Project: McFaul Ck Meadow
Project Number:
Stream: McFaul Ck
Investigator(s): G Miller, Dickson

Date: 11/7/25
Town: 2C
Photo begin file#

Time: 11
State: NV
Photo end file#

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

Notes:
C53 - ditch w/ (berm) spoils on side of ditch making a small berm that is stopping connectivity to the active floodplain & meadow

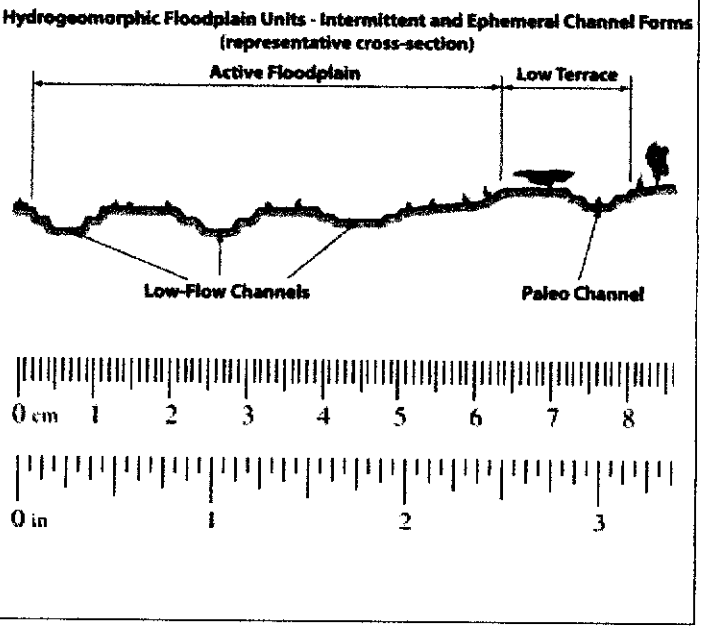
Brief site description:
End of McFaul Ck terminates @ lake
Cr continues in ditch after low pt in meadow

Checklist of resources (if available):

- [X] Aerial photography
  Dates:
- [X] Topographic maps
  Scale:
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [X] Other studies RC1 / LUMOS
- [ ] Stream gage data
  Gage number:
  Period of record:
- [ ] Clinometer / level
- [ ] History of recent effective discharges
- [ ] Results of flood frequency analysis
- [ ] Most recent shift-adjusted rating
- [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

The dominant Wentworth size class that imparts a characteristic texture to each zone of a channel cross-section is recorded in the average sediment texture field under the characteristics section for the zone of interest.

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



☐ **Walk the channel and floodplain within the study area to get an impression of the vegetation and geomorphology present at the site. Record any potential anthropogenic influences on the channel system in "Notes" above.**

☐ **Locate the low-flow channel (lowest part of the channel). Record observations.**

Characteristics of the low-flow channel:

Average sediment texture: loam w/ lots of OM

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

☐ NA ☐ Mid (herbaceous, shrubs, saplings)

☐ Early (herbaceous & seedlings) ☒ Late (herbaceous, shrubs, mature trees)

Dominant species present: _____

Other: ☐ Salix lemonii

☐ _____

☐ _____

☐ _____

☐ **Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.**

Characteristics used to delineate the low-flow/active floodplain boundary:

☒ Change in total veg cover ☒ Tree ☒ Shrub ☐ Herb

☒ Change in overall vegetation maturity

☒ Change in dominant species present

☒ Other ☒ Presence of bed and bank

☐ Drift and/or debris

☐ Other: _____

☐ Other: _____

☐ **Continue walking the channel cross-section. Record observations below.**

Characteristics of the low-flow channel:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

☐ NA ☐ Mid (herbaceous, shrubs, saplings)

☐ Early (herbaceous & seedlings) ☒ Late (herbaceous, shrubs, mature trees)

Dominant species present: in active floodplain

Other: ☐ Salix lemonii

☐ Berberis aquifolium

☐ Pinus jeffreyi

☐ Ribes nevadense

Epilobium howellii

☐ **Continue walking the channel cross-section. Record indicators of the active floodplain/low terrace boundary.**

Characteristics used to delineate the active floodplain/ low terrace boundary:

☐ Change in average sediment texture
☐ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
☐ Change in overall vegetation maturity
☐ Change in dominant species present
☐ Other ☐ Presence of bed and bank
☐ Drift and/or debris
☐ Other: _____
☐ Other: _____

N/A no low terrace strs to floodplain

☐ **Walk the active floodplain/low terrace boundary both upstream and downstream of the cross-section to verify that the indicators used to identify the transition are consistently associated the transition in both directions.**

Consistency of indicators used to delineate the active floodplain/low terrace boundary:

Y ☒ N ☐ Change in average sediment texture
Y ☒ N ☐ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
Y ☒ N ☐ Change in overall vegetation maturity
Y ☒ N ☐ Change in dominant species present
Y ☒ N ☐ Other: Y ☒ N ☐ Presence of bed and bank
Y ☐ N ☐ Drift and/or debris
Y ☐ N ☐ Other: _____
Y ☐ N ☐ Other: _____

☒ **If the characteristics used to delineate the active floodplain/low terrace boundary were NOT consistently associated with the transition in both the upstream and downstream directions, repeat all steps above.**

☐ **Continue walking the channel cross-section. Record characteristics of the low terrace.**

Characteristics of the low terrace:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: _____

Other: ☐ _____
☐ _____
☐ _____
☐ _____

☐ **If characteristics used to delineate the active floodplain/low terrace boundary were deemed reliable, acquire boundary.**

Active floodplain/low terrace boundary acquired via:

☐ Mapping on aerial photograph
☐ Digitized on computer
☐ GPS
☐ Other: _____

Project: McFaul Ck Meadow
Project Number:
Stream: Mc Faul
Investigator(s): G Allingham Olson

Date: 11/7/25
Town: Zc
Photo begin file#

Time: 10:30
State: NV
Photo end file#

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

Notes: Historical ditch
CS2

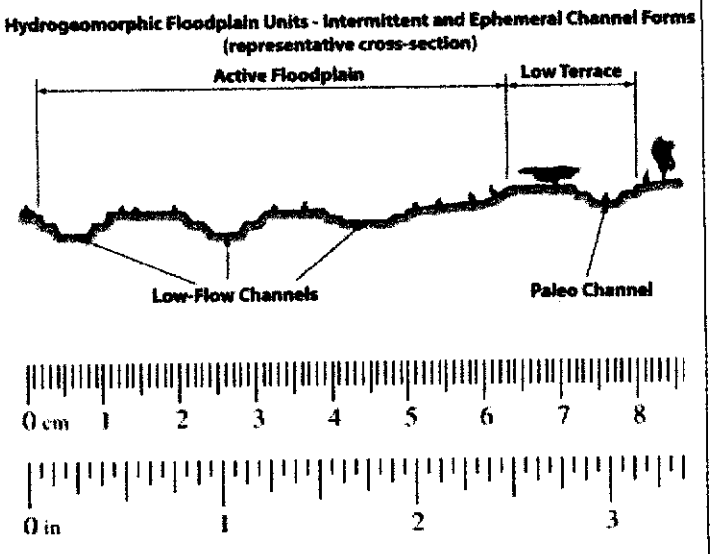
Brief site description:
Creek following edge of meadow after Bourne Med. Basins

Checklist of resources (if available):

- [X] Aerial photography
  Dates:
- [X] Topographic maps
  Scale:
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [X] Other studies RCI / Lumos
- [ ] Stream gage data
  Gage number:
  Period of record:
- [ ] Clinometer / level
- [ ] History of recent effective discharges
- [ ] Results of flood frequency analysis
- [ ] Most recent shift-adjusted rating
- [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

The dominant Wentworth size class that imparts a characteristic texture to each zone of a channel cross-section is recorded in the average sediment texture field under the characteristics section for the zone of interest.

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64		
0.157	4	Pebble	
		Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



☒ **Walk the channel and floodplain within the study area to get an impression of the vegetation and geomorphology present at the site. Record any potential anthropogenic influences on the channel system in "Notes" above.**

☒ **Locate the low-flow channel (lowest part of the channel). Record observations.**

Characteristics of the low-flow channel:

Average sediment texture: Loam High OM

Total veg cover: 30 % Tree: 0 % Shrub: 10 % Herb: 20%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: _____

Other:
- ☐ elmus sp.
- ☐ bracicarea
- ☐ salix lemonii
- ☐ _____

☐ **Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.**

Characteristics used to delineate the low-flow/active floodplain boundary:

- ☒ Change in total veg cover ☐ Tree ☒ Shrub ☒ Herb
- ☐ Change in overall vegetation maturity
- ☐ Change in dominant species present
- ☐ Other
  - ☒ Presence of bed and bank
  - ☐ Drift and/or debris
  - ☐ Other: _____
  - ☐ Other: _____

☐ **Continue walking the channel cross-section. Record observations below.**

N/A

Characteristics of the low-flow channel:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: _____

Other:
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

☒ **Continue walking the channel cross-section. Record indicators of the active floodplain/low terrace boundary.**

Characteristics used to delineate the active floodplain/ low terrace boundary:

NA

☐ Change in average sediment texture
☐ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
☐ Change in overall vegetation maturity
☐ Change in dominant species present
☐ Other ☐ Presence of bed and bank
☐ Drift and/or debris
☐ Other: _____
☐ Other: _____

X
no low terrace
only active floodplain to meadow

CS2

☑ **Walk the active floodplain/low terrace boundary both upstream and downstream of the cross-section to verify that the indicators used to identify the transition are consistently associated the transition in both directions.** X to meadow

Consistency of indicators used to delineate the active floodplain/low terrace boundary:

Y ☒ N ☐ Change in average sediment texture
Y ☐ N ☐ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
Y ☒ N ☐ Change in overall vegetation maturity
Y ☒ N ☐ Change in dominant species present
Y ☒ N ☐ Other: Y ☒ N ☐ Presence of bed and bank
Y ☐ N ☐ Drift and/or debris
Y ☐ N ☐ Other: _____
Y ☐ N ☐ Other: _____

☒ **If the characteristics used to delineate the active floodplain/low terrace boundary were NOT consistently associated with the transition in both the upstream and downstream directions, repeat all steps above.** Consistant

☐ **Continue walking the channel cross-section. Record characteristics of the low terrace.**

Characteristics of the low terrace:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: _____

Other:
☐ _____
☐ _____
☐ _____
☐ _____

☐ **If characteristics used to delineate the active floodplain/low terrace boundary were deemed reliable, acquire boundary.**

Active floodplain/low terrace boundary acquired via:

☐ Mapping on aerial photograph ☐ GPS
☐ Digitized on computer ☐ Other: _____

Project: McFaulck Meadow
Project Number:
Stream: McFaul
Investigator(s): Garth Alling D. Olson

Date: 11/7/25 **Time:**
Town: Zc **State:** NV
Photo begin file# **Photo end file#**

Y [X] / N [ ] Do normal circumstances exist on the site? * see notes

Y [ ] / N [X] Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

Notes: Historical ditch along edge of existing meadow & upland
upstream - [illegible] from
C01 → Channel [illegible]

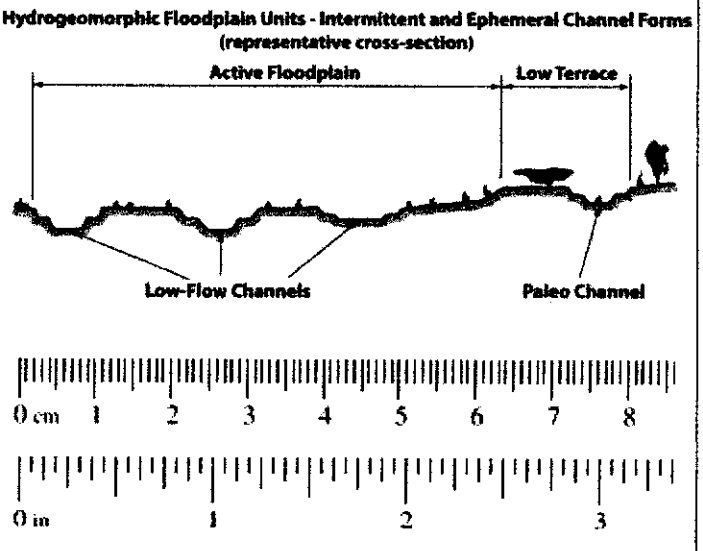
Brief site description: upstream of project area McFaulck turns into a junction box (mgmt unknown) & under Hwy.
Ck flows in channel/ditch along meadow edge
Lower ½ contours to lake ephemeral drainage

Checklist of resources (if available):

- [X] Aerial photography
  Dates:
- [X] Topographic maps
  Scale:
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [X] Other studies - RCA / Lumos
- [ ] Stream gage data
  Gage number:
  Period of record:
- [ ] Clinometer / level
- [ ] History of recent effective discharges
- [ ] Results of flood frequency analysis
- [ ] Most recent shift-adjusted rating
- [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

The dominant Wentworth size class that imparts a characteristic texture to each zone of a channel cross-section is recorded in the average sediment texture field under the characteristics section for the zone of interest.

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



☒ **Continue walking the channel cross-section. Record indicators of the active floodplain/low terrace boundary.** * no low terrace

Characteristics used to delineate the active floodplain/ low terrace boundary:

- ☒ Change in average sediment texture
- ☒ Change in total veg cover ☒ Tree ☒ Shrub ☐ Herb
- ☒ Change in overall vegetation maturity
- ☒ Change in dominant species present
- ☐ Other ☐ Presence of bed and bank
  - ☐ Drift and/or debris
  - ☐ Other: _____
  - ☐ Other: _____

CS1

☒ **Walk the active floodplain/low terrace boundary both upstream and downstream of the cross-section to verify that the indicators used to identify the transition are consistently associated the transition in both directions.**

Consistency of indicators used to delineate the active floodplain/low terrace boundary:

- Y ☒ N ☐ Change in average sediment texture
- Y ☒ N ☐ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- Y ☒ N ☐ Change in overall vegetation maturity
- Y ☒ N ☐ Change in dominant species present
- Y ☒ N ☐ Other: Y ☒ N ☐ Presence of bed and bank
  - Y ☐ N ☐ Drift and/or debris
  - Y ☐ N ☐ Other: _____
  - Y ☐ N ☐ Other: _____

CS1

☐ **If the characteristics used to delineate the active floodplain/low terrace boundary were NOT consistently associated with the transition in both the upstream and downstream directions, repeat all steps above.**

☐ **Continue walking the channel cross-section. Record characteristics of the low terrace.**

Characteristics of the low terrace:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: _____

_____

_____

Other:

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

☐ **If characteristics used to delineate the active floodplain/low terrace boundary were deemed reliable, acquire boundary.**

Active floodplain/low terrace boundary acquired via:

- ☐ Mapping on aerial photograph
- ☐ Digitized on computer
- ☐ GPS
- ☐ Other: _____

☒ **Walk the channel and floodplain within the study area to get an impression of the vegetation and geomorphology present at the site. Record any potential anthropogenic influences on the channel system in "Notes" above.**

☒ **Locate the low-flow channel (lowest part of the channel). Record observations.** CS1

Characteristics of the low-flow channel:

Average sediment texture: Sandy loam

Total veg cover: 20 % Tree: 20 % Shrub: 0 % Herb: 20 %

Community successional stage: Canopy

CS2

☐ NA ☐ Mid (herbaceous, shrubs, saplings)

☒ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: Dracicacea

Other: ☐ Pinus Jeffrii (canopy)

☐ elmus sp.

☐

☐

☒ **Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.**

Characteristics used to delineate the low-flow/active floodplain boundary:

☒ Change in total veg cover ☐ Tree ☒ Shrub ☒ Herb

☐ Change in overall vegetation maturity

☒ Change in dominant species present

☒ Other ☒ Presence of bed and bank

☐ Drift and/or debris

☐ Other: _____

☐ Other: _____

☒ **Continue walking the channel cross-section. Record observations below.**

Characteristics of the low-flow channel:

Average sediment texture: loam high % of OM

Total veg cover: 30 % Tree: 0 % Shrub: 10 % Herb: 20 %

Community successional stage:

CS2

☐ NA ☒ Mid (herbaceous, shrubs, saplings)

☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: elmus sp

Other: ☐ Salix lemonii

☐

☐

☐

Marlette Creek Plant List 6.21

Family	Scientific name	Common name	Wetland Code	Dominant
Trees				
Pinaceae	Pinus jeffreyii	Jeffrey pine	UPL	Y
Shrubs and sub-shrubs				
Asteraceae	Artemisia tridentata	big sagebrush	UPL	Y
Grossulariaceae	Ribes nevadense	Sierra currant	FAC	
Rosaceae	Purshia tridentata	antelope bitterbrush	UPL	
	Rosa woodsii var. ultramontana	Interior Rose	FAC	Y
Salicaceae	Salix lemmonii	lemon's willow	FACW	Y
Forbs				
Asteraceae	Achillea millefolium	common yarrow	FACU	Y
	Arnica longifolia	seep spring arnica	FACW	
	Artemisia douglasiana	California mugwort	FAC	
	Cirsium vulgare	bullthistle	FACU	
Brassicaceae	Barbarea orthoceras	American rocket	FACW	
	Descurainia incana	Mountain tansy mustard	FAC	
	Rorippa curvisiliqua	western water cress	OBL	
	Rorippa subumbelltata	Tahoe yellow cress	OBL	
Malvaceae	Sidalcea oregana	Oregon checker mallow	FACW	Y
Onagraceae	Chamerion angustifolium	fireweed	FACW	Y
	Epilobium sp.	willowherb	FACW	Y
	Oenothera elata	evening primrose	FACW	
Plantaginaceae	Veronica americana	American brooklime	OBL	Y
Rosaceae	Drymocallis glandulosa	sticky cinquefoil	FAC	Y
	Potentilla gracilentus var. fastigata	slender penstemon	FAC	
Salicaceae	Rumex crispus	curly dock	FAC	
	Rumex salicifolius	willow dock	FACW	Y
Scrophulariaceae	Verbascum thapsus	woolly mullein	FACW	
Grasses and grass-like species				
Cyperaceae	Carex amplifolia	ample leaved sedge	OBL	Y
	Carex douglasii	Douglas' sedge	FAC	
	Carex fracta	fragile sheathed sedge	OBL	
	Carex nebrascensis	Nebraska sedge	OBL	Y
	Scirpus microcarpus	small-flowered bulrush	OBL	Y
Juncaceae	Juncus bufonius	common toad rush	FACW	
	Juncus nevadensis	Sierra rush	FACW	Y
	Juncus occidentalis	slender juncus	FACW	Y
Poaceae	Agrostis idahoensis	colonial bentgrass	FACW	
	Alopecurus pratensis	meadow foxtail	FACW	Y
	Bromus tectorum	cheatgrass	UPL	
	Deschampsia cespitosa	tufted hair grass	FACW	Y
	Elymus elymoides	squirreltail	UPL	
	Elymus glaucus	blue wildrye	FACU	
	Muhlenbergia filiformis	Slender muhly	FACW	
	Poa secunda	Nevada bluegrass	UPL	

McFaul Creek Stream and Meadow Restoration Project
Aquatic Resource Delineation Report

Prepared for:

Nevada Tahoe Conservation District
PO Box 915
Zephyr Cove, NV 89448

And the

Willis Family Trust
550 Sierra Sunset Lane
Zephyr Cove, NV 89448

Prepared by:

Garth Alling, Sierra Ecotone Solutions LLC
Alison Stanton, M.S. Botanist

May 2026

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EXECUTIVE SUMMARY

The McFaul Stream and Meadow Restoration Project (Project) is located in Zephyr Cove in Douglas County, Nevada, adjacent to Highway 50. The Project is on private property and is being designed and managed by the Nevada Tahoe Conservation District (NTCD). The Project analysis area includes McFaul Creek from the south side of the US 50 right-of-way, adjacent portions of McFaul Creek Meadow, and the creek outlet at the shoreline of Lake Tahoe. The 8.1-acre study area was assessed for aquatic resources and the delineation was conducted in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, the 2008 Arid West Regional Supplement, and the *National Ordinary High Water Mark (OHWM) Field Delineation Manual for Rivers and Streams* (USACE 2025) and precedent 2008 *A Field Guide to the Identification of the* Ordinary *High Water Mark (OHWM) in the Arid West Region of the Western United States.*

A total of 262,664 sq. feet (6.03 acres) of potential Wetlands and Waters of the U.S. were mapped in the Project Area. Potential Waters include 10,438 sq. feet (0.24 acres) of the mapped channel of McFaul Creek along 1,850 linear feet (LF) assigned a Cowardin code of R4SBA (Riverine, Intermittent, Streambed, Seasonally or Temporarily Flooded). Potential Wetlands include 142,221 sq. feet (3.26 acres) of Freshwater Emergent Wetland of McFaul Creek Meadow assigned a Cowardin code of PEM1B (Palustrine, Emergent, Seasonally or Temporarily Flooded) and 77,859 sq. feet (1.79 acres) of Freshwater Forested/Shrub Wetland in the adjacent riparian corridor- assigned a Cowardin code of PSS1B (Palustrine, Scrub-Shrub, Seasonally or Temporarily Flooded). Other potential Aquatic resources include 18,886 sq. feet (0.43 acres) of stormwater basins constructed in 2025 and 13,270 sq. feet (0.30 acres) of shoreline at the creek outlet at Lake Tahoe assigned a Cowardin code of L1UBH (Lacustrine, Limnetic, Unconsolidated Bottom, Permanent).

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Figures

Tables

Appendices

Electronic Appendix

Aquatic Resources spreadsheet and GIS shapefiles

ACRONYMS AND ABBREVIATIONS

BMP	best management practices
GPS	global positioning system
LTB	Lake Tahoe Basin
LTBMU	Lake Tahoe Basin Management Unit
NDOT	Nevada Department of Transportation
NRCS	National Resource Conservation Service
NTCD	Nevada Tahoe Conservation District
NWI	National Wetland Inventory
OHW	ordinary high water
OHWM	ordinary high water mark
Project	McFaul Creek Stream and Meadow Restoration Project
SF	Square Feet
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geological Survey

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1.0 INTRODUCTION

1.1 PROJECT APPLICANT

The purpose of this report is to identify and describe aquatic resources within the survey area of the McFaul Creek Stream and Meadow Restoration Project (Project). This report facilitates efforts to:

- Avoid or minimize impacts to aquatic resources during the design process.
- Document aquatic resource boundary determinations for review by regulatory authorities.
- Provide background information.

Project activities will occur on private property (APN 1318-15-101-009) located in Douglas County, Nevada at 550 Sierra Sunset Lane in Zephyr Cove. The Project includes the lowest reach of McFaul Creek draining directly into Lake Tahoe and adjacent portions of McFaul Creek Meadow on the south side of US Highway 50. The Project is being designed and managed by the Nevada Tahoe Conservation District (NTCD).

Nevada Tahoe Conservation District (NTCD) is the Project Manager and can be contacted at:

Nevada Tahoe Conservation District
PO Box 915
Zephyr Cove, NV 89448
775-586-1610

Sierra Ecotone Solutions LLC is the Agent and preparer of the report and can be contacted at:

Sierra Ecotone Solutions LLC
PO Box 1297
Zephyr Cove, NV 89448
530-416-2440

The property owner can be contacted at:

Patrick Willis, Willis Family Trust
550 Sierra Sunset Lane
Zephyr Cove, NV 89448

1.2 PROJECT DESCRIPTION

The McFaul Creek Stream and Meadow Restoration Project (Project) is located in the southeastern corner of Lake Tahoe on private property (APN 1318-15-101-009) in Zephyr Cove in Douglas County, Nevada (**Figure 1 Project Location and Vicinity**). The Project is being designed and managed by the Nevada Tahoe Conservation District (NTCD) and addresses restoration needs on the lowest reach of McFaul Creek draining directly into Lake Tahoe and adjacent portions of McFaul Creek Meadow on the south side of US Highway 50. The Project area is 8.1 acres.

Figure 1. Project Location and Vicinity with Project Area (in red)

Proposed Actions

The NTCD, in partnership with the land owner, proposes to implement restoration on McFaul Creek and adjacent portions of McFaul Creek Meadow within the Project Area between Highway 50 and Lake Tahoe. The purpose of the proposed Project is to improve water quality and restore floodplain connectivity between McFaul Creek and McFaul Creek Meadow. Currently, a concrete box culvert (4 x 6 feet) conveys McFaul Creek below US Highway 50. No modifications to the culvert are proposed as part of this project, but significant sedimentation has reduced its flow capacity, and FEMA flood models indicate a 100-year flood would overtop the highway. NTCD staff recommends Nevada Department of Transportation (NDOT) perform culvert maintenance and remove this sediment prior to implementation of the proposed Project.

The Project will include the following major components, as shown in **Figure 2 Project Components**.

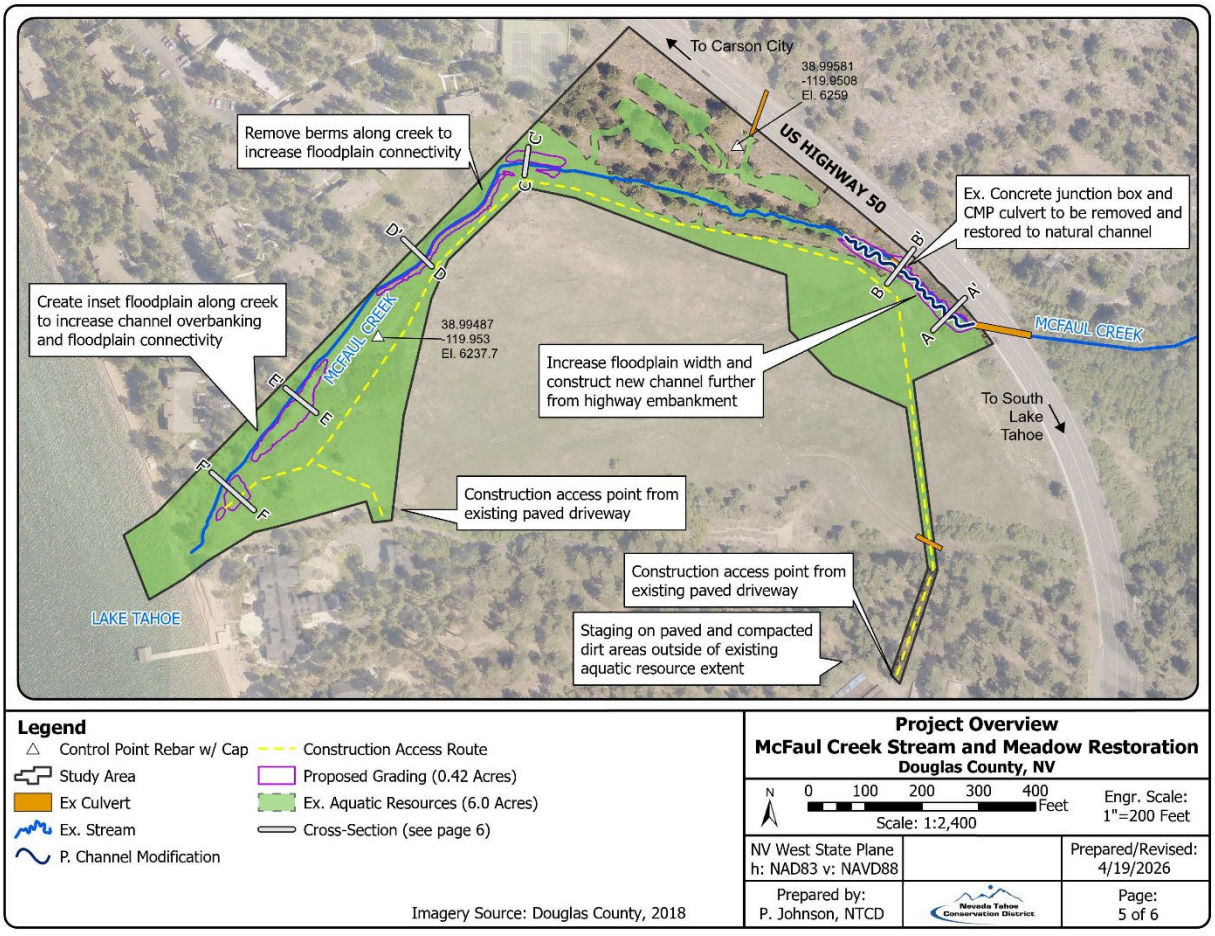


Figure 2. Map of Project Components

Directly downstream of the US Highway 50 culvert, the McFaul Creek channel runs northwest toward the northern property line. This section (approximately 285 feet) is deeply incised with bank heights of 4 feet and greater. Without restoration, the continued upstream migration of

several head-cuts will continue the channel incision and further degrade water quality. As it approaches the property line, the creek turns to the southwest towards Lake Tahoe. This section of creek is constrained by a series of berms that were likely dredged from the meadow when the channel was moved in the 1990s. Proposed actions in this section include:

- Remove an existing concrete junction box and CMP culvert
- Realign a 285 linear foot (LF) section of McFaul Creek further from the highway embankment
- Construct a new channel using excavation and creation of 350 LF of sod and blanket channel
- Install appropriate natural grade controls made of wood, rock and native vegetation to slow velocities during high flows, promote bank overtopping, mitigate flood risk, and improve water quality.
- Use local channel bed material to fill existing 3-foot headcut and relocate willow to provide shading.
- Utilize grading to remove berms and increase the width of the floodplain by 10 to 14 feet on the north side of the creek.

As McFaul Creek continues toward Lake Tahoe, several berms and other types of past fill prevent connectivity between McFaul Creek Meadow and the creek. The Project proposes to lower a portion of the adjacent meadow and create an inset floodplain. Constructing a floodplain in this area may help address groundwater issues at the house, which presently uses a pumping system to convey water back towards the creek. A functional floodplain may improve drainage and reduce the risk of flooding at the residence. Conifer encroachment is also occurring into the meadow. The proposed actions are:

- Lower the high point in the meadow by a maximum of 18 inches, with an average cut of 6 inches.
- Construct new floodplain up to 40-feet wide
- Remove 12 trees to reduce conifer encroachment and decrease wildfire risk.
- Repair downstream head-cut using sod and material from the floodplain restoration

Construction staging will occur outside of the Project area in the paved areas of two existing residences. Access will occur from both staging areas, one leading straight into the meadow and the other via forested upland area.

Project Schedule

The project is proposed to be constructed during the summer of 2026. NTCD staff will be finalizing design plans during the winter of 2026 and will acquire permits for the project through relevant agencies such as TRPA, the US Army Corps of Engineers, Douglas County and the Nevada Division of Environmental Protection. NTCD staff will oversee construction of the

project and will bid the project to select a contractor to construct the project. Construction is anticipated to be completed in one season, by October 2026.

Construction will occur in the mid to late summer and early fall months, when the creek is dry, so significant dewatering measures are not required for project implementation. However, isolated summer thunderstorms have the potential to cause intermittent flows in the creek, so NTCD will monitor weather forecasts and work with the contractor to adjust construction schedules accordingly. The contractor will be required to have pumps on site at all times and to install coffer dams at the downstream end of any work areas to minimize runoff to Lake Tahoe. Standard construction BMPs such as silt fences, construction limit fencing and waddles will be utilized, per the project plans. All restoration areas, as well as construction access routes will be revegetated post-project.

Project Benefits

Successful completion of the project will dissipate stream velocity during high flows and mitigate flooding while also providing the numerous other benefits associated with a functional floodplain and expanded riparian area, such as improved hydrologic function and improved habitat and ecological benefits.

Benefits include:

- Improved capacity of McFaul Creek to convey higher flows from the stormwater basins constructed as part of the Marla Bay Pinewild Water Quality Improvement Project
- Lower stream velocities in McFaul Creek during high flows and increased flood mitigation
- Improved water quality in McFaul Creek and Lake Tahoe
- Improved aquatic and terrestrial habitats
- Increased fire resiliency and meadow health
- Decreased flood risk of infrastructure and private property in the McFaul Creek watershed.

2.0 LOCATION

The McFaul Creek Stream and Meadow Restoration Project (Project) is located at 550 Sierra Sunset Lane in Zephyr Cove in Douglas County, Nevada (**Figure 1 Project Location and Vicinity**). The Project Area is 8.1 acres and located on the south side of US Highway 50 in the southeastern corner of Lake Tahoe.

Location	Douglas County, Nevada
APN	1318-15-101-009
Address	550 Sierra Sunset Lane Zephyr Cove 89488
Driving Directions	From Reno, take 395 South for 35 miles. Take exit to US-50 westbound and travel for approximately 19 miles. Turn right into the driveway.

	From Sacramento, take US-50 eastbound for approximately 108 miles to Zephyr Cove. Turn left into driveway.
Waterbody	McFaul Creek
Tributary to downstream waterbody	Lake Tahoe
Latitude & Longitude (DD)	38.99355 -119.95352
Township, Range, Section,	Township 14 North, Range 17 East, Section 3
USGS Quadrangle	South Lake Tahoe

3.0 METHODS

A routine wetland delineation was conducted in accordance with the 1987 Corps of Engineers Wetland Delineation Manual (USACE 1987), the Arid West Regional Supplement to the Corps of Engineers Wetland Delineation Manual (Version 2.0), (USACE 2008a), and the National Ordinary High Water Mark (OHWM) Field Delineation Manual for Rivers and Streams (USACE 2025).

3.1 BACKGROUND INFORMATION

The following information was reviewed prior to conducting the delineation:

- National Resource Conservation Service (NRCS) Web Soil Survey (NRCS 2026)
- NRCS National Hydric Soils List (NRCS 2016)
- National Wetland Plants List (NWPL 2026)
- U.S. Fish and Wildlife Service National Wetland Inventory (NWI) (USFWS 2026)

3.2 DATA COLLECTION

The delineation of the McFaul Creek channel involved identifying the limits of Ordinary High Water (OHW), as described in the *National Ordinary High Water Mark (OHWM) Field Delineation Manual for Rivers and Streams* (USACE 2025) and the previous version *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b). Garth Alling of Sierra Ecotone Solutions LLC. and Dana Olson of NTCD conducted field surveys within the Project study area on November 7, 2025.The survey focused on areas targeted for Project activities and included the channel of McFaul Creek, the adjacent meadow, and upland habitats. The surveyors walked through these areas to get an impression of the vegetation and geomorphology present.

During the survey, hydrological conditions were typical for late fall with no flow in McFaul Creek and dry conditions in the meadow. Lake Tahoe was around the lowest point of 2025 at 6,226.6 feet Lake Tahoe Datum (LTD) at the USGS station gage at Tahoe City (USGS 10337000). The surveyors walked cross sections of the low-flow channel recording indicators of the active floodplain boundary (i.e. presence of bed and bank, break in slope, sediment and drift deposits, change in plant community). Dominant species of the riparian plant community present in the active floodplain were identified along the cross sections. The wetland indicator status of plant

species was determined using the 2016 Regional Wetland Plant List (Lichvar et al. 2016) and verified with the new Wetland Plant List website maintained by the Corps (NWPL 2024). Cross sections upstream and downstream were also searched to verify the consistency of the transitions associated with the OHWM. Representative control points were established upslope of the OHWM at 3 locations in areas that lacked any hydrophytic vegetation or evidence of wetland hydrology. The locations of sample points and OHWM were mapped using the Gaia GPS phone application (current Version 2025.10). GPS data were imported into ESRI ArcGIS Pro online software for developing wetland maps. OHWM Data Sheets are provided in **Appendix A**

A follow-up survey was conducted on May 7, 2026 by Alison E. Stanton, Botanist, to verify plant species at more seasonal time of year and compile a plant list (**Appendix B McFaul Creek Project Area Plant Species List**) and also to take representative photographs of the study area **Appendix C**.

4.0 EXISTING CONDITIONS

4.1 TOPOGRAPHY

The McFaul Creek watershed is a small steep drainage of only 3.7-acres located on the southeastern shore of Lake Tahoe in Douglas County, Nevada. Most of the watershed runs through remote, undeveloped public lands in the Carson Range owned by the US Forest Service. Within the final mile before draining into Lake Tahoe, the Creek runs through two private parcels. The first parcel includes Lake Tranquility, a privately owned dammed reservoir that holds water from McFaul for recreational purposes. McFaul Creek drains from the reservoir through a vault and a pipe, and then continues through a short steep gully before reaching a lower-gradient riparian corridor dominated by aspens. It then crosses below US Highway 50 through a concrete box culvert which discharges to McFaul Creek Meadow, a privately owned meadow extending between the highway and Lake Tahoe. Elevation in the study area ranges from 6,230 feet at the shoreline to approximately 6,260 feet on the upper end of McFaul Creek Meadow at US Highway 50 (**see Figure 1 Project Location and Vicinity**).

4.2 GEOLOGY AND SOILS

Geology in the McFaul Creek watershed is granitic and is underlain primarily by Cretaceous-aged granodiorite with valley fill that includes both fluvial and glacial deposits characterized by non-consolidated sands, silts and some gravels (Saucedo, 2005). Within the Project area the geology is Holocene-aged matrix of unsorted, poorly consolidated granitic colluvium, decomposed granite, and supported debris flow material of sand and cobble to boulder gravel. Soils are formed by active erosion processes and are well-drained to excessively well drained. Approximately 58% of the Project area is mapped as Tahoe complex, 0-2 % slopes, 26 % as Cassenai very stony gravelly loamy coarse sand (5-15 percent slopes), and an additional 11% is mapped as extremely stony Cagwin-Rock outcrop complex (5-15 percent slope) (**Figure 3,** NRCS 2025).

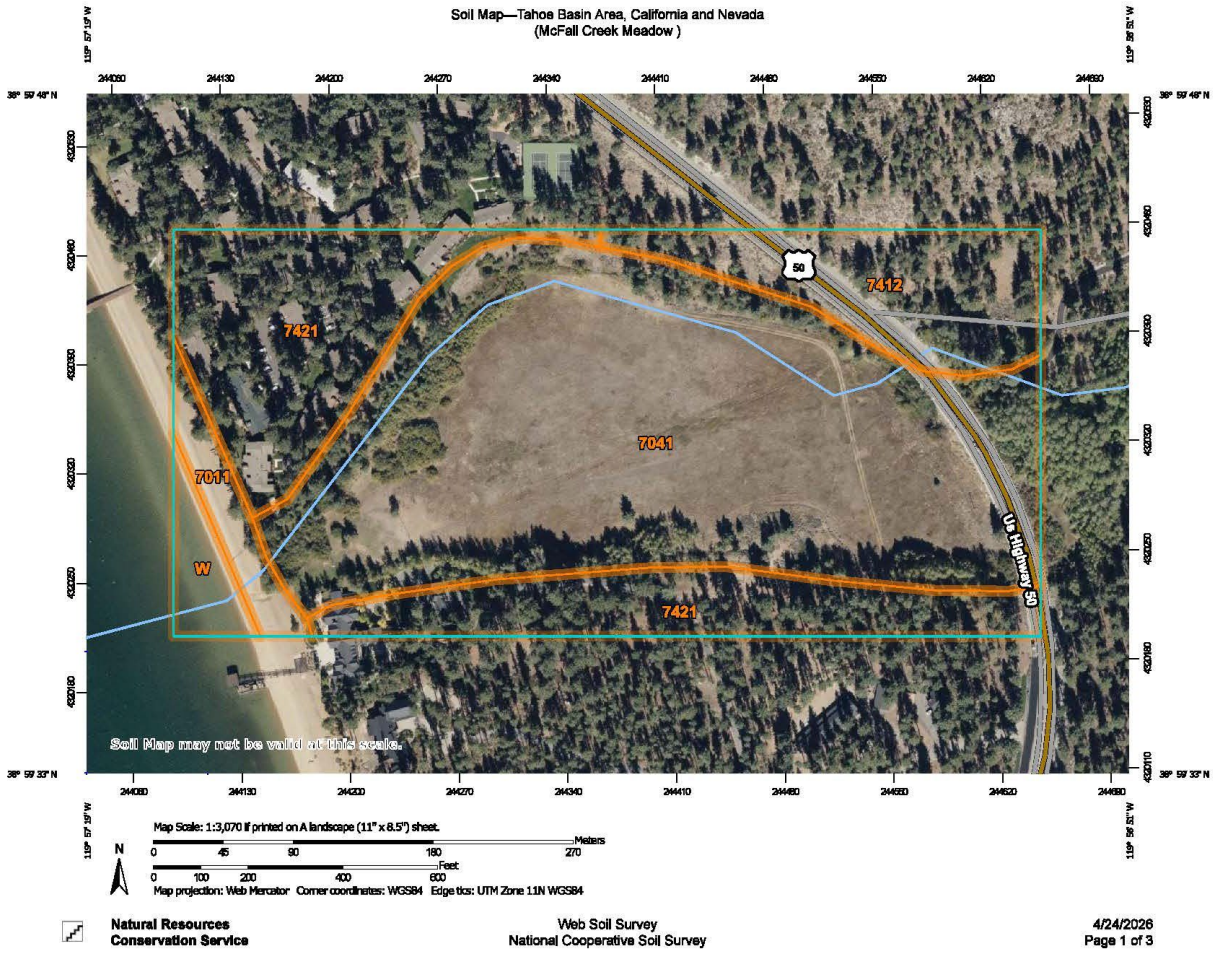


Figure 3. Soils map

4.3 HYDROLOGY

McFaul Creek is a very shallow, intermittent stream that runs dry by summer and into fall. When there is water, this alluvial system supports limited transport and deposition of sand with some gravels. Hydrology in Marlette Creek is snow-melt dominated and punctuated with runoff from summer thunderstorms or from rain-on-snow events. Peak flows can occur during the snow-melt season (April through June) or during a rain-on-snow event. Mean annual precipitation in the watershed is 30 inches (NRCS, SNOTEL).

The present-day condition of McFaul Creek Meadow and McFaul Creek is significantly different from pre-Comstock Era conditions, when a perennial multi-threaded channel with frequent overbanking likely ran through the meadow. An 1890s topographic map of the area shows two blue line streams, one running on the north side of the meadow, and one associated with

McFaul Creek running down the center of the meadow. The pre-disturbance meadow would have likely been considered “Stage Zero”, according to contemporary geomorphologists under the Cluer and Thorne Stream Evolution Model. Today, an incised single threaded channel exists along the northern periphery of the meadow. Various irrigation and diversions structures installed during the early 1900s and the dam on Lake Tranquility alters flows in the channel, leaving it dry most years in the later summer and early fall. Issues resulting from the altered drainage, including bank erosion, channel incision, and headcut migration, will continue to degrade water quality if they are not addressed.

The first lakeside residence was constructed on the parcel in the mid-1900s. That residence was reconstructed and moved slightly further into the meadow in 2005. As part of the conditions of approval, an “SEZ mitigation project” was constructed in 2013, which created a new ditch in McFaul Creek Meadow and removed a small reservoir on McFaul Creek and created a new rocked outlet into Lake Tahoe. In 2020, horse grazing in the meadow ended after a new owner purchased the Sierra Sunset Estate.

McFaul Creek likely receives a significant pollutant load from Highway 50 due to the close proximity. To capture sheet flow from the highway and the Marla Bay neighborhood to the north, a series of stormwater basins were constructed in 2025 on the northeastern corner of the property as part of the Nevada Department of Transportation Marla Bay Pinewild Water Quality Improvement Project. The stormwater basins will allow pollutants to settle and water quality in the creek is expected to improve. However, the project has the potential to increase both surface and groundwater flows into McFaul Creek after it is fully connected in 2026.

4.4 NATIONAL WETLANDS INVENTORY

Figure 4 shows waters and wetlands identified by the National Wetlands Inventory (NWI) (USFWS 2025). Waters mapped in the study area by the NWI include the bed and channel of McFaul Creek mapped as R4SB (Riverine, Intermittent, Streambed) that is Seasonally or Temporarily Flooded, freshwater forested wetland mapped as PSS1B (Palustrine, Scrub Shrub), and the emergent wetland mapped as PEM1B (Palustrine, Emergent).

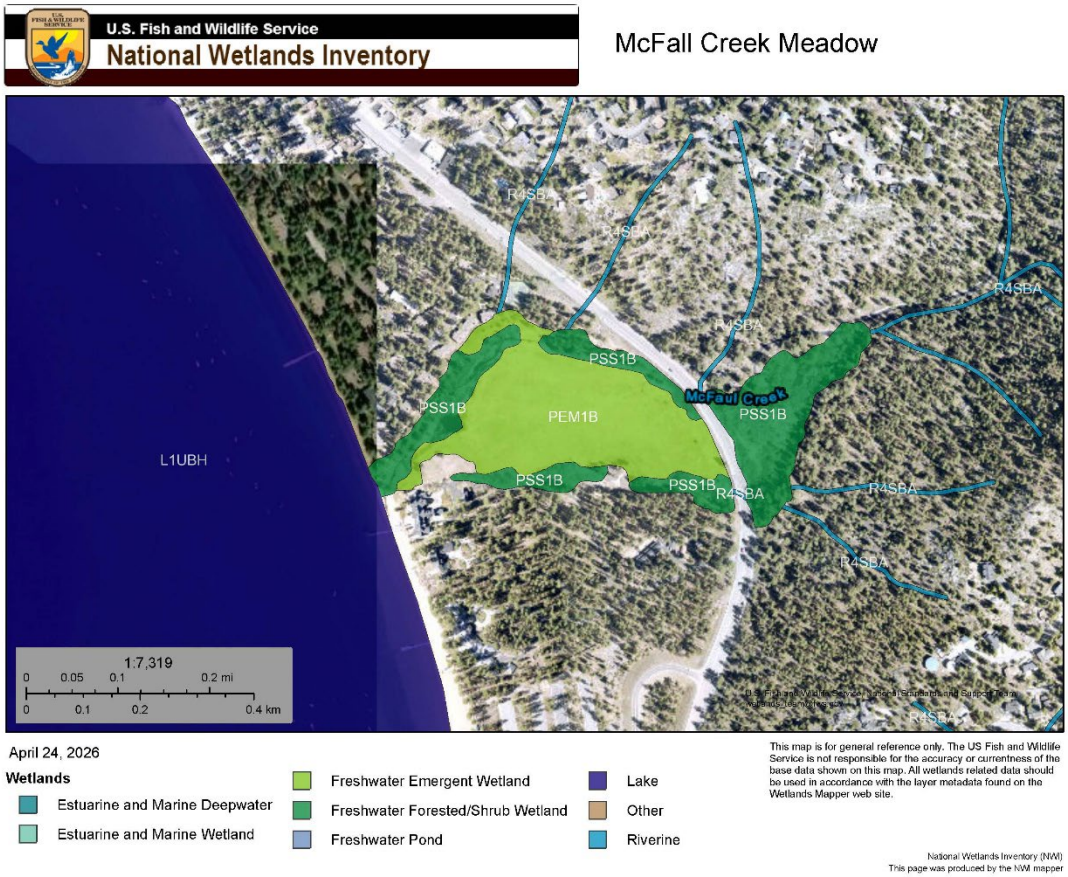


Figure 4. National Wetlands Inventory map

4.5 BIOLOGICAL CONDITIONS

Vegetation

Directly downstream of the US Highway 50 culvert, the McFaul Creek channel is lined on both side by a dense thicket of Woods rose (*Rosa woodsii*). The channel becomes deeply incised, with bank heights of 4 feet and greater, and is disconnected from the meadow floodplain. As a consequence, the riparian corridor is very narrow along this section, just south of the stormwater basins. The top of the bank supports an overstory of Jeffrey pine *(Pinus jeffreyi)* and a shrub layer of upland species such as big sage *(*Artemisia tridentata) and bitterbrush *(*Purshia tridentata*).* As the creek approaches the northern property line, it turns to the southwest towards Lake Tahoe and the riparian plant community from this point is dominated by Lemmon's willow (*Salix lemonii*). The channel becomes very constrained by a series of berms that were likely dredged from the meadow when the channel was moved in the 1990s. The adjacent meadow in this area close to the highway is fairly dry.

Closer to Lake Tahoe, the shallow channel becomes increasingly connected to the floodplain, and the riparian corridor expands. There are several more thickets of Woods rose among the willows. The meadow gets increasingly wet near the lake and supports a variety of sedges

(*Carex sp.*), Sierra rush (*Juncus nevadensis*), many grasses like meadow foxtail (*Alopecurus pratensis*) and tufted hairgrass (*Deschampsia cespitosa*), and a diverse assemblage of forbs such as seep spring arnica (*Arnica longifolia*) and American rocket (*Barbarea orthoceras*). Obligate wetland species such as American brooklime (Veronica americana) and mountain bog bulrush (Scirpus microcarpus) occur within the channel and thrive when conditions are wet enough.

In May 2026, several plants of the Nevada State Critically Endangered Tahoe yellow cress (*Rorripa subumbellata*) were observed just outside of the Project Area on the shoreline at the outlet of Lake Tahoe. No project activities will occur within the shoreline and no impacts are anticipated.

Aquatic Wildlife and Habitats

McFaul Creek is very shallow and usually runs dry by summer and into fall, therefore it provides limited aquatic habitat and does not provide suitable habitat for Lahontan cutthroat trout (*Oncorhynchus clarkia henshawi;* LCT) or Sierra Nevada yellow-legged frog (*Rana sierra*). However, the riparian corridor may provide nesting habitat for song birds and the adjacent meadow provides foraging habitat for resident and migratory birds.

5.0 AQUATIC RESOURCES

The McFaul Creek channel is very shallow and the banks are deeply incised in the vicinity of Highway 50. The riparian plant corridor is extremely narrow and the transition to the upland is abrupt. As the channel becomes less constrained by the berms associated with past modifications, the width of the active floodplain becomes wider in lower reaches. Throughout the area, the delineation focused on identification of OHWM indicators i.e. presence of bed and bank, break in slope, and change in plant community. The delineation of the McFaul Creek channel was based on the presence of an OHWM that was consistently associated with the change in vegetation community and change in slope of the channel bed to bank. As shown in **Figure 5,** a total of 1,850 linear feet (LF) of McFaul Creek (MapID 2) was delineated between Highway 50 and the shoreline at the outlet at Lake Tahoe (L1UBH) (MapID 1). The shrub-scrub riparian plant community was delineated in 2 different sections (Map ID 4/5), due to changes in the confinement of the channel. The freshwater emergent wetland of McFaul Creek Meadow was delineated in one polygon on the south side of the creek (MapID 6) and two polygons on the north side (MapID 7/8). The stormwater basins (MapID 3) that were constructed in 2025, formed a contiguous polygon.

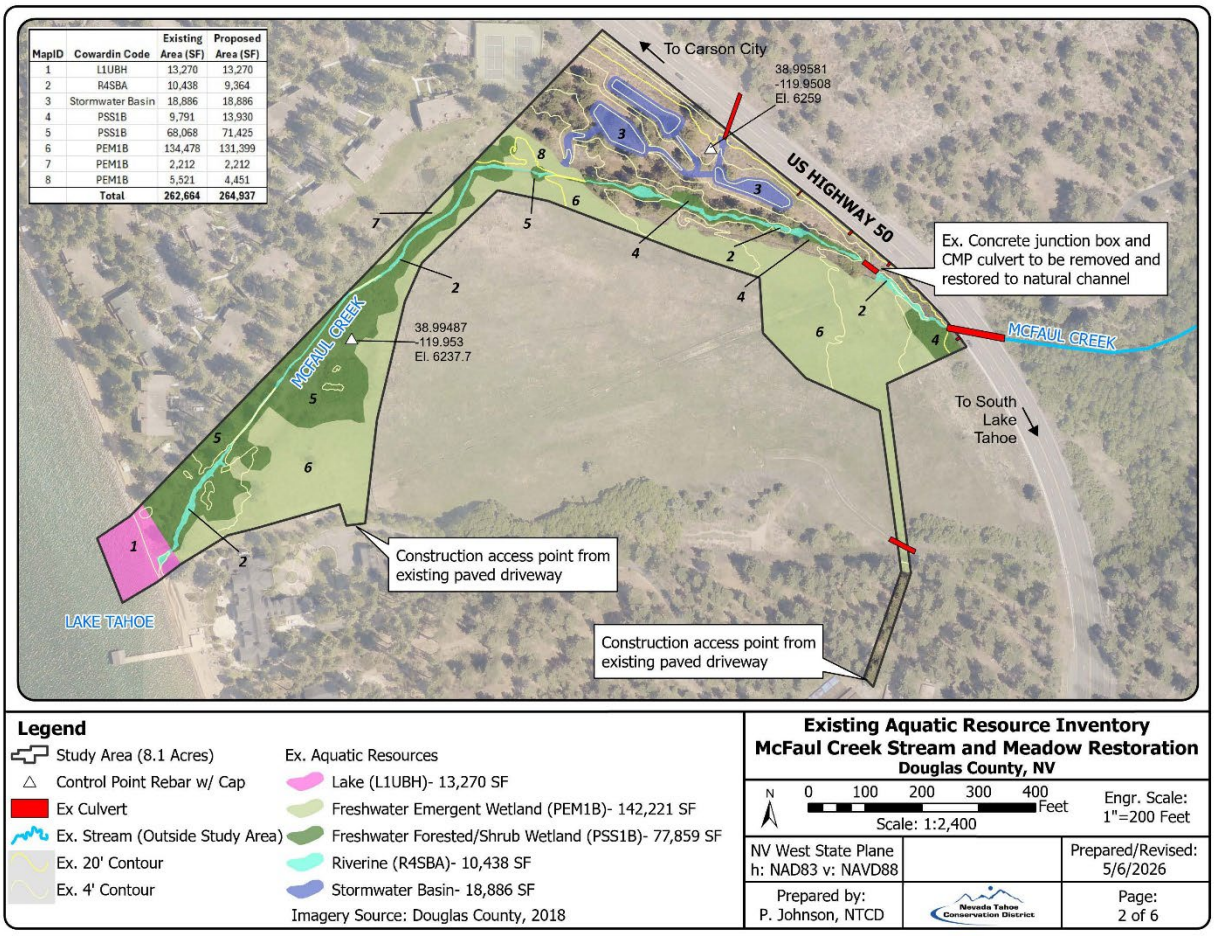


Figure 5. Existing Aquatic Resources mapped within the Project Area.

Table 1 provides a summary of the potential Wetlands and Waters of the U.S. mapped in the Project Area. A total of 262,664 sq. feet (6.03 acres) were delineated. Potential Waters include 10,438 sq. feet (0.24 acres) of the mapped channel of McFaul Creek along 1,850 linear feet (LF) assigned a Cowardin code of R4SBA (Riverine, Intermittent, Streambed, Seasonally or Temporarily Flooded). Potential Wetlands include 142,221 sq. feet (3.26 acres) of Freshwater Emergent Wetland of McFaul Creek Meadow assigned a Cowardin code of PEM1B (Palustrine, Emergent, Seasonally or Temporarily Flooded) and 77,859 sq. feet (1.79 acres) of Freshwater Forested/Shrub Wetland in the adjacent riparian corridor- assigned a Cowardin code of PSS1B (Palustrine, Scrub-Shrub, Seasonally or Temporarily Flooded). Other potential Aquatic resources include 18,886 sq. feet (0.43 acres) of stormwater basins constructed in 2025 and 13,270 sq. feet (0.30 acres) of shoreline at the creek outlet at Lake Tahoe assigned a Cowardin code of L1UBH (Lacustrine, Limnetic, Unconsolidated Bottom, Permanent).

Table 1. Summary of Potential Waters and Wetlands of the U.S. in the Study Area					
MapID		**Cowardin Code**	**Description**	**Acres**	**Sq. Feet**
1		L1UBH	Lake Tahoe	0.30	13,270
2		R4SBA	McFaul Creek Channel	0.24	10,438
3		Stormwater Basin	Constructed in 2025	0.43	18,886
4		PSS1B	McFaul Creek riparian corridor	0.22	9,791
5		PSS1B	McFaul Creek riparian corridor	1.56	68,068
6		PEM1B	McFaul Creek Meadow	3.09	134,478
7		PEM1B	McFaul Creek Meadow	0.05	2,212
8		PEM1B	McFaul Creek Meadow	0.13	5,521
TOTAL Potential Waters and Wetlands of the U.S.				**6.03**	**262,664**

6.0 REFERENCES

Cowardin, L.M., V. Carter V., F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31.Washington, D.C.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

National Resources Conservation Service (NRCS). 2026. Web Soil Survey. Accessed January 11, 2026. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

USACE. 2008a. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ERDC\EL TR-06-16.

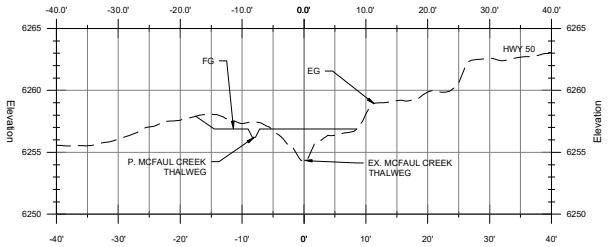
USACE. 2008b. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. ERDC/CRREL TR-08-12.

USACE. 2025. National Ordinary High Water Mark (OHWM) Field Delineation Manual for Rivers and Streams.

USACE. 2026. National Wetlands Plant List database. Accessed January 10, 2026. https://nwpl.sec.usace.army.mil/

U.S. Fish and Wildlife Service (USFWS). 2026. National Wetlands Inventory database. Accessed January 10, 2026; https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

SECTION A-A'



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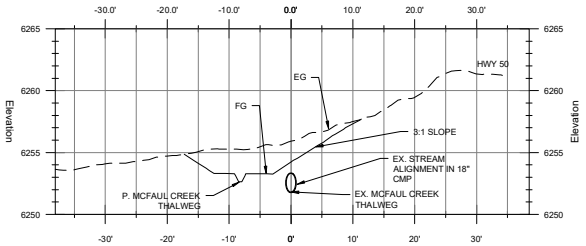

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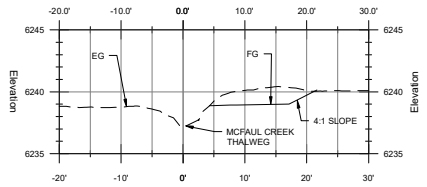

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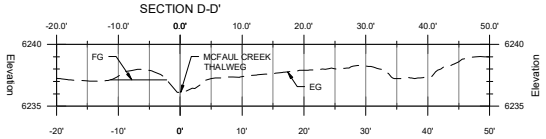

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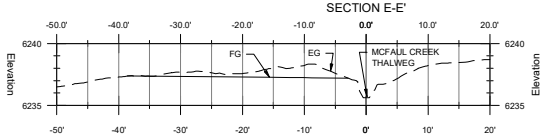

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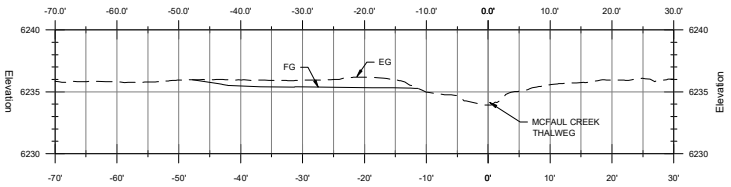

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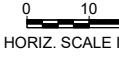

HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"=5'

Nevada Tahoe Conservation District

SECTION VIEWS MCFAUL CREEK STREAM AND MEADOW RESTORATION

DRAWN:
PJ, NTCD

DATE:
4/19/2026

SHEET
6 of 6