMS) Section, Township, Range:
Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): convex Slope (%): 1
Subregion (LRR): Northwestern Wheat & Range Lat: 4840881 Long: 472374.5 Datum: NAD83
Soil Map Unit Name: Not available NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Precipitation higher than average this year

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. none | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ____) | | | |
| 1. none | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |
| **Herb Stratum** (Plot size: 5') | | | |
| 1. Bromus hectorum | 70 | Y | n/a |
| 2. Leymus cinereus | 30 | Y | FAC |
| 3. Chorispora tenella | 2 | | n/a |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 102 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____) | | | |
| 1. none | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No X

Remarks:

## SOIL

Sampling Point: DP3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 10YR 3/3 | 100 | | | | | sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No X

Remarks:



## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland 2

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Grassy Mtn City/County: Malheur Sampling Date: 5/21/17
Applicant/Owner: Calico Resources Inc State: OR Sampling Point: DP4
Investigator(s): S.M. Harrelson (EMS) Section, Township, Range:
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): B Lat: 4640858 Long: 472290 Datum: NAD83
Soil Map Unit Name: not available NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes X No ____ | Is the Sampled Area within a Wetland? Yes X No ____ |
| Hydric Soil Present? | Yes X No ____ | |
| Wetland Hydrology Present? | Yes X No ____ | |

Remarks:
Precipitation higher than average

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. none | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | ____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ____) | | | |
| 1. none | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | ____ = Total Cover | | |
| **Herb Stratum** (Plot size: ____) | | | |
| 1. Hordeum brachyantherum | 10 | | FACW |
| 2. Poa bulbosa | 25 | Y | FACU |
| 3. Poa palustris | 20 | Y | FAC |
| 4. Leymus cinereus | 30 | Y | FAC |
| 5. Juncus bufonius | 3 | | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 88 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____) | | | |
| 1. none | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No ____

Remarks:

## SOIL

Sampling Point: DP4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 3/1 | 58 | 10YR 3/6 | 2 | C | M | Sandy loam | |
| | 10YR 3/2 | 40 | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes X No ___

Remarks:



## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes X No ___ Depth (inches): 2

Water Table Present? Yes X No ___ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

**Wetland Hydrology Present?** Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

standing water in hole to w/in 3" of the surface

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Grassy Mtn City/County: Malheur Sampling Date: 5/21/17
Applicant/Owner: Calico Resources Inc State: OR Sampling Point: DP5
Investigator(s): S.M. Harrelson (EMS) Section, Township, Range:
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 1
Subregion (LRR): B Lat: 4840858 Long: 472293.7 Datum: NAD83
Soil Map Unit Name: not available NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

**Is the Sampled Area within a Wetland?** Yes ____ No X

Remarks:
Precipitation higher than average

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. none | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ____) | | | |
| 1. none | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |
| **Herb Stratum** (Plot size: ____) | | | |
| 1. Bromus tectorum | 35 | Y | n/a |
| 2. Pascopyrum smithii | 50 | Y | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 85 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: | |
|---|---|---|
| OBL species | x 1 = | |
| FACW species | x 2 = | |
| FAC species | x 3 = | |
| FACU species | x 4 = | |
| UPL species | x 5 = | |
| Column Totals: (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No X

Remarks:

## SOIL

Sampling Point: DPS

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 3/3 | 100 | | | | | sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No X

Remarks:



## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrology observed

# WETLAND DETERMINATION DATA FORM - ARID WEST REGION

| | | | | | |
|---|---|---|---|---|---|
| **Project Site:** | Calico Resources | **Landform:** | Reservoir | **Slope(%):** | 0-2 |
| **City/County:** | Malheur **State:** Oregon | **Local Relief:** | Depression | **Sub-Region (LRR):** | B |
| **Sampling Date:** | 5/7/2015 | **Section:** | 8 | **Lat:** | 43.67038217 |
| **Applicant/Owner:** | Calico Resources | **Township:** | 22S | **Long:** | -117.353740069 |
| **Sampling Point:** | 8A (2015) | **Range:** | 44E | **Datum:** | NAD 83 |
| **Investigator 1:** | R. Waldher | | | **Soil Map Unit Name:** | N/A |
| **Investigator 2:** | J. Tatum | | | **NWI Classification:** | PUSCH |

**Are climatic / hydrologic conditions on the site typical for this time of year?** ☑ Yes ☐ No **(If No Explain in Remarks)**

**Are Vegetation** ☐ **Soil** ☐ **Hydrology** ☐ **Significantly Disturbed?** **Are normal Conditions present?** ☑ Yes ☐ No

**Are Vegetation** ☐ **Soil** ☐ **Hydrology** ☐ **Naturally Problematic?**

## SUMMARY OF FINDING - Attach a site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| **Hydrophytic Vegetation Present?** | ☐ Yes | ☑ No |
| **Hydric Soil Present?** | ☐ Yes | ☑ No |
| **Wetland Hydrology Present?** | ☐ Yes | ☑ No |

**Is the Sampled Area within a Wetland?** ☐ Yes ☑ No

**Summary Remarks:** Soil pit taken at low point in Schweitzer Reservoir. Tributary channel T-11 (ephemeral) terminates into reservoir. An embankment is present at the north end of the reservoir. The ephemeral drainage continues downslope from the reservoir embankment. Green areas show up on aerial but vegetation was determined to be upland.

## VEGETATION (Use Scientific Names)

| herb | % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| Onopordum acanthium | 8 | | UPL |
| Ceratocephala testiculata | 35 | Y | UPL |
| Bromus tectorum | 40 | Y | UPL |



**Dominance Test Worksheet:**

| | |
|---|---|
| Number of Dominant Species that are OBL, FACW, or FAC: | 0 (A) |
| Total Number of Dominant Species Across all Strata: | 2 (B) |
| Percent of Dominant Species that are OBL, FACW, or FAC: | 0.00% (A/B) |

**Prevalence Index Worksheet**

| | (A) | | (B) |
|---|---|---|---|
| OBL: | 0 | x1 | 0 |
| FACW: | 0 | x2 | 0 |
| FAC: | 0 | x3 | 0 |
| FACU: | 0 | x4 | 0 |
| UPL: | 83 | x5 | 415 |
| | 83 | | 415 |

*Prevalence Index = B/A* 5.00

**Hydrophytic Vegetation Indicators:**

- ☐ Dominance Test > 50%
- ☐ Prevalence Index <= 3.0
- ☐ Morphological Adaptations
- ☐ Problematic Hydrophytic Vegetation

| | | | |
|---|---|---|---|
| **% Bare Ground in Herb Stratum:** | 17 | **Tree Percentage:** | 0 |
| **% Cover of Biotic Crust:** | | **Shrub Percentage:** | 0 |
| | | **Herb Percentage:** | 83 |

**Hydrophytic Vegetation Present?** ☐ Yes ☑ No

**Vegetation Remarks:** Vegetation dominated by weedy upland species.

# WETLAND DETERMINATION DATA FORM - ARID WEST REGION

**SOIL- Profile Description: (Describe to the Depth needed to Document the Indicator or Confirm the Absense of Indicators.)**

| | Matrix | | | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Depth (in) | H | V | C | % | Color (moist) | % | Type | Loc | Texture | Remarks |
| 0 | 4 | 10YR | 4 | 2 | 100 | | | | sandy loam | 1/2" pebbles throughout |
| 4 | 20 | 10YR | 4 | 4 | 100 | | | | sandy loam | Rocks up to 2" diameter |

## SOIL-Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratfied Layers (A5) (LRR C)
- ☐ 1cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

## Indicators for Problematic Hydric Soils:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

☐ Restrictive Layer Present?

Type:

Depth (inches):

Hydric Soil Present? ☐ Yes ☑ No

**Soil Remarks:** No hydric soil indicators present.

## HYDROLOGY-Wetland Hydrology Indicators:



**Primary Indicators (any one indicator is sufficient)**

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

## Field Observations:

- ☐ Surface Water Present? Depth (inches):
- ☐ Water Table Present? Depth (inches):
- ☐ Saturation Present? Depth (inches):

Wetland Hydrology Present? ☐ Yes ☑ No

**Hydrology Remarks:**

Soil was damp at approx 12 inches but no saturation was present. No wetland hyldrology indicators at this location.

# Appendix B: Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name | 3678 / Grassy Mtn | Assessor | HARRELSON |
| Address | | Date | 5/18/17 |
| Waterway Name | Trib 2 | Coordinates at downstream end (ddd.mm.ss) | Lat. 43°40'40.95" N |
| Reach Boundaries | See Fig. 5 | | Long. 117°22'15.92" W |
| Precipitation w/in 48 hours (cm) | 0.8 | Channel Width (m) 0.94 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

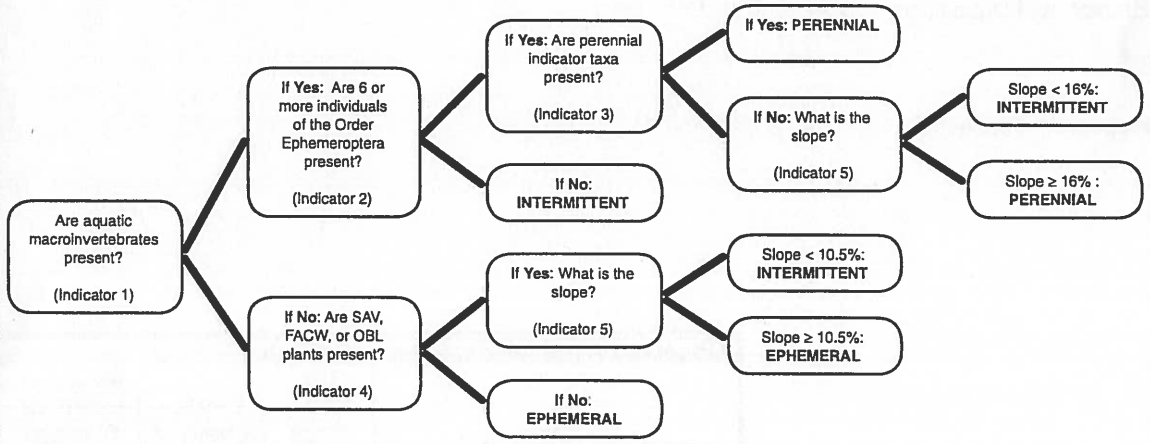
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (refer to Table ) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (Within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 9 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 2

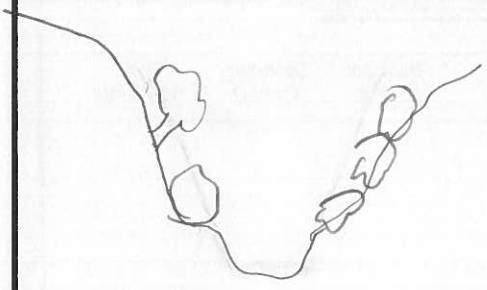
**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.



- no water at time of evaluation
- substrate - cobble, gravel, sand/silt
- run-off from surrounding hillsides

shrubs
sagebrush*
bitter brush

cheatgrass*



**Ancillary Information**

- ☐ Riparian Corridor no
- ☐ Erosion and Deposition - very minor
- ☐ Floodplain Connectivity - no fldpln present

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

# Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name Calico Resources | | Assessor R. Waldher | |
| Address | Trib 2a (2017) | Date 5/8/15 | |
| Waterway Name Tributary 11 (2015) | | Coordinates at downstream end (ddd.mm.ss) | Lat. 46.672165003 N |
| Reach Boundaries ~1000' downstream of embankment | | | Long. -117.3549443 W |
| Precipitation w/in 48 hours (cm) Ø | Channel Width (m) 2ft - 4ft | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") | |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):** None

**Observed Macroinvertebrates:** None

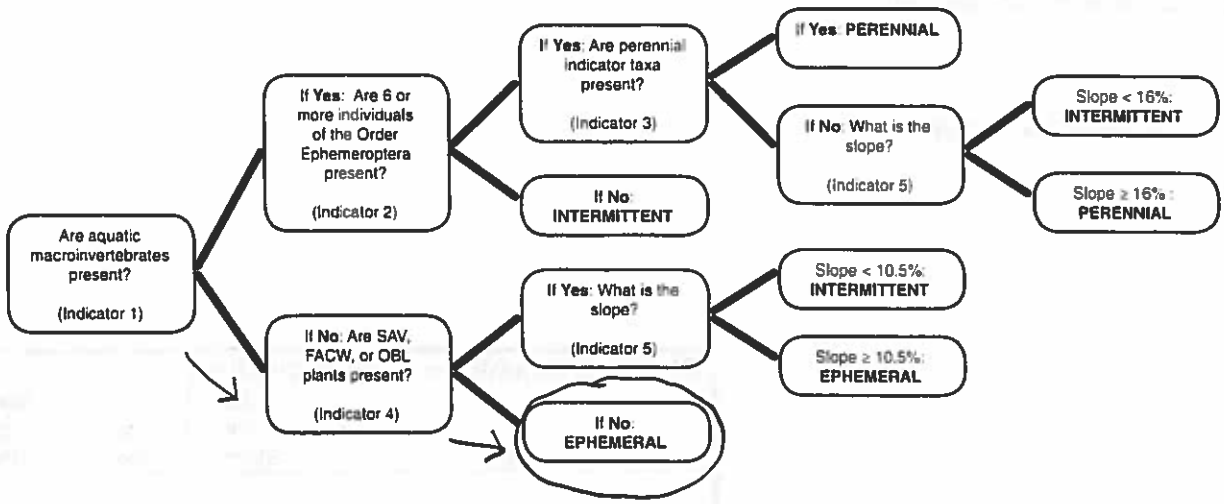
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (refer to Table 1) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (Within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 8-10 % | |

Superseded

**Conclusions**




**Single Indicators:** None
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 2a (2017)

# Streamflow Duration Field Assessment Form T-11 (2015)

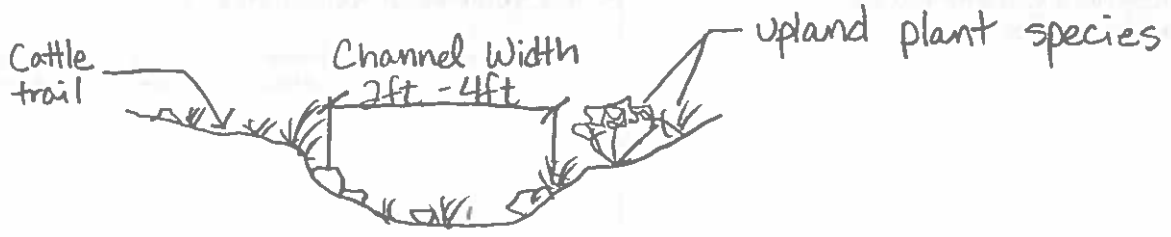
**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.




- Drainage terminates @ schweitzer reservoir (upland conditions)
- Poorly defined OHWM (flow path approx. 2.5ft wide)
- upland vegetation throughout, rocks/boulders present
- Drainage poorly defined below reservoir



**Ancillary Information:**

- ☐ Riparian Corridor
- ☐ Erosion and Deposition
- ☐ Floodplain Connectivity

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| | | | |

# Appendix B: Streamflow Duration Field Assessment Form

2176.83'

308.25

| | | | |
|---|---|---|---|
| Project # / Name 3678 / Grassy MH | | Assessor S.M. Harrelson | |
| Address | | Date 5/18/17 | |
| Waterway Name Trib 2B | | Coordinates at downstream end (ddd.mm.ss) | Lat. 43° 40' 52.89 N |
| Reach Boundaries see Fig 5 | | | Long. 117° 21' 43.77 W |
| Precipitation w/in 48 hours (cm) 0.8 | Channel Width (m) 6 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") | |

**Observed Hydrology**

% of reach w/observed surface flow 14%

% of reach w/any flow (surface or hyporheic) 14%

# of pools observed 2

**Observations**

**Observed Wetland Plants (and indicator status):**

Juncus sp. FACW/OBL
Eleocharis acicularis OBL
Ranunculus cymbalaria OBL
R. sceleratus OBL

**Observed Macroinvertebrates:**

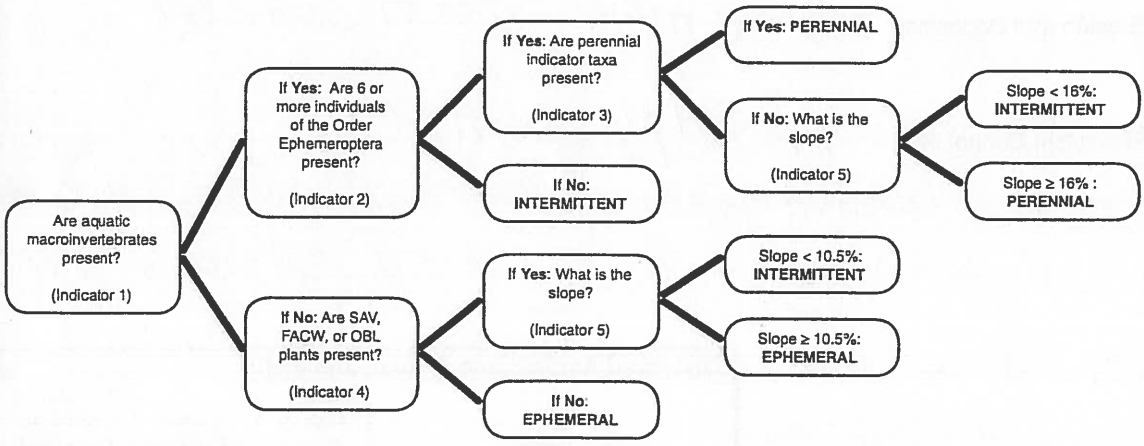
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| water slider | | | 2 |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☒ Yes | ☐ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (Refer to Table 1) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (Within ½ channel width) | ☒ Yes | ☐ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 6 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☐ Ephemeral
☒ Intermittent
☐ Perennial

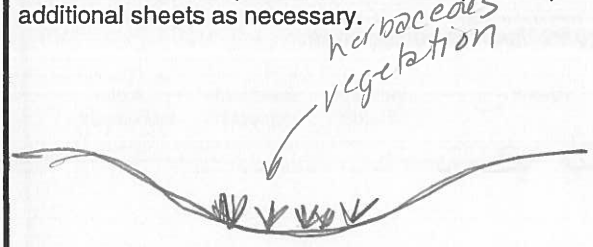
Trib 2B

**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:** Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.




- very limited areas w/ hydrophytic veg
- no hydric soils observed

OHWM = line on bank
Substrate sorting



**Ancillary Information:**

- ☐ Riparian Corridor – none present
- ☐ Erosion and Deposition – some minor erosion observed
- ☐ Floodplain Connectivity – no fldpln observed

* In the southern portion of the study area, this tributary has shifted to the west, leaving 2 old ephemeral cut-off channels. These channels no longer have a connection to the main channel & do not flow anywhere.

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

# Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name | Calico Resources | Assessor | R. Waldher |
| Address | | | Date 5/8/15 |
| Waterway Name | Tributary 9 (2015) Trib 3 (2017) | Coordinates at downstream end (ddd.mm.ss) | Lat. 43.068 75324 N |
| Reach Boundaries | ~500' from southern study boundary | | Long. -117.369 7958 W |
| Precipitation w/in 48 hours (cm) | Ø | Channel Width (m) (ft) | 2ft - 3ft |
| ☐ Disturbed Site / Difficult Situation (Describe in "Notes") | | | |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):** None

**Observed Macroinvertebrates:** None

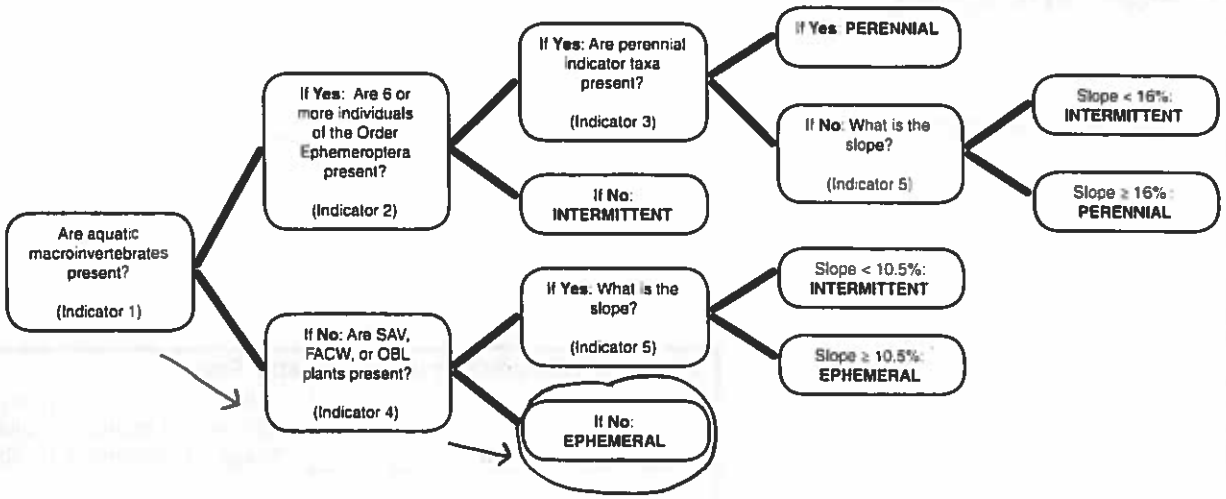
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|

**Indicators**

Superseded

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (refer to Table 1) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (Within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 8-10 % | |

**Conclusions**




**Single Indicators:** None
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 3 (2017)

## Streamflow Duration Field Assessment Form

Tributary 9 (2015)

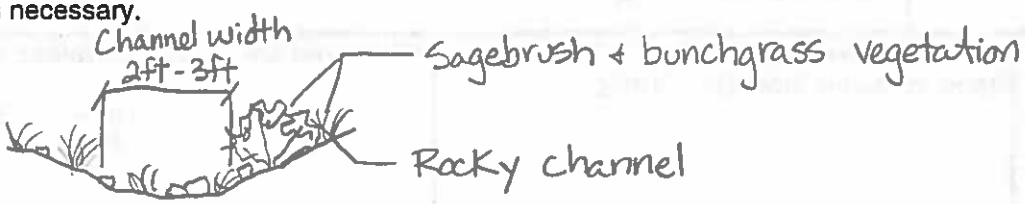
**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.




- OHWM poorly defined along channel (Flow path approx. 2.5 ft wide)
- Delineated same channel in 2013 near road
- Upland vegetation, rocky soils

Superseded

**Ancillary Information:**

- ☐ Riparian Corridor
- ☐ Erosion and Deposition
- ☐ Floodplain Connectivity

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| | | | |

Trib3

# Appendix B: Streamflow Duration Field Assessment Form

| | | |
|---|---|---|
| Project # / Name 3678/Grassy Mtn | Assessor S.M. Harrelson | |
| Address | Date 5/18/17 | |
| Waterway Name Trib3 | Coordinates at downstream end (ddd.mm.ss) Lat. 43°41'10.63" N | |
| Reach Boundaries see Fig 5 | Long. 117°21'41.15 W | |
| Precipitation w/in 48 hours (cm) 0.8 | Channel Width (m) 3 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

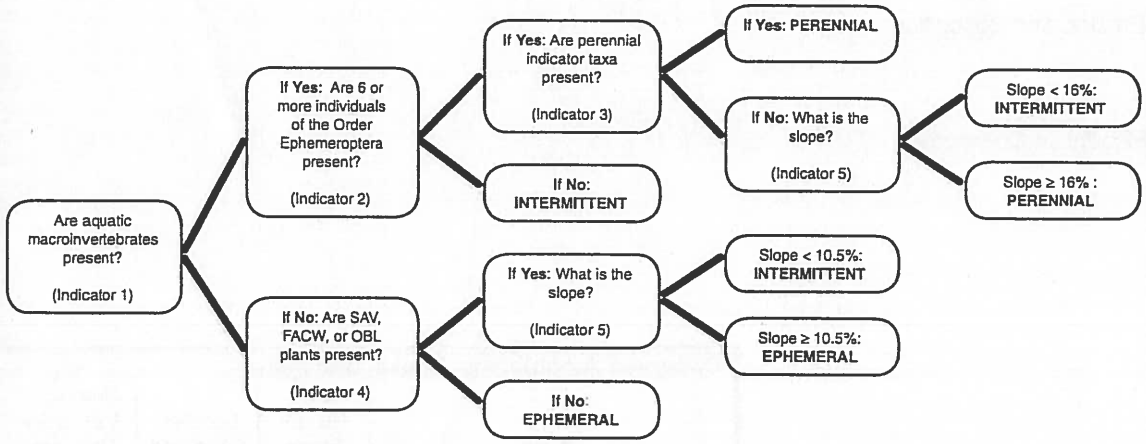
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (Refer to Table ...) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 5 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib3

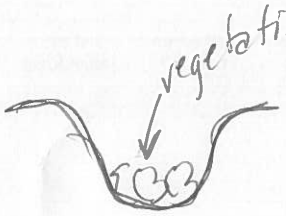
**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:** Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☒ Natural or Anthropogenic Disturbance
- ☐ Other: _____

channel appears to have been bermed in the past to create a pond. Berm no longer functional, pond gone, creating a break in the channel. NWI portion of the channel no longer there.

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.




- dry channel w/in sagebrush
- some cobble
- see photos



**Ancillary Information:**

- ☐ Riparian Corridor — none observed
- ☐ Erosion and Deposition — very little
- ☐ Floodplain Connectivity — none observed

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

# Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name Calico Resources | | Assessor R. Waldher | |
| Address | | | Date 5/8/15 |
| Waterway Name Tributary 10 (2015) Trib 4 (2017) | | Coordinates at downstream end (ddd.mm.ss) | Lat. 43.66879619 N |
| Reach Boundaries ~500' from southern study boundary | | | Long. -117.363504 W |
| Precipitation w/in 48 hours (cm) Ø | Channel Width (m) 3ft-4ft | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") | |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):** None

**Observed Macroinvertebrates:** None

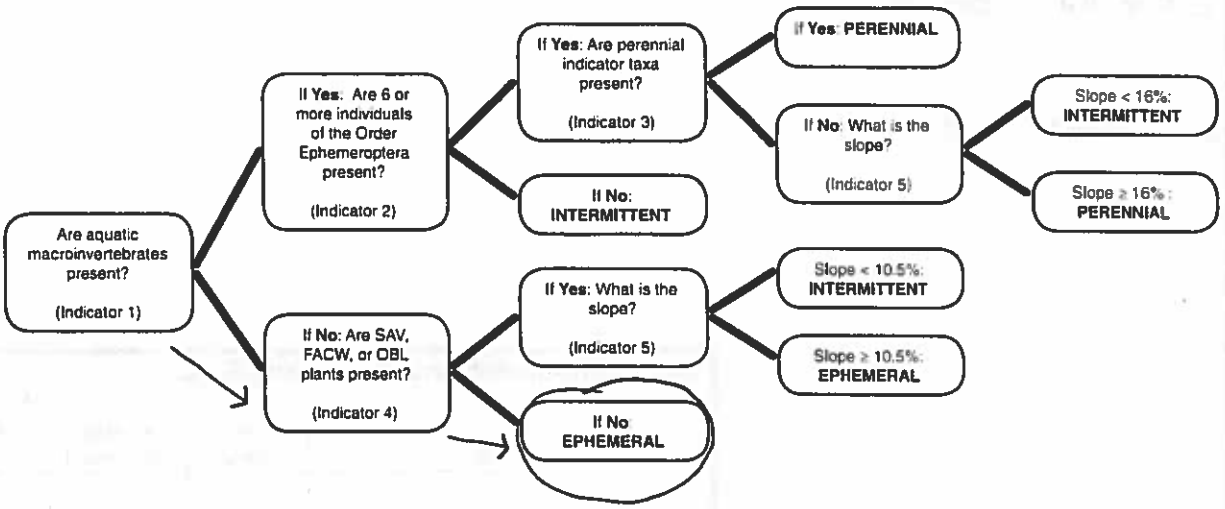
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (refer to Table 1) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (Within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 6-10 % | |

Superseded

**Conclusions**




**Single Indicators:** None

☐ Fish

☐ Amphibians

**Finding:**

☒ Ephemeral

☐ Intermittent

☐ Perennial

Trib 4 (2017)

# Streamflow Duration Field Assessment Form T-10(2015)

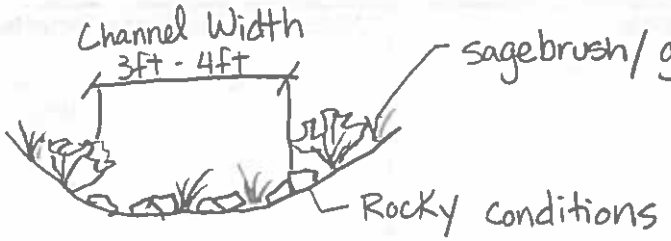
**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.




- sparse upland vegetation
- very rocky drainage
- Poorly defined alluvial flow path approx. 3 ft wide)



**Ancillary Information:**

- ☐ Riparian Corridor
- ☐ Erosion and Deposition
- ☐ Floodplain Connectivity

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| | | | |

Trib 4

# Appendix B: Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name 3678/Grassy Mtn. | | Assessor S. M. Harrelson | |
| Address | | Date 5/18/17 | |
| Waterway Name Trib 4 | | Coordinates at downstream end (ddd.mm.ss) | Lat. 43°40'42.02" N |
| Reach Boundaries see Fig 5 | | | Long. 117°21'47.81 W |
| Precipitation w/in 48 hours (cm) 0.8 | Channel Width (m) 1.3 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") | |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

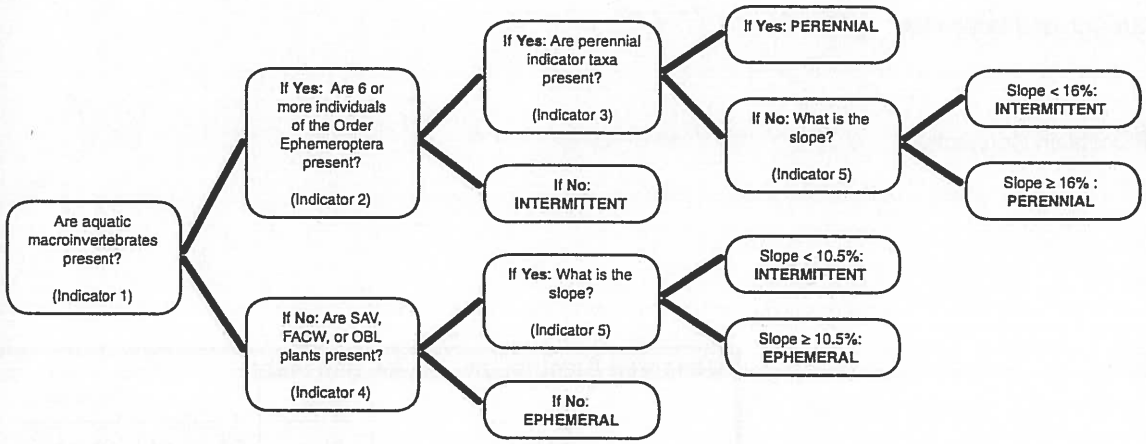
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (Refer to Table ...) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 4-6 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 4

**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:** Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

- small Trib of Trib 3
- dry channel w/in sagebrush
- cattle grazing

OHWM = line on bank
substrate sorting



**Ancillary Information**

- ☐ Riparian Corridor none observed
- ☐ Erosion and Deposition very little
- ☐ Floodplain Connectivity ~~has access~~ no fldpln observed

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

# Appendix B: Streamflow Duration Field Assessment Form

| | | |
|---|---|---|
| Project # / Name 3678 / Grassy mt. | Assessor S. M. Harrelson | |
| Address | Date 5/18/17 | |
| Waterway Name Trib 5 | Coordinates at downstream end (ddd.mm.ss) Lat. 43°40'53.79" N | |
| Reach Boundaries see Fig 5 | Long. 117°21'07.86" W | |
| Precipitation w/in 48 hours (cm) 0.8 | Channel Width (m) 1.89 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") |

**Observed Hydrology**

% of reach w/observed surface flow 0

% of reach w/any flow (surface or hyporheic) 0

# of pools observed 0

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

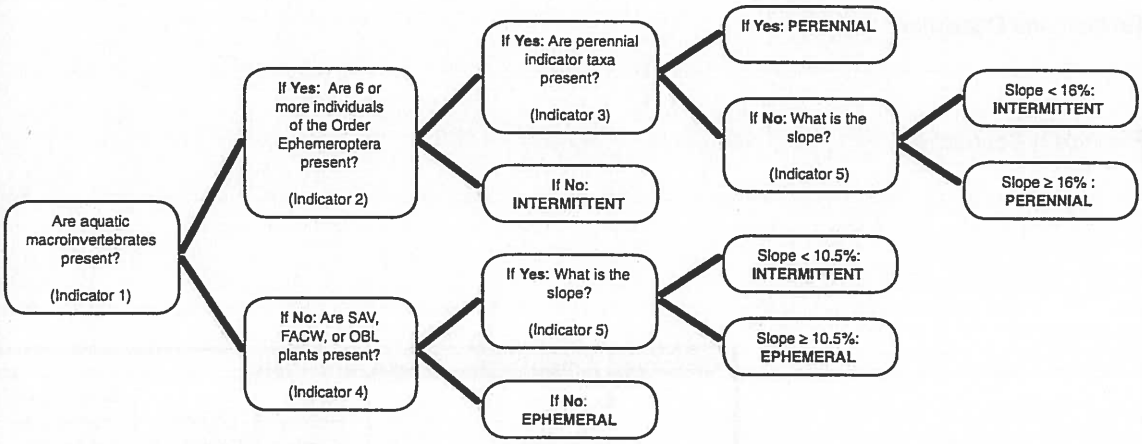
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (Refer to Table 3) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (Within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 10-15 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 5

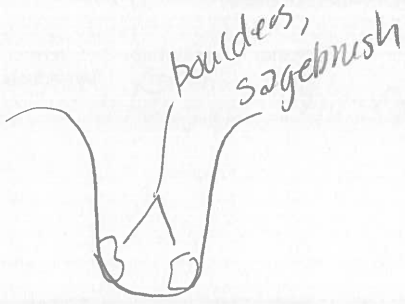
**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.




- dry channel, steeper slope than others
- w/in sagebrush
- some lrg cobble



**Ancillary Information**

- ☐ Riparian Corridor none observed
- ☐ Erosion and Deposition none
- ☐ Floodplain Connectivity no fldpln observed

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

# Appendix B: Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name | 3678/Grassy Mt. | Assessor | S.M. Harrelson |
| Address | | Date | 5/19/17 |
| Waterway Name | Tribb | Coordinates at downstream end (ddd.mm.ss) | Lat. 43°42'35.96" N |
| Reach Boundaries | see Figs | | Long. 117°21'39.43" W |
| Precipitation w/in 48 hours (cm) | 0.8 | Channel Width (m) 2.36 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

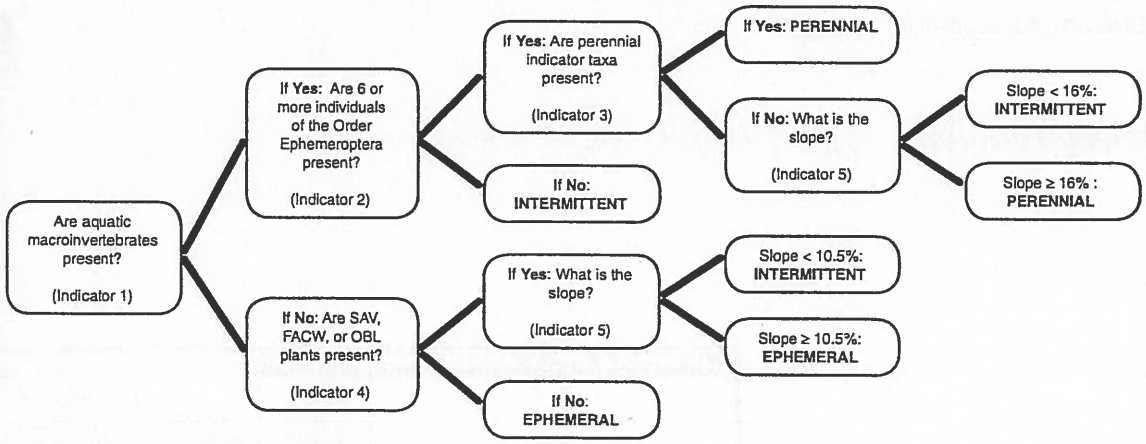
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (Refer to Table ...) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 2-4 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 6

**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

- presence of bed/banks begins & ends where indicated w/ gps
- heavily traveled by cattle
- some moderate erosion in N portion of trib = scouring, line on bank



**Ancillary Information**

- ☐ Riparian Corridor — none observed
- ☐ Erosion and Deposition — moderate ~20% of length
- ☐ Floodplain Connectivity — no fldpln observed

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

# Appendix B: Streamflow Duration Field Assessment Form

| | |
|---|---|
| Project # / Name 3678/Grassy mt. | Assessor S.M. Harrelson |
| Address | Date 5/19/17 |
| Waterway Name Trib 7 | Coordinates at downstream end (ddd.mm.ss) Lat. 43°43'29.05" N |
| Reach Boundaries See Fig 5 | Long. 117°19'38.08" W |
| Precipitation w/in 48 hours (cm) 0.8 | Channel Width (m) 1.52 |
| ☐ Disturbed Site / Difficult Situation (Describe in "Notes") | |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

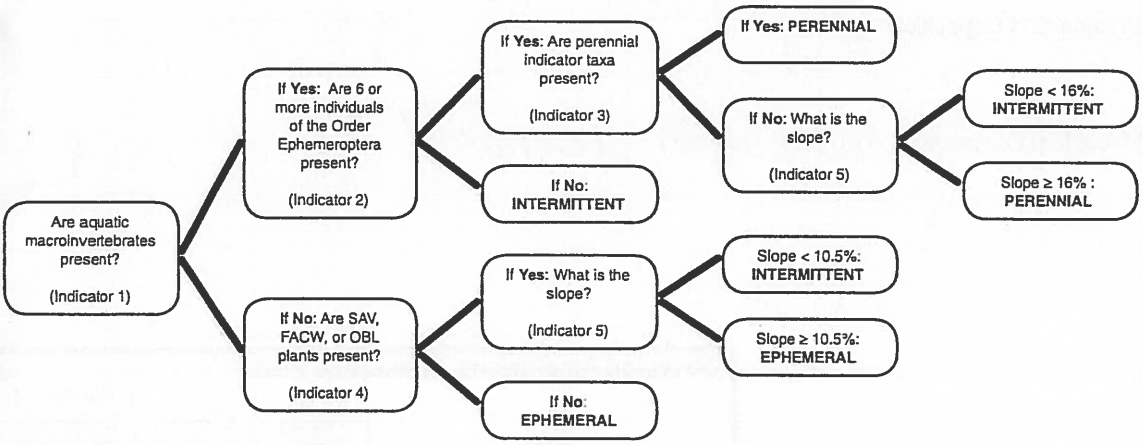
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (Refer to Table ...) | ☐ Yes | ☐ No |
| 4. Are FACW, OBL or SAV plant species present? (Within ½ channel width) | ☐ Yes | ☐ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 1-2 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 7

**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

- dry channel w/culvert under road

OHWM = line on bank

Superseded

**Ancillary Information**

- ☐ Riparian Corridor none observed
- ☐ Erosion and Deposition Very little
- ☐ Floodplain Connectivity no fldpln observed

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

Trib 8

# Appendix B: Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name | 3678/Grassy Mtn | Assessor | S.M. Harrelson |
| Address | | Date | 5/19/17 |
| Waterway Name | Trib 8 | Coordinates at downstream end (ddd.mm.ss) | Lat. 43°43'29.02" N |
| Reach Boundaries | see Fig 5 | | Long. 117°19'38.0" W |
| Precipitation w/in 48 hours (cm) | 0.8 | Channel Width (m) 1.14 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

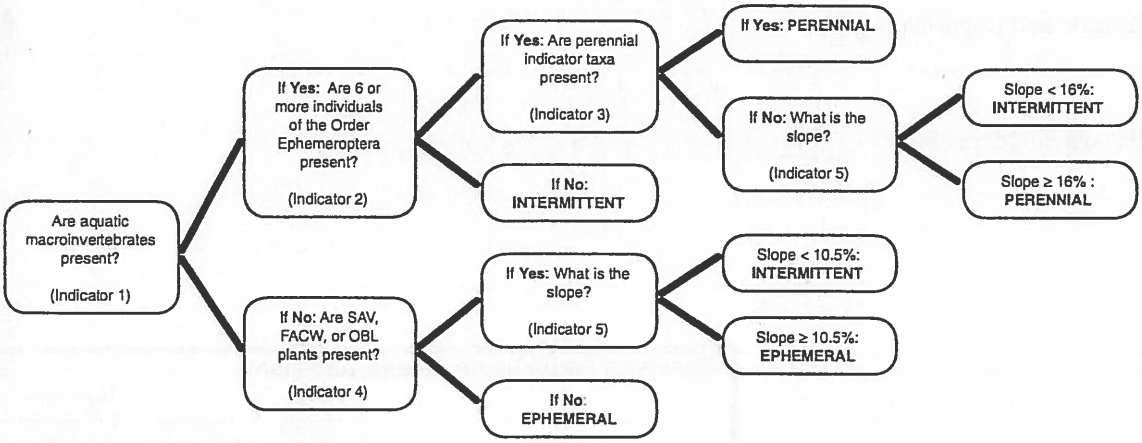
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? Refer to Table | ☐ Yes | ☒ No |
| 4. Are FACW, OBL or SAV plants present? Within ½ channel width | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 3-10 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 8

**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☒ Natural or Anthropogenic Disturbance
- ☐ Other: _____

- an old berm cuts off a portion of the trib. Channel starts again outside of study area

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

- dry channel along road
- ends at small berm, no channel present dwnstrm of this pt.
- OHWM = line on bank

Superseded

**Ancillary Information:**

- ☐ Riparian Corridor NO
- ☐ Erosion and Deposition very little
- ☐ Floodplain Connectivity ~~YES~~ no fldpln observed

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

Trib 9

# Appendix B: Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name 3678 / Grassy Mt | | Assessor S.M. Harrelson | |
| Address | | Date 5/19/17 | |
| Waterway Name Trib 9 | | Coordinates at downstream end (ddd.mm.ss) | Lat. 43°48'15.03" N |
| Reach Boundaries see Fig 5 | | | Long. 117°18'35.91" W |
| Precipitation w/in 48 hours (cm) 0.8 | Channel Width (m) 1.42 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") | |

**Observed Hydrology**

% of reach w/observed surface flow 0

% of reach w/any flow (surface or hyporheic) 0

# of pools observed 0

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

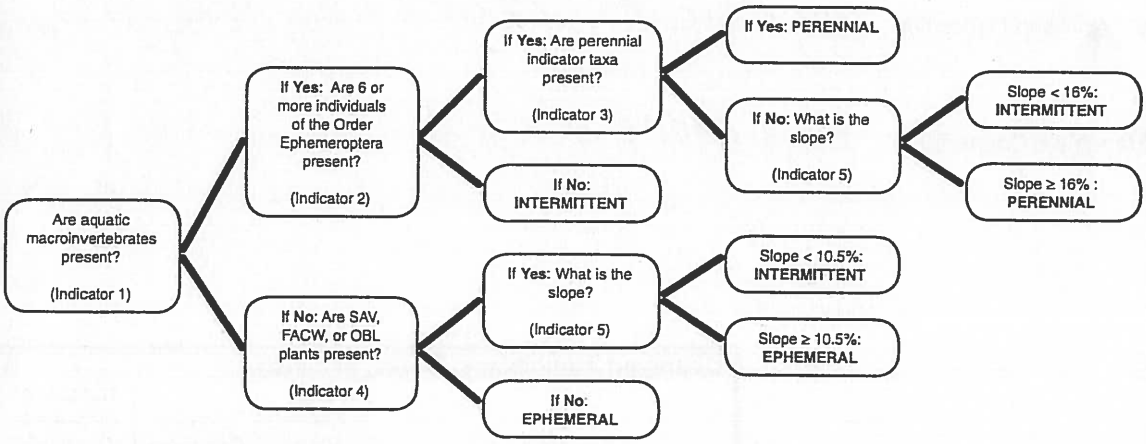
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (Refer to Table ...) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (Within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 8-20 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 9

**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

- dry, channel, heavily incised
- Significant erosion ~75-80% of length

OHWM = substrate sorting, linear bank



**Ancillary Information:**

- ☐ Riparian Corridor None observed
- ☐ Erosion and Deposition Significant, observed along 60% of reach
- ☐ Floodplain Connectivity no, channel incised

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

# Appendix B: Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name 3678/Grassy mt. | | Assessor Harrelson | |
| Address | | Date 5/19'5/2017 | |
| Waterway Name Trib 10 | | Coordinates at downstream end (ddd.mm.ss) | Lat. 48501661.42 N |
| Reach Boundaries See Fig 5 | | | Long. 475066.45 W |
| Precipitation w/in 48 hours (cm) 0.8 | Channel Width (m) | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") | |

**Observed Hydrology**

% of reach w/observed surface flow Ø

% of reach w/any flow (surface or hyporheic) Ø

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):**

None

**Observed Macroinvertebrates:**

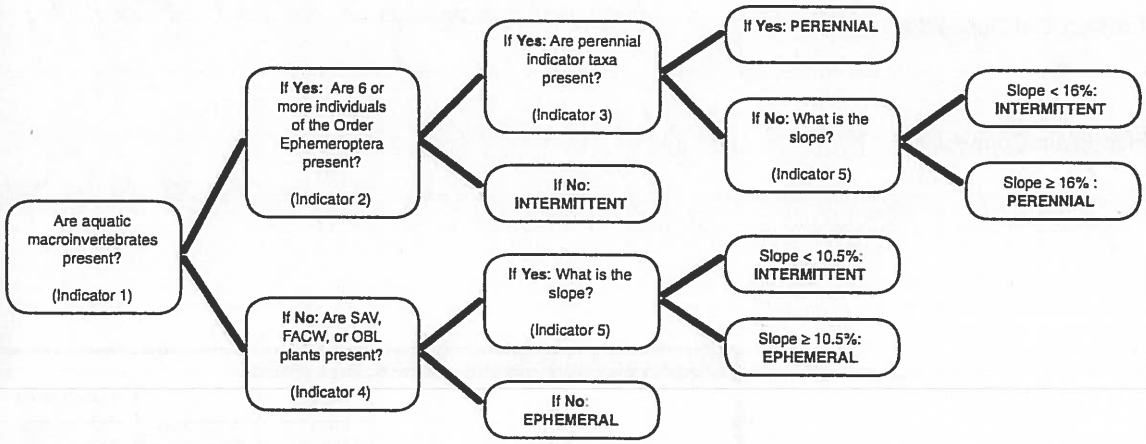
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☐ Yes | ☒ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☒ No |
| 3. Are perennial indicator taxa present? (Refer to Table ...) | ☐ Yes | ☒ No |
| 4. Are FACW, OBL, or SAV plants present? (within ½ channel width) | ☐ Yes | ☒ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 1-5 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

**Finding:**
☒ Ephemeral
☐ Intermittent
☐ Perennial

Trib 10

**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:** disturbance

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- cattle grazing for entire extent

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☒ Natural or Anthropogenic Disturbance

☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

- highly disturbed ; incised dry channel
- heavily vegetated : cheat grass, herb sophia, Cirsium sp.



**Ancillary Information**

☐ Riparian Corridor none observed

☐ Erosion and Deposition heavy erosion along entire reach

☐ Floodplain Connectivity no f/d p/n observed

* several erosional side channels were not mapped *

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None | | | |

# Appendix B: Streamflow Duration Field Assessment Form

| | | | |
|---|---|---|---|
| Project # / Name | 3678 / Grassy Mtn | Assessor | Harrelson |
| Address | | Date | 5/20/17 |
| Waterway Name | J-H Canal | Coordinates at downstream end (ddd.mm.ss) | Lat. 4861176.53 N |
| Reach Boundaries | see Fig 5 | | Long. 475521.36 W |
| Precipitation w/in 48 hours (cm) | 0.8 | Channel Width (m) 4.8 | ☐ Disturbed Site / Difficult Situation (Describe in "Notes") |

**Observed Hydrology**

% of reach w/observed surface flow 100

% of reach w/any flow (surface or hyporheic) 100

# of pools observed Ø

**Observations**

**Observed Wetland Plants (and indicator status):**

Typha sp. OBL

**Observed Macroinvertebrates:**

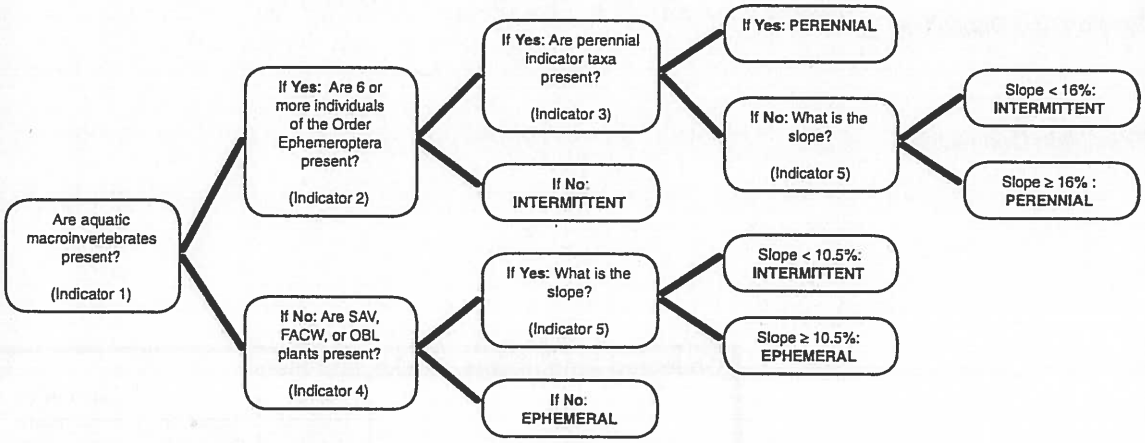
| Taxon | Indicator Status | Ephemer-optera? | # of Individuals |
|---|---|---|---|
| None observed due to high flow, but presumed present | | | |

**Indicators**

| | | |
|---|---|---|
| 1. Are aquatic macroinvertebrates present? | ☒ Yes | ☐ No |
| 2. Are 6 or more individuals of the Order Ephemeroptera present? | ☐ Yes | ☐ No unknown |
| 3. Are perennial indicator taxa present? (Refer to Table ...) | ☒ Yes | ☐ No assumed |
| 4. Are FACW, OBL, or SAV plants present? (within ½ channel width) | ☒ Yes | ☐ No |
| 5. What is the slope? (In percent, measured for the valley, not the stream) | 2-3 % | |

Superseded

**Conclusions**




**Single Indicators:**
☐ Fish
☐ Amphibians

↳ presumed present

**Finding:**
☐ Ephemeral
☐ Intermittent
☒ Perennial

**Notes:** single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

**Difficult Situation:**

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☐ Natural or Anthropogenic Disturbance
- ☐ Other: _____

**Additional Notes:** (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

- irrigation canal w/ pumped water & water flow controls
- water murky, no fish/amphibians observed, but they are likley present w/in the canal

Superseded

**Ancillary Information**

- ☐ Riparian Corridor none
- ☐ Erosion and Deposition observed on right bank
- ☐ Floodplain Connectivity no fldpln observed

**Observed Amphibians, Snake, and Fish:**

| Taxa | Life History Stage | Location Observed | Number of Individuals Observed |
|---|---|---|---|
| None observed | | | |

# APPENDIX C

## SITE PHOTOGRAPHS

**Grassy Mountain Mine Project – Wetland Delineation Report**
**Photolog**

Photo 1.

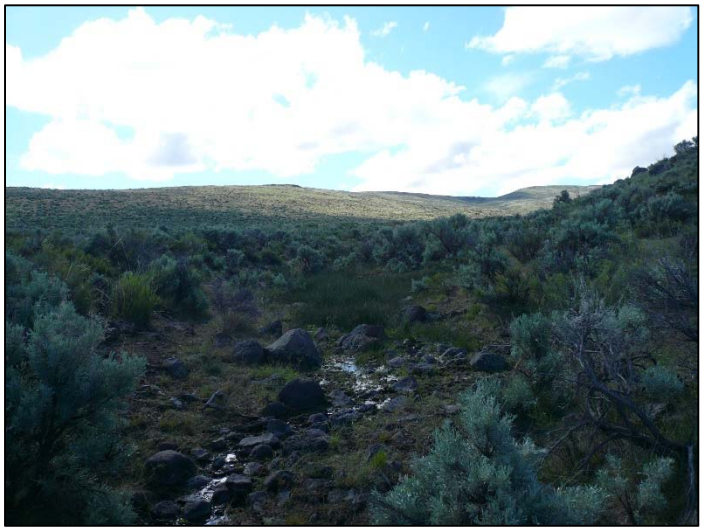
Tributary 1 (ephemeral) facing upstream. OHWM defined by sediment sorting and scouring.

Photo 2.

Tributary 1 (ephemeral) facing downstream. Channel width ranged between 2-5 feet.



Photo 3.



Tributary 2b (intermittent) facing upstream. Some wetland plants and macroinvertebrates were observed.

Photo 4.

Tributary 2b (intermittent) facing downstream.

**Grassy Mountain Mine Project – Wetland Delineation Report**
**Photolog**

Photo 5.

Tributary 2a (ephemeral) facing upstream at location above Schweizer Reservoir. Channel width ranged between 2-4 feet. OHWM was poorly defined (HDR 2015).

Photo 6.

Tributary 2a (ephemeral) facing downstream at location above Schweizer Reservoir. Vegetation was dominated by sagebrush and upland bunchgrasses (HDR 2015).



Photo 7.

Tributary 2a (ephemeral) facing upstream at location below Schweizer Reservoir. Reservoir embankment is visible in background. OHWM was poorly defined (HDR 2015).

Photo 8.

Tributary 2a (ephemeral) facing downstream. Vegetation was upland throughout (HDR 2015).

**Grassy Mountain Mine Project – Wetland Delineation Report**
**Photolog**

Photo 9.


Soil Pit #8A was dug at the low point of Schweizer reservoir to confirm the absence of wetlands. Soils were light in color and not hydric (HDR 2015).

Photo 10.

View of upland vegetation at Soil Pit #8A (HDR 2015).



Photo 11.

Schweizer Reservoir facing upstream at ephemeral drainage Tributary 2. Grazing was evident throughout the reservoir (HDR 2015).

Photo 12.

Schweizer Reservoir facing north toward reservoir embankment (HDR 2015).

Photo 13.

Tributary 3 (ephemeral) facing upstream. Channel width ranged between 2–3 feet. OHWM was poorly defined (HDR 2015).

Photo 14.

Tributary 3 (ephemeral) facing downstream. Vegetation was upland throughout (HDR 2015).



Photo 15.

Tributary 3 (ephemeral) facing upstream. OHWM was poorly defined, and upland vegetation was present throughout.

Photo 16.

Tributary 3 (ephemeral) facing downstream.

Photo 17.

Tributary 3 (ephemeral) facing upstream. Channel width ranged between 4-12 feet. OHWM was poorly defined.

Photo 18.

Tributary 3 (ephemeral) facing downstream. End of defined channel.



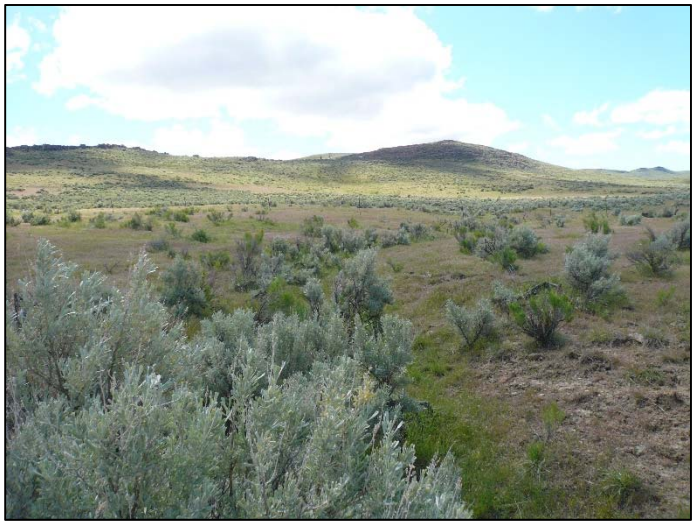
Photo 19.

Tributary 4 (ephemeral) facing upstream. Channel width ranged between 3-4 feet. OHWM was poorly defined (HDR 2015).

Photo 20.

Tributary 4 (ephemeral) facing downstream. Vegetation was fairly sparse and soils were rocky (HDR 2015).

Photo 21.



Tributary 4 (ephemeral) facing upstream. Channel width ranged between 1-3 feet. OHWM was poorly defined.

Photo 22.

Tributary 4 (ephemeral) facing upstream. Vegetation was upland throughout, and area was heavily grazed.



Photo 23.

Tributary 4 (ephemeral) facing downstream.

Photo 24.

Tributary 5 (ephemeral) facing upstream. Channel width ranged between 5-8 feet, and the OHWM was poorly defined.

Photo 25.

Tributary 5 (ephemeral) facing downstream. Sagebrush was common throughout the channel.

Photo 26.

Soil pit DP1 facing north. Partial berm from old pond is visible in the background.



Photo 27.

Photo facing downstream (south) from DP1 towards the end of Tributary 3 in this area.

Photo 28.

Photo facing upstream (north) from DP1.

Photo 29.

Tributary 3 (ephemeral) facing upstream.

Photo 30.

Tributary 3 (ephemeral) facing downstream towards access road.



Photo 31.

Tributary 6 (ephemeral) facing upstream. Channel width ranged between 4-14 feet; OHWM was defined by scouring and a line impressed on the bank.

Photo 32.

Tributary 6 (ephemeral) facing downstream. Old berm is visible on the left bank.

Photo 33.

Photo facing southwest (upstream). Area north of Tributary 6 with no evident channel.

Photo 34.

Photo facing northeast (downstream). Area north of Tributary 6 with no evident channel.



Photo 35.


Photo facing south (upstream). Area mapped as a stream channel, however, no channel is evident.

Photo 36.


Photo facing north (downstream). Area mapped as a stream channel, however, no channel is evident.

Photo 37.


Photo facing southeast (upstream). Area mapped as a stream channel, however, no channel is evident.

Photo 38.


Photo facing northwest (downstream). Area mapped as a stream channel, however, no channel is evident.



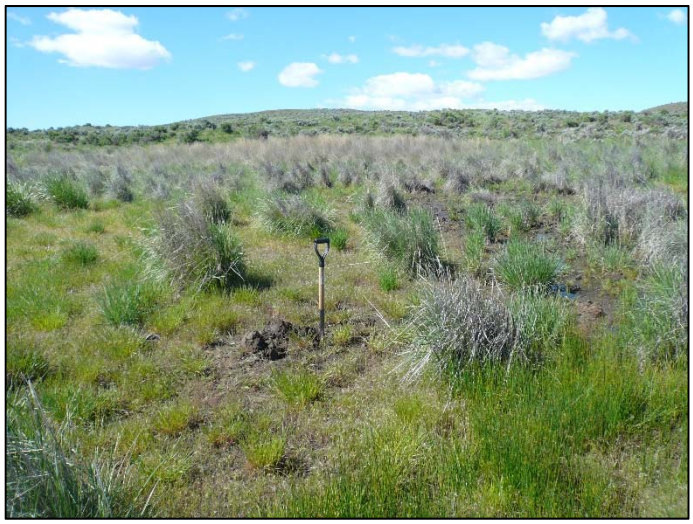
Photo 39.

Wetland 1 facing downslope (northeast).

Photo 40.

Wetland 1 facing upslope (southwest).

Photo 41.



Wetland data point DP2 facing south inside Wetland 1.

Photo 42.

Upland data point DP3 facing southwest.



Photo 43.

Photo facing east from Wetland 1 towards area mapped as a pond by NWI.

Photo 44.


Photo facing southeast (upstream). Area mapped as a stream channel, however, no channel is evident.

Photo 45.


Photo facing northwest (downstream). Area mapped as a stream channel, however, no channel is evident.

Photo 46.

Tributary 7 (ephemeral) facing upstream. Channel width ranged between 3-8 feet.



Photo 47.

Tributary 7 (ephemeral) facing downstream. OHWM was poorly defined.

Photo 48.

Tributary 8 (ephemeral) facing upstream. Beginning of defined channel.

Photo 49.

Tributary 8 (ephemeral) facing downstream. Channel width ranged between 2-6 feet.

Photo 50.

Tributary 8 (ephemeral) facing upstream.



Photo 51.

Tributary 8 (ephemeral) facing downstream. OHWM was defined by sediment sorting and a line impressed on the bank.

Photo 52.


Photo facing west (upstream). Area mapped as a stream channel, however, no channel is evident.

**Grassy Mountain Mine Project – Wetland Delineation Report**
**Photolog**

Photo 53.


Photo facing east (downstream). Area mapped as a stream channel, however, no channel is evident.

Photo 54.

Cattle pond outside project area.



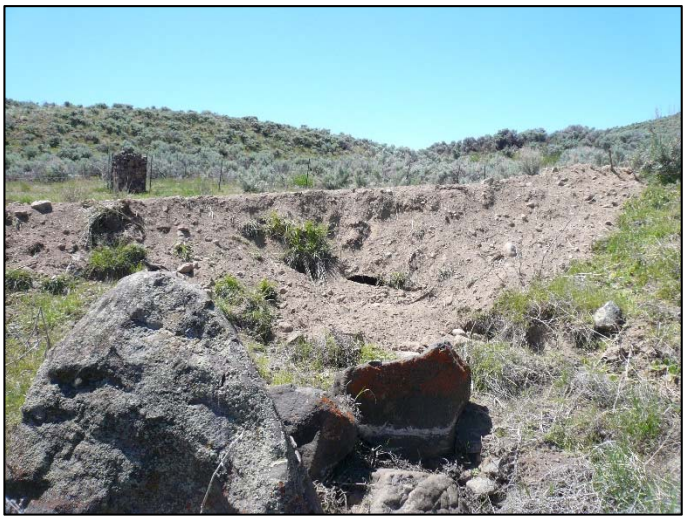
Photo 55.


Photo facing southwest (upstream). Area mapped as a stream channel, however, no channel is evident.

Photo 56.


Photo facing northeast (downstream). Area mapped as a stream channel, however, no channel is evident.

Photo 57.



Tributary 9 (ephemeral) facing upstream.
Beginning of defined channel.

Photo 58.

Tributary 9 (ephemeral) facing downstream.
OHWM was defined by some sediment sorting and changes in vegetation.



Photo 59.

Tributary 9 (ephemeral) facing upstream.
Channel widths ranged between 3-7 feet.

Photo 60.

Tributary 9 (ephemeral) facing downstream.

Photo 61.

Photo facing southwest (upstream). Area mapped as a stream channel, however, no channel is evident.

Photo 62.

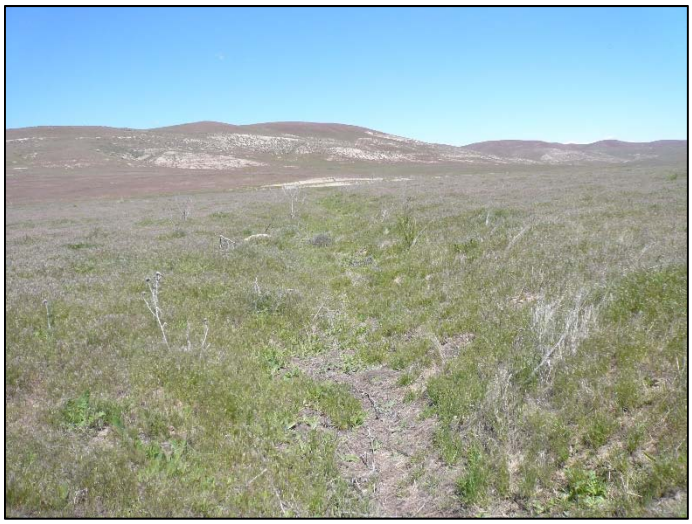


Photo facing northeast (downstream). Area mapped as a stream channel, however, no channel is evident.



Photo 63.


Photo facing northwest (upstream). Area mapped as a stream channel, however, no channel is evident.

Photo 64.


Photo facing southeast (downstream). Area mapped as a stream channel, however, no channel is evident.

Photo 65.

Tributary 10 (ephemeral) facing upstream. Area is heavily grazed with cattle roaming throughout channel.

Photo 66.

Tributary 10 (ephemeral) facing downstream. Channel width ranged between 2-10 feet.



Photo 67.

Tributary 10 (ephemeral) facing upstream.

Photo 68.

Tributary 10 (ephemeral) facing downstream. Channel is deeply incised with moderate to severe erosion.

Photo 69.

Tributary 10 (ephemeral) facing upstream. Area is heavily grazed with cattle roaming throughout channel.

Photo 70.

Tributary 10 (ephemeral) facing downstream.



Photo 71.

J-H Canal (artificial waterbody) facing upstream.

Photo 72.

J-H Canal (artificial waterbody) facing downstream. Berm is visible on right bank, and water control structure is visible on the left bank.