8900 LAKESIDE CUSTOM LOT SUBDIVISION

SPECIAL
PACKETS
PACKAGE

DECEMBER 8, 2021

CFA, INC.

1150 CORPORATE BLVD.

RENO, NEVADA 89502

(775) 856-1150

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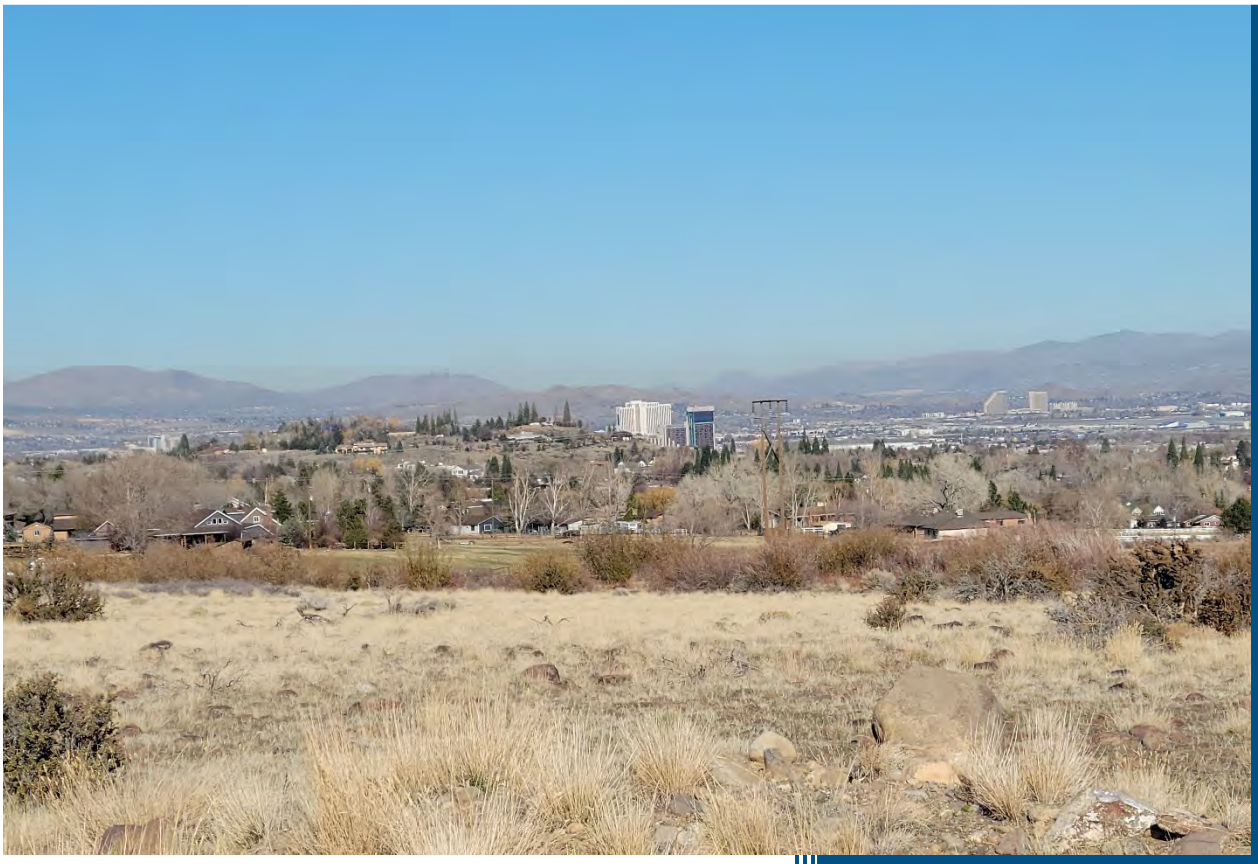
Table of Contents – Special Packet

8900 Lakeside Drive
Geologic and Seismic Hazards Report



UNIVERSAL
ENGINEERING SCIENCES

UES No. 4130.2100080.0000

Thomas Creek Development, LLC

12/1/2021

Thomas Creek Development, LLC
Adam Giordano and Roger Davidson
2100 Manzanita Lane
Reno, Nevada 89509
775-470-0650

December 1, 2021

Re: Geologic and Seismic Hazards Report
8900 Lakeside Drive Property
APN 041-130-58
UES Project Number: 4130.2100080.0000

Ref: Conceptual Site Layout, CFA, Inc., Dated 07/21/2021, email received July 23, 2021

Dear Mr. Giordano and Mr. Davidson,

Universal Engineering Sciences (UES) is pleased to submit this Geologic and Seismic Hazards report for the referenced project. Our investigation consisted of geological and seismic hazards research on the property. *This report is preliminary and is not suitable for the final design.* A final geotechnical report is required based on actual field investigation, laboratory work, and engineering analysis.

The attached report presents our understanding of the project, outlines our scope of services, and provides preliminary conclusions. We appreciate the opportunity to provide our services and trust that the results will fulfill project requirements at this time. If you or any of your design consultants have any questions or comments, do not hesitate to get in touch with us.

Respectfully,
Universal Engineering Sciences

Nelson Pearson, EIT
Geotechnical Professional

REGISTERED PROFESSIONAL ENGINEER-STATE OF NEVADA
DEAN R. STANPHILL
CIVIL
Exp: 06/30/22
NO. 13546

Dean Stanphill, P.E., G.E., C.E.M
Principal

Laura Varone
Geotechnical Professional

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GEOLOGIC AND SEISMIC HAZARDS REPORT
8900 LAKESIDE DRIVE PROPERTY
APN 041-130-58
RENO, WASHOE COUNTY, NEVADA

1.0 INTRODUCTION

This report presents the results of our geologic and seismic hazards research for the proposed residential community with individual lots between 2.5 and 5 acres in size. The project site is located in Reno, Washoe County, Nevada, and encompasses APN 041-130-58 for a total of 72.8 acres. The site's general location is shown on Plate A-1, Exploration Map.

The purpose of our services is to provide information and preliminary geotechnical engineering recommendations relative to:

- General geology and seismicity of the area
- Geologic and seismic hazards
- Site classification and seismic design parameters

This report is to provide seismic and site assessment information and preliminary design recommendations. *It is not to be used for the final design.*

2.0 PROJECT INFORMATION

Our understanding of the project is based on communication with the client and the civil engineering team, a review of the tentative development map, site visits, and our preliminary seismic exploration.

2.1 SITE DESCRIPTION

According to the Washoe County Assessor's office, the project site is identified as assessor parcel number (APN) 041-130-58 and is accessible via Lakeside Drive/Holcomb Ranch Lane and Lombardi Lane. The site is zoned as High Density Rural, Medium Density Rural, and General Rural (HDR, MDR, and GR). The site is currently undeveloped, there is a hill with grades exceeding 10% that dominates the landscape to the east and central portion of the site, and the western part of the site has an abundance of surface cobbles and small boulders. The property is located on the edges of a residential area, surrounded on the north, east, and west by single-family homes and undeveloped open land to the west. According to the Public Land Survey System (PLSS), the site is in the SE¼ of the NE¼, SW¼ of the NE¼, and NE¼ of the NE¼ of section 11, T18N, R19E of the Mount Diablo Principal Meridian.

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2.2 Proposed Development

As we understand, from emails and phone calls with the client and drawings received on parcel layout and roads, the proposed includes:

- A residential community
  - Individual lots between 2.5 and 7 acres in size
  - The lots will remain undeveloped to allow for the construction of custom luxury single-family homes
- Residential structures will be one to three stories in height and may include basements
- Appurtenant construction includes
  - Flexible asphalt concrete (AC) and rigid Portland cement concrete (PCC) pavements
  - Paving includes the construction of a new road system as well as pavements associated with the construction of the individual lots
  - Retention/detention basins as part of the stormwater management plan
  - Designed landscaping throughout the site
  - New community entrance signage

UES assumes a combination of conventional wood-framed and masonry construction will be used. Further, we assume that all structures will be supported on shallow foundation systems, including spread footing, continuous strip, and concrete slab-on-grade floors.

Structural loadings, grading plans, and anticipated traffic volumes were unavailable at the time of this report.

3.0 GEOLOGIC AND SEISMIC HAZARDS

As part of the geotechnical investigation of the project site, UES reviewed published geotechnical, geological, and hazard data. The following sub-sections present our findings along with our conclusions.

3.1 Regional Geology

The Site is located at the south end of the Truckee Meadows, a structural basin bounded by Steamboat Hills to the south, the Virginia Range to the east, and the Sierra Nevada to the west. This basin is transitional between the Basin and Range physiographic province to the east and the Sierra Nevada to the west. The geologic structure of the area is characterized by high-angle extensional normal faults trending in a north-northeast direction. The Truckee Meadows is a down-dropped graben with neighboring horsts to the east and west. The present topography of the basin is due primarily to a combination of extensional normal faulting and Quaternary-age basinal sedimentation.

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3.2 Site Geology

According to the geologic mapping by H.F. Bonham Jr. and D.K. Rogers (Nevada Bureau of Mines and Geology, Mt. Rose NE Quad. 1983), the materials in the general site vicinity are composed of the following:

> **Qdm – Donner Lake Outwash-Mount Rose Fan Complex:** Pediment and thin fan deposits from major streams draining alpine glaciers on Mount Rose; brown to brownish-gray, sandy, muddy, poorly sorted large pebble gravel; cobbles and small boulders common. Clasts dominantly volcanic (porphyritic andesite and latite); surface granitic clasts rare. Deeply weathered, strongly developed soil profile similar to Qdo; locally overlain by undifferentiated veneer of Qtm; well cemented and/or hydrothermally altered in Steamboat Hills area
>
> **Qoa – Older Alluvium:** Highly dissected remnants of muddy, sandy small pebble gravel in alluvial deposits transported from Thomas Creek; soil profile 1 - 2 meters thick with strongly developed argillic B-horizon; local duripan development. Also includes areas of older alluvium in Steamboat Hills.

A map showing the local geology is presented on Plate A-3, Geologic Map.

3.3 United States Department of Agriculture (USDA) Soil Mapping

UES reviewed the United States Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Survey to gather a broad understanding of the on-site soils. The USDA soil survey provides a general overview of mapped soil types. *However, the information provided by the USDA soil survey is insufficient to develop site-specific design recommendations.* Table 1 summarizes the information obtained from the USDA soil mapping. The USDA soil survey report is located in Appendix C.

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Table 1: Summary table of the USDA Web Soil Survey information for the project site.

Map Unit Symbol	Map Unit Name	Depth to restrictive feature [in]	Depth to groundwater [in]
174	Indian Creek extremely stony sandy loam, 2 to 8 percent slopes	14 to 20 inches to duripan	>80
585	Barnard-Trosi association	20 to 39 inches to duripan	>80
595	Springmeyer sandy clay loam, 0 to 2 percent slopes	>80	>80
630	Fleischmann gravelly clay loam, 2 to 4 percent slopes	20 to 30 inches to duripan	>80
631	Fleischmann gravelly clay loam, 4 to 8 percent slopes	20 to 30 inches to duripan	>80
640	Notus stony loamy fine sand	>80	>80
730	Stodick very stony loam, 15 to 30 percent slopes	14 to 20 inches to paralithic bedrock	>80
780	Bieber stony sandy loam, 0 to 4 percent slopes	8 to 20 inches to duripan	>80

The USDA soil survey defines a restrictive feature as a layer that significantly impedes water movement; typically, this is either a cemented layer or bedrock. UES has not conducted a subsurface exploration at the time of this report; therefore, this report is insufficient for construction.

3.4 Well Log Inquiry and Groundwater

Based on the United States Geological Survey (USGS) groundwater watch website (https://groundwaterwatch.usgs.gov), the approximate depth to monthly median water level is 128 feet below grade. The nearest well is approximately 400 feet south of the southeast corner of the site. **UES does not anticipate groundwater affecting the construction of the proposed development**. Groundwater levels fluctuate due to seasonal variations, irrigation practices, and groundwater withdrawal/recharge cycles.

3.5 Faulting and Surface Rupture

Literature prepared by A. Ryall and B. M. Douglas (NBMG, Regional Seismicity, Reno Folio, 1976) indicates that earthquake recurrence curves predict a return period of 70 to 80 years for an earthquake Magnitude 7.0 or greater within 62 miles of the Reno-Carson area. They also calculate that, on average, an earthquake of Magnitude 5.3 to 5.4 would be expected to occur within 20 miles of Reno approximately once in 30 years, would have a maximum bedrock acceleration of

0.12 to 0.19g, and would involve about 6 seconds of strong shaking. The expected return period of rock accelerations greater than 0.5g at an average site in western Nevada associated with an earthquake of magnitude greater than 7.0 is on the order of 2000 years.

Active faults capable of generating large magnitude earthquakes have been identified within the region. The project site is in the Basin and Range Physiographic Province, structurally characterized by high-angle extensional normal faults. Therefore, strong ground shaking associated with earthquakes should be expected during the life of the project.

Based on a review of the United States Geological Survey (USGS) Quaternary Fault and Fold database and the referenced geologic map, there is a mapped undifferentiated Quaternary-aged (< 1.6 million years) fault traversing the project site in a north to south direction. According to the database, the fault is part of the Mount Rose fault zone. **In our opinion, surface fault rupture is unlikely.** The fault line is shown on Plate A-3, Geologic Map

3.6 Seismically Induced Liquefaction

Liquefaction is a loss of soil shear strength that may occur during a seismic event and results from a buildup of pore water pressures caused by cyclic shear stresses exceeding the effective soil stress. When the pore ware pressures exceed the soil's effective stress, the soil may behave like a non-Newtonian fluid, subject to three-dimensional ground movement. This phenomenon is limited to poorly consolidated (typically, soils with a shear wave velocity less than 600 feet per second, and Standard Penetration Test (SPT) less than 30) clean to silty sand/sandy silt lying below the groundwater table (typically less than 50 feet deep). The consequences of liquefaction include substantial loss of soil strength, seismic settlement, horizontal ground displacement from lateral spreading, increased lateral soil loads, sand boils, and bearing capacity degradation.

UES conducted two refraction microtremor seismic surveys (ReMi) to establish the seismic site classification and liquefaction screening and analysis. The results of the ReMi survey indicate the project site soils are stiff soil with an average shear wave velocity of 894 and 1,140 feet per second (ft/s). Based on the shear wave velocities, and the depth of groundwater being greater than 50 feet – **UES concludes that the risk of liquefaction for the proposed development is unlikely.**

3.7 Flooding

The site is located on Federal Emergency Management Agency (FEMA) community panel numbers 32031C3229H (effective 6/18/2013) and 32031C3233G (effective 3/16/2009), which map the site is within **flood hazard Zone X** (unshaded). These are areas of minimal flood hazard, determined to be outside the 0.2 percent annual chance floodplain (500-year flood) and areas of 1 percent annual chance flood (100-year flood). A copy of the flood hazard map is included on Plate A-4, Flood Hazard Map.

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3.8 TSUNAMI OR SEICHE

There are no large bodies of water near the project site; therefore, the potential for tsunamis or seiches to impact the site is **considered nonexistent**.

3.9 RADON

Radon, a colorless, odorless, radioactive gas derived from the natural decay of uranium, is found in nearly all rocks and soils. The Environmental Protection Agency (EPA) suggests taking remedial action to reduce radon in any structure with an average indoor radon level of 4.0 pCi/L or more. Based on the MyHAZARDS-Nevada database managed by the Nevada Bureau of Mines and Geology, the project site is in an area with average radon levels of 3.75 pCi/L. Therefore, we **suggest testing the site for radon.** Our office can be of assistance if you desire radon testing.

4.0 GEOPHYSICAL EXPLORATION

As part of this initial geohazard investigation, we conducted a geophysical site evaluation that included two seismic microtremor surveys and one seismic refraction survey. The seismic refraction survey was conducted over the mapped fault splay on the south end of the property. The approximate locations of the seismic explorations are shown on Plate A-1 Exploration Map.

The ReMi surveys consisted of one 289-foot, 12-channel line seismic survey line, using 10-Hz geophones. The ReMi method evaluates the weighted-average soil shear wave velocity for the upper 100 feet (V_s100). The ReMi results can be used for identifying and analyzing liquefaction potential and are presented in Plates B-1 through B-4. ReMi data were collected using both ambient noise and active sources. Active noise was generated by striking a 16-pound sledgehammer off the ReMi array's ends and walking up and down the line during data acquisition.

Geophysical data were acquired with a Seismic Source model DAQlink4 24-channel seismograph, using a 12-geophone spread spaced at 8 meters (26.25 ft) intervals for a total survey line length of 289 ft. The surface wave signals were recorded using 10-Hz geophones. Data were processed using Geogiga's Surface Plus application.

Additionally, UES conducted a seismic refraction survey to further evaluate the subsurface conditions at the project site. Seismic refraction measures the velocity of the primary seismic wave (P-wave) as it propagates through a soil or rock medium. In general, higher seismic velocities correlate with a denser medium, allowing for quantifying the competence of the material. The seismic refraction survey utilized a 26-foot geophone spacing.

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4.1 General Surface Characteristics

Based on our site visit, historical Google Earth imagery, and our document review; we present the following observations:

- The site's topography has considerable slopes ranging across the entire site, increasing in elevation from the east to the west. The site's southwest corner has a maximum elevation of approximately 4,880 feet above mean sea level (MSL). The northeast corner has a minimum elevation of approximately 4,662 feet above MSL. Elevations are based on NAVD88 vertical datum and the Washoe Regional Mapping System and shown on Plate A-2, Topographic Map.
- The terrain is varying degrees of grassland covered with boulders and cobbles (Figure 1 and 2)
    - There is moderate vegetation (Figure 3)
- Currently, the project site has:
    - Waterways and ditches in multiple locations throughout the site
    - Rockery walls found in the central section
    - A gated path running north to south through the project site connects Lombardi Road and Bellhaven Road (entrance shown in Figure 4)
- Historical Google Earth imagery (Google Earth Pro, 2021) suggests the project site has remained unchanged since 1990

Figure 1: Grasslands throughout site.

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Figure 2: Boulders and cobbles on the surface of the site.

Figure 3: Various growth of vegetation throughout site.

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Figure 4: The entrance to the path through the site, as well as one of the waterways.

5.0 RECOMMENDATIONS

Site-specific recommendations will be created once the subsurface investigation is conducted. *Therefore, this report is not for the final design.*

5.1 Seismic Site Class and Seismic Design Parameters

To establish Site Class as per the 2018 International Building Code (IBC) in conjunction with ASCE 7-16, we performed two Refraction Microtremor (ReMi) surveys on the site's west and east side.

5.1.1 Seismic Site Class

The site class for the project site was determined in accordance with Table 20.3-1 of ASCE Standard 7-16. Based on our geophysical exploration results indicating a weighted-average soil shear wave velocity of the upper 100 feet (V_s100) as **894 and 1,140 ft/s**, **a Site Class D should be used for determining seismic design criteria**. In addition, if the proposed structure has a fundamental period of greater than 0.5 seconds, we recommend that a site-specific response analysis be performed for structural design. Results of the ReMi survey and analysis are presented on Plates B-1 through B-4.

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5.1.2 Seismic Design Parameters

UES obtained the site seismic design parameters using the ATC Hazards by Location website. This application is a third-party graphical user interface (GUI) utilizing the USGS seismic design maps and is used for determining seismic design values according to ASCE/SEI 7-16 and the 2018 International Building Code. Design parameters are presented in the following Table 2.

Table 2: 2018 IBC Seismic Design Parameters

Description	Value
Latitude	39.442308
Longitude	-119.811692
Site Class	**D**
Risk Category	**II**
Short-Period (0.2 sec) Spectral Response, S_S	1.956 g
Long-Period (1.0 sec) Spectral Response, S_1	0.698 g
Short (0.2 sec) MCE Spectral Response, S_{MS}	1.956 g
Long (1.0 sec) MCE Spectral Response, S_{M1}	*null
Short (0.2 sec) Design Spectral Response, S_{DS}	1.304 g
Long (1.0 sec) Design Spectral Response, S_{D1}	*null
Short-Period (0.2 sec) Site Coefficient, F_A	1.0
Long-Period (1.0 sec) Site Coefficient, F_V	*null
Site modified Peak Ground Accelerations, PGA_M	**0.942 g**
Seismic Design Category, SDC	D

NOTE *null: The Structural Engineer shall determine these values in accordance with ASCE 7-16, Section 11.4.8, Exception 2 and make a further determination if a site response analysis is required in accordance with Chapter 21 of ASCE 7-16.

5.2 Site Rippability

UES performed a seismic refraction survey to evaluate the rippability of the soil. The Caterpillar D8R Ripper Performance rippability chart shows that an excavator with a single shank or multi-shank No. 8 ripper should reach the depth of the 5,000 ft/s velocity contour. The majority of the site does not reach a p-wave velocity of 5,000 ft/s until an approximate depth of sixty-five feet (65'). Therefore, UES believes earthwork at the project site can be accomplished with adequately sized conventional earthwork equipment. However, pockets of dense soils and buried boulders may present some challenges. Refraction survey results are shown on Plate B-5, and the Caterpillar Rippability chart is shown on plate B-6.

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7.0 OTHER SERVICES

Based on a review of this report, a comprehensive geotechnical investigation shall be performed to provide site-specific recommendations for the final design.

The analyses and recommendations in this report are based in part upon data obtained from the geophysical field exploration. The nature and extent of variations beyond the locations of the explorations may not become evident until further geotechnical investigation is conducted. If variations then appear evident, it may be necessary to re-evaluate the recommendations of this report.

8.0 CLOSURE

Our professional services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities. No warranties, either express or implied, are intended or made. We prepared this report to aid the geotechnical investigation plan. This report is not a bidding document. Any contractor reviewing this report must draw their own conclusions regarding site conditions and specific construction techniques for this project.

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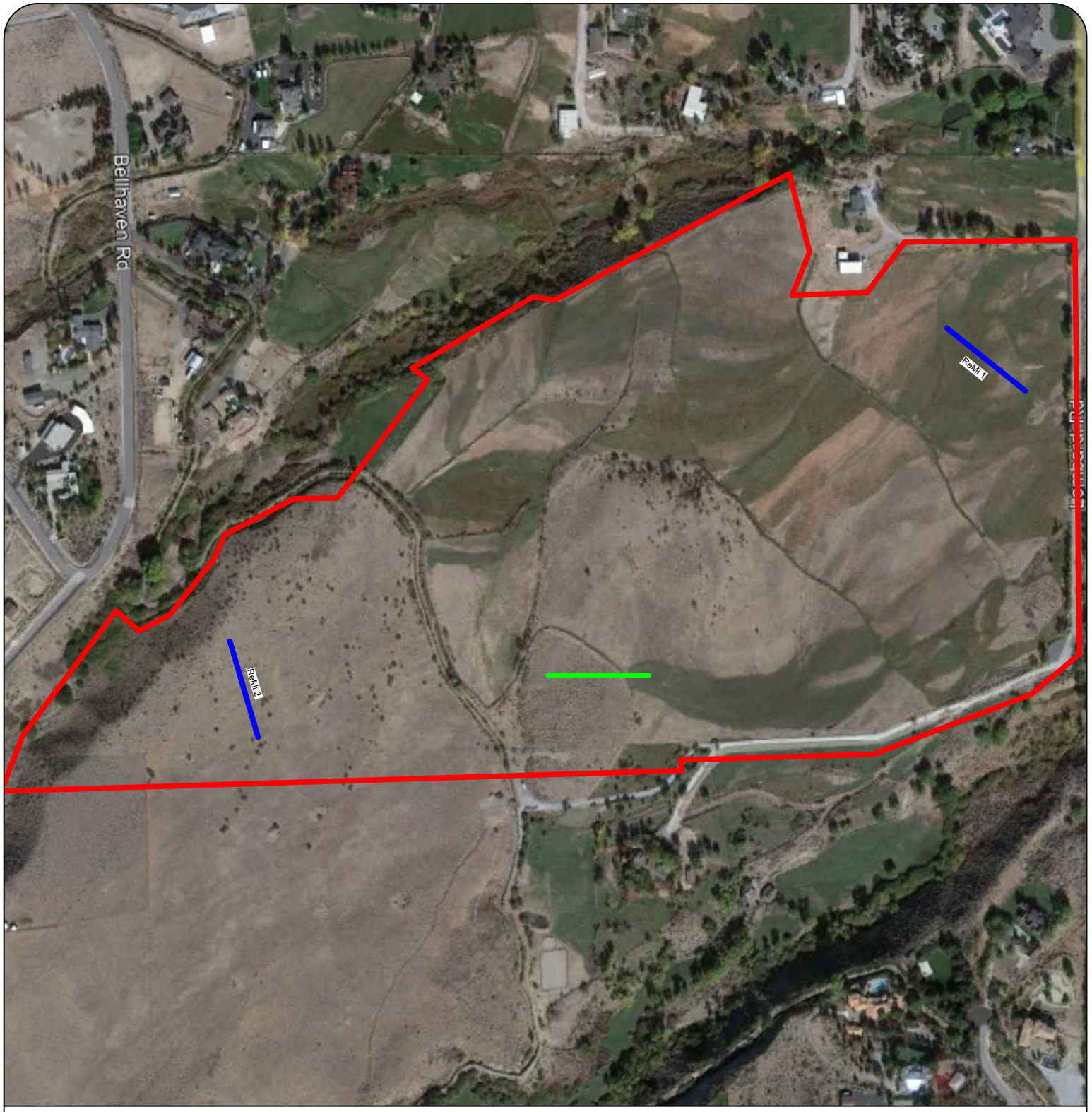
Appendix A

Maps



250 0 125 250 500

(IN FEET)

PROJECT BOUNDARY

ReMi LINE LOCATION

REFRACTION LINE LOCATION

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Exploration Map

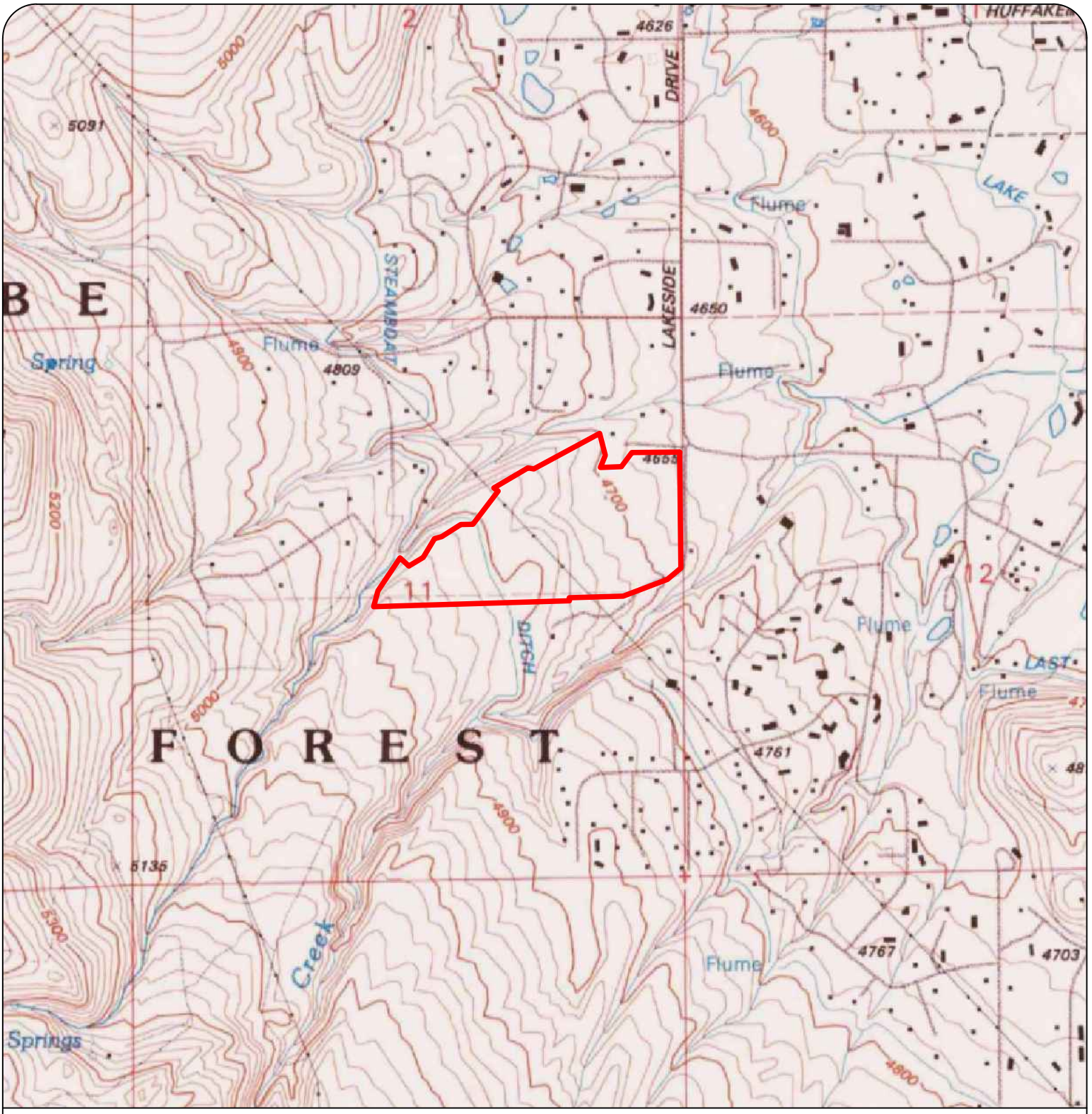
8900 Lakside Drive

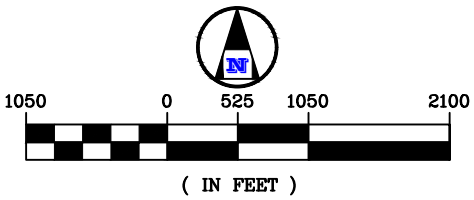
Washoe County, Nevada

Date: 11-23-2021

Job No: 4130.2100080.0000

Plate A-1





PROJECT BOUNDARY

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Topographic Map

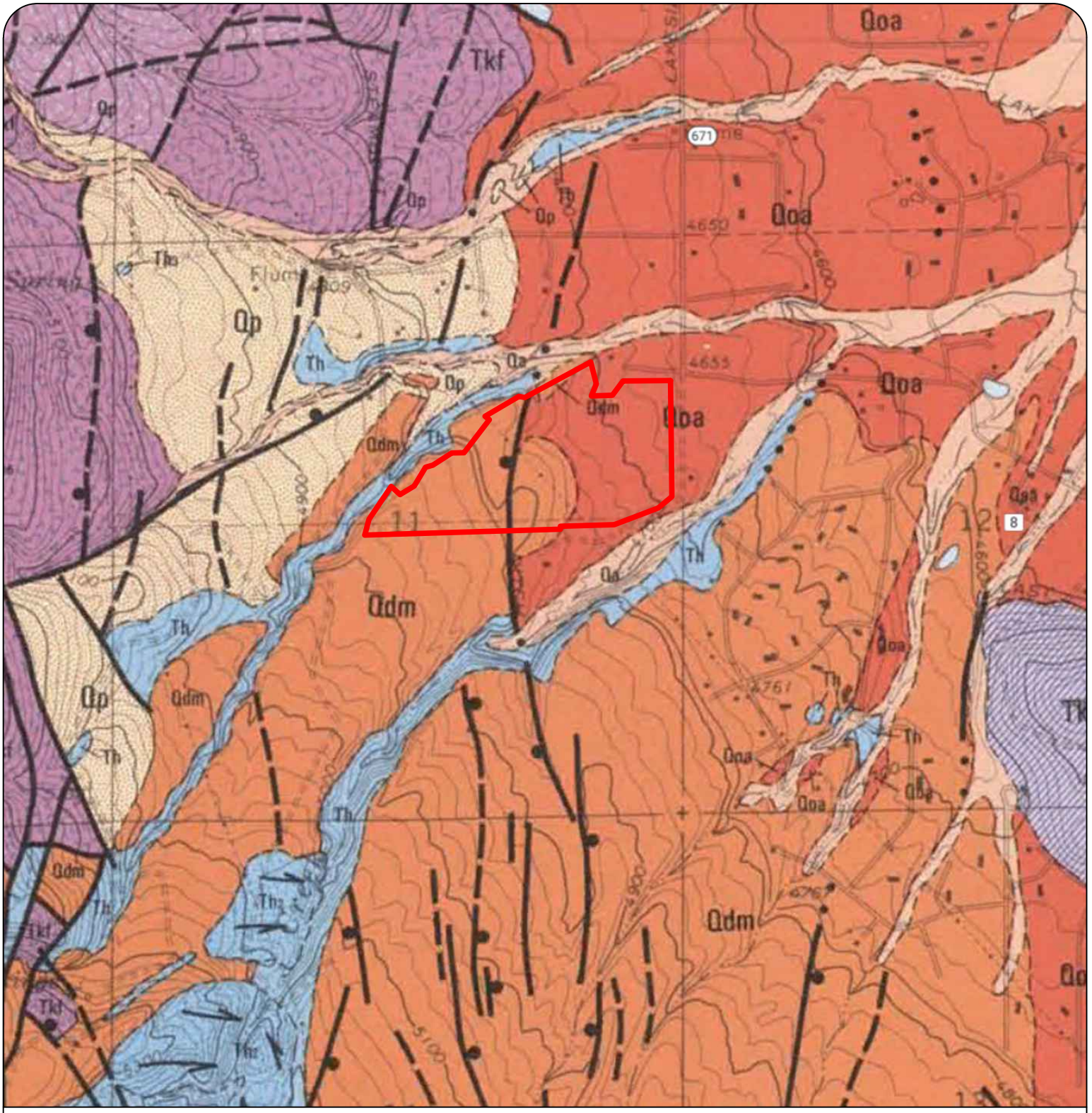
8900 Lakside Drive

Washoe County, Nevada

Date: 11-23-2021

Job No: 4130.2100080.0000

Plate A-2



700 0 350 700 1400

(IN FEET)

PROJECT BOUNDARY

FAULT

Qoa Older Alluvium: Highly dissected remnants of muddy, sandy small pebble gravel in alluvial deposits transported from Thomas Creek, Soil profile 1-2 m thick with strongly developed argillic B horizon, local duripan development.

Qp Pediment Gravel: Veneers of moderately to poorly sorted medium pebble to cobble gravel <3 m thick, Commonly occurs as gravel sheet <1 m thick over bedrock and older pediment and alluvial fan gravels. Clast content dominantly volcanic.

Qdm Donner Lake Outwash: Mount Rose Fan Complex. Pediment and thin fan deposits from major streams draining alpine glaciers on Mount Rose. Brown to brownish gray sandy, muddy, poorly sorted large pebble gravel, cobbles and small boulders common.

Th Sandstone Of Hunter Creek: Brown to gray, medium to thick bedded, subangular coarse sand, Intercalated tuff and subrounded andesite pebble to cobble conglomerate, grades upward into thin bedded silt and diatomaceous silt.

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Geologic Map

8900 Lakside Drive

Washoe County, Nevada

Date: 11-23-2021

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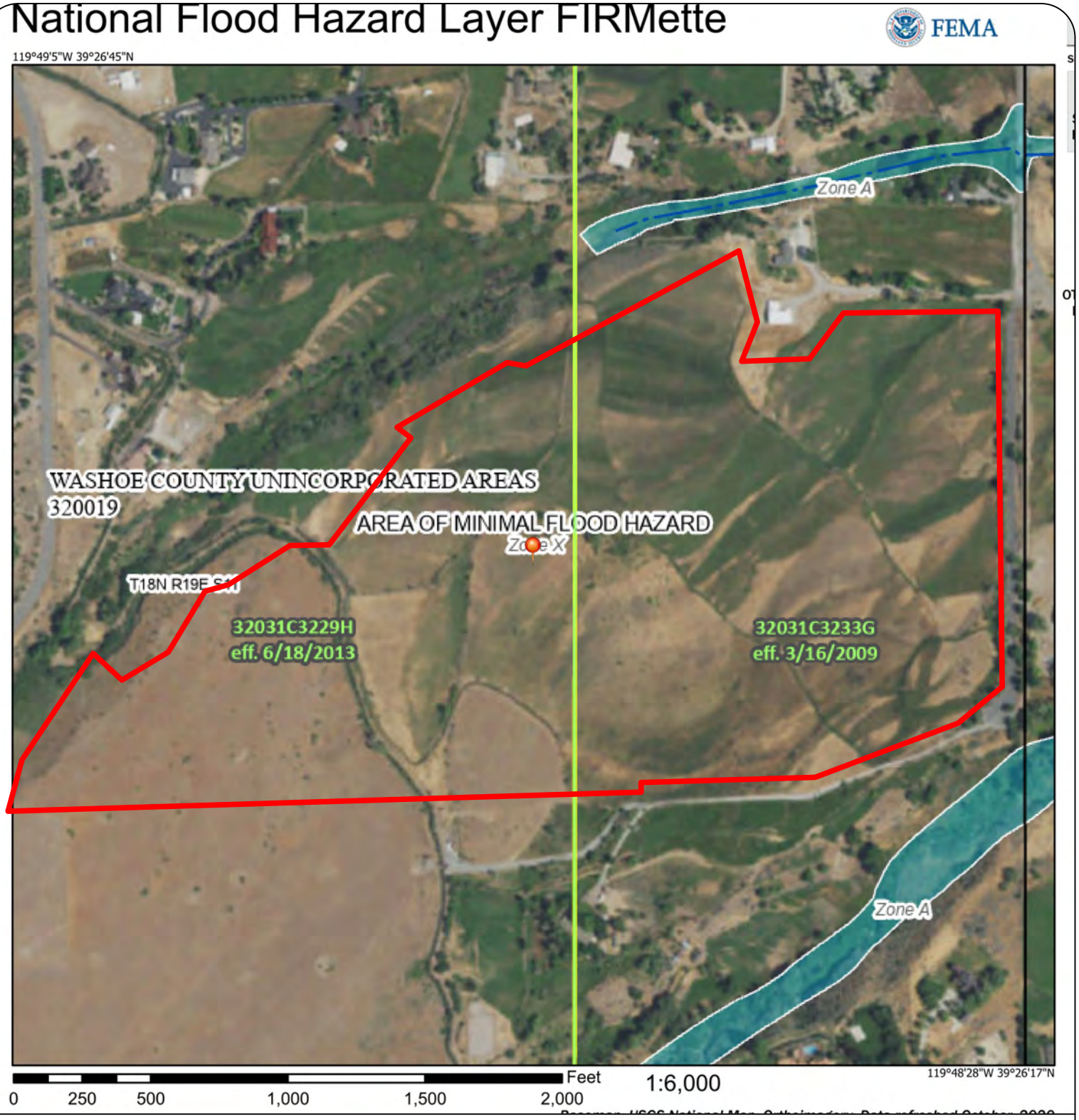
Plate A-3



Area of Minimal Flood Hazard

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Flood Hazard Map

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Washoe County, Nevada

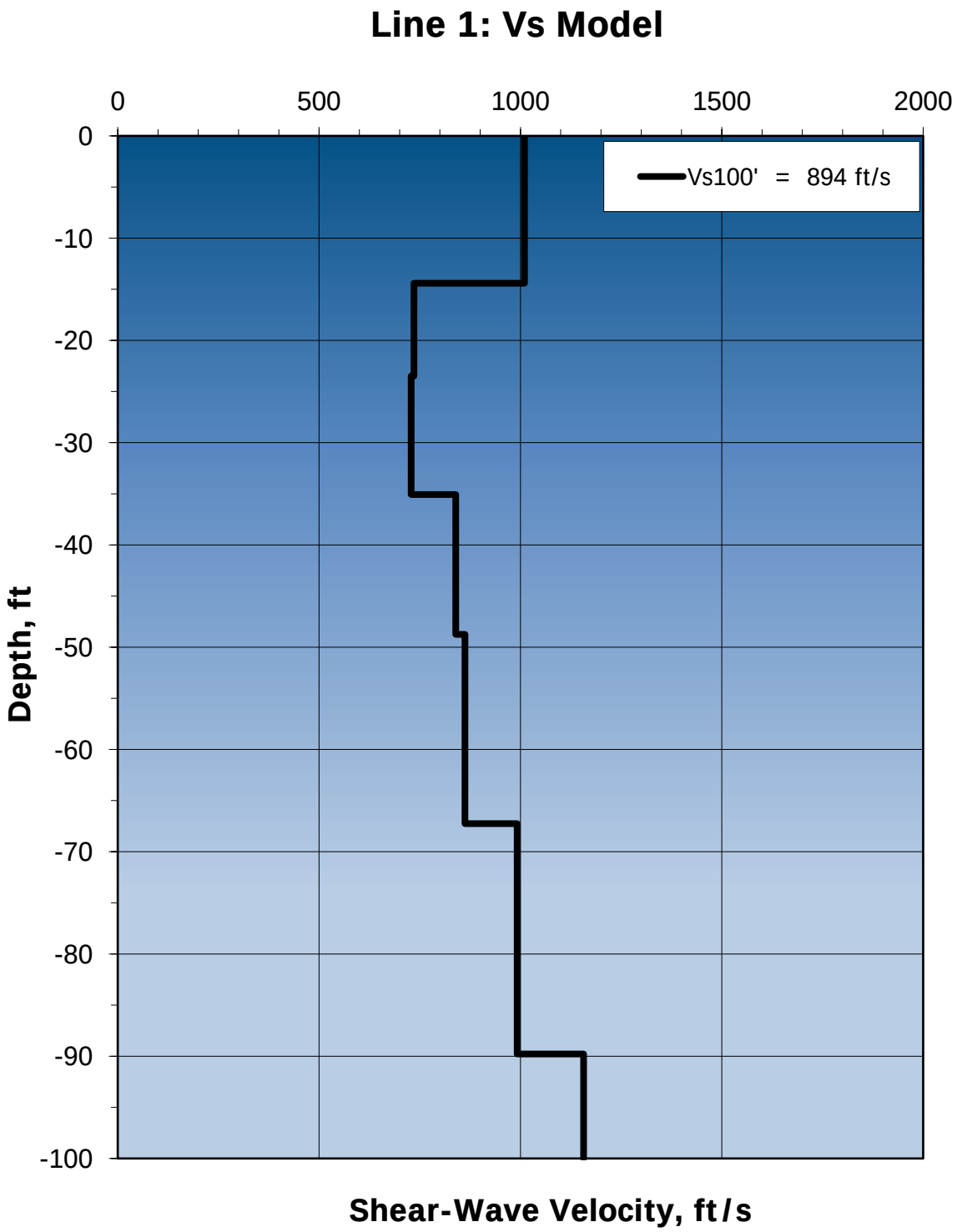
Date: 11-23-2021

Job No: 4130.2100080.0000

Plate A-4

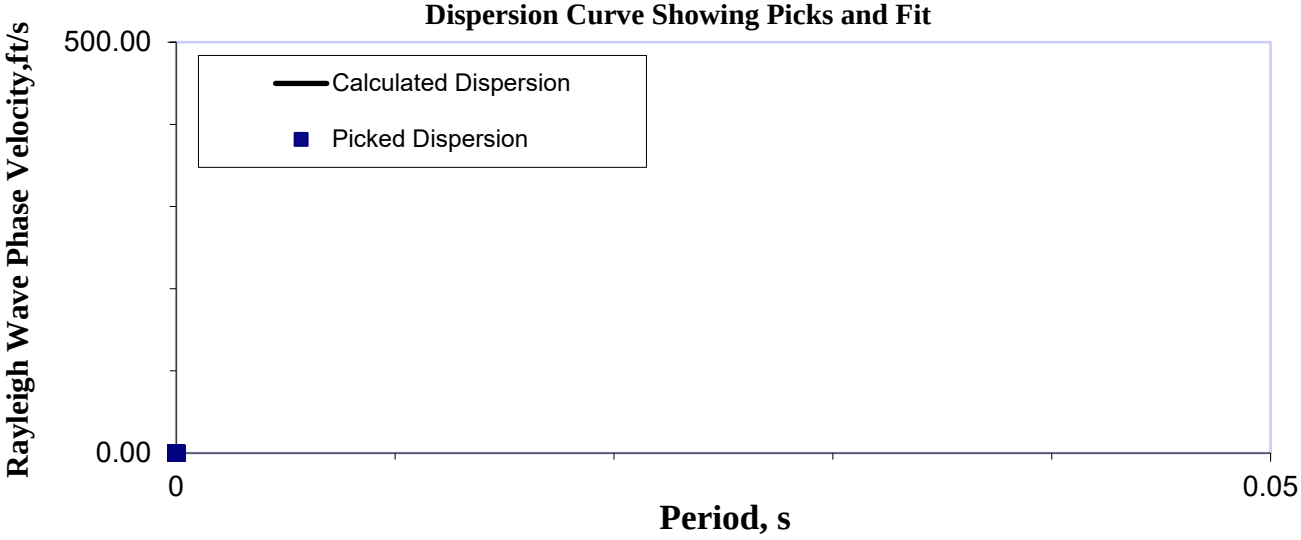
Appendix B

Seismic Data

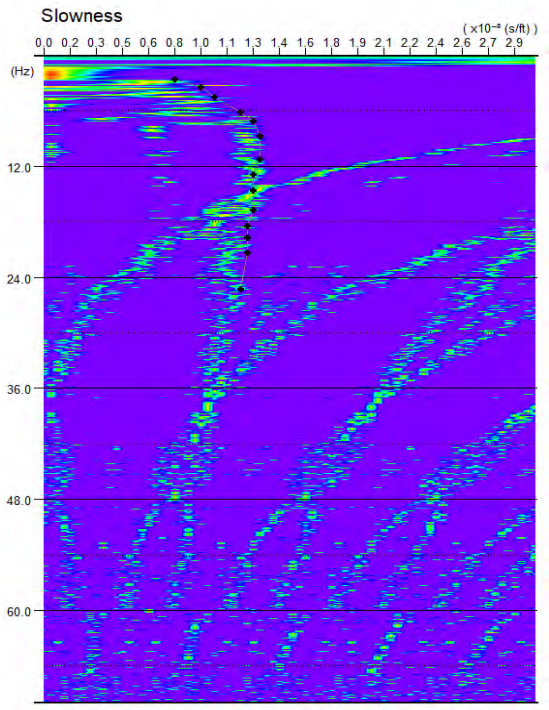


UNIVERSAL ENGINEERING SCIENCES	CLIENT: Thomas Creek Development, LLC	SHEAR-WAVE VELOCITY PROFILE (Line 1)	
	PROJECT: 8900 Lakeside Drive	PROJECT NO: 4130.2100074	PLATE NO: B-1

Dispersion Curve Showing Picks and Fit

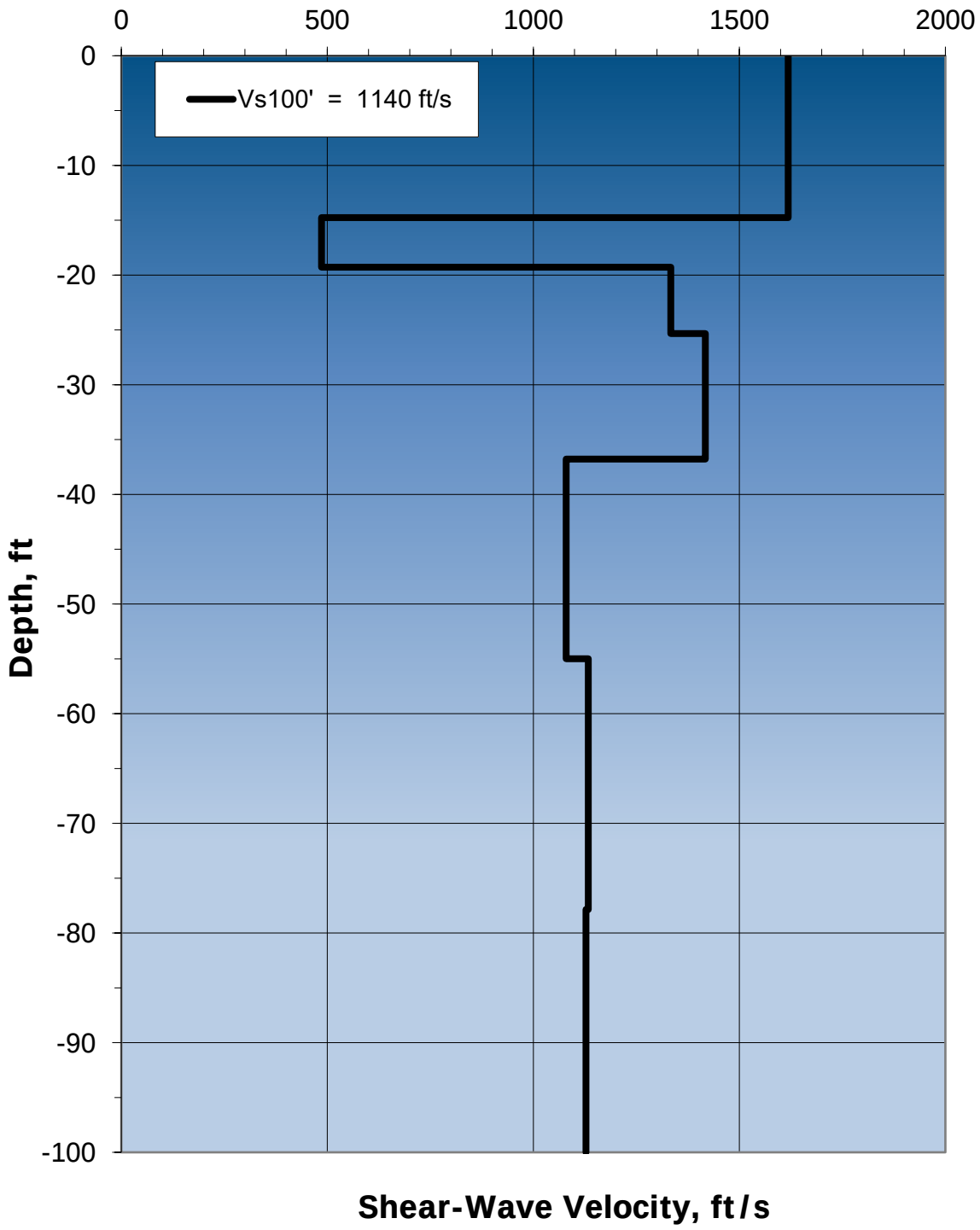


p-f Image with Dispersion Modeling Picks

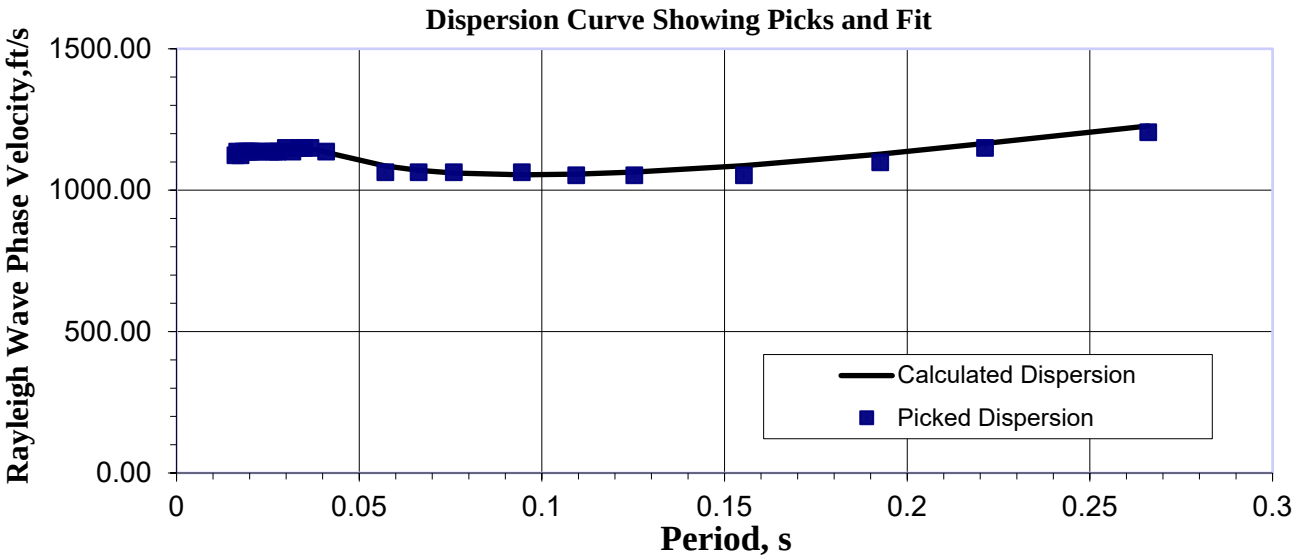


UNIVERSAL ENGINEERING SCIENCES	**CLIENT:** Thomas Creek Development, LLC	**Dispersion Curve and p-f Image (Line 1)**	
	PROJECT: 8900 Lakeside Drive	PROJECT NO: 4130.2100074	PLATE NO: B-2

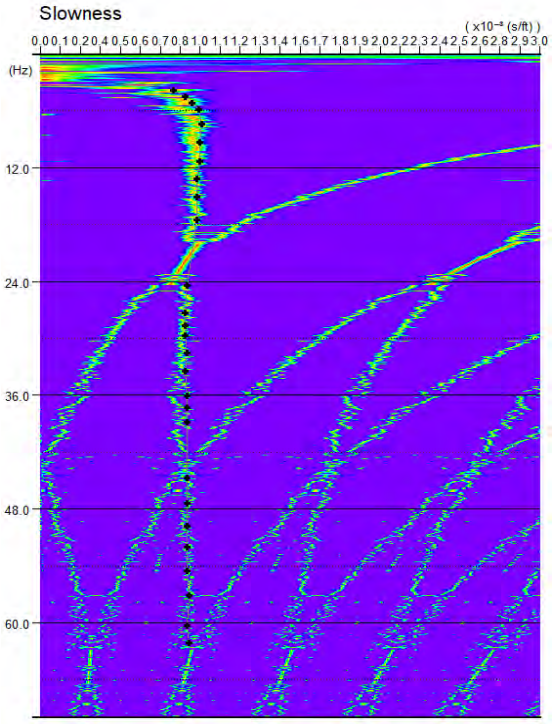
Line 2: Vs Model



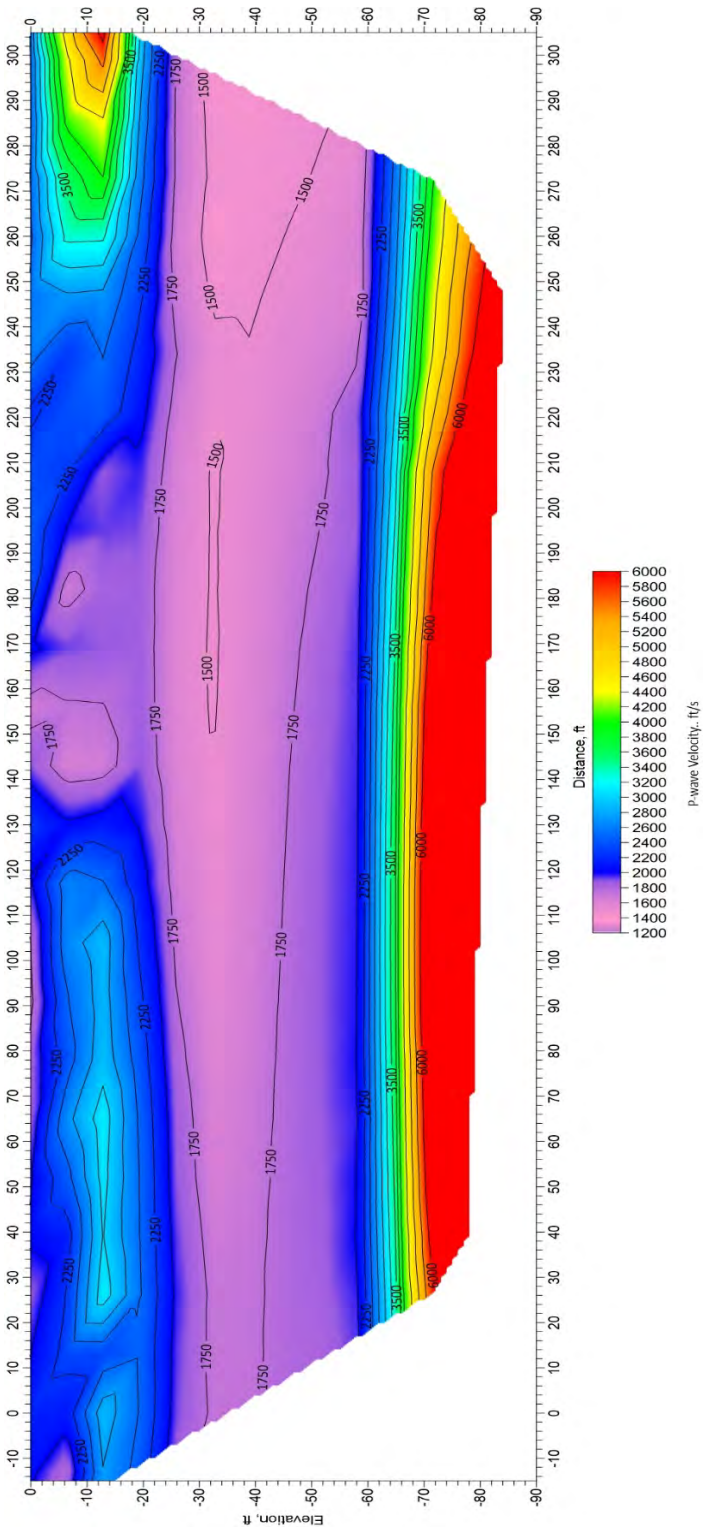
UNIVERSAL ENGINEERING SCIENCES	CLIENT: Thomas Creek Development, LLC	SHEAR-WAVE VELOCITY PROFILE (Line 2)	
	PROJECT: 8900 Lakeside Drive	PROJECT NO: 4130.2100074	PLATE NO: B-3



p-f Image with Dispersion Modeling Picks



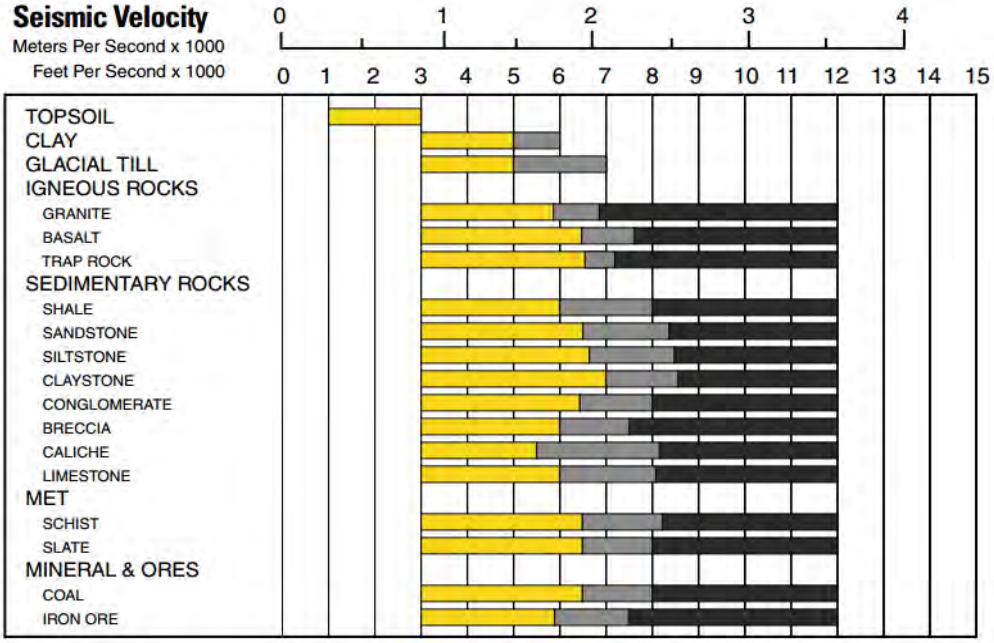
UNIVERSAL ENGINEERING SCIENCES	**CLIENT:** Thomas Creek Development, LLC	**Dispersion Curve and p-f Image (Line 2)**	
	PROJECT: 8900 Lakeside Drive	PROJECT NO: 4130.2100074	PLATE NO: B-4



UNIVERSAL ENGINEERING SCIENCES	**CLIENT:** Thomas Creek Development, LLC	**REFRACTION VELOCITY**	
	PROJECT: 8900 Lakeside Drive	PROJECT NO.: 4130.2100074	PLATE NO. B-5

D8R Ripper Performance

- Multi or Single Shank No. 8 Series D Ripper
- Estimated by Seismic Wave Velocities



RIPPABLE

MARGINAL

NON-RIPPABLE

UNIVERSAL ENGINEERING SCIENCES	**CLIENT:** Thomas Creek Development, LLC	**Rippability Chart**
	PROJECT: 8900 Lakeside Drive	PROJECT NO.: 4130.2100074 / PLATE NO.: B-6

UNIVERSAL ENGINEERING SCIENCES

Appendix C

Supporting Literature

USDA Natural Resources Conservation
Service Web Soil Survey
Soil Map
Engineering Properties

ATC Hazards by Location

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Washoe County, Nevada, South Part

November 16, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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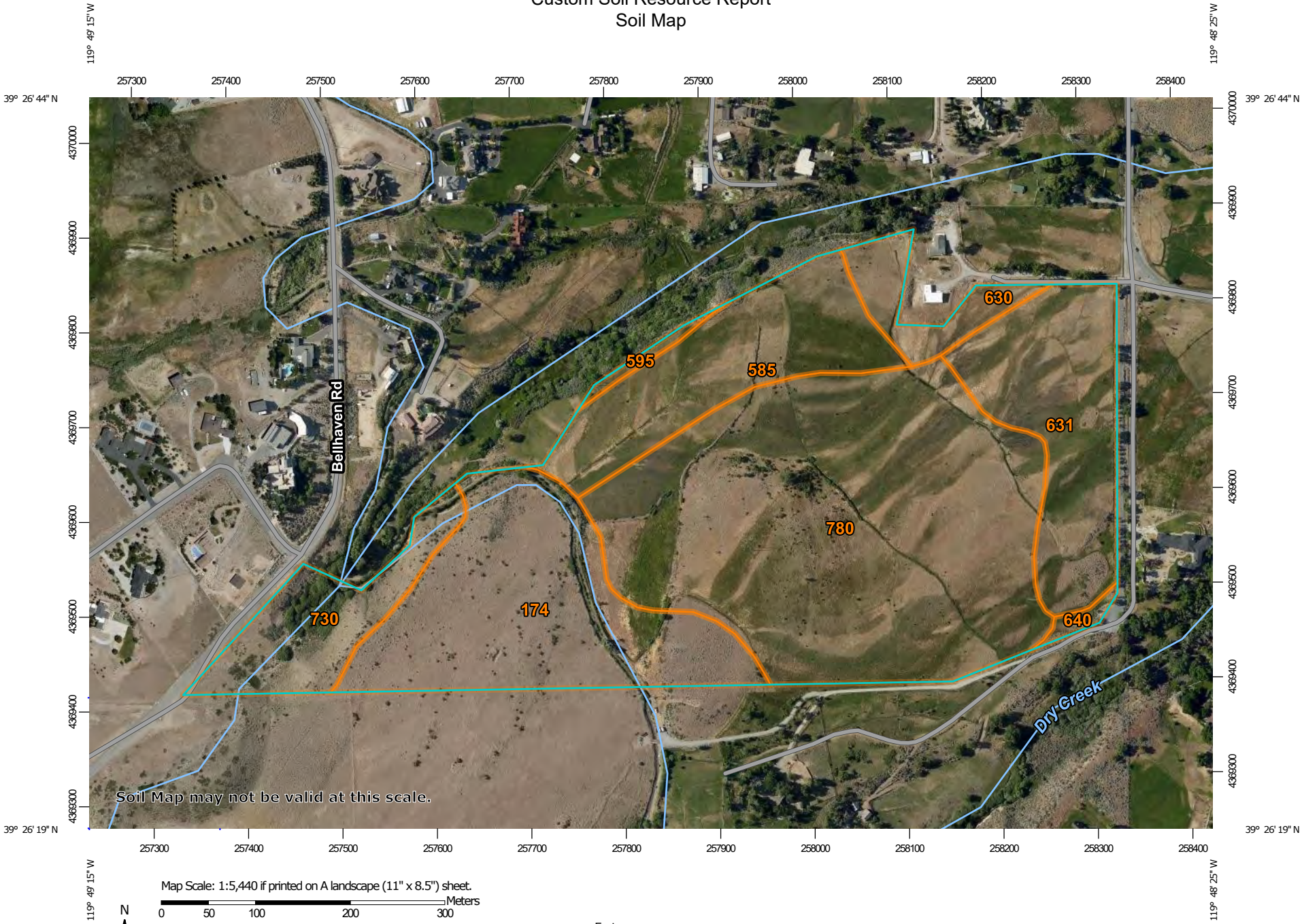
Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:5,440 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washoe County, Nevada, South Part
Survey Area Data: Version 18, Sep 9, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 1, 2018—Oct 1, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
174	Indian Creek extremely stony sandy loam, 2 to 8 percent slopes	14.3	20.0%
585	Barnard-Trosi association	8.7	12.1%
595	Springmeyer sandy clay loam, 0 to 2 percent slopes	0.4	0.6%
630	Fleischmann gravelly clay loam, 2 to 4 percent slopes	2.5	3.5%
631	Fleischmann gravelly clay loam, 4 to 8 percent slopes	9.2	12.8%
640	Notus stony loamy fine sand	0.4	0.5%
730	Stodick very stony loam, 15 to 30 percent slopes	5.2	7.3%
780	Bieber stony sandy loam, 0 to 4 percent slopes	31.0	43.2%
Totals for Area of Interest		**71.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Washoe County, Nevada, South Part

174—Indian Creek extremely stony sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hxgw
Elevation: 4,500 to 5,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 51 degrees F
Frost-free period: 90 to 110 days
Farmland classification: Not prime farmland

Map Unit Composition

Indian creek and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Indian Creek

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 3 inches: very stony sandy loam
H2 - 3 to 20 inches: clay
H3 - 20 to 25 inches: cemented material
H4 - 25 to 60 inches: stratified extremely gravelly loamy coarse sand to gravelly sandy clay loam

Properties and qualities

Slope: 2 to 8 percent
Surface area covered with cobbles, stones or boulders: 23.0 percent
Depth to restrictive feature: 14 to 20 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R026XY025NV - CLAYPAN 8-10 P.Z.
Hydric soil rating: No

Minor Components

Leviathan

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Washoe

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY016NV - LOAMY 8-10 P.Z.
Hydric soil rating: No

Verdico

Percent of map unit: 5 percent
Landform: Pediments
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R026XY023NV - CLAYPAN 10-12 P.Z.
Hydric soil rating: No

585—Barnard-Trosi association

Map Unit Setting

National map unit symbol: hxkw
Elevation: 4,600 to 5,200 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 49 to 51 degrees F
Frost-free period: 80 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition

Barnard and similar soils: 50 percent
Trosi and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Barnard

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 15 inches: stony sandy loam
H2 - 15 to 26 inches: clay
H3 - 26 to 30 inches: cemented material

Properties and qualities

Slope: 2 to 4 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: 20 to 39 inches to duripan
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R026XY017NV - LOAMY HILL 10-12 P.Z.
Hydric soil rating: No

Description of Trosi

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 12 inches: very stony sandy loam
H2 - 12 to 19 inches: very cobbly clay
H3 - 19 to 34 inches: cemented material
H4 - 34 to 60 inches: variable

Properties and qualities

Slope: 4 to 8 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: 12 to 20 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R026XY023NV - CLAYPAN 10-12 P.Z.

Hydric soil rating: No

Minor Components

Bieber

Percent of map unit: 4 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY023NV - CLAYPAN 10-12 P.Z.
Hydric soil rating: No

Galeppi

Percent of map unit: 4 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Indian creek

Percent of map unit: 3 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY025NV - CLAYPAN 8-10 P.Z.
Hydric soil rating: No

Aquolls

Percent of map unit: 2 percent
Landform: Swales
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R022AY016NV - WET MEADOW
Hydric soil rating: Yes

Oest

Percent of map unit: 2 percent
Landform: Fan skirts
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

595—Springmeyer sandy clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hxkz
Elevation: 4,800 to 5,500 feet
Mean annual precipitation: 10 to 14 inches

Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 90 to 110 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Springmeyer and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Springmeyer

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 13 inches: sandy clay loam
H2 - 13 to 40 inches: gravelly sandy clay loam
H3 - 40 to 60 inches: stratified loamy sand to very gravelly sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 2c
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Minor Components

Oest

Percent of map unit: 4 percent
Landform: Fan skirts
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Holbrook

Percent of map unit: 4 percent
Landform: Alluvial fans
Down-slope shape: Linear

Across-slope shape: Convex
Ecological site: R026XY016NV - LOAMY 8-10 P.Z.
Hydric soil rating: No

Aquolls

Percent of map unit: 2 percent
Landform: Swales
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R022AY016NV - WET MEADOW
Hydric soil rating: Yes

630—Fleischmann gravelly clay loam, 2 to 4 percent slopes

Map Unit Setting

National map unit symbol: hxld
Elevation: 4,300 to 5,200 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 100 to 110 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Fleischmann and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fleischmann

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 4 inches: gravelly clay loam
H2 - 4 to 20 inches: clay
H3 - 20 to 43 inches: cemented material
H4 - 43 to 60 inches: variable

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 20 to 30 inches to duripan
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R026XY025NV - CLAYPAN 8-10 P.Z.
Hydric soil rating: No

Minor Components

Orr

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Idlewild

Percent of map unit: 5 percent
Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R026XY001NV - MOIST FLOODPLAIN
Other vegetative classification: MOIST FLOODPLAIN (026XY001NV_2)
Hydric soil rating: No

Reno

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY023NV - CLAYPAN 10-12 P.Z.
Hydric soil rating: No

631—Fleischmann gravelly clay loam, 4 to 8 percent slopes

Map Unit Setting

National map unit symbol: hxlf
Elevation: 4,300 to 5,200 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 100 to 110 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Fleischmann and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fleischmann

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 4 inches: gravelly clay loam
H2 - 4 to 20 inches: clay
H3 - 20 to 43 inches: cemented material
H4 - 43 to 60 inches: variable

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: 20 to 30 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R026XY025NV - CLAYPAN 8-10 P.Z.
Hydric soil rating: No

Minor Components

Orr

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Idlewild

Percent of map unit: 5 percent
Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R026XY001NV - MOIST FLOODPLAIN
Other vegetative classification: MOIST FLOODPLAIN (026XY001NV_2)
Hydric soil rating: No

Reno

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex

Ecological site: R026XY023NV - CLAYPAN 10-12 P.Z.
Hydric soil rating: No

640—Notus stony loamy fine sand

Map Unit Setting

National map unit symbol: hxlh
Elevation: 4,300 to 4,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 47 to 51 degrees F
Frost-free period: 100 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Notus and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Notus

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 12 inches: stony loamy fine sand
H2 - 12 to 60 inches: stratified very gravelly coarse sand to sandy loam

Properties and qualities

Slope: 2 to 4 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: R023XY009NV - LOAMY BOTTOM 8-12 P.Z.
Other vegetative classification: LOAMY BOTTOM 8-12 P.Z. (023XY009NV_2)
Hydric soil rating: No

Minor Components

Holbrook

Percent of map unit: 5 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY016NV - LOAMY 8-10 P.Z.
Hydric soil rating: No

Settlemeyer

Percent of map unit: 5 percent
Landform: Swales
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R026XY003NV - WET MEADOW 10-14 P.Z.
Hydric soil rating: Yes

Rose creek

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R026XY003NV - WET MEADOW 10-14 P.Z.
Other vegetative classification: MOIST FLOODPLAIN (026XY001NV_2)
Hydric soil rating: No

730—Stodick very stony loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hxm4
Elevation: 4,800 to 5,300 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 49 to 51 degrees F
Frost-free period: 95 to 110 days
Farmland classification: Not prime farmland

Map Unit Composition

Stodick and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stodick

Setting

Landform: Pediments
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum and colluvium derived from soft sedimentary rock

Typical profile

H1 - 0 to 4 inches: stony loam
H2 - 4 to 14 inches: very gravelly clay loam
Cr - 14 to 60 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 14 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R026XY015NV - SHALLOW LOAM 10-12 P.Z.
Hydric soil rating: No

Minor Components

Chalco

Percent of map unit: 5 percent
Landform: Pediments
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R026XY015NV - SHALLOW LOAM 10-12 P.Z.
Hydric soil rating: No

Galeppi

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Verdico

Percent of map unit: 3 percent
Landform: Pediments
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R026XY023NV - CLAYPAN 10-12 P.Z.
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

780—Bieber stony sandy loam, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: hxmf
Elevation: 4,900 to 5,200 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 90 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition

Bieber and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bieber

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 6 inches: stony sandy loam
H2 - 6 to 18 inches: clay
H3 - 18 to 51 inches: cemented material
H4 - 51 to 60 inches: stratified cobbly sandy loam to very gravelly sandy loam

Properties and qualities

Slope: 0 to 4 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 8 to 20 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R026XY023NV - CLAYPAN 10-12 P.Z.
Hydric soil rating: No

Minor Components

Oest

Percent of map unit: 4 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Leviathan

Percent of map unit: 4 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY010NV - LOAMY 10-12 P.Z.
Hydric soil rating: No

Barnard

Percent of map unit: 2 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R026XY017NV - LOAMY HILL 10-12 P.Z.
Hydric soil rating: No

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Engineering Properties (8900 Lakeside Drive Property)

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission

rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group

index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties–Washoe County, Nevada, South Part														
Map unit symbol and soil name	**Pct. of map unit**	**Hydrologic group**	**Depth**	**USDA texture**	**Classification**		**Pct Fragments**		**Percentage passing sieve number—**				**Liquid limit**	**Plasticity index**
					Unified	**AASHTO**	**>10 inches**	**3-10 inches**	**4**	**10**	**40**	**200**		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
174—Indian Creek extremely stony sandy loam, 2 to 8 percent slopes														
Indian creek	85	D	0-3	Very stony sandy loam	SM	A-2, A-4	25-38-50	30-35-40	70-80-90	65-75-85	45-50-55	30-35-40	20-28-35	NP
			3-20	Clay, gravelly clay	CH	A-7	0- 0- 0	0-10- 25	80-90-100	70-85-100	65-78-90	55-68-80	55-63-70	30-38-45
			20-25	Cemented material	—	—	—	—	—	—	—	—	—	—
			25-60	Stratified extremely gravelly loamy coarse sand to gravelly sandy clay loam	GC-GM, GP-GC, GW-GM, GM	A-2, A-1	0- 3- 5	5-18- 30	35-45-55	30-43-55	15-20-25	5-10- 15	15-23-30	NP-5-10

Engineering Properties–Washoe County, Nevada, South Part														
Map unit symbol and soil name	**Pct. of map unit**	**Hydrologic group**	**Depth**	**USDA texture**	**Classification**		**Pct Fragments**		**Percentage passing sieve number—**				**Liquid limit**	**Plasticity index**
					Unified	**AASHTO**	**>10 inches**	**3-10 inches**	**4**	**10**	**40**	**200**		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
585—Barnard-Trosi association														
Barnard	50	D	0-15	Stony sandy loam	SM	A-2, A-4	10-15-20	5- 8- 10	85-90-95	80-85-90	50-65-80	25-38-50	15-20-25	NP-3 -5
			15-26	Clay, silty clay	CH	A-7	0- 0- 0	0- 5- 10	85-93-100	85-93-100	70-80-90	60-73-85	50-55-60	30-35-40
			26-30	Cemented material	—	—	—	—	—	—	—	—	—	—
Trosi	35	D	0-12	Very stony sandy loam	SM, GM	A-1, A-2, A-4	5-15- 25	5- 8- 10	60-70-80	50-63-75	30-40-50	20-30-40	15-20-25	NP-3 -5
			12-19	Very cobbly clay, very cobbly clay loam	CL, CH, GC	A-7	0- 5- 10	30-40-50	70-78-85	65-73-80	60-68-75	45-55-65	40-50-60	15-23-30
			19-34	Cemented material	—	—	—	—	—	—	—	—	0-0 -14	NP
			34-60	Variable	GP	A-1	—	—	—	—	—	—	—	—
595—Springmeyer sandy clay loam, 0 to 2 percent slopes														
Springmeyer	90	C	0-13	Sandy clay loam	CL, SC	A-6	0- 0- 0	0- 3- 5	80-90-100	80-88-95	60-70-80	45-53-60	25-30-35	10-13-15
			13-40	Gravelly sandy clay loam, sandy clay loam, clay loam	CL, SC	A-7, A-2, A-6	0- 0- 0	0- 3- 5	80-88-95	65-75-85	60-70-80	30-45-60	35-40-45	15-18-20
			40-60	Stratified loamy sand to very gravelly sandy clay loam	SC	A-2	0- 0- 0	0- 3- 5	70-78-85	55-63-70	30-38-45	20-25-30	25-30-35	10-13-15

Engineering Properties–Washoe County, Nevada, South Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
630—Fleischmann gravelly clay loam, 2 to 4 percent slopes														
Fleischmann	85	D	0-4	Gravelly clay loam	CL	A-7, A-6	0- 0- 0	0- 3- 5	75-80-85	65-70-75	60-65-70	50-58-65	30-38-45	15-20-25
			4-20	Clay	CH	A-7	0- 0- 0	0- 3- 5	80-90-100	80-90-100	75-85-95	70-83-95	50-58-65	35-40-45
			20-43	Cemented material	—	—	—	—	—	—	—	—	—	—
			43-60	Variable	GP	A-1	—	—	—	—	—	—	—	—
631—Fleischmann gravelly clay loam, 4 to 8 percent slopes														
Fleischmann	85	D	0-4	Gravelly clay loam	CL	A-7, A-6	0- 0- 0	0- 3- 5	75-80-85	65-70-75	60-65-70	50-58-65	30-38-45	15-20-25
			4-20	Clay	CH	A-7	0- 0- 0	0- 3- 5	80-90-100	80-90-100	75-85-95	70-83-95	50-58-65	35-40-45
			20-43	Cemented material	—	—	—	—	—	—	—	—	—	—
			43-60	Variable	GP	A-1	—	—	—	—	—	—	—	—
640—Notus stony loamy fine sand														
Notus	85	A	0-12	Stony loamy fine sand	SM	A-2	1- 3- 5	5- 8- 10	80-90-100	70-85-100	55-68-80	15-25-35	0-17 -20	NP
			12-60	Stratified very gravelly coarse sand to sandy loam	GP-GM, SP-SM, GM, SM	A-1	0- 0- 0	15-20-25	40-55-70	35-43-50	15-25-35	5-10- 15	0-19 -23	NP

Engineering Properties–Washoe County, Nevada, South Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
730—Stodick very stony loam, 15 to 30 percent slopes														
Stodick	85	D	0-4	Stony loam	CL-ML, CL	A-4	5- 8- 10	0- 3- 5	85-90-95	80-85-90	70-78-85	50-60-70	15-20-25	5-8 -10
			4-14	Very gravelly clay loam, very gravelly loam	SC, GC	A-2, A-6	0- 0- 0	0- 3- 5	50-63-75	35-45-55	30-43-55	20-33-45	30-35-40	10-15-20
			14-60	Bedrock	—	—	—	—	—	—	—	—	—	—
780—Bieber stony sandy loam, 0 to 4 percent slopes														
Bieber	90	D	0-6	Stony sandy loam	SC-SM, SM	A-4	1- 7- 13	0- 7- 12	80-90-100	75-85-95	50-60-70	35-43-50	20-25-30	NP-5 -10
			6-18	Clay, clay loam	CL, CH	A-7	0- 0- 0	0- 0- 0	80-90-100	75-85-95	70-80-90	60-73-85	45-53-60	20-28-35
			18-51	Cemented material	—	—	—	—	—	—	—	—	—	—
			51-60	Stratified cobbly sandy loam to very gravelly sandy loam	GM	A-1	0- 0- 0	5-20- 35	35-45-55	30-40-50	20-28-35	15-20-25	20-25-30	NP-3 -5

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Hazards by Location

Search Information

Coordinates: 39.442308060717124, -119.81169212009888

Elevation: 4721 ft

Timestamp: 2021-11-24T18:19:11.585Z

Hazard Type: Seismic

Reference Document: ASCE7-16

Risk Category: II

Site Class: D

Basic Parameters

Name	Value	Description
S_S	1.956	MCE_R ground motion (period=0.2s)
S_1	0.698	MCE_R ground motion (period=1.0s)
S_{MS}	1.956	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.304	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.88	Coefficient of risk (0.2s)
CR_1	0.878	Coefficient of risk (1.0s)
PGA	0.856	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.942	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)

SsRT	1.956	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2.223	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	2.845	Factored deterministic acceleration value (0.2s)
S1RT	0.698	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.795	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	1.142	Factored deterministic acceleration value (1.0s)
PGAd	1.16	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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PRELIMINARY DRAINAGE REPORT

8900 LAKESIDE DRIVE SUBDIVISION
TENTATIVE MAP

RENO, NV

DECEMBER 2021

CFA, INC.
1150 CORPORATE BLVD.
RENO, NV 89502

PROFESSIONAL ENGINEER - STATE OF NEVADA
KATHLEEN KNIGHT
Exp: 6/30/23
CIVIL
No. 26985
12/8/21

TABLE OF CONTENTS

APPENDICIES

INTRODUCTION

This report presents the Preliminary Hydrology Study to support the proposed development of the 8900 Lakeside Dr subdivision located on APN 041-130-58. This property is located southwest of Reno, Nevada.

The purpose of this study is to compare the existing and proposed 5-year and 100-year storm events on the site and mitigate any increase in flows based on the proposed development per the Truckee Meadows Regional Drainage Manual and represent the general stormwater conveyance system for the proposed development.

EXISTING SITE DESCRIPTION AND DRAINAGE

The project site is located to the North and West of Lombardi Ln, southwest of the intersection with Lakeside Dr. The parcel is confined by Lombardi Ln to the east and undeveloped and developed single family lots to the northwest, north, and south. The Vicinity Map in Appendix A depicts the area of the proposed project.

The existing site consists of a vacant lot with native vegetation throughout. Steamboat ditch runs through the site on the west side collecting run off from the southwestern corner. Based on aerial and field surveys conducted by CFA the site generally slopes from southwest to northeast varying from 4% to 21%. Offsite drainage coming onto the site is from the south and collected by Steamboat Ditch and transported offsite.

For analysis, the existing site was evaluated as one drainage area and consists of 72.8 acres, as depicted on the Existing Hydrology Map provided in Appendix E.

PROPOSED PROJECT DESCRIPTION AND DRAINAGE

The proposed project is preliminary, and the site plan used for this drainage report is conceptual. For this report it was assumed the site will be subdivided with no improvements to the lots. The only detained flows that will be considered for this report will be the increase from the streets and the utilities within the right of way. The flows from the proposed lots will not be detained since the lots are remaining undeveloped. Since there are no existing storm drain utilities within this area, the proposed site will drain via overland flow to the proposed detention basin located in the northeast corner of the site

For analysis, the proposed site was evaluated as one drainage area and consists of 72.8 Acres as depicted on the Proposed Hydrology Map provided in Appendix E. Flows will be captured and detained on site by the proposed Pond. An infiltration test will be performed during construction. The flows and analysis for the proposed detention pond were calculated using Hydraflow Hydrographs. These calculations are provided in Appendix C.

FLOOD ZONE

According to FIRM Index Map #32019C0375E, dated January 16th, 2009, a portion of the site that will be developed is located within the following flood zone area:

- Zone X, Unshaded; flood zone areas determined to be outside the 0.2% annual chance floodplain
- Zone A, Shaded; Special Flood Hazard Areas without Base Flood Elevation (BFE)

A copy of the FIRM Index Map is in Appendix B.

HYDROLOGIC MODEL PARAMETERS METHODOLOGY

The Rational Method is used to estimate the peak runoff resulting from a storm of given intensity and frequency falling on a specific watershed. The peak flow is expressed as:

$$Q = C\,i\,A$$

where
- Q = Peak rate of runoff, cubic feet per second
- C = Runoff coefficient
- i = Average rainfall intensity, inches per hour
- A = Watershed area, acres

Washoe County allows the use of the Rational Method for contributing areas less than 100 acres. Runoff computations were made using criteria from the Drainage Guidelines for Washoe County. Runoff coefficients were determined using Table 701 from the Truckee Meadows Regional Drainage Manual (TRDRM). Rainfall intensities were determined from the rainfall intensity-duration-frequency (IDF) curves for the site from the National Oceanic and Atmospheric Administration (NOAA) Precipitation Frequency Data Server (PFDS) and

are provided in Appendix B. The initial time of concentration, $T_{c(1)}$, is calculated by using the TR-55 Method and the equations and calculations are provided in Appendix C.

Rational Method calculations were performed using Hydraflow Hydrographs Extension for Autodesk with the appropriate IDF curves and routing parameters. The peak flow for each drainage area is determined based on the runoff coefficient, initial time of concentration, and area (Ref. Calculations, Appendix C).

HYDROLOGY

Peak flows for on-site watersheds were estimated for the 5- and 100-year design storms using the Rational Method, (Ref. Rational Method Calculations, Appendix C). The average C value for the 5-year and 100-year storm conditions is shown in Table 1. The peak runoff generated by the existing and proposed conditions for the 5- and 100-year storm events are displayed in Table 2.

TABLE 1
RATIONAL METHOD PARAMETERS

DRAINAGE AREA	AREA (ACRE)	5YR RUNOFF (COEFF)	100YR RUNOFF (COEFF)	5YR INTENSITY (IN/HR)	100YR INTENSITY (IN/HR)	TC (MIN)
E1	72.8	0.2	0.5	1.341	3.294	12
P1	70	0.2	.5	1.341	3.294	12
P2	2.8	.88	.93	1.341	3.294	12

TABLE 2
PEAK RUNOFF

DRAINAGE BASIN	5YR FLOW (CFS)	100YR FLOW (CFS)
P1	18.78	115.30
P2	3.31	8.58
E1	19.53	119.91
INCREASE	2.56	3.97

Models for the 5-year and 100-year events for existing and proposed conditions and the proposed 100 yr conditions were ran in Hydraflow. Calculations and related information are provided in Appendix C.

DETENTION POND

All onsite flows will be directed to a detention pond in the northeast corner of the site. The pond was sized to detain the difference in peak flows between the developed and undeveloped conditions for the 5-year storm or the difference in peak flows between the developed and undeveloped conditions for the 100-year

storm, whichever is greater. Table 3 shows the required volumes for the 5-year and 100-year storms. The pond will retain the 100-year storm event with a foot of freeboard with a bottom elevation of 4661.50 ft and a top elevation of 4664.50 ft.

TABLE 3				
POND DISCHARGE				
5 YR VOLUME (INCREASE) (FT^3)	100 YR VOLUME (INCREASE) (FT^3)	POND CAPACITY (FT^3)	5 YR POND DISCHARGE (cfs)	100 YR POND DISCHARGE (cfs)
1,838	2,856	5,250	0.47	1.37

Stage/storage tables and outlet/infiltration design calculation are provided in Appendix D.

CONCLUSION

As demonstrated in this report, the proposed drainage concept will detain the 5-yr and 100-yr storm runoff onsite in compliance with the Washoe County design requirements without adverse impact to adjacent or downstream properties or public storm drain facilities.

REFERENCE

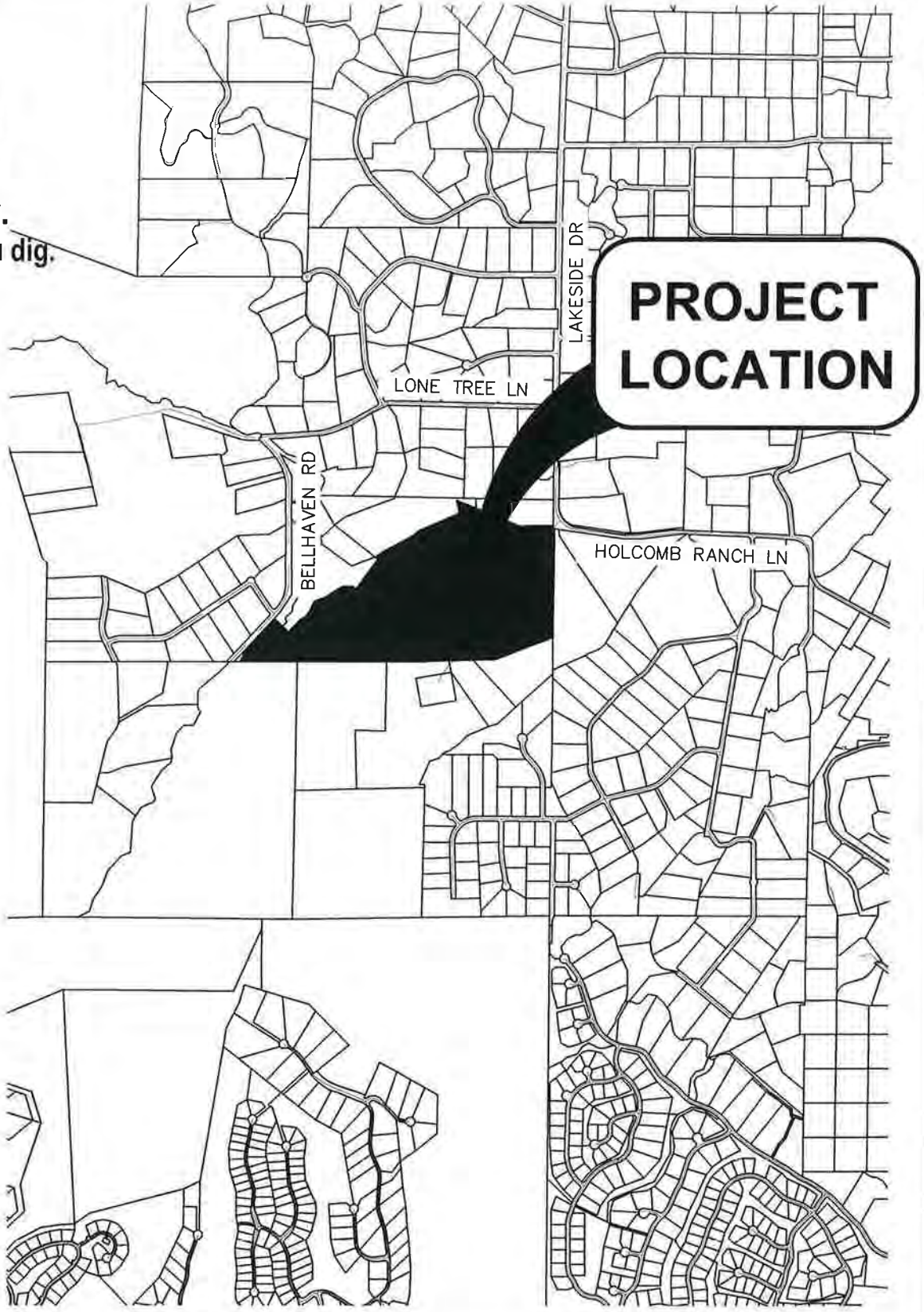
NOAA National Weather Service, *NOAA Atlas 14, Volume 1, Version 5, Reno, Nevada, US, Latitude: 39.4425°, Longitude: -119.8108°, Elevation 4710.94ft.*, (NOAA Atlas 14 Point Precipitation Frequency Estimates: NV, 2004, Revised 2011)

Truckee Meadows Regional Drainage Manual, April 2009

APPENDIX A
VICINITY MAP

811

Know what's **below.**
Call before you dig.



X:\PROJECTS\21087.00\DWG\ENGR\TENT MAP\EXHIBITS\VICINITYMAP.DWG <DHEIN> 12/7/2021 11:22 AM

cfa

1150 CORPORATE BLVD.
RENO, NV 89502
(775) 856-1150

VICINITY MAP
for
8900 LAKESIDE DR

RENO NEVADA

SHEET 1 OF 1

APPENDIX B
FIRM MAP
IDF

National Flood Hazard Layer FIRMette

FEMA

119°49'3"W 39°26'44"N

0 250 500 1,000 1,500 2,000 Feet 1:6,000

119°48'26"W 39°26'17"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Are of 1% annual chance flood with averag depth less than one foot or with drainag areas of less than one square mile *Zone*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zon*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximat point selected by the user and does not repres an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/29/2021 at 12:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NOAA Atlas 14, Volume 1, Version 5
Location name: Reno, Nevada, USA*
Latitude: 39.4425°, Longitude: -119.8108°
Elevation: 4710.94 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.13** (0.960-1.31)	**1.40** (1.20-1.64)	**1.88** (1.60-2.21)	**2.34** (1.98-2.76)	**3.10** (2.56-3.71)	**3.79** (3.04-4.61)	**4.62** (3.59-5.72)	**5.63** (4.19-7.14)	**7.26** (5.09-9.54)	**8.76** (5.87-11.8)
10-min	**0.858** (0.732-0.996)	**1.07** (0.912-1.25)	**1.43** (1.22-1.69)	**1.78** (1.51-2.10)	**2.36** (1.95-2.82)	**2.89** (2.31-3.51)	**3.52** (2.73-4.35)	**4.28** (3.19-5.44)	**5.53** (3.88-7.27)	**6.66** (4.46-8.97)
15-min	**0.708** (0.608-0.824)	**0.884** (0.752-1.04)	**1.18** (1.01-1.39)	**1.47** (1.24-1.74)	**1.94** (1.61-2.33)	**2.39** (1.91-2.90)	**2.91** (2.26-3.60)	**3.54** (2.64-4.49)	**4.57** (3.20-6.00)	**5.50** (3.69-7.42)
30-min	**0.478** (0.408-0.554)	**0.594** (0.506-0.698)	**0.798** (0.678-0.938)	**0.988** (0.838-1.17)	**1.31** (1.08-1.57)	**1.61** (1.29-1.95)	**1.96** (1.52-2.42)	**2.39** (1.78-3.02)	**3.08** (2.16-4.04)	**3.71** (2.48-4.99)
60-min	**0.296** (0.253-0.343)	**0.368** (0.313-0.432)	**0.493** (0.420-0.581)	**0.612** (0.518-0.724)	**0.811** (0.670-0.971)	**0.995** (0.796-1.21)	**1.21** (0.940-1.50)	**1.48** (1.10-1.87)	**1.90** (1.33-2.50)	**2.29** (1.54-3.09)
2-hr	**0.198** (0.175-0.226)	**0.244** (0.218-0.281)	**0.314** (0.275-0.360)	**0.372** (0.322-0.427)	**0.463** (0.390-0.536)	**0.544** (0.446-0.641)	**0.638** (0.509-0.763)	**0.757** (0.583-0.945)	**0.986** (0.716-1.26)	**1.19** (0.834-1.56)
3-hr	**0.158** (0.142-0.178)	**0.196** (0.177-0.223)	**0.246** (0.220-0.278)	**0.285** (0.253-0.323)	**0.340** (0.296-0.388)	**0.388** (0.331-0.449)	**0.445** (0.373-0.522)	**0.523** (0.428-0.636)	**0.663** (0.525-0.850)	**0.801** (0.612-1.05)
6-hr	**0.112** (0.100-0.125)	**0.140** (0.125-0.157)	**0.173** (0.154-0.194)	**0.198** (0.176-0.222)	**0.231** (0.202-0.261)	**0.255** (0.220-0.291)	**0.279** (0.238-0.322)	**0.309** (0.257-0.361)	**0.358** (0.291-0.428)	**0.413** (0.329-0.532)
12-hr	**0.073** (0.066-0.082)	**0.092** (0.083-0.103)	**0.115** (0.103-0.129)	**0.133** (0.119-0.149)	**0.157** (0.138-0.178)	**0.175** (0.152-0.200)	**0.194** (0.165-0.224)	**0.212** (0.177-0.248)	**0.237** (0.192-0.283)	**0.257** (0.204-0.313)
24-hr	**0.047** (0.042-0.053)	**0.059** (0.053-0.066)	**0.075** (0.067-0.083)	**0.087** (0.078-0.097)	**0.105** (0.093-0.117)	**0.119** (0.105-0.133)	**0.133** (0.117-0.150)	**0.148** (0.129-0.169)	**0.169** (0.144-0.194)	**0.186** (0.156-0.215)
2-day	**0.028** (0.025-0.032)	**0.035** (0.032-0.040)	**0.045** (0.040-0.051)	**0.053** (0.047-0.060)	**0.064** (0.056-0.072)	**0.073** (0.063-0.083)	**0.082** (0.070-0.094)	**0.091** (0.078-0.106)	**0.105** (0.087-0.124)	**0.116** (0.095-0.138)
3-day	**0.020** (0.018-0.023)	**0.026** (0.023-0.029)	**0.033** (0.030-0.037)	**0.039** (0.035-0.044)	**0.048** (0.042-0.054)	**0.055** (0.048-0.062)	**0.062** (0.053-0.071)	**0.070** (0.059-0.080)	**0.081** (0.067-0.094)	**0.090** (0.073-0.106)
4-day	**0.017** (0.015-0.019)	**0.021** (0.019-0.024)	**0.027** (0.024-0.031)	**0.032** (0.029-0.036)	**0.040** (0.035-0.045)	**0.046** (0.040-0.052)	**0.052** (0.045-0.059)	**0.059** (0.050-0.067)	**0.069** (0.057-0.080)	**0.077** (0.063-0.090)
7-day	**0.011** (0.010-0.013)	**0.014** (0.013-0.016)	**0.019** (0.016-0.021)	**0.022** (0.020-0.025)	**0.027** (0.024-0.031)	**0.031** (0.027-0.036)	**0.036** (0.030-0.041)	**0.040** (0.034-0.046)	**0.046** (0.039-0.055)	**0.052** (0.042-0.061)
10-day	**0.009** (0.008-0.010)	**0.011** (0.010-0.013)	**0.015** (0.013-0.017)	**0.018** (0.015-0.020)	**0.021** (0.019-0.024)	**0.024** (0.021-0.028)	**0.028** (0.024-0.032)	**0.031** (0.026-0.036)	**0.036** (0.030-0.042)	**0.039** (0.032-0.046)
20-day	**0.005** (0.005-0.006)	**0.007** (0.006-0.008)	**0.009** (0.008-0.010)	**0.011** (0.010-0.012)	**0.013** (0.012-0.015)	**0.015** (0.013-0.017)	**0.017** (0.014-0.019)	**0.019** (0.016-0.021)	**0.021** (0.018-0.025)	**0.023** (0.019-0.027)
30-day	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.007** (0.006-0.008)	**0.008** (0.007-0.010)	**0.010** (0.009-0.012)	**0.011** (0.010-0.013)	**0.013** (0.011-0.015)	**0.014** (0.012-0.016)	**0.016** (0.014-0.019)	**0.018** (0.015-0.021)
45-day	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.006** (0.005-0.006)	**0.007** (0.006-0.007)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.009-0.011)	**0.011** (0.009-0.012)	**0.012** (0.010-0.014)	**0.013** (0.011-0.015)
60-day	**0.003** (0.003-0.003)	**0.004** (0.003-0.004)	**0.005** (0.004-0.005)	**0.006** (0.005-0.006)	**0.007** (0.006-0.008)	**0.008** (0.007-0.008)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.008-0.011)	**0.010** (0.009-0.012)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

NOAA Atlas 14, Volume 1, Version 5
Location name: Reno, Nevada, USA*
Latitude: 39.4425°, Longitude: -119.8108°
Elevation: 4710.94 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.094 (0.080-0.109)	0.117 (0.100-0.137)	0.157 (0.133-0.184)	0.195 (0.165-0.230)	0.258 (0.213-0.309)	0.316 (0.253-0.384)	0.385 (0.299-0.477)	0.469 (0.349-0.595)	0.605 (0.424-0.795)	0.730 (0.489-0.983)
10-min	0.143 (0.122-0.166)	0.178 (0.152-0.209)	0.239 (0.203-0.281)	0.296 (0.251-0.350)	0.393 (0.325-0.470)	0.481 (0.385-0.585)	0.587 (0.455-0.725)	0.714 (0.532-0.906)	0.921 (0.646-1.21)	1.11 (0.743-1.50)
15-min	0.177 (0.152-0.206)	0.221 (0.188-0.259)	0.296 (0.252-0.348)	0.367 (0.311-0.435)	0.486 (0.402-0.582)	0.597 (0.478-0.725)	0.727 (0.564-0.899)	0.886 (0.660-1.12)	1.14 (0.800-1.50)	1.38 (0.922-1.85)
30-min	0.239 (0.204-0.277)	0.297 (0.253-0.349)	0.399 (0.339-0.469)	0.494 (0.419-0.585)	0.656 (0.542-0.785)	0.804 (0.643-0.976)	0.979 (0.759-1.21)	1.19 (0.888-1.51)	1.54 (1.08-2.02)	1.85 (1.24-2.50)
60-min	0.296 (0.253-0.343)	0.368 (0.313-0.432)	0.493 (0.420-0.581)	0.612 (0.518-0.724)	0.811 (0.670-0.971)	0.995 (0.796-1.21)	1.21 (0.940-1.50)	1.48 (1.10-1.87)	1.90 (1.33-2.50)	2.29 (1.54-3.09)
2-hr	0.395 (0.350-0.452)	0.489 (0.436-0.562)	0.627 (0.550-0.719)	0.744 (0.645-0.854)	0.926 (0.780-1.07)	1.09 (0.893-1.28)	1.28 (1.02-1.53)	1.51 (1.17-1.89)	1.97 (1.43-2.53)	2.39 (1.67-3.12)
3-hr	0.474 (0.425-0.535)	0.590 (0.533-0.669)	0.738 (0.661-0.834)	0.856 (0.759-0.970)	1.02 (0.890-1.17)	1.16 (0.995-1.35)	1.34 (1.12-1.57)	1.57 (1.29-1.91)	1.99 (1.58-2.55)	2.40 (1.84-3.15)
6-hr	0.668 (0.601-0.748)	0.837 (0.751-0.939)	1.03 (0.925-1.16)	1.19 (1.05-1.33)	1.38 (1.21-1.56)	1.53 (1.32-1.74)	1.67 (1.42-1.93)	1.85 (1.54-2.16)	2.15 (1.74-2.57)	2.47 (1.97-3.18)
12-hr	0.882 (0.794-0.982)	1.11 (0.994-1.24)	1.39 (1.25-1.55)	1.61 (1.43-1.80)	1.90 (1.66-2.14)	2.11 (1.83-2.41)	2.34 (1.99-2.70)	2.56 (2.14-2.99)	2.85 (2.31-3.42)	3.10 (2.45-3.77)
24-hr	1.13 (1.02-1.26)	1.41 (1.28-1.58)	1.79 (1.61-2.00)	2.09 (1.88-2.33)	2.51 (2.24-2.81)	2.85 (2.52-3.19)	3.20 (2.80-3.61)	3.56 (3.09-4.05)	4.06 (3.46-4.66)	4.45 (3.74-5.17)
2-day	1.35 (1.20-1.52)	1.69 (1.51-1.92)	2.16 (1.92-2.44)	2.54 (2.25-2.87)	3.06 (2.69-3.48)	3.48 (3.04-3.98)	3.92 (3.38-4.51)	4.39 (3.74-5.10)	5.04 (4.20-5.93)	5.55 (4.54-6.64)
3-day	1.47 (1.32-1.66)	1.86 (1.66-2.09)	2.38 (2.13-2.69)	2.82 (2.51-3.18)	3.43 (3.03-3.88)	3.93 (3.43-4.46)	4.45 (3.85-5.10)	5.01 (4.27-5.78)	5.81 (4.84-6.79)	6.45 (5.28-7.65)
4-day	1.60 (1.43-1.80)	2.02 (1.81-2.27)	2.61 (2.34-2.94)	3.10 (2.77-3.49)	3.80 (3.36-4.29)	4.37 (3.83-4.95)	4.98 (4.31-5.68)	5.64 (4.81-6.47)	6.58 (5.49-7.66)	7.35 (6.02-8.66)
7-day	1.88 (1.67-2.13)	2.39 (2.12-2.72)	3.13 (2.77-3.56)	3.73 (3.28-4.24)	4.57 (3.99-5.21)	5.24 (4.54-6.00)	5.97 (5.12-6.87)	6.73 (5.70-7.81)	7.80 (6.48-9.18)	8.67 (7.10-10.3)
10-day	2.10 (1.86-2.39)	2.69 (2.38-3.05)	3.53 (3.12-4.01)	4.20 (3.70-4.77)	5.13 (4.48-5.84)	5.86 (5.09-6.70)	6.64 (5.71-7.62)	7.44 (6.32-8.61)	8.55 (7.14-10.0)	9.42 (7.77-11.2)
20-day	2.62 (2.33-2.97)	3.34 (2.97-3.79)	4.39 (3.90-4.96)	5.19 (4.60-5.88)	6.29 (5.54-7.12)	7.14 (6.24-8.11)	8.02 (6.94-9.17)	8.90 (7.64-10.3)	10.1 (8.54-11.8)	11.0 (9.22-13.0)
30-day	3.06 (2.73-3.48)	3.92 (3.49-4.45)	5.13 (4.56-5.82)	6.05 (5.36-6.86)	7.31 (6.43-8.30)	8.28 (7.23-9.43)	9.27 (8.03-10.6)	10.3 (8.82-11.9)	11.6 (9.86-13.6)	12.7 (10.6-14.9)
45-day	3.68 (3.28-4.11)	4.71 (4.20-5.26)	6.15 (5.48-6.85)	7.22 (6.42-8.04)	8.63 (7.63-9.64)	9.68 (8.53-10.8)	10.7 (9.39-12.1)	11.8 (10.2-13.3)	13.1 (11.2-14.9)	14.1 (12.0-16.2)
60-day	4.20 (3.73-4.71)	5.40 (4.79-6.04)	7.05 (6.24-7.88)	8.23 (7.28-9.19)	9.73 (8.59-10.9)	10.8 (9.50-12.2)	11.9 (10.4-13.4)	12.9 (11.2-14.6)	14.1 (12.2-16.1)	15.0 (12.9-17.2)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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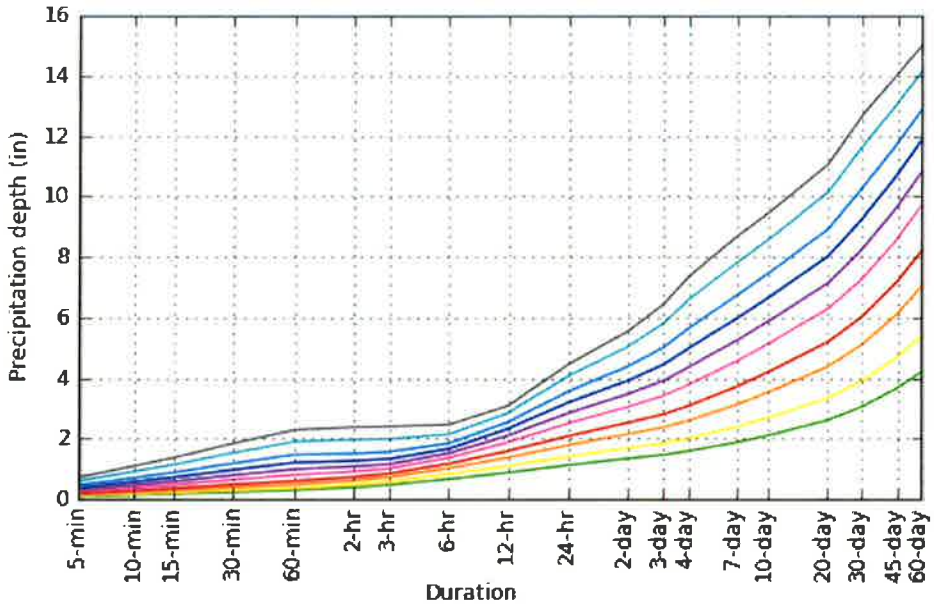
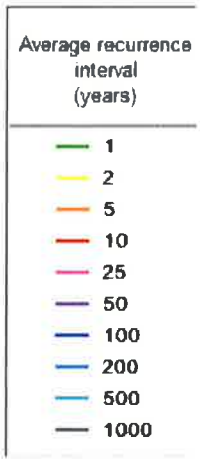
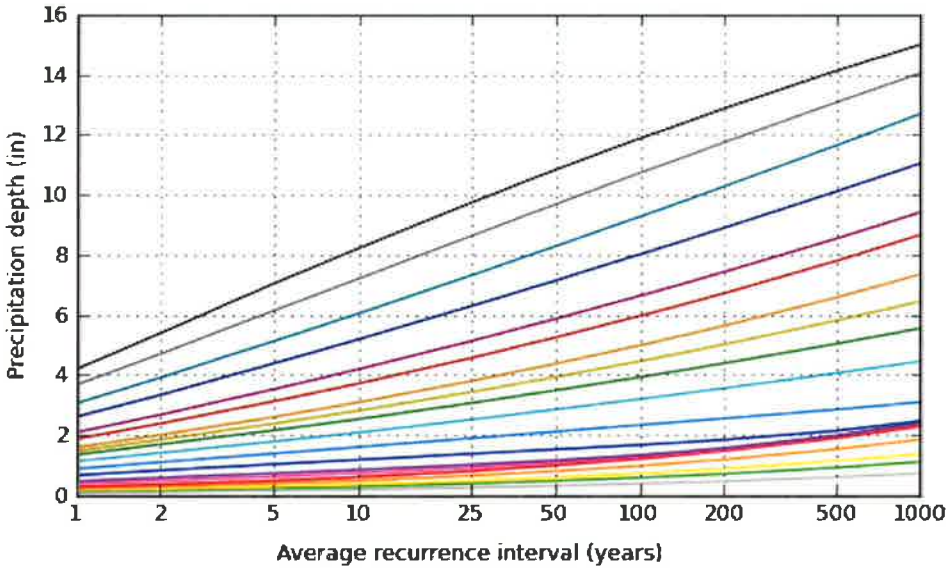
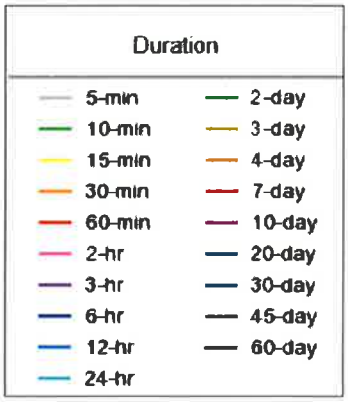
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 39.4425°, Longitude: -119.8108°









NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Wed Nov 24 00:45:24 2021

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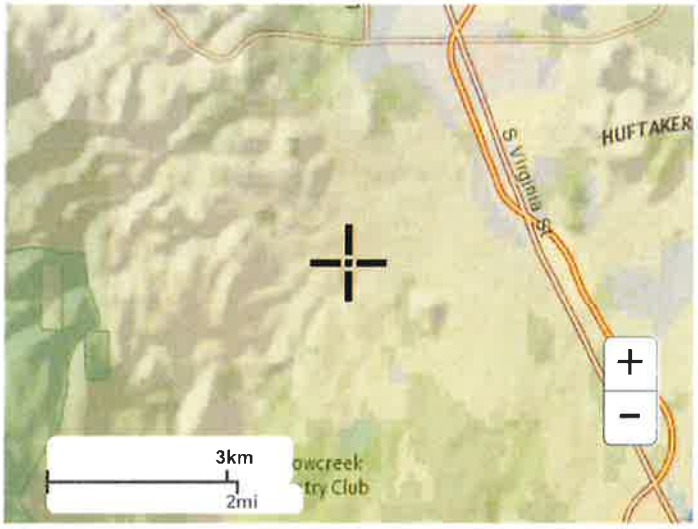
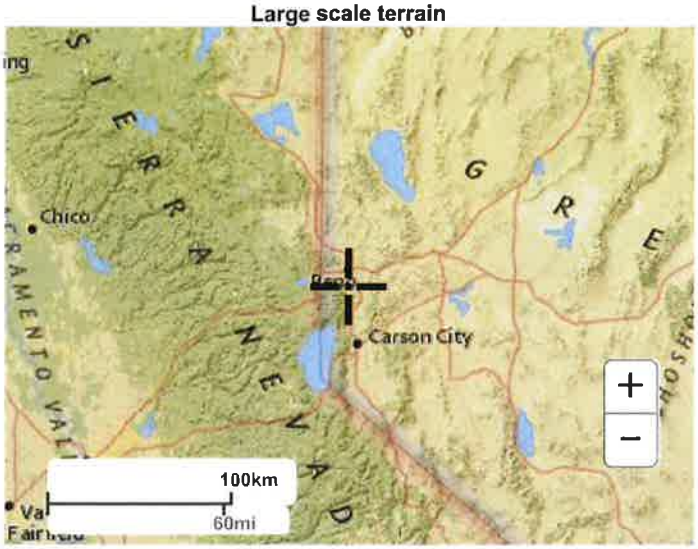
Maps & aerials

Small scale terrain

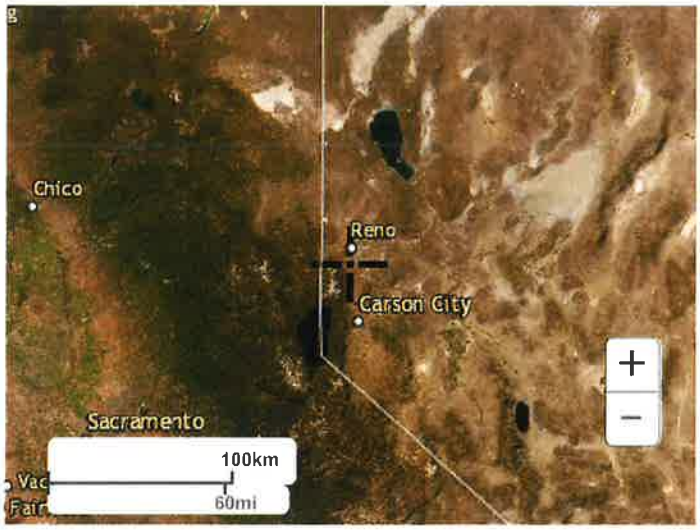


Large scale terrain



Large scale map

Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX C
HYRDRAFLOW HYDROGRAPH CALCULATIONS

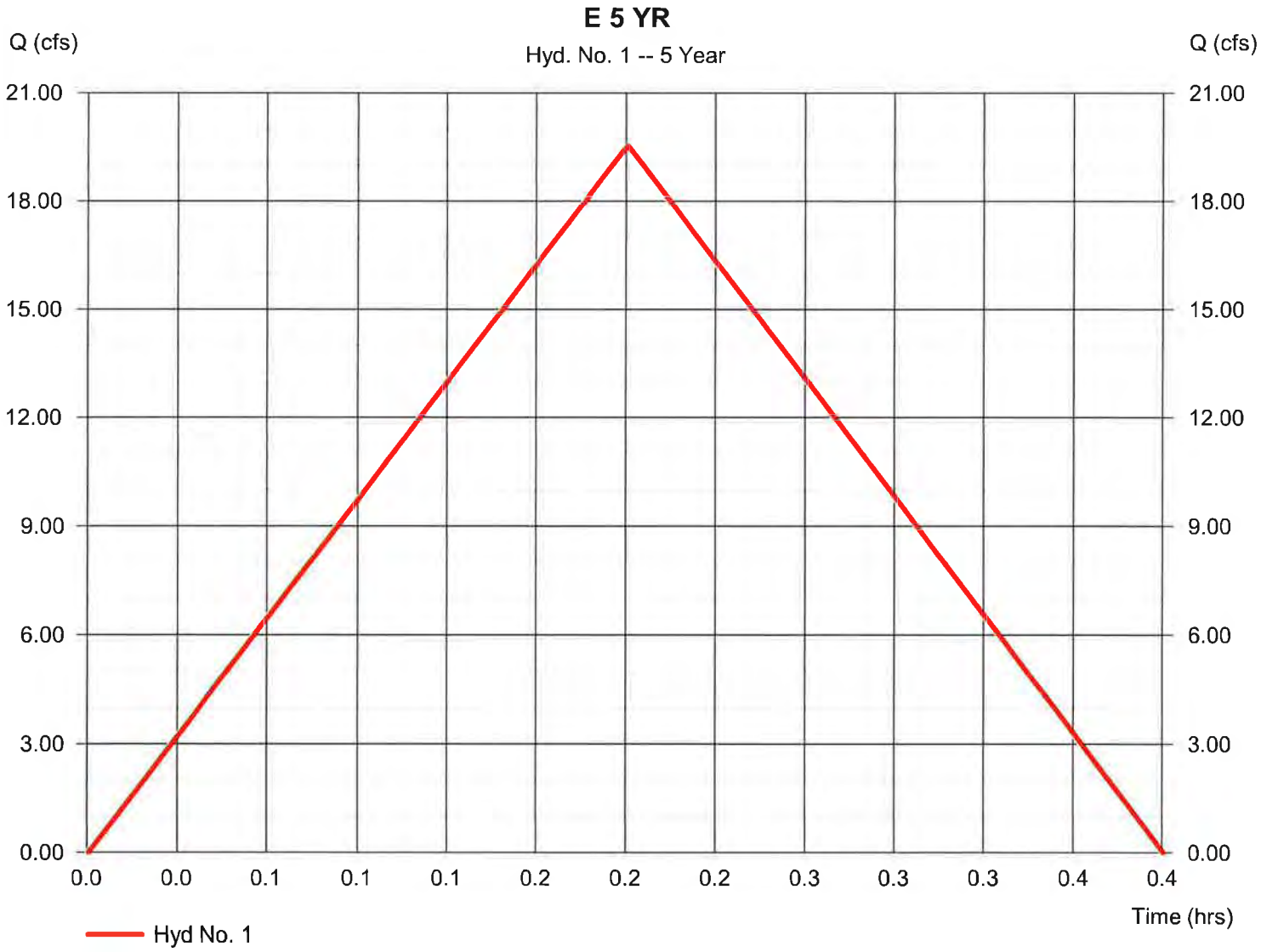
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 12 / 7 / 2021

Hyd. No. 1

E 5 YR

Hydrograph type	= Rational	Peak discharge	= 19.53 cfs
Storm frequency	= 5 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 14,061 cuft
Drainage area	= 72.800 ac	Runoff coeff.	= 0.2
Intensity	= 1.341 in/hr	Tc by TR55	= 12.00 min
IDF Curve	= Lakeside IDF.IDF	Asc/Rec limb fact	= 1/1



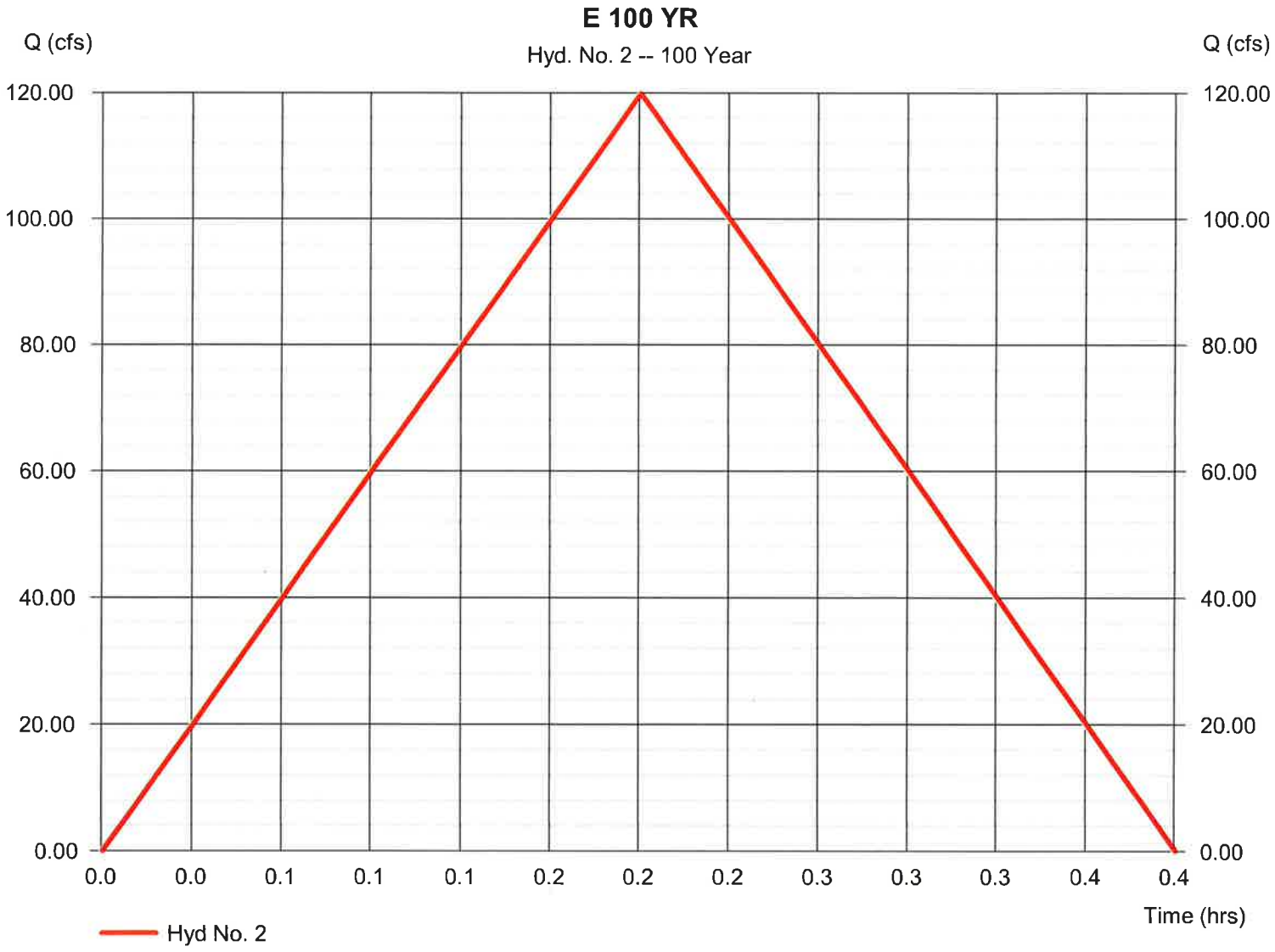
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 12 / 7 / 2021

Hyd. No. 2

E 100 YR

Hydrograph type	= Rational	Peak discharge	= 119.91 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 86,334 cuft
Drainage area	= 72.800 ac	Runoff coeff.	= 0.5
Intensity	= 3.294 in/hr	Tc by TR55	= 12.00 min
IDF Curve	= Lakeside IDF.IDF	Asc/Rec limb fact	= 1/1

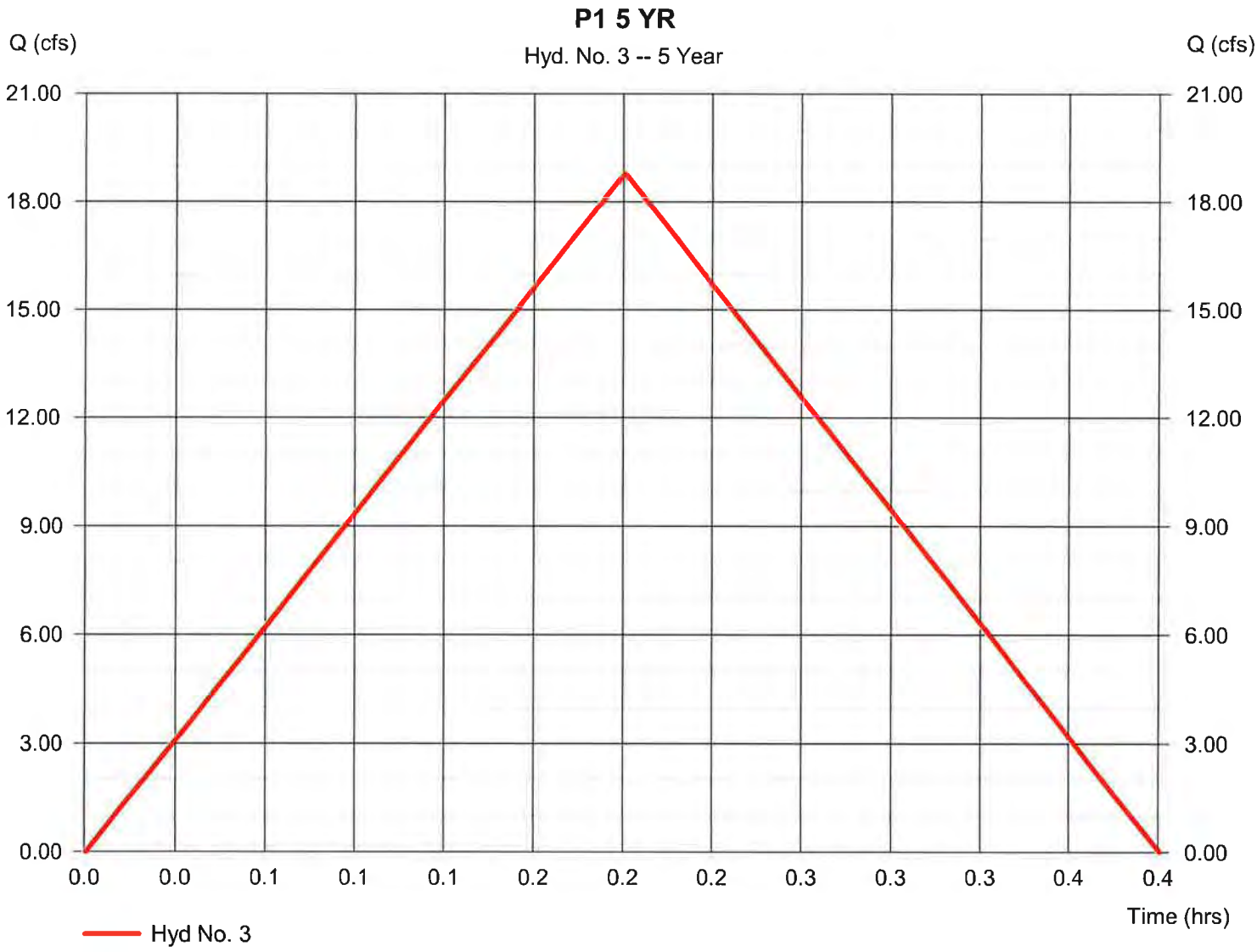


Hydrograph Report

Hyd. No. 3

P1 5 YR

Hydrograph type	= Rational	Peak discharge	= 18.78 cfs
Storm frequency	= 5 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 13,520 cuft
Drainage area	= 70.000 ac	Runoff coeff.	= 0.2
Intensity	= 1.341 in/hr	Tc by TR55	= 12.00 min
IDF Curve	= Lakeside IDF.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hyd. No. 4

P2 5 YR

Hydrograph type	= Rational	Peak discharge	= 3.305 cfs
Storm frequency	= 5 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 2,379 cuft
Drainage area	= 2.800 ac	Runoff coeff.	= 0.88
Intensity	= 1.341 in/hr	Tc by TR55	= 12.00 min
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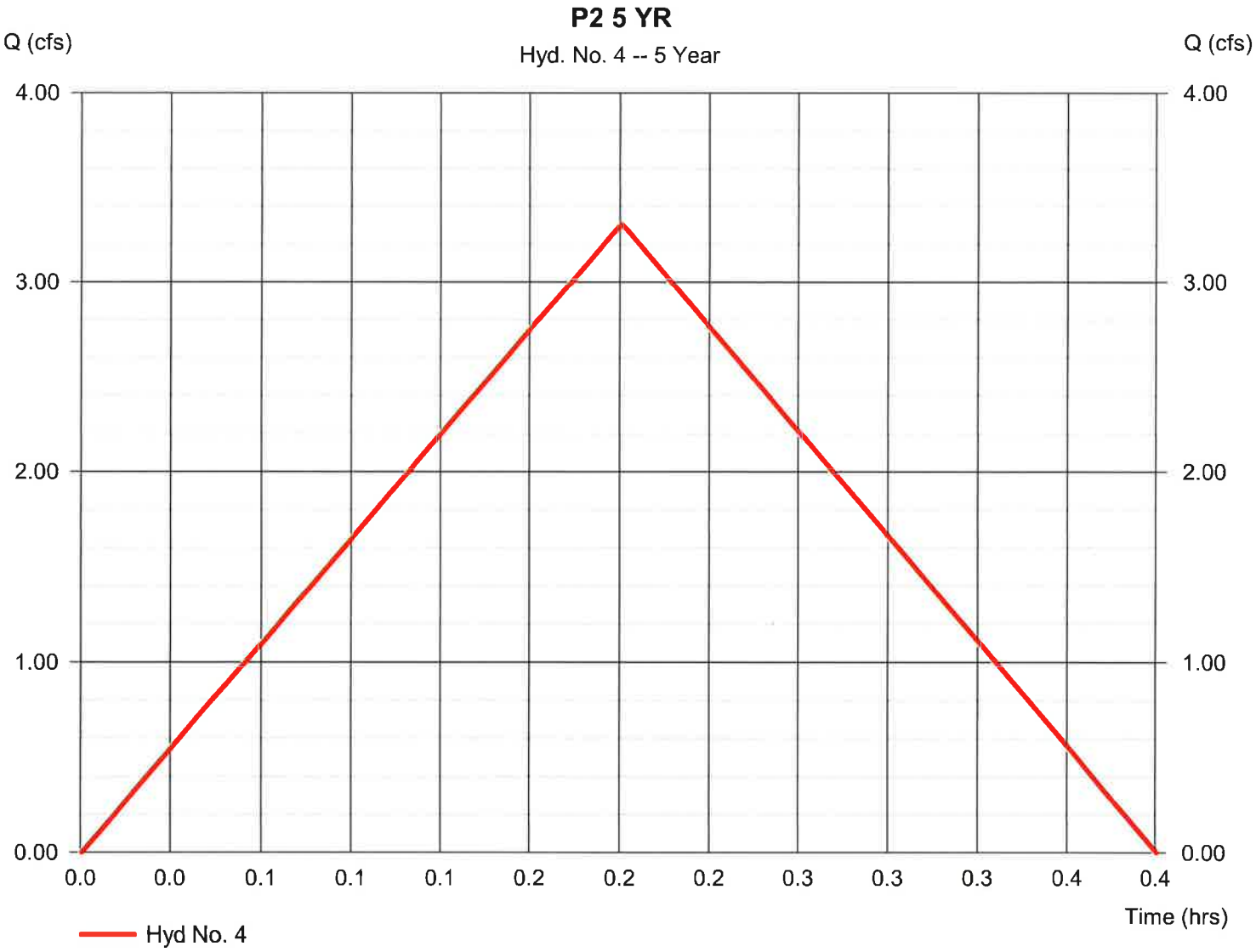
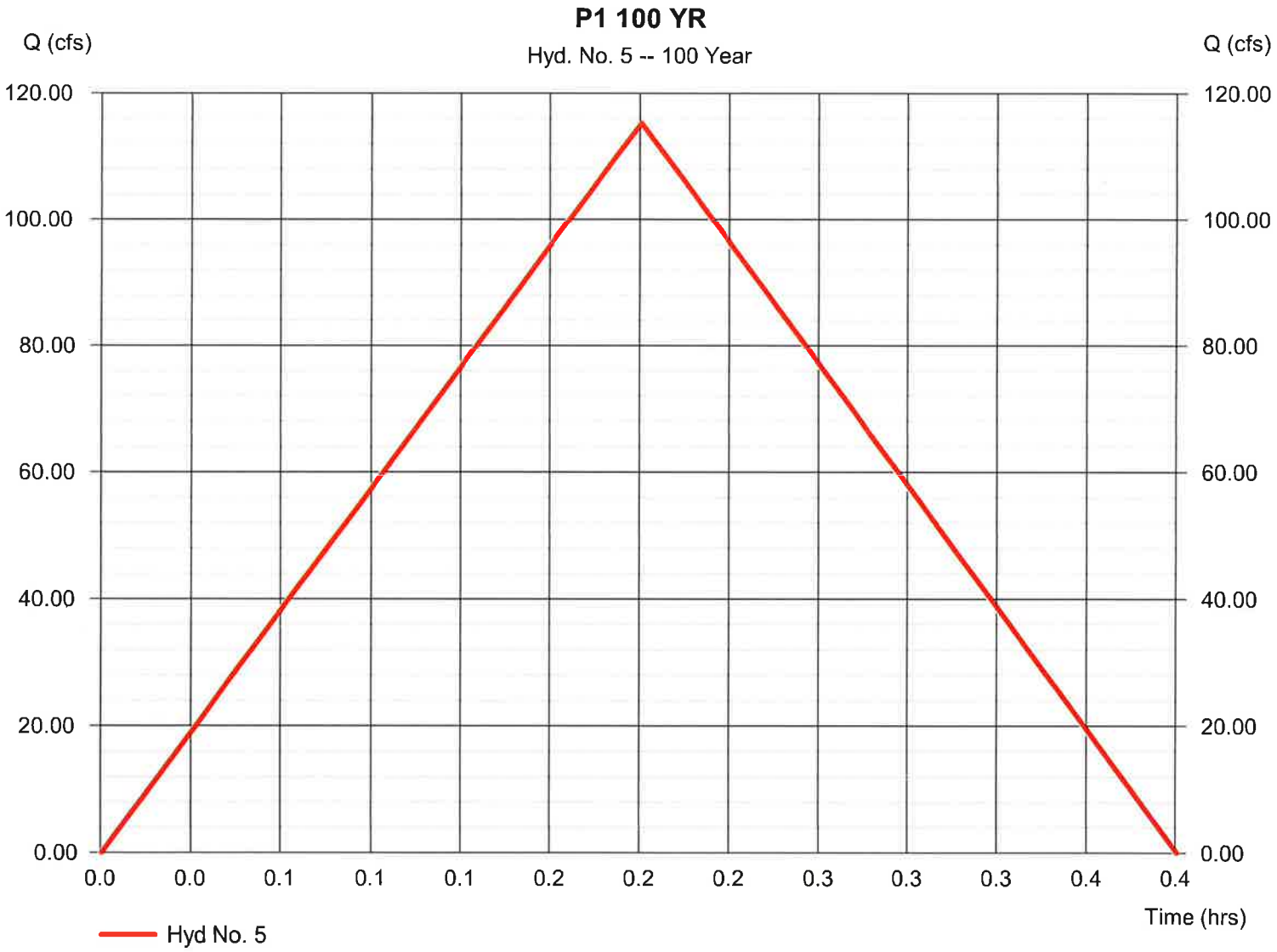


Hydrograph Report

Hyd. No. 5

P1 100 YR

Hydrograph type	= Rational	Peak discharge	= 115.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 83,014 cuft
Drainage area	= 70.000 ac	Runoff coeff.	= 0.5
Intensity	= 3.294 in/hr	Tc by TR55	= 12.00 min
IDF Curve	= Lakeside IDF.IDF	Asc/Rec limb fact	= 1/1

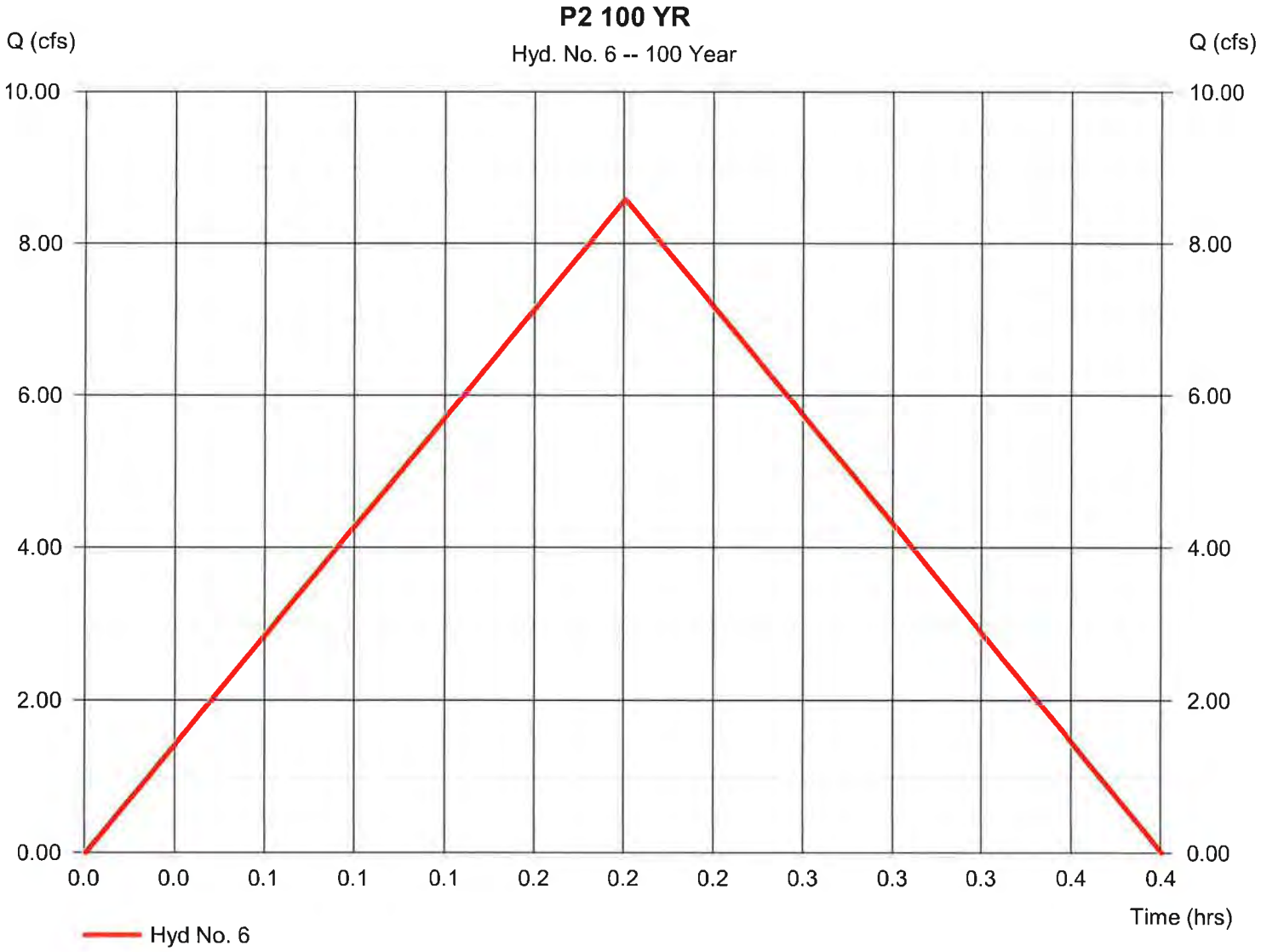


Hydrograph Report

Hyd. No. 6

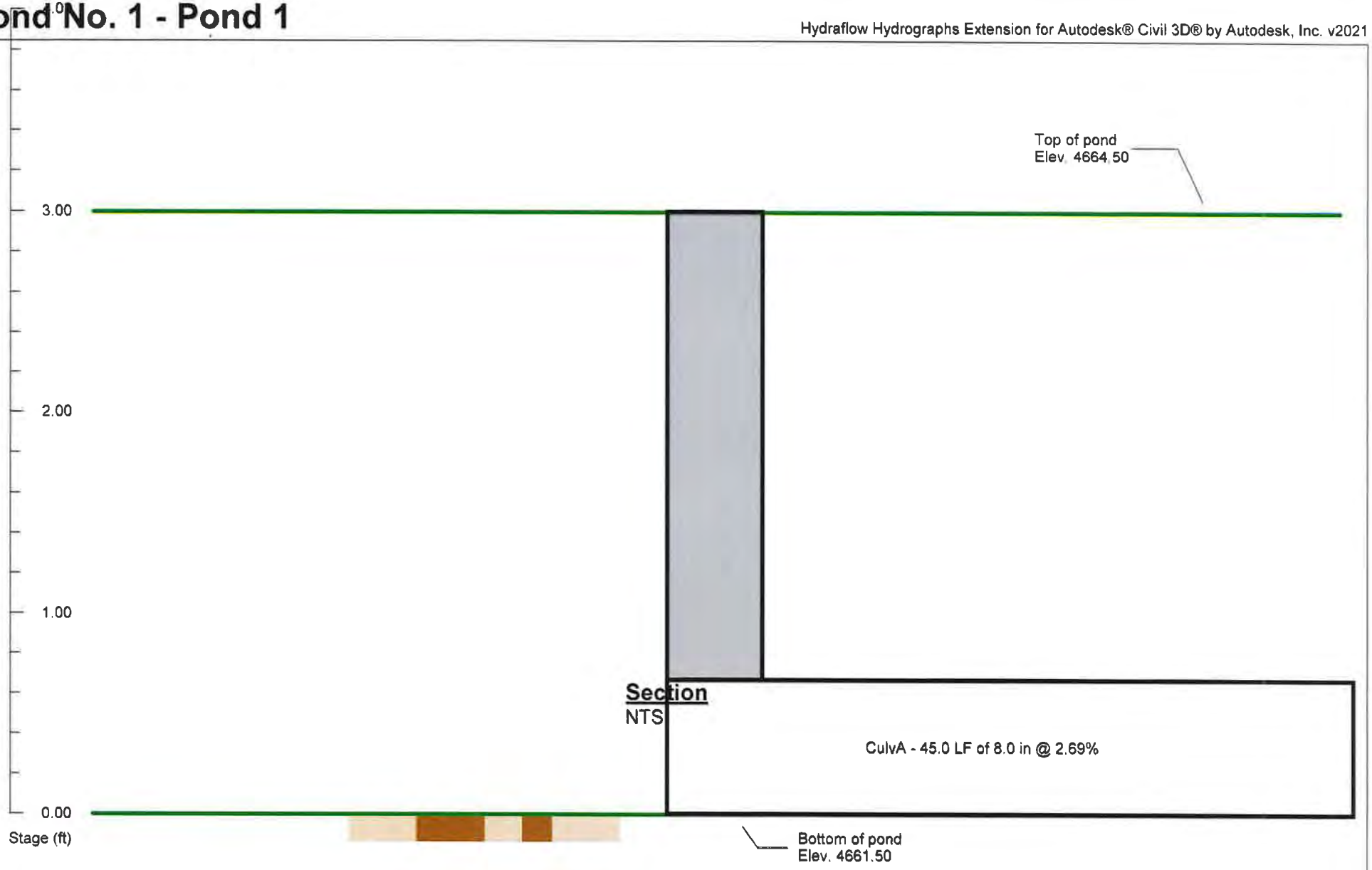
P2 100 YR

Hydrograph type	= Rational	Peak discharge	= 8.578 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 6,176 cuft
Drainage area	= 2.800 ac	Runoff coeff.	= 0.93
Intensity	= 3.294 in/hr	Tc by TR55	= 12.00 min
IDF Curve	= Lakeside IDF.IDF	Asc/Rec limb fact	= 1/1



APPENDIX D
POND STAGE/STORAGE CALCULATIONS

Pond No. 1 - Pond 1



Inflow hydrograph = 6. Rational - P2 100 YR

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 — Tuesday, 12 / 7 / 2021

Pond No. 1 - Pond 1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 4661.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	4661.50	4,800	0	0
1.00	4662.50	5,699	5,243	5,243
2.00	4663.50	6,669	6,177	11,420
3.00	4664.50	7,711	7,183	18,603

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	Inactive	Inactive	Inactive
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 4661.50	0.00	0.00	0.00
Length (ft)	= 45.00	0.00	0.00	0.00
Slope (%)	= 2.69	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	Inactive	Inactive	Inactive
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	4661.50	0.00	---	---	---	---	---	---	---	---	---	0.000
1.00	5,243	4662.50	1.37 ic	---	---	---	---	---	---	---	---	---	1.372
2.00	11,420	4663.50	2.17 ic	---	---	---	---	---	---	---	---	---	2.170
3.00	18,603	4664.50	2.67 oc	---	---	---	---	---	---	---	---	---	2.673

Pond 1 - 100 YR Outflow

Actuals			
Event (yrs)	Qp (cfs)	Max El (ft)	Max Stor (cuft)
5	0.516	4661.92	2,210
100	1.370	4662.50	5,231

Pond 1 - 5 YR Outflow

Actuals			
Event (yrs)	Qp (cfs)	Max El (ft)	Max Stor (cuft)
5	0.473	4661.90	2,100
100	1.312	4662.44	4,947

APPENDIX E
EXISTING & PROPOSED
STORM WATER DRAINAGE PLAN

HYDROLOGY LEGEND

E # — SUB-AREA

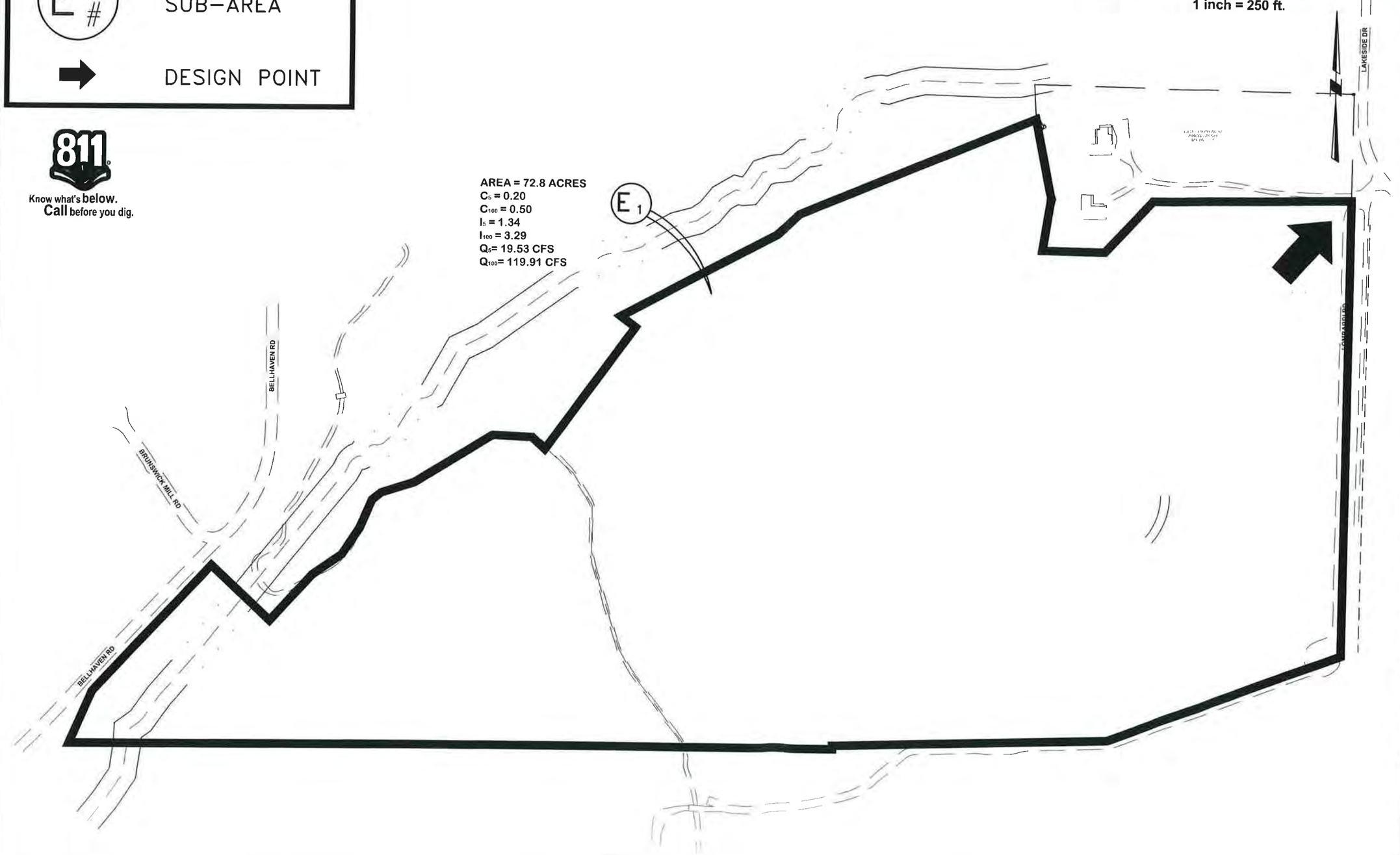
DESIGN POINT

811 Know what's **below.** **Call** before you dig.

GRAPHIC SCALE

250 0 125 250 500

1 inch = 250 ft.



cfa

1150 CORPORATE BLVD.
RENO, NV 89502
(775) 856-1150
FAX: (775) 856-1160

8900 LAKESIDE DRIVE TENTATIVE MAP

EXISTING DRAINAGE MAP

HYDROLOGY REPORT

WASHOE COUNTY NEVADA

JOB NO.	20081.01
DESIGNED BY	DH
CHECKED BY	KK
DATE	12/07/2021

SHEET 1 OF 2

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HYDROLOGY LEGEND

P # — SUB-AREA

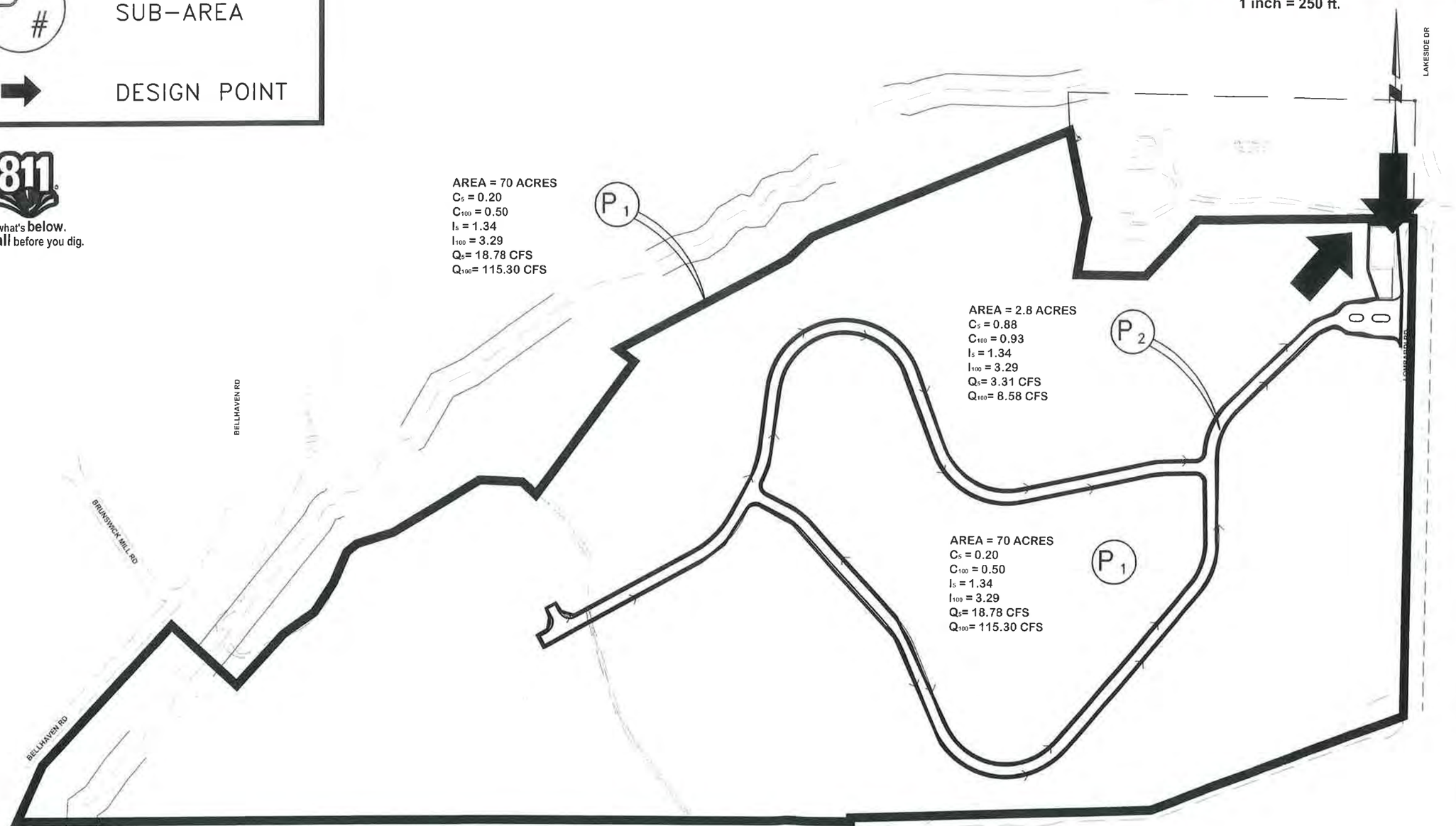
DESIGN POINT

811 Know what's **below.** **Call** before you dig.

GRAPHIC SCALE

250 0 125 250 500

1 inch = 250 ft.



1150 CORPORATE BLVD
RENO, NV 89502
(775) 856-1150
FAX: (775) 856-1160

8900 LAKESIDE DRIVE TENTATIVE MAP

PROPOSED DRAINAGE MAP

HYDROLOGY REPORT

WASHOE COUNTY NEVADA

JOB NO.	20081.01
DESIGNED BY	DH
CHECKED BY	KK
DATE	12/07/2021

SHEET 2 OF 2

PRELIMINARY SANITARY SEWER REPORT

8900 LAKESIDE DR
CUSTOM LOT SUBDIVISION

RENO, NV

DECEMBER 2021

CFA, INC.
1150 CORPORATE BLVD.
RENO, NV 89502

PROFESSIONAL ENGINEER - STATE OF NEVADA
KATHLEEN KNIGHT
Exp: 6/30/23
CIVIL
No. 26935
12/8/23

TABLE OF CONTENTS

APPENDICIES

INTRODUCTION

This report presents the sanitary sewer system plan to support the 8900 Lakeside Drive Custom Lot Subdivision. This tentative map includes twenty-four proposed residential lots, utilities, and road improvements, in the southwestern area of Reno, Nevada near Lombardi Lane and Lakeside Dr.

The purpose of this study is to ensure that the onsite sanitary sewer system can convey wastewater flows in accordance with the Washoe County Community Services Gravity Sewer Collection Design Standards.

EXISTING SITE DESCRIPTION

The project site is located to the North and West of Lombardi Ln, southwest of the intersection with Lakeside Dr. The parcel is confined by Lombardi Ln to the east and undeveloped and developed single family lots to the northwest, north, and south. The proposed project site is located on Parcel APN: 041-130-58 (See Vicinity Map in Appendix A).

PROPOSED DEVELOPMENT DESCRIPTION

899 Lakeside Drive Custom Lot Subdivision consists of twenty-four residential lots, utilities, and site improvements. Two private roads will extend across the site from the east to the west side, with one of them making a loop to encompass the southern portion of the lot. The roadway has roadside drainage ditches that collect the water and transfer the water to a detention basin at the northeast corner of the development. The roadways have been sloped at a 3:1 slope to daylight into the existing grade, but meant to follow the existing terrain where possible, without exceeding the road design standards. Landscaping will be constructed throughout the site.

DESIGN CRITERIA

Design criteria for this analysis was based on the City of Reno Public Works Design Manual's (PWDM) (Jan. 2009) guidelines for sanitary sewers. Pipe flow characteristics were computed using the Manning equation with an "n" value of 0.014. Sewer lines shall be designed to give velocities of not less than 2 feet per second when flowing half full.

EXISTING SANITARY SEWER SYSTEM

Currently, there is an existing 8" sanitary sewer main flowing east in Kinney Court, which is approximately three thousand feet (3,000) north of the project. This existing line is seen as the best available path to provide a gravity community sewer service to the property at 8900 Lakeside Drive (APN 041-130-58). CFA has also met with Alex Wolfson of NDOT to discuss the allowance of establishing a future sewer line in or at the edge of Lakeside Drive. That path sounded promising from Alex, but he did recommend that we review whether NDOT holds the right-of-way in Fee or if it is in easement, which is currently being reviewed.

PROPOSED SYSTEM

As previously mentioned, the proposed development will consist of twenty-four residential lots. Within the development, the sewer line would be able to slope anywhere from 1% to 9% to match the existing street slopes. Once the proposed sewer line exits the property and heads north, we will be able to maintain a slope of 0.65%, to tie into the existing line in Kinney Court. Based on the 24 homes that were approved and vetted during the planning process of this project, it would create approximately 0.031 cfs (19,440 gpd) during peak flow. The average peak flows were calculated based on the following assumptions from the PWDM:

Peak sewage generation:

Residential = 270 gallons/capita/day
Peaking Factor = 3.0

Q_p 8-inch = (270 g/c/d) (3.0 c/du) (24 du) = 19,440 gpd

Should the existing nearby 82 Single Family Residences be converted to municipal sewer, the proposed 8" line would be able to accommodate the additional sanitary sewer flows. As seen in the attached table, using the Washoe County Community Services Gravity Sewer Collection Design Standards described above, the peak flow volume would be 85,860 gallons per day, well below the peak flow capacity of 666,738 gpd. The peak discharge would be 1.14 cfs with a peak velocity of 2.07 ft/s, maintaining the conditions of the proposed sanitary sewer line described above. All Flowmaster pipe flow calculations can be found in Appendix B.

Existing Single Family Residential Sewage Contribution			
Number of HDR Single Family Residences	Sewage Contribution per Residence (gpd)	Mimimun Peaking Factor	
82	270	3	
Peak Sewage Contribution from Existing Homes		66420	gpd
Proposed Single Family Residential Sewage Contribution			
Number of HDR Single Family Residences	Sewage Contribution per Residence (gpd)	Mimimun Peaking Factor	
24	270	3	
Peak Sewage Contribution from Proposed Homes		19440	gpd
Total Peak Sewage Flow in Proposed Main		85860	gpd

CONCLUSION

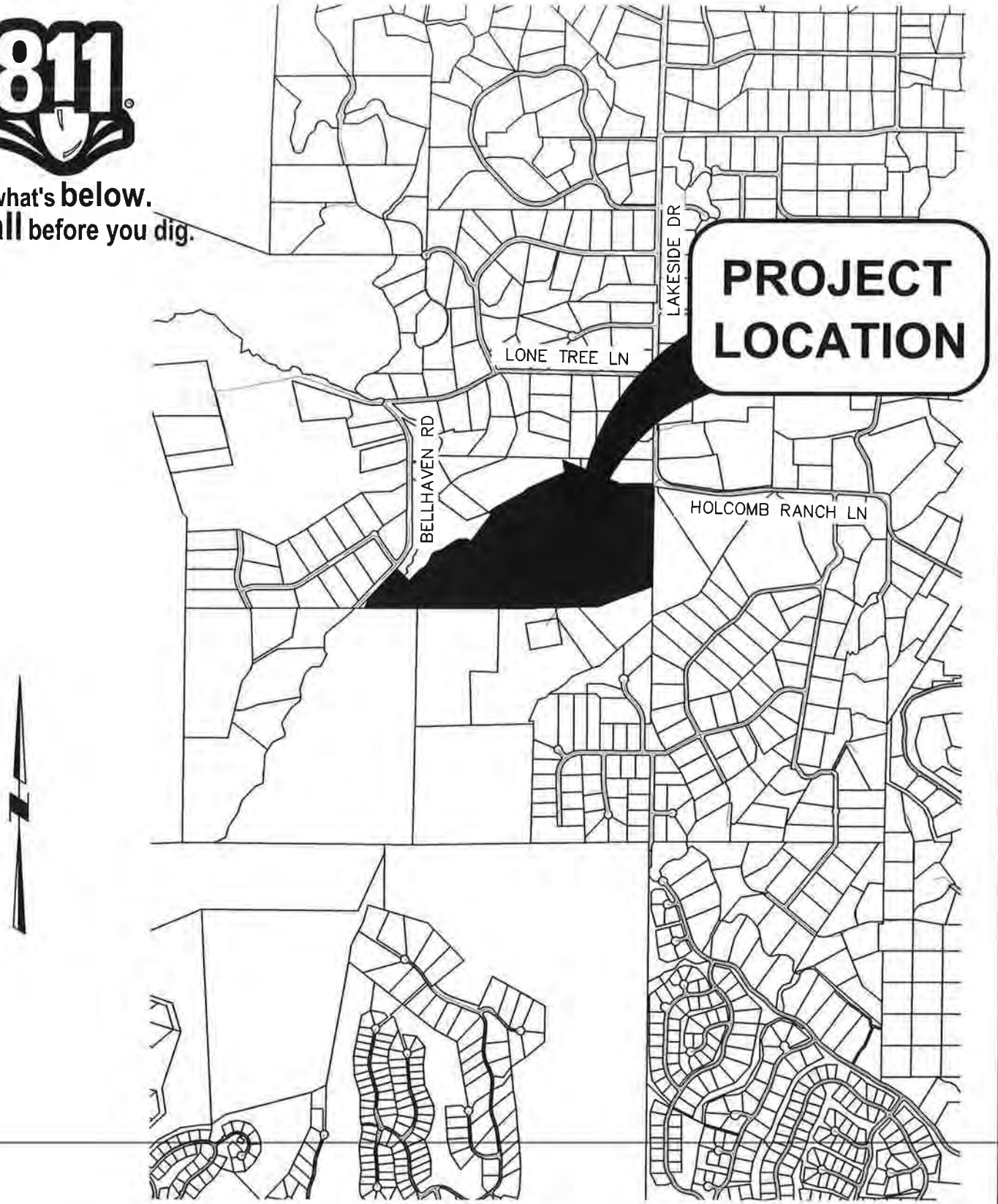
Based on the analysis, the proposed 8-inch sanitary sewer mains within the development and the existing 8" mains downstream can adequately convey the proposed sewage flows from the 8900 Lakeside Dr. Custom Lot Subdivision and will not significantly impact downstream flow capacity.

APPENDIX A

VICINITY MAP

811

Know what's **below.**
Call before you dig.



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cfa
1150 CORPORATE BLVD.
RENO, NV 89502
(775) 856-1150

VICINITY MAP
for
8900 LAKESIDE DR

RENO NEVADA

SHEET 1 OF 1

APPENDIX B

CALCULATIONS

Lakeside Dr Proposed Only Flow Depth

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.65000	%
Diameter	8.00	in
Discharge	19440.00	gal/day

Results

Normal Depth	0.08	ft
Flow Area	0.02	ft²
Wetted Perimeter	0.46	ft
Hydraulic Radius	0.05	ft
Top Width	0.43	ft
Critical Depth	0.08	ft
Percent Full	11.6	%
Critical Slope	0.00622	ft/ft
Velocity	1.33	ft/s
Velocity Head	0.03	ft
Specific Energy	0.10	ft
Froude Number	1.02	
Maximum Discharge	1.14	ft³/s
Discharge Full	1.06	ft³/s
Slope Full	0.00001	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	11.61	%
Downstream Velocity	Infinity	ft/s

Lakeside Dr Proposed Only Flow Depth

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.08	ft
Critical Depth	0.08	ft
Channel Slope	0.65000	%
Critical Slope	0.00622	ft/ft

Map of contributing area. Taken from Washoe County GIS

Lakeside Dr Total Flow Depth

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.65000	%
Diameter	8.00	in
Discharge	85860.00	gal/day

Results

Normal Depth	0.16	ft
Flow Area	0.06	ft²
Wetted Perimeter	0.68	ft
Hydraulic Radius	0.09	ft
Top Width	0.57	ft
Critical Depth	0.17	ft
Percent Full	23.9	%
Critical Slope	0.00549	ft/ft
Velocity	2.07	ft/s
Velocity Head	0.07	ft
Specific Energy	0.23	ft
Froude Number	1.09	
Maximum Discharge	1.14	ft³/s
Discharge Full	1.06	ft³/s
Slope Full	0.00010	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	23.92	%
Downstream Velocity	Infinity	ft/s

Lakeside Dr Total Flow Depth

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.16	ft
Critical Depth	0.17	ft
Channel Slope	0.65000	%
Critical Slope	0.00549	ft/ft

Lakeside Dr Flow Capacity

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.65000	%
Normal Depth	0.53	ft
Diameter	8.00	in

Results

Discharge	666738.16	gal/day
Flow Area	0.30	ft²
Wetted Perimeter	1.48	ft
Hydraulic Radius	0.20	ft
Top Width	0.53	ft
Critical Depth	0.48	ft
Percent Full	80.0	%
Critical Slope	0.00815	ft/ft
Velocity	3.45	ft/s
Velocity Head	0.18	ft
Specific Energy	0.72	ft
Froude Number	0.81	
Maximum Discharge	1.14	ft³/s
Discharge Full	1.06	ft³/s
Slope Full	0.00621	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.00	%
Downstream Velocity	Infinity	ft/s

Lakeside Dr Flow Capacity

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.53	ft
Critical Depth	0.48	ft
Channel Slope	0.65000	%
Critical Slope	0.00815	ft/ft

Aquatic Resources Delineation Report

Lakeside Parcel

Prepared For:

8900 Lakeside, LLC
2100 Manzanita Lane
Reno, NV 89509

Prepared By:

Resource Concepts, Inc.
340 N. Minnesota Street
Carson City, NV 89703

October 22, 2021

Aquatic Resources Delineation Report

Lakeside Parcel

October 22, 2021

(RCI #20-305.1)

Prepared For:

8900 Lakeside, LLC
Attn: Mr. Roger Davidson
2100 Manzanita Lane
Reno, NV 89509

Prepared By:

Resource Concepts, Inc.
340 North Minnesota Street
Carson City, NV 89703-4152
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EXECUTIVE SUMMARY

The delineation for this property was prepared at the request of Mr. Roger Davidson of 8900 Lakeside, LLC. The area of delineation (Survey Area) is approximately 72-acres in size. The delineation was conducted in accordance with the 1987 *Corps of Engineers Wetland Delineation Manual* (TR-Y-87-1) as amended by the *Arid West Regional Supplement* (2008), the *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (2008), and the Corps' regulatory guidance on *Wetland Determinations and Delineation Procedures for Irrigated Lands*.

The delineation identified nine (9) aquatic resources. The on-site waters consist of two wetlands induced by intermittent irrigation from the adjacent irrigation ditch, Steamboat Ditch (D-4), and many irrigation ditches running throughout the property. A summary of the aquatic resources is included below.

Aquatic Resources	Acres	Linear Feet	Identification
AR-1	0.21	--	PEM1C
AR-2	0.89	--	PSS1C
AR-3	0.13	565	Intermittent Stream (Non-relatively Permanent Water)
D-1	0.05	1175	Excavated irrigation ditch
D-2	0.02	850	Excavated irrigation ditch
D-2b	0.02	530	Excavated irrigation ditch
D-3	0.05	1195	Excavated irrigation ditch
D-4	0.26	900	Steamboat Ditch Excavated irrigation ditch
D-5	0.03	635	Excavated irrigation ditch
Total	**1.67**	**5,850**	

- Aquatic Resource 1 (AR-1) is an irrigation induced palustrine emergent wetland (PEM1C) supported by drainage from D-5, an excavated irrigation ditch.
- Aquatic Resource 2 (AR-2) is a palustrine, scrub-shrub, broad-leaved deciduous, emergent, and persistent wetland. This wetland area is seasonally flooded by AR-3 and groundwater seepage. AR-2 abuts AR-3, an intermittent tributary to Dry Creek and the Truckee River, a Traditional Navigable Water (TNW). The on-site area of AR-2 is 0.89 acres.
- Aquatic Resource 3 (AR-3) is an unnamed intermittent stream that is a tributary to Dry Creek, which flows to the Truckee River, a TNW.

- Aquatic Resources D-1, D-2, and D-2b are remnant ditches that appear to have been previously hydrologically charged by flow from D-3 but have become disconnected. D-1, D-2, and D-2b all terminate within adjacent pastures and infiltrate, having no surface water connection to a TNW.
- D-3 and D-5 are irrigation ditches excavated in uplands that receive flow from Steamboat Ditch (D-4) via an irrigation gate and culvert under the adjacent access road. Water is diverted to the south within AR-3 and to the northeast within AR-5. Both ditches terminate within the irrigated pastures and do not have surface water connections to a TNW.
- D-4 is identified as Steamboat Ditch, a major irrigation line through the Truckee Meadows, carrying water diverted from the Truckee River to Steamboat Creek, which flows north back into the Truckee River, a TNW.

Total on-site acreage of aquatic resources is 1.67 acres, which includes 5,285 linear feet of irrigation ditches and 565 feet of an intermittent stream channel.

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ATTACHMENTS

File Doc: 2021-10-25 Fnl Rpt Lakeside AqDelin 21-305.1 ThCrkDev jrm-jm L10-20.docx

ACRONYMS AND ABBREVIATIONS

Wetland Indicator Status Acronyms:

OBL (Obligate Wetland). Occur almost always in wetlands.

FACW (Facultative Wetland). Usually occur in wetlands.

FAC (Facultative). Likely to occur in wetlands or uplands.

FACU (Facultative Upland). Usually occur in uplands.

UPL (Obligate Upland). Occur almost always in uplands.

N/I (No Indicator). Indicator status unavailable.

Water Types Acronyms:

TNW. Traditional Navigable Water, including territorial seas

TNWW. Wetlands adjacent to TNWs

RPW. Relatively Permanent Waters (RPWs) that flow year round

RPWWD. Wetlands directly abutting RPWs

RPWWN. Wetlands adjacent to but not directly abutting RPWs

NRPW. Non-RPWs are tributaries that do not have continuous flow at least seasonally

NRPWW. Wetlands adjacent to non-RPWs

ISOLATE. Isolated (interstate or intrastate) waters

UPLAND. Uplands

TNWRPW. Tributary consisting of both RPWs and non-RPWs

1.0 INTRODUCTION

1.1 Project Description and Purpose

In September 2021, Resource Concepts, Inc. (RCI) was contracted by Mr. Roger Davidson, representing 8900 Lakeside, LLC, to complete a delineation of aquatic resources within approximately 72-acres of private property located in southwest Reno, Washoe County, Nevada (Washoe County APN 0414-130-58). The site is located directly west of Lombardi Road and can be accessed either via Lombardi Road from the east or Belhaven Road on the west side.

The purpose of this report is to identify, describe and delineate the boundaries of on-site aquatic resources. This report facilitates efforts to:

- Avoid or minimize impacts to aquatic resources during the project design process,
- Document aquatic resource boundaries for review by the US Army Corps of Engineers (USACE) which will be required for state and federal permitting purposes as needed, and
- Provide early identification of known US Fish and Wildlife Service (USFWS) federally listed species with potential to occur within the Survey Area.

The delineation was conducted in accordance with the *1987 Corps of Engineers Wetland Delineation Manual, Arid West Regional Supplement* (2010), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (2008). The Corps' regulatory guidance on *Wetland Determinations and Delineation Procedures for Irrigated Lands* was used to determine the presence and extent of potential wetlands on the site's irrigated pastures and persistence in the absence of irrigation.

1.2 Contact Information

Preparers of this Delineation Report

Resource Concepts, Inc. (RCI)
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2.0 PROJECT LOCATION

The Survey Area is located in Section 18 T.18N R.19E Mt. Rose NE, U.S. Geological Survey 7.5-minute topographic quad (Lat.39.263439°, Long. -119.483901° WGS 84) in southwest Reno, Nevada. The property is currently being evaluated to determine the presence of aquatic resources and development potential of the site.

To drive to the site from the USACE Reno Field Office, head south on Booth Street to make a left on California Street. Turn right on South Arlington Avenue, drive for 1-mile and then turn left to stay on Plumb Lane for half a mile. At Lakeside Drive turn right and continue approximately 4.5 miles. The Survey Area will be located on the right side of Lakeside Drive just at the bend of the road, continue straight to get to the Lombardi Drive access point.

For a site visit or directions to a specific location within the area of delineation, please contact JoAnne Michael at RCI.

3.0 METHODS

3.1 Methods Used to Delineate and Survey Aquatic Resources

The site was delineated by a wetland scientist on September 14, 2020. This survey was performed by RCI in accordance with the criteria contained in the Technical Report Y-87-1, *Corps of Engineers Wetland Delineation Manua*l, January 1987 (1987 Manual) and as amended by *the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0, September 2008). Additionally, the USACE South Pacific Division Regulatory Program Wetlands Determination and Delineation Procedures for Irrigated Lands was reviewed for further guidance on delineation of on-site irrigated pastures.

Prior to the field review, aerial photographs, US Geological Survey (USGS) topographic maps, and National Wetland Inventory maps were reviewed. A baseline transect was established along the east parcel line and four east-west transects were established perpendicular to the flow of water. Data points were taken at locations determined by review of the USGS topographic maps, National Wetland Inventory maps, aerial photography (Attachment B), and field observations of hydrophytic vegetation as being potential wetland or other jurisdictional waters. At each data point, data on vegetation, soils, and hydrology were collected. Wetland data forms are provided in Attachment E and Ordinary High-Water Mark data forms are provided in Attachment F.

4.0 EXISTING CONDITIONS

4.1 Landscape Setting

The Survey Area is approximately 72 acres located in southwest Reno. The Survey Area is characterized by livestock grazing fields with irrigation diches constructed throughout. The Survey Area is surrounded by low-density residential development to the north, east and southern sides, and is bordered to the west by the undeveloped toe slope of the Sierra Nevada.

Topography

This Survey Area is located upon fan remnants within the Truckee Meadows. Site elevation ranges from 4,860 feet at the southwestern end to 4,666 feet above mean sea level at the northeast corner. The site has a slope ranging from 2-25%, averaging approximately 7% running southwest to northeast.

Recent and Historical Disturbances

The Survey Area has been historically altered by human-induced impacts including irrigated pastures and livestock grazing. Portions of the pastures have been cleared of boulders and large cobble, which have either been removed from the parcel or stockpiled and used to create rock wall structures. Other portions of the site retain the natural rocky surface. There are several active and remnant irrigation ditches within the Survey Area that flow from diversions originating from Steamboat Ditch (D-4). Reference overview photos 1-3 in Attachment C.

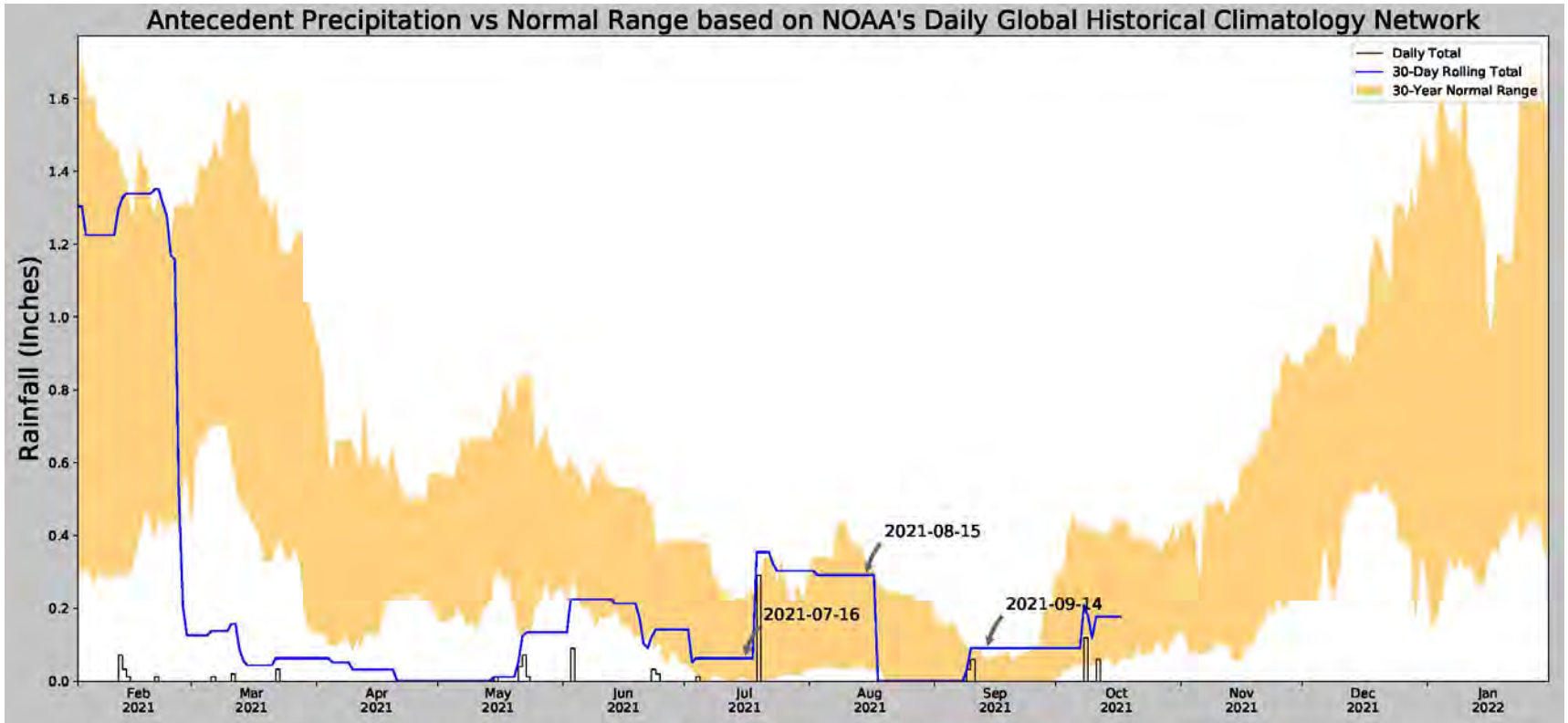
Hydrology

The Survey Area is located within the Truckee Meadows, with natural surface waters draining northeast across the site. The Survey Area is located within the Dry Creek-Truckee River Hydrologic Unit Code (160501020507 HUC-12) watershed, where the watershed reaches up to approximately 7,800 feet in the west and extends downslope to the northeast. The watershed drains a portion of the Carson Range of the Sierra Nevada. The upper portion of the watershed is forested and relatively undeveloped. Ranches and residential communities make up the watershed immediately adjacent to the Survey Area (Integrated Source Water and 319(h) Watershed Protection Plan, 2021).

Rainfall

On average, the site receives 8 to 12 inches of annual precipitation (NRCS Soil Survey 2021), mainly falling as snow from November through March. As of May 1, 2021, the Truckee River Basin is much below normal at 36% of median, compared to 59% last year (USDA NRCS Nevada Water Supply Outlook Report May 1, 2021). During the previous three months, precipitation was recorded at 20-30% of average for the Reno Area (USDA Water and Climate Update, October 21, 2021.)

The USACE Antecedent Precipitation Database was run for the September 14, 2021, survey date. Based on review of the charted data in the graph below, the precipitation for the survey date is well below normal for that time of year and the site is experiencing extreme drought.



Coordinates	39.441968, -119.811396
Observation Date	2021-09-14
Elevation (ft)	4726.31
Drought Index (PDSI)	Extreme drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2021-09-14	0.0	0.053543	0.090551	Wet	3	3	9
2021-08-15	0.037008	0.312598	0.291339	Normal	2	2	4
2021-07-16	0.011811	0.226378	0.062992	Normal	2	1	2
Result							Wetter than Normal - 15

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
RENO TAHOE INTL AP	39.4839, -119.7711	4410.105	3.608	316.205	2.764	11352	90
RENO WFO	39.5683, -119.7956	4986.877	8.769	260.567	6.231	1	0

Surface Water

The primary source of on-site surface water is Steamboat Ditch (D-4). Steamboat Ditch enters the parcel on the northern boundary and flows south across the middle section of the Survey Area before exiting at the southern parcel boundary. Water within Steamboat Ditch is diverted from the Truckee River near the California/Nevada state line and flows southeast through the Survey Area before discharging into Steamboat Creek in southwest Reno. Steamboat Creek is a perennial tributary to the Truckee River.

Water from Steamboat Ditch is diverted into on-site irrigation ditches D-3 and D-5. Both ditches terminate within the on-site pasture.

Along the northwest and northern parcel boundaries is an intermittent stream (AR-3) that is a tributary to Dry Creek one of four major drainages in the watershed. Dry Creek flows northeast and into Boynton Slough before the confluence with Steamboat Creek. Steamboat Creek flows to the Truckee River, a TNW.

Based on review of the Mt. Rose USGS 7.5-minute quadrangle topographical digital map (Figure 1 in Attachment B), there is one "blue line" stream or natural feature mapped within the Survey Area, which is identified as D-6.

Geology

The Survey Area is underlain by alluvial deposits from the Quaternary (less than two-million-years) to the west, and older alluvial deposits from the Miocene to Quaternary to the east. The older alluvium is unconsolidated, coarser material carried down from high gradient streams leaving behind cobble and boulder substrate. The alluvium to the east of the Survey Area is much finer sandy loam with some gravel and cobble. The site geology is weakly weathered and largely undissected, with little or no soil development (Nevada Bureau of Mines and Geology UNR 2017).

Soils

According to the National Resource Conservation Service (NRCS) soil survey maps (Figure 2 in Attachment B), the soils in the Survey Area include:

- Bieber stony sandy loam, 0 to 4 percent slopes, approximately 43% of site
- Indian Creek extremely stony sandy loam, 2 to 8 percent slopes, approximately 20% of site
- Fleischmann gravelly clay loam, 4 to 8 percent slopes, approximately 12% of site
- Barnard-Trosi association, approximately 12% of site
- Stodick very stony loam, 15 to 30 percent slopes, approximately 6% of site
- Fleischmann gravelly clay loam, 2 to 4 percent slopes, approximately 4% of site
- Springmeyer sandy clay loam, 0 to 2 percent slopes, approximately < 1% of site
- Notus stony loamy fine sand, approximately < 1% of site

Additional soil characteristics are provided in the following paragraphs and a soils map is provided in Attachment B.

Bieber stony sandy loam, 0 to 4 percent slopes

Bieber stony sandy loam soils are found at 4,900 to 5,200 feet elevation. Mean annual precipitation typically ranges between 10 to 14 inches. These soils are formed on remnant alluvial fans and consist of mixed alluvium parental material. A typical profile of Bieber stony sandy loam soils consists of:

H1 0 to 6 inches: stony sandy loam
H2 6 to 18 inches: clay
H3 18 to 51 inches: cemented material
H4 51 to 60 inches: stratified cobbly sandy loam to very gravelly sandy loam

These soils are classified as well drained, **non-hydric** soils. The frequency of flooding and ponding is none. Depth to the water table is generally more than 80 inches below the surface. Depth to a restrictive feature is between 8 to 20 inches to duripan. Available water capacity in the soil profile is very low (about 2.5 inches) (NRCS Web Soil Survey, accessed October 11, 2021).

Ecological site commonly associated with this soil type is Claypan 10-12 P.Z. (R026XY023NV).

Other minor components include: Oest (4%), Leviathan (4%), and Barnard (2%). None of these minor soil components are listed as hydric.

Indian Creek extremely stony sandy loam, 2 to 8 percent slopes

Indian Creek extremely stony sandy loam soils are found at 4,500 to 5,500 feet elevation. Mean annual precipitation typically ranges between 8 to 12 inches. These soils are formed on remnant alluvial fans and consist of mixed alluvium parental material. A typical profile of Indian Creek extremely stony sandy loam soils consists of:

H1 0 to 3 inches: very stony sandy loam
H2 3 to 20 inches: clay
H3 20 to 25 inches: cemented material
H4 25 to 60 inches: stratified extremely gravelly loamy coarse sand to gravelly sandy clay loam

These soils are classified as well drained, **non-hydric** soils. The frequency of flooding or ponding is none. Depth to the water table is generally more than 80 inches below the surface. Depth to a restrictive feature is between 14 to 20 inches to duripan. Available water capacity in the soil profile is very low (about 2.8 inches) (NRCS Web Soil Survey, accessed October 11, 2021).

Other minor components include: Leviathan (5%), Washoe (5%), Verdico (3%) and Rose Creek (4%). None of these minor soil components are listed as hydric.

Ecological site commonly associated with this soil type is Claypan 8-10 P.Z. (R026XY025NV).

Fleischmann gravelly clay loam, 4 to 8 percent slopes

Fleischmann gravelly clay loam soils are found at 4,300 to 5,200 feet elevation. Mean annual precipitation typically ranges between 8 to 12 inches. These soils are formed from mixed alluvium parental material

and are most often formed on fan remnants. A typical profile of Fleischmann gravelly clay loam soils consists of:

H1 0 to 4 inches: gravelly clay loam
H2 4 to 20 inches: clay
H3 20 to 43 inches: cemented material
H4 43 to 60 inches: variable

These soils are classified as well drained, **non-hydric** soils. The frequency of flooding and ponding is none. Depth to the water table is generally more than 80 inches below the surface. Depth to a restrictive feature is between 20 to 30 inches to duripan. Available water storage in the soil profile is low (about 3.1 inches) (NRCS Web Soil Survey, accessed October 11, 2021).

Ecological site commonly associated with this soil type is Claypan 8-10 P.Z. (R026XY025NV).

Other minor components include: Orr (5%), Idlewild (5%), and Reno (5%). None of these minor soil components are listed as hydric.

Barnard-Trosi association

Barnard-Trosi association soils are found at 4,600 to 5,200 feet elevation. Mean annual precipitation typically ranges between 10 to 12 inches. These soils are formed from mixed alluvium parental material and are most often formed in fan remnants. A typical profile of Barnard-Trosi association soils consists of:

H1 0 to 15 inches: stony sandy loam
H2 15 to 26 inches: clay
H3 26 to 30 inches: cemented material

These soils are classified as well drained, **non-hydric** soils. The frequency of flooding and ponding is none. Depth to the water table is generally more than 80 inches below the surface. Depth to a restrictive feature is between 20 to 39 inches to duripan. Available water storage in the soil profile is low (about 4.5 inches) (NRCS Web Soil Survey, accessed October 11, 2021).

Ecological site commonly associated with this soil type is Loamy Hill 10-12 P.Z. (R026XY017NV).

Other minor components include: Bieber (4%), Galeppi (4%), Indian Creek (3%), Aquolls (2%), and Oest (2%). None of these minor soil components are listed as hydric with the exception of Aquolls. Approximately 2% of the series composition is Aquolls, which are found in a wet meadow and are rated as hydric.

Stodick very stony loam, 15 to 30 percent slopes

Stodick very stony loam soils are found at 4,800 to 5,300 feet elevation. Mean annual precipitation typically ranges between 8 to 10 inches. These soils are formed from pediments or eroded areas from residuum and colluvium derived from soft sedimentary rock. A typical profile of Stodick very stony loam soils consists of:

H1 0 to 4 inches: stony loam
H2 4 to 14 inches: very gravelly clay loam
H3 14 to 60 inches: bedrock

These soils are classified as well drained, **non-hydric** soils. The frequency of flooding and ponding is none. Depth to the water table is generally more than 80 inches below the surface. Depth to a restrictive feature is between 14 to 20 inches to paralithic bedrock. Available water storage in the soil profile is very low (about 2.1 inches) (NRCS Web Soil Survey, accessed October 11, 2021).

Ecological site commonly associated with this soil type is Shallow Loam 10-12 P.Z. (R026XY015NV).

Other minor components include: Chalco (5%), Galeppi (5%), Verdico (3%), and Rock outcrop (2%). None of these minor soil components are listed as hydric.

Fleischmann gravelly clay loam, 2 to 4 percent slopes

Fleischmann gravelly clay loam soils are found at 4,300 to 5,200 feet elevation. Mean annual precipitation typically ranges between 8 to 12 inches. These soils are formed from remnant alluvial fans from mixed alluvium parent material. A typical profile of Fleischmann gravelly clay loam soils consists of:

H1 0 to 4 inches: gravelly clay loam
H2 4 to 20 inches: clay
H3 20 to 43 inches: cemented material
H4 43 to 60 inches: variable

These soils are classified as well drained, **non-hydric** soils. The frequency of flooding and ponding is none. Depth to the water table is generally more than 80 inches below the surface. Depth to a restrictive feature is between 20 to 30 inches to duripan. Available water storage in the soil profile is low (about 3.1 inches) (NRCS Web Soil Survey, accessed October 11, 2021).

Ecological site commonly associated with this soil type is Claypan 8-10 P.Z. (R026XY025NV).

Other minor components include Orr (5%), Idlewild (5%), and Reno (5%). None of these minor soil components are listed as hydric.

Community Types and Existing Vegetation

The Survey Area is composed of two distinct vegetative communities: irrigated pasture and non-irrigated upland shrub-scrub. Although the entire 72-acre parcel is grazed, only some areas of the pasture have irrigation induced vegetation. A list of observed plant species is provided in Attachment D.

Irrigated Pastures

Within the irrigated pasture areas, the observed vegetation consisted primarily of Kentucky blue grass (*Poa pratensis*, FAC), Bearded lyme grass (*Leymus triticoides*, FAC), meadow barley (*Hordeum jubatum,* FAC) and sedges (*Carex* spp.*,* OBL-FAC). Data points T1-P3, T3-P2, and T3-P4 in Attachment E characterize the on-site typical irrigated pasture, which is shown in photos 3 and 4 in Attachment C.

Upland Communities

Several areas within the parcel boundary were unirrigated and covered with sufficient rock that resulted in reduced grazing. These areas were characterized by stands of big sagebrush (*Artemisia tridentata*, UPL) and rubber rabbitbrush (*Ericameria nauseosa*, UPL) or scattered antelope bitterbrush (*Purshia tridentata,* UPL)

(Photos 1 and 2 in Attachment C). Common grasses in these upland areas include meadow fescue (*Festuca pratensis*, UPL), slender wild rye (*Elymus trachycaulus*, FACU), and cheatgrass. Medusa head was observed in multiple areas throughout the Survey Area. Common forbs included whorled milkweed (*Asclepias verticillate*, FACU), Canada thistle (*Cirsium arvense*, FACU), and Curly-cup gumweed (*Grindelia squarrosa*, FACU). Black locust (*Robinia pseudoacacia*, FACU) and Western juniper (*Juniperus occidentalis*, UPL) are scattered throughout the Survey Area along the property boundaries, rocky areas and fence lines. Based on review of the soil types and unirrigated portions of the site, these areas suggest that the site would be naturally dominated by upland shrubs if left unirrigated.

5.0 AQUATIC RESOURCES

Nine aquatic resources were identified within the Survey Area and are depicted on the Aquatic Resources Delineation Map provided in Attachment A. The nine aquatic resources consist of six excavated ditches, one intermittent stream, and two emergent wetlands. A summary of the delineated resources is shown in Table 1 and described below.

Table 1. Summary of Aquatic Resources within the Survey Area

Aquatic Resource Name	Aquatic Resource Classification		Size (acres)	Size (linear feet)
	Cowardin	Location (Lat/Long)		
AR-1	PEM1A	39.443527, -119.813468	0.21	--
AR-2	PSS1/EM1C	39.44087, -119.8182	0.89	--
AR-3	R4SBC	39.4403, -119.8188	0.13	565
D-1	R4SBCx	39.441803, -119.809178	0.05	1,175
D-2	R4SBCx	39.443802, -119.812268	0.02	530
D-2B	R4SBCx	39.440809, -119.810112	0.02	850
D-3	R4SBCx	39.440668, -119.813919	0.05	1,195
D-4 Steamboat Ditch	R4SBCx	39.440579, -119.814519	0.27	900
D-5	R4SBCx	39.442215, -119.814868	0.03	635
Total			**1.67**	**5, 850**

Aquatic Resource – (AR-1): Palustrine Emergent Wetland, Seasonally Flooded

AR-1 is an emergent wetland located within an irrigated pasture at the termination of irrigation ditch D-5. AR-1 is identified by the Cowardin (2013) classification system as a palustrine, emergent wetland with persistent vegetation and temporarily flooded (PEM1A). This wetland is an irrigation induced wetland, located on a hill slope at a four percent grade. This wetland receives water from excavated irrigation ditch D-5, which receives water directly from a diversion gate along Steamboat Ditch (D-4). Flow within D-5 is blocked at the northern end by a cobble barrier placed within the ditch that causes water within the channel to disperse downslope of the barrier forming AR-1 wetland. The wetland boundaries were delineated in the field by a distinct change in vegetation. There is no surface water connection to a TNW.

Vegetation: Wetland vegetation is dominated by sedges (*Carex* spp., OBL-FAC) and Baltic rush (*Juncus balticus*, FACW). The wetland vegetation criterion is met by a dominance of greater than 50% hydrophytic vegetation.

Soils: Wetland soils were characterized as:

0-8	10YR 5/2 (90%), and 10YR 3/6 (10%), sandy clay, redox concentration in the matrix
8-18	10YR 3/2 (90%), and 10YR 3/6 (10%), sandy clay, redox concentration in the matrix
>18	clay pan

Hydric soil indicators are documented by the presence of a depleted matrix.

Hydrology: Wetland hydrology is charged by discharge of irrigation water from D-5. Irrigation water was not present at the time of the site survey, but indicators of wetland hydrology included a positive FAC-Neutral Test and saturation visible on aerial imagery.

The on-site area of AR-1 is 0.21 acres. AR-1 is described in data forms T3-P1 located in Attachment E and shown in photos 5 and 6 in Attachment C.

Aquatic Resource – (AR-2): Palustrine Scrub-Shrub Deciduous Wetland, Seasonally Flooded

AR-2 is a scrub-shrub wetland abutting an intermittent creek (AR-3) that flows west to east through the northwest corner of the parcel. AR-2 is identified by the Cowardin (2013) classification system as a palustrine, scrub-shrub, broad-leaved deciduous wetland (PSS1C) that is seasonally flooded. The wetland boundary was delineated in the field by a distinct change in vegetation from willow to Wood's Rose (*Rosa woodsii*, FACU) and a distinct topographic break. AR-2 abuts D-6, an intermittent stream that flows east along the north property boundary and into Dry Creek, which flows to the Truckee River, a TNW.

Vegetation: Wetland vegetation is dominated by a dense stand of willow (*Salix* spp., OBL-FAC) with a sparse understory. The wetland vegetation criterion is met by a dominance of greater than 50% hydrophytic vegetation.

Soils: Soils are mapped as Stodick very stony loam found on 15 to 30 percent slopes and well drained. Stodick soils are not listed as hydric on the NRCS Hydric Soil List.

Hydrology: No soil saturation or inundation was present at the time of survey, but indicators of prior water seepage below and around willow roots and water stained leaves observed below the shrubs indicate a seep in the break in slope. Wetland hydrology indicators include water-stained leaves and evidence of surface water seepage.

The on-site area of AR-2 is 0.89 acres. AR-2 is described in data forms T4-P2 located in Attachment E and shown in photo 8 in Attachment C.

Aquatic Resource – (AR-3): Non-Relatively Permanent Water / Intermittent Stream

AR-3 is an unnamed intermittent stream that flows southwest to northeast through the northwest portion of the parcel. AR-3 is an intermittent tributary to Dry Creek, which flows northeast and is culverted under

the Reno-Tahoe Airport before discharging into Boynton Slough which flows to the Truckee River (NDEP Source Water and Watershed Protection Web Map, accessed 10/20/2021).

Total on-site length of AR-3 is 565 linear feet (0.13 acres). The width of AR-3 at the OHWM is approximately 10 feet. Depth at the OHWM is 8 inches. The OHWM was identified in the field by change in substrate, rack lines and sediment debris. AR-3 is described in OHWM-8 data form in Attachment F and shown in photo 9 in Attachment C.

Remnant Ditch 1 (D-1): Remnant Excavated irrigation ditch, ephemeral flows

D-1 is a remnant manmade, excavated irrigation ditch that was constructed through upland pasture. There is no upstream connection to a water source and portions of the ditch are fully vegetated, which suggests it is not currently being used or maintained for irrigation purposes. Based on historic aerials and the NWI maps, historically, this ditch would have collected water from D-3. However, the channel of D-3 is no longer defined and currently ends in the pasture as shown on the Aquatic Resource Map in Attachment A and water sheet flows or infiltrates into an upland vegetated swale (described in T1-P1 and T1-P2). Sheet flow may still occur within the swale and discharge into D1 further down slope; however, the swale terminates in a rock pile located near the eastern property line (reference photo 23). There was no flow or evidence of recent flows within D-1.

D-1: The on-site length of D-1 is 1,175 linear feet (0.05 acres). The width at the OHWM is 2 feet. D-1 is described in OHWM-1 data form in Attachment F and shown in photo 10 in Attachment C. D-1 is isolated and has no surface water connection to a TNW.

Remnant Ditches 2 (D-2) and 2b (D-2b): Remnant Excavated irrigation ditches, ephemeral flows

D-2 and D-2b are remnant manmade, excavated ditches that were constructed through upland pasture. Neither appear to be currently used or maintained and are fully vegetated in portions of the channel (reference photos 11-13). Based on historic aerials and the NWI maps, historically, these ditches would have collected water from the D-3. However, the channel of D-3 has degraded and currently terminates in the pasture, reference photo 15, and as shown on the Aquatic Resource Map in Attachment A. The channels of D2 and D2b end abruptly within the pasture and no longer connect. There was no flow or evidence of recent flows within these ditches. Ditches 2 and 2b terminate within the project area and do not have a surface water connection to a TNW

D-2: The on-site length of D-2 is 530 linear feet (0.02 acres) on-site. The width at the OHWM is 1 foot. The channel ends at a steep slope along the northern parcel line and any flows within D-2 sheet flow across the slope. There was no evidence of erosion or rills. D-2 is described in OHWM-2 data form in Attachment F and shown in photos 11 and 12 in Attachment C. D-2 has no surface water connection to a TNW.

D-2b: The on-site length of D-2b is 850 linear feet (0.02 acres) on-site. The width at the OHWM is 1 foot. The channel ends within upland pasture and flow within D-2b infiltrates. D-2b is described in OHWM-7 data form in Attachment F and shown in photo 13 in Attachment C. D-2b has no surface water connection to a TNW.

Ditch – 3 (D-3): Excavated irrigation ditch, seasonally intermittent flows
D-3 is a manmade, excavated irrigation ditch constructed through uplands. Water can be diverted from Steamboat Ditch (D-4) via a culvert and headgate before discharging into D-3; however, D-3 does not appear to have been recently used and portions of the ditch are vegetated with cheatgrass, an upland species. Ditch 3 meanders southeast through the parcel and dissipates along the hill slope (reference photo 15 in Attachment C). There is no surface water connection to a TNW.

The on-site length of D-3 is 1,193 linear fleet (0.05 acres). The average width of D-3 is approximately two feet at the OHWM with a depth of six inches. The OHWM was identified in the field by a change in substrate. D-3 is described in OHWM-3 data form in Attachment F and shown in photos 14 and 15 in Attachment C.

Ditch – 4 (D-4):
AR-4 is a manmade, excavated irrigation ditch identified as Steamboat Ditch. Flow within Steamboat Ditch originates from the Truckee River near the California/Nevada border and flows north to south through the Survey Area prior to discharging into Steamboat Creek, which flows to the Truckee River, a TNW. Irrigation gates on D-4 allow water to be diverted to D-3 and D-5 ditches. There was no flow in Steamboat Ditch at the time of the delineation.

The on-site length of D-4 is 900 linear fleet (0.26 acres). The average width of D-4 is approximately 13 feet at the OHWM. Depth at the OHWM is two feet. The OHWM was identified in the field by an undercut bank, scour, and lack of vegetation. D-4 is described in OHWM-5 data form in Attachment F and shown in photo 17 in Attachment C.

Ditch – 5 (D-5):
D-5 is a manmade, excavated irrigation ditch that receives flow from Steamboat ditch and ends in the pasture at AR-1: PEM1C. Flow into D-5 is controlled by an irrigation gate on D-4 that diverts water through a culvert under the adjacent access road. Flow within the ditch is blocked at the northern end by placement of a cobble barrier, causing water to slow and dissipate, forming AR-1 located immediately downslope of the cobble. D-5 channel terminates at AR-1, which is perched on the hillslope with no surface water connection to a TNW.

The on-site length of D-5 is 635 linear fleet (0.03 acres). The average width of D-5 is approximately 2 feet at the OHWM. Depth at the OHWM is two inches. The OHWM was identified in the field by an undercut bank, scour, and lack of vegetation. The OHWM is intermittent throughout the reach of the channel and portions of the ditch are fully vegetated, suggesting this ditch is not regularly used or maintained. D-5 is described in OHWM-6 data form in Attachment F and shown in photos 18 and 19 in Attachment C.

6.0 FEDERALLY PROTECTED SPECIES

The USFWS Information for Planning and Consultation website (accessed October 20, 2021) identified six federally protected species with potential to occur near the Survey Area:

- Cui-ui (*Chasmistes cujus)*, Endangered
- Sierra Nevada yellow-legged frog (*Rana sierrae*), Endangered
- Carson Wandering Skipper (*Pseudocopaeodes eunus obscurus*), Endangered

- Monarch Butterfly (*Danaus plexippus*), Candidate
- Steamboat buckwheat (*Eriogonum ovalifoium* var. *williamsiae),* Endangered
- Webber's Ivesia (*Ivesia webberi*), Threatened

There is no designated critical habitat located within the Survey Area.

Cui-ui (Chasmistes cujus), Endangered

Cui-ui is a lake sucker found only in Pyramid Lake Nevada. There is *no potential* for cui-ui to occur on-site.

Sierra Nevada yellow-legged frog (Rana sierrae), Endangered

Sierra Nevada yellow-legged frogs (SNYLF) are typically found in lakes, ponds, marshes, meadows and streams at high elevations, typically ranging from 4,500 to 12,000 feet that are either perennial or intermittent at an elevation above 4,500 feet. There are no high elevation lakes, ponds, marshes, meadows and streams within the Survey Area. The nearest known population occurred on Mt. Rose in Washoe County, but is now extinct (amphibianweb.org accessed, 2020). There *is no potential* for SNYLF to occur on-site.

Carson Wandering Skipper (Pseudocopaeodes eunus obscurus), Endangered

The Carson wandering skipper is a small orange-brown butterfly. They are typically found in grassland habitats on alkaline substrates in Nevada and California, at elevations less than 5,000 east of the Sierra Nevada. Habitat includes the presence of salt grass, near nectar sources such as *Cirsium arvense* (Canadian thistle), and possibly near geothermal activity. There is no suitable habitat for the Carson Wandering Skipper. There is *no potential* for the Carson Wandering Skipper to occur on site.

Steamboat buckwheat (Eriogonum ovalifoium var. williamsiae), Endangered

Steamboat buckwheat occurs in young, shallow, poorly developed, dry soils derived from siliceous opaline sinter precipitated by past thermal spring flows. Steamboat buckwheat is restricted to substrates derived from hot spring deposits in the Steamboat Hills. On-site soils are not derived from siliceous opaline sinter nor are there thermal springs on-site. There is *no potential* for Steamboat buckwheat to occur on-site.

Webber's Ivesia (Ivesia webberi), Endangered

Webber's ivesia occurs on shallow shrink-swell clay soils with a gravelly surface layer over volcanic, generally andesitic bedrock, on mid-elevation benches and flats. Known in Nevada from the Pine Nut and Carson ranges and Peavine Mountain. There are no shrink-swell soils present within the Survey area. There is *no potential* for Webber's Ivesia to occur on-site.

7.0 REFERENCES

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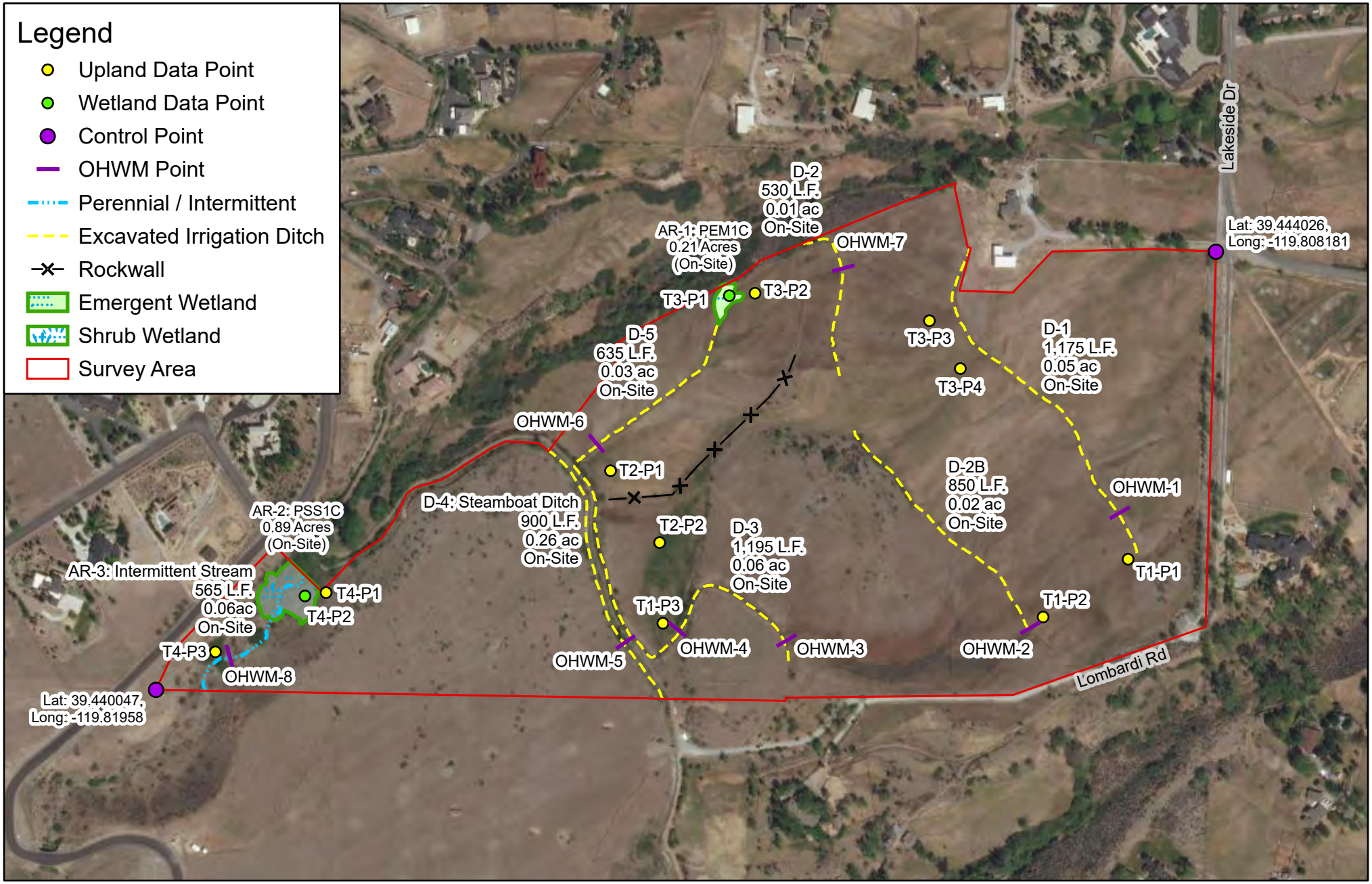
Attachments

Attachment A

Aquatic Resource Delineation Map



Project: Lakeside Parcel
County: Washoe County
Surveyor: JoAnne Michael, Erin Smith
Date: September 16, 2021
Source: ESRI Imagery Services
Maxar Metro 5/8/2021

8900 Lakeside, LLC - Lakeside Dr. Parcel
Aquatic Resources

0 200 400 Feet
1 In = 400 Ft

N

10/21/2021

Resource Concepts Inc.

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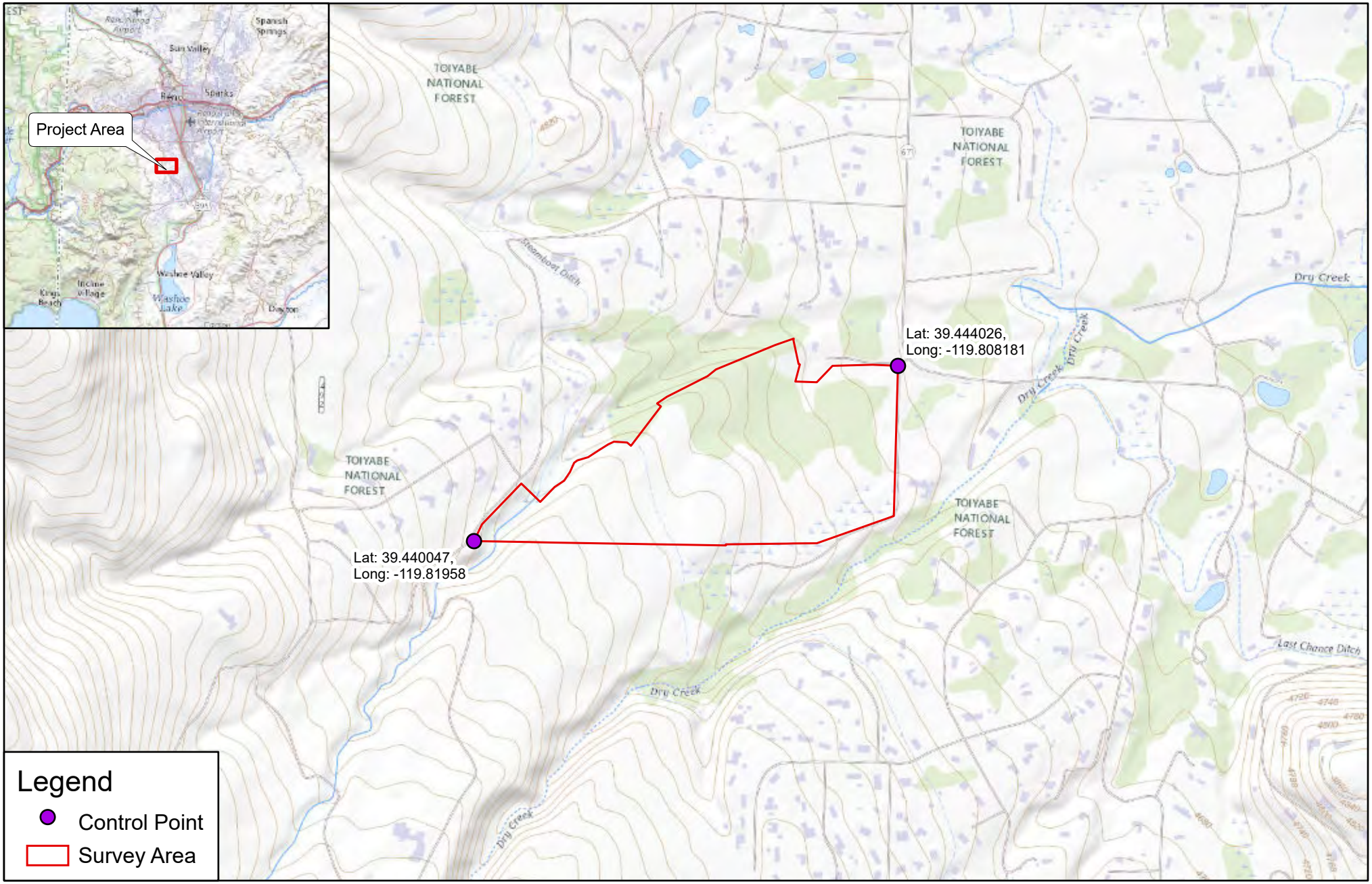
Attachment B

Supporting Maps



Project: Lakeside Parcel
County: Washoe County
Surveyor: JoAnne Michael, Erin Smith
Date: September 16, 2021
Source: USGS The National Map, 2020

Figure 1
8900 Lakeside, LLC - Lakeside Dr. Parcel
Location Map

0 500 1,000 Feet
1 In = 1,000 Ft

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10/21/2021

Resource Concepts Inc

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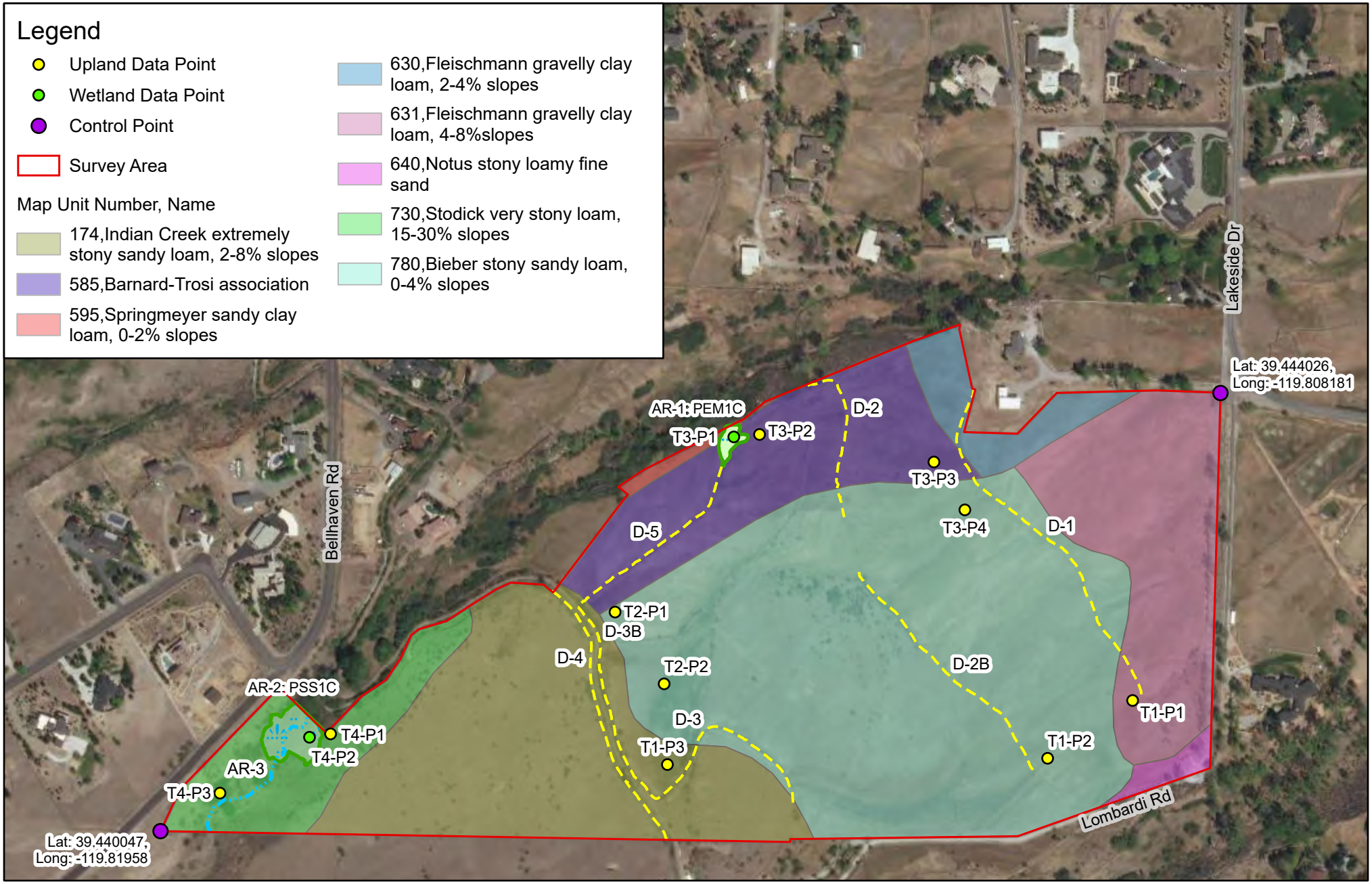

Project: Lakeside Parcel
County: Washoe County
Surveyor: JoAnne Michael, Erin Smith
Date: September 16, 2021
Source: Web Soil Survey, 2020

Figure 2
8900 Lakeside, LLC - Lakeside Dr. Parcel
Web Soil Survey

0 200 400 Feet
1 In = 400 Ft

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10/21/2021

Resource Concepts Inc

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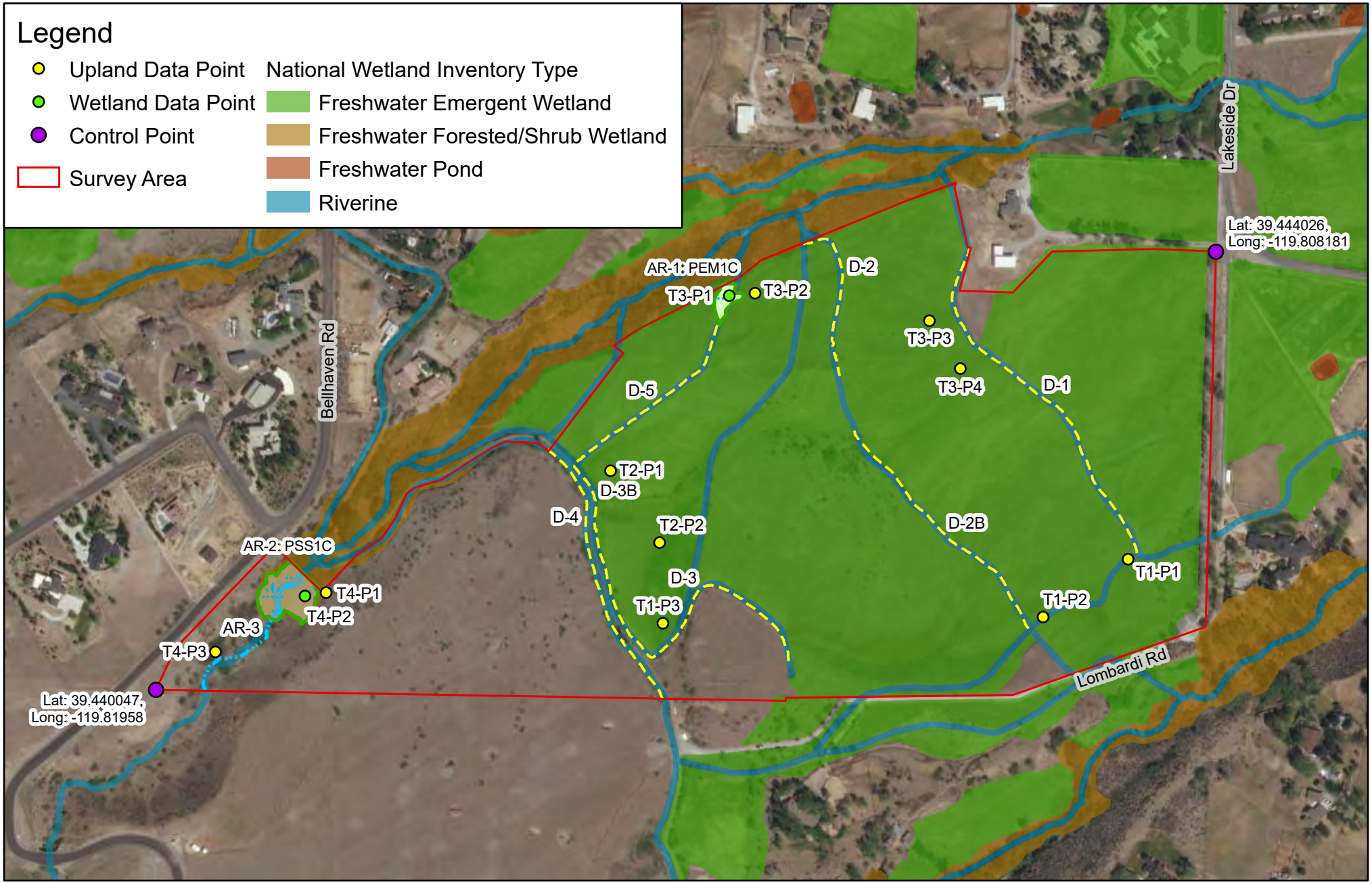

Project: Lakeside Parcel
County: Washoe County
Surveyor: JoAnne Michael, Erin Smith
Date: September 16, 2021
Source: National Wetland Inventory, 2020

Figure 3
8900 Lakeside, LLC - Lakeside Dr. Parcel
National Wetland Inventory

0 200 400 Feet
1 In = 400 Ft

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10/21/2021

Resource Concepts Inc.

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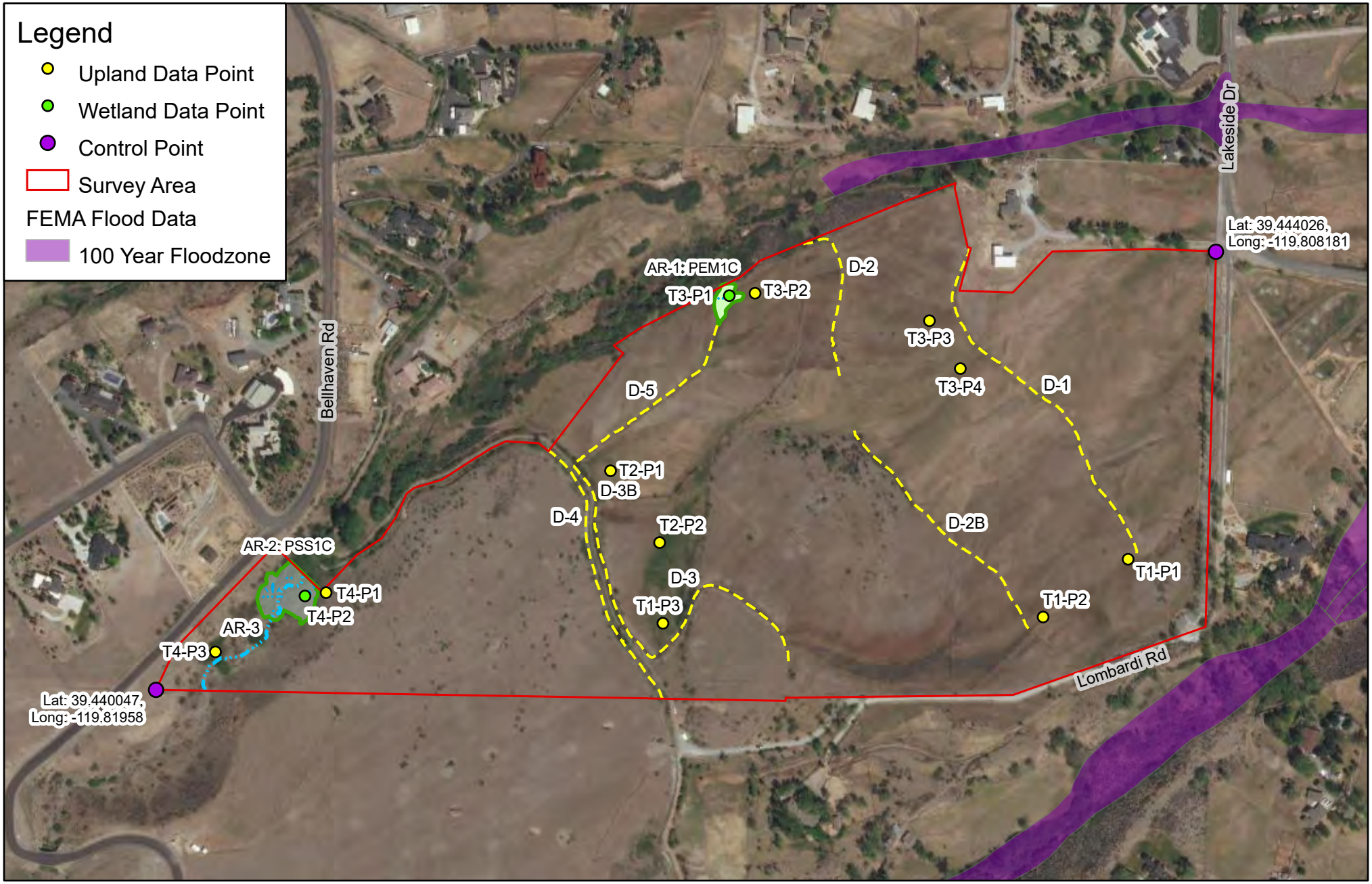

Project: Lakeside Parcel
County: Washoe County
Surveyor: JoAnne Michael, Erin Smith
Date: September 16, 2021
Source: FEMA Flood Map, 2020

Figure 4
8900 Lakeside, LLC - Lakeside Dr. Parcel
FEMA Floodplain

0 200 400 Feet
1 In = 400 Ft

N

10/21/2021

RCI Resource Concepts Inc.

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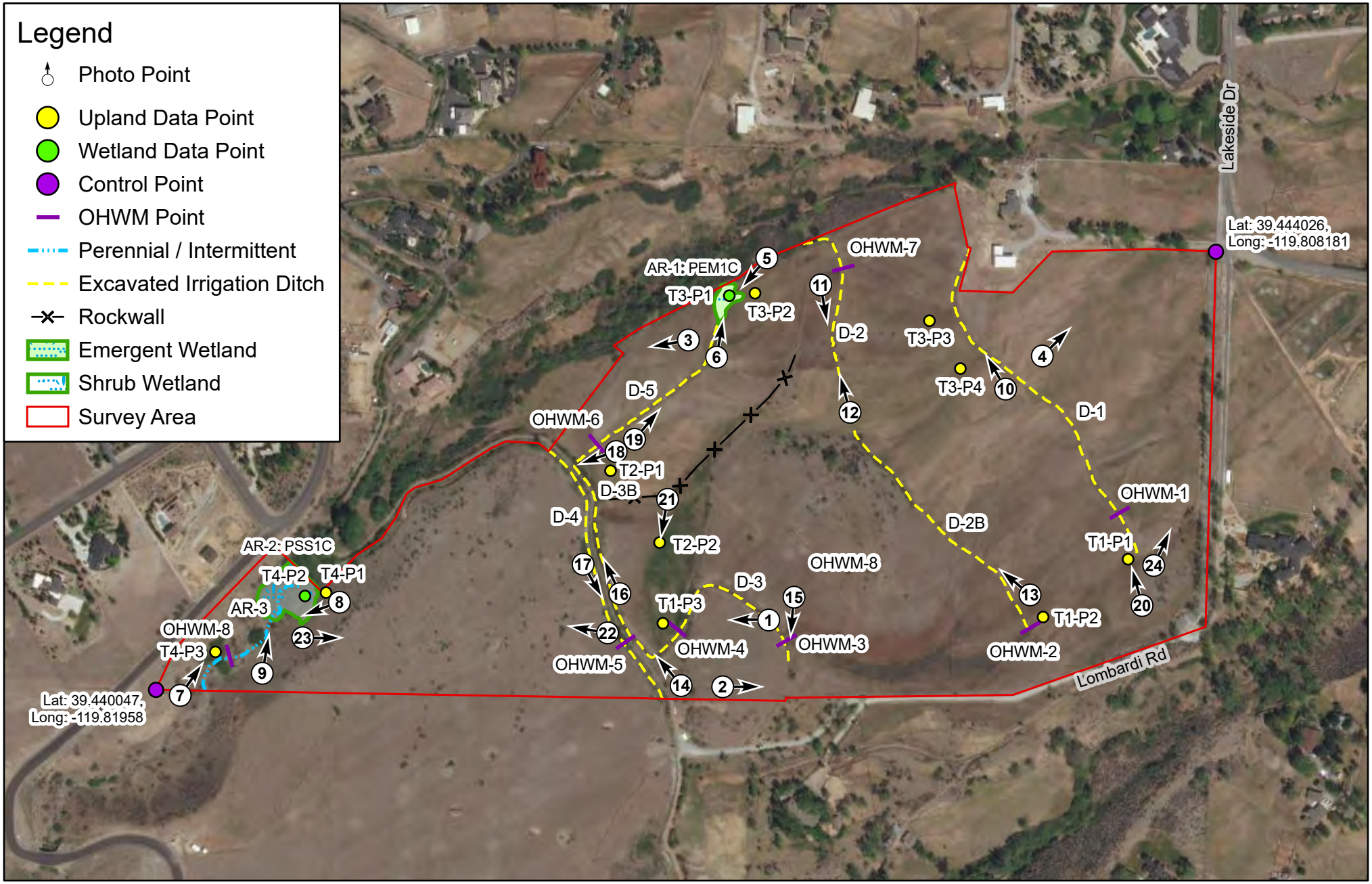


Project: Lakeside Parcel
County: Washoe County
Surveyor: JoAnne Michael, Erin Smith
Date: September 16, 2021
Source: ESRI Imagery Services
Maxar Metro 5/8/2021

Figure 5
8900 Lakeside, LLC - Lakeside Dr. Parcel
Photo Point Map

0 200 400 Feet
1 In = 400 Ft

N

10/21/2021

RCI Resource Concepts Inc.

R:\Projects\Thomas_Creek_Development\21-305\MXD\ThomasCreekD_Project\ThomasCreekD_Project.aprx

Attachment C

On-Site Photographs

Attachment C – Photo Plates

Photo 1. Overview of upland pasture taken from northeast parcel corner.

Photo 2. Overview of upland pasture taken along the southern property line, view to the east.

Attachment C – Photo Plates

Photo 3. Upland irrigated grazed pasture typical of northern portion of Survey Area. View to the north.

Photo 4. Upland irrigated pasture typical located in northeast corner of parcel.

Attachment C – Photo Plates

Photo 5. AR-1: PEM1C. Wetland boundary defined by distinct change in vegetation.

Photo 6. AR-1: PEM1C. End of D-5: Irrigation ditch at the start of AR-1.

Attachment C – Photo Plates

Photo 7. Overview of AR-2: PSS1C and AR-3: Intermittent stream from western corner of parcel.

Photo 8. AR-2: PSS1C formed by seep at toe of slope. Wetland boundary delineated by distinct change in vegetation.

Attachment C – Photo Plates

Photo 9. AR-3: Intermittent Stream / NRPW.

Photo 10. D1- excavated irrigation ditch within upland pasture.

Attachment C – Photo Plates

Photo 11. D-2. Channel is fully vegetation in some reaches.

Photo 12. D-2 south end. Channel flattens in pasture and there is no longer a bed and bank.

Attachment C – Photo Plates

Photo 13. D-2b Ditch. Portions of ditch are fully vegetated, suggesting lack of recent flows.

Photo 14. D-3: excavated irrigation ditch near diversion from D-4: Steamboat Ditch.

Attachment C – Photo Plates

Photo 15. Southern end of D-3. Channel dissipates. No bed and bank or OHWM.

Photo 16. Upland road separating D-3 (right) and D-4: Steamboat Ditch (left).

Attachment C – Photo Plates

Photo 17. D-4: Steamboat Ditch, flows north to south through parcel.

Photo 18. D-5: Irrigation ditch. Water from D-4 is discharged via a culvert under access road into D-5

Attachment C – Photo Plates

Photo 19. D-5: irrigation ditch near culvert outlet and upslope of AR-1.

Photo 20. T1P1 upland vegetative swale. Mapped as "riverine" on NWI. Lacks hydric soil indicators and doesn't meet wetland criteria. D-1: ditch enters swale at right.

Attachment C – Photo Plates

Photo 21. T2-P2. Vegetated swale mapped as “riverine” on NWI.

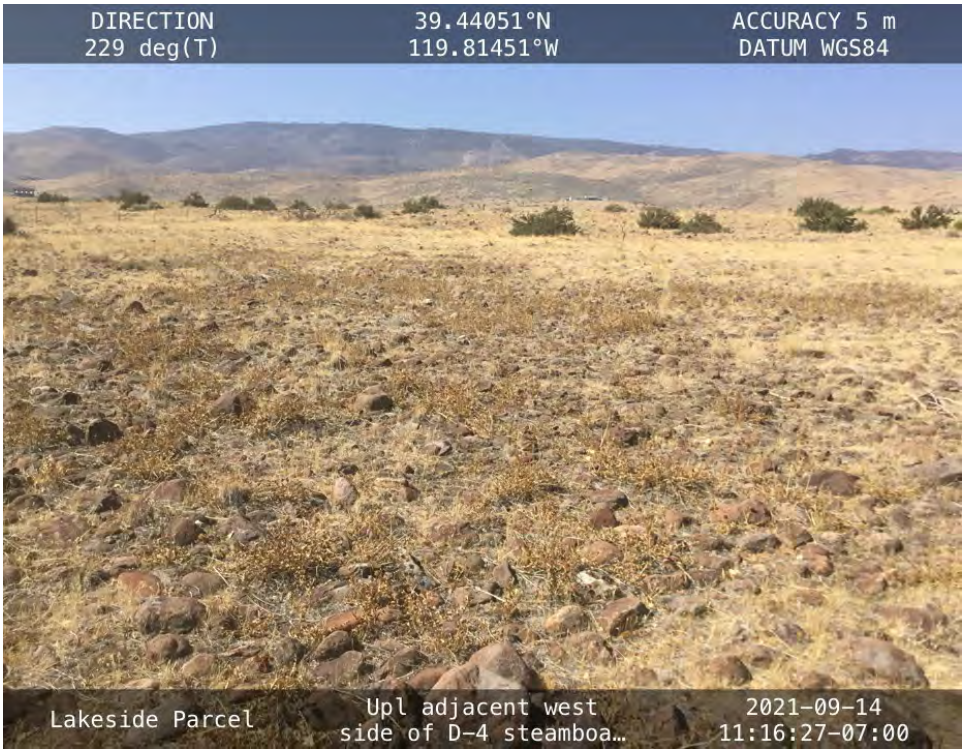


Photo 22. Overview of upland, unirrigated pasture west of D-4: Steamboat Ditch.

Attachment C – Photo Plates

Photo 23. Overview of upland, unirrigated pasture taken at west end of parcel looking east.

Photo 24. Swale mapped as "riverine" on NWI map. D-1 out flows to this rock lined swale.

Attachment D

Plant List

Attachment D
Wetland Delineation Plant List

Scientific Name	Common Name	Wetland Indicator
Grasses/Grasslikes		
Agropyron cristatum	Crested Wheatgrass	UPL
Alopecurus arundinaceus	Creeping Meadow-Foxtail	FAC
Bromus tectorum	Cheatgrass	UPL
Carex douglasii	Douglas' Sedge	FAC
Carex spp.	Douglas' sedge	OBL-FAC
Elymus caput-medusae L.	Medusa head	UPL
Elymus trachycaulus	Slender Wild Rye	FACU
Festuca arundinacea	Tall Fescue	UPL
Festuca pratensis	Meadow Fescue	UPL
Hordeum jubatum	Fox-Tail Barley	FAC
Juncus balticus	Baltic Rush	FACW
Juncus sp.	Rush	OBL-FAC
Leymus cinereus	Great Basin Lyme Grass	FAC
Leymus triticoides	Beardless Lyme Grass	FAC
Phleum pratense	Common Timothy	FACU
Poa palustris	Fowl Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FAC
Forbs		
Asclepias verticillate	Whorled Milkweed	FACU
Asteraceae sp.	Daisy	UPL
Cirsium arvense	Canada Thistle	FACU
Cirsium vulgare	Bull Thistle	FACU
Epilobium sp.	Willowherb	OBL-FAC
Grindelia squarrosa	Curly-Cup Gumweed	FACU
Iva axillaris	Poverty Weed	UPL
Plantago lanceolata	English Plantain	FAC
Rumex crispus	Curly dock	FAC
Trees		
Juniperus occidentalis	Western Juniper	UPL
Populus fremontii	Fremont's Cottonwood	UPL
Robinia pseudoacacia	Black Locust	FACU
Salix sp.	Willow	OBL-FAC

Scientific Name	Common Name	Wetland Indicator
Shrubs		
Artemisia tridentata	Big Sagebrush	UPL
Ericameria nauseosa	Rubber Rabbitbrush	UPL
Prunus andersonii	Desert Peach	UPL
Purshia tridentata	Antelope Bitterbrush	UPL
Rosa woodsii	Woods' Rose	FACU
Salix exigua	Narrow-Leaf Willow	FACW

Attachment E

Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T1-P1

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 4

Subregion (LRR): D Lat: 39.441407 Long: -119.809034 Datum: WGS 84

Soil Map Unit Name: 631, Fleischmann gravelly clay loam NWI classification: R4SBCx

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

DP 1 taken in upland vegetated swale adjacent to D1: excavated drainage, shown as drainage on NWI, but no defined bed and bank or OHWM. Does not meet wetland criteria. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca pratensis	20	Y	UPL
2. Festuca arundinacea	5	N	UPL
3. Carrex spp.	60	Y	FACW
4. Juncus balticus	15	N	FACW
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

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 ✔

Remarks:

SOIL

Sampling Point: T1-P1

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
0-8	10YR 3/4	100					SCL	Dense, med. roots
8-18	10YR 3/4	100					sandy loar	Large cobble throughout profile

[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** ✔

Remarks:

SCL = sandy clay loam

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): None

Water Table Present? Yes _____ No ✔ Depth (inches): >18

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): >18

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

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

Remarks:

Vegetated upland swale - no defined bed and bank, no OWHM.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T1-P2

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 4

Subregion (LRR): D Lat: 39.440896 Long: -119.809940 Datum: WGS 84

Soil Map Unit Name: 780, Bieber stony sandy loam, 0-4% slopes NWI classification: R4SBCx

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

DP taken in upland vegetated swale adjacent to D2B - no defined bed or bank. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Carex spp.	40	Y	OBL-FA(
2. Juncus balticus	40	Y	FACW
3. Festuca arundinacea	5	N	UPL
4. Rumex crispus	5	N	FAC
5. Hordeum jubatum	10	N	FAC
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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 ____

Remarks:

SOIL

Sampling Point: T1-P2

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
0-9	10YR 3/4	100					SCL	Dense, coarse roots
9-19	10YR 3/2	100					SCL	Cobble throughout

[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 ✔

Remarks:

SCL = sandy clay loam.

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): None

Water Table Present? Yes _____ No ✔ Depth (inches): >19

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): >19

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

Located in naturally occurring vegetated swale. Shown as stream on NWI map, but does not have a defined bed/bank, no OHWM. Does not meet wetland criteria.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T1-P3

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 4

Subregion (LRR): D Lat: 39.440743 Long: -119.814080 Datum: WGS 84

Soil Map Unit Name: 174, Indian Creek extremely stony sandy loam NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Data point taken in upland irrigated pasture adjacent to D-3: excavated irrigation ditch. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Poa pratensis	55	Y	FAC
2. Elymus trachycaulus	30	Y	FACU
3. Asteraceae sp.	5	N	UPL
4. Juncus balticus	10	N	FACW
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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 _____

Remarks:

SOIL

Sampling Point: T1-P3

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
0-8	10YR 3/2	100					SL	Dense, fine roots.
8-22	10YR 3/2	100					SL	

[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 ✔

Remarks:

SL = sandy loam.

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): None

Water Table Present? Yes _____ No ✔ Depth (inches): >22

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): >22

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T2-P1

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR): D Lat: 39.442017 Long: -119.814702 Datum: WGS 84

Soil Map Unit Name: 780, Bieber stony sandy loam NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Data point taken within irrigated pasture near confluence of D-4 and D-5. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Juncus balticus	45	Y	FACW
2. Carex sp.	45	Y	OBL-FAC
3. Rumex crispus	3	N	FAC
4. Poa palustris	5	N	FAC
5. Plantago lanceolata	2	N	FAC
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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 _____

Remarks:

SOIL

Sampling Point: T2-P1

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
0-7	10YR 3/3	100					sandy clay	Dense, fine roots
7-18	10YR 3/2	100					sandy clay	

[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 ✔

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): None

Water Table Present? Yes _____ No ✔ Depth (inches): >18

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): >18

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T2-P2

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR): D Lat: 39.441424 Long: -119.814143 Datum: WGS 84

Soil Map Unit Name: 780, Bieber stony sandy loam NWI classification: R4SBCx

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

DP taken within upland swale within irrigated pasture - mapped as "riverine" on NWI Map. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Juncus balticus	20	Y	FACW
2. Carex douglasii	20	Y	FAC
3. Elymus caput-medusae L.	20	Y	UPL
4. Leymus triticoides	20	Y	FAC
5.			
6.			
7.			
8.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (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 _____

Remarks:

SOIL

Sampling Point: T2-P2

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 3/2	100					sandy loar	

[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 ✔

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): None

Water Table Present? Yes _____ No ✔ Depth (inches): >14

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): >14

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

Swale within center of pasture - no defined channel or OHWM evident. May recieve water from D4: Steamboat Ditch during high flows.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T3-P1

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 4

Subregion (LRR): D Lat: 39.443527 Long: -119.813468 Datum: WGS 84

Soil Map Unit Name: 585, Barnard-Trosi association NWI classification: R4SBCx

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks:

AR-1: PEM1A - irrigation induced wetland, perched on hill slope - receives water from D5. No surface water connection to a TNW. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Carex sp.	45	Y	OBL-FA(
2. Juncus balticus	45	Y	FACW
3. Festuca pratensis	5	N	UPL
4. Alopecurus arundinaceus	5	N	FAC
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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 ____

Remarks:

Wetland boundary defined in field by change in dominant vegetation.

SOIL

Sampling Point: T3-P1

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
0-8	10YR 5/2	90	10YR 3/6	10	C	M	sandy clay	Fine roots
8-18	10YR 3/2	90	10YR 3/6	10	C	M	sandy clay	
18								Clay pan

[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: clay pan

Depth (inches): 18

Hydric Soil Present? Yes ✔ **No** ___

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): None

Water Table Present? Yes ___ No ✔ Depth (inches): >18

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): >18

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

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

Remarks:

Data point taken at terminus of D5, which forms AR-1. Irrigation was not on during site survey. - receives irrigation water, sheet flows across hill slope and infiltrates. No surface water connection to a TNW.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T3-P2

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR): D Lat: 39.443554 Long: -119.813189 Datum: WGS 84

Soil Map Unit Name: 585, Barnard-Trosi association NWI classification: PEM1A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

DP taken in upland irrigated pasture adjacent to AR-1: PEM1A. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Festuca pratensis	10	N	UPL
2. Phleum pratense	10	N	FACU
3. Carex sp.	70	Y	OBL-FA(
4. Rumex crispus	5	N	FAC
5. Plantago lanceolata	5	N	FAC
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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 ____

Remarks:

SOIL

Sampling Point: T3-P2

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
0-18	10YR 3/3	100					sandy loar	

[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** ✔

Remarks:

No hydric soil indicators.

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): none

Water Table Present? Yes _____ No ✔ Depth (inches): >18

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): >18

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T3-P3

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): D Lat: 39.443368 Long: -119.811279 Datum: WGS 84

Soil Map Unit Name: 585, Barnard-Trosi association NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions. Upland irrigated field adjacent to west side of D1.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca pratensis	15	N	UPL
2. Juncus balticus	60	Y	FACW
3. Rumex crispus	5	N	FAC
4. Carex sp.	20	Y	OBL-FA(
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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 _____

Remarks:

SOIL

Sampling Point: T3-P3

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
0-18	10YR 3/3	98	10YR 4/6	2	C	M	sandy loar	redox features faint, sparse

[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 ✔

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): None

Water Table Present? Yes _____ No ✔ Depth (inches): >18

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): >18

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T3-P4

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): D Lat: 39.442972 Long: -119.810926 Datum: WGS 84

Soil Map Unit Name: 780, Bieber stony sandy loam NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Data point taken in topographic low/swale within irrigated pasture. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca pratensis	20	Y	UPL
2. Carex spp.	60	Y	OBL-FAC
3. Hordeum jubatum	20	Y	FAC
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

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:

✔ 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 _____

Remarks:

SOIL

Sampling Point: T3-P4

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
0-18	10YR 3/2	100					sandy loar	cobble throughout

[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 ✔

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): none

Water Table Present? Yes _____ No _____ Depth (inches): >18

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): >18

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T4-P1

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 25

Subregion (LRR): D Lat: 39.440913 Long: -119.817760 Datum: WGS 84

Soil Map Unit Name: 730, Stodick very stony loam NWI classification: n/a

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Data point taken on upland slope above AR-2: PSS1C; wetland boundary defined by distinct topo break. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Prunus andersonii	30	Y	UPL
2. Ericameria nauseosa	30	Y	UPL
3.			
4.			
5.			
	60 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Agropyron cristatum	50	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (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 ✔

Remarks:

SOIL

Sampling Point: T4-P1

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
0-12	10YR 3/3	100					loam	with gravel and cobble

[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 ✔

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): none

Water Table Present? Yes _____ No ✔ Depth (inches): >12

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): >12

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

Data point taken on steep slope, 2-3 feet higher in elevation than adjacent wetland. no evidence of erosion or rills.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T4-P2

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 20

Subregion (LRR): D Lat: Long: Datum: WGS 84

Soil Map Unit Name: 730, Stodick very stony loam NWI classification: PSS1/EM1C

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks:

AR-2: PSS1C - originating from seep near base of steep slope. Wetland boundary defined by topo break. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix sp.	80	Y	OBL-FA(
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Salix exigua	100	Y	FACW
2.			
3.			
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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 ____

Remarks:

Wetland boundary delineated on change in vegetation from willow (OBL-FAC) to woods' rose (FACU). Dense willow thicket. No herbaceous layer but soil covered with duff.

SOIL

Sampling Point: T4-P2

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

[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** _____

Remarks:

Mapped in non-hydric soils

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): none

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

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

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

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

Remarks:

No soil saturation or inundation at the time of survey, but visual evidence of water seeping below/around willow roots and water stains/sediment on fallen leaves below shrubs. Soils eroded at outlet of seep; rilling beneath dense vegetation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 8900 Lakeside, LLC - Lakeside Parcel City/County: Reno / Washoe Sampling Date: 9/14/21

Applicant/Owner: Roger Davidson State: NV Sampling Point: T4-P3

Investigator(s): JoAnne Michael, Erin Smith, Lewis Mendive Section, Township, Range: S.11, T.18N, R.19E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 25

Subregion (LRR): D Lat: Long: Datum: WGS 84

Soil Map Unit Name: 730, Stodick very stony loam NWI classification: n/a

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

Data point taken on steep upland hillside, slopes away from AR-7 dominated by upland shrubs. According to the Palmer Drought Severity Index, the Survey Area is experiencing extreme drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Artemisia tridentata	20	Y	UPL
2. Purshia tridentata	20	Y	UPL
3. Rosa woodsii	50	Y	FACU
4.			
5.			
	90 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Leymus cinereus	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (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 ✔

Remarks:

SOIL

Sampling Point: T4-P3

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
0-12	10YR 3/3	100					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 ✔

Remarks:

Sandy/gravelly soils interspersed with cobble.

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): none

Water Table Present? Yes _____ No ✔ Depth (inches): > 12

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): > 12

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

Attachment F

OHWM Data Forms

OHWM Delineation Cover Sheet Page 1 of 9

Project: 8900 Lakeside, LLC -Lakeside Dr. Parcel **Date:** September 14, 2021

Location: SW Reno, Washoe Co, Nevada **Investigator(s):** JoAnne Michael, Lewis Mendive

Project Description:

The purpose of the delineation is to identify on-site wetlands for furuter planning purposes.

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

The site contains a series of excavated ditches that irrigate adjacent pastures. The main supply ditch is Steamboat Ditch, which conveys water from the Truckee River, through the site and back into Steamboat Creek, a tributary to the Truckee River. Water is controlled by irrigation gates and culverts.
One intermittent stream is located in the northwest corner of the site that flows to Dry Creek. There are in-stream structures or disturbances.

Off-site Information

Remotely sensed image(s) acquired? ☒ **Yes** ☐ **No** [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

Aerial photo used to map data points and $OHWM_1$

Hydrologic/hydraulic information acquired? ☐ **Yes** ☒ **No** [If yes, attach information to datasheet(s) and describe below.] Description:

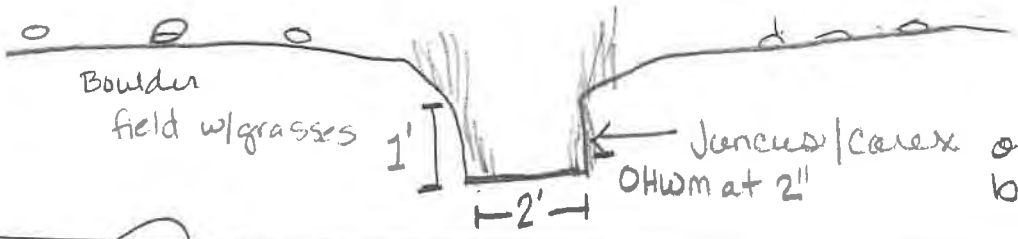
List and describe any other supporting information received/acquired:

National Wetland Inventory Map
NRCS Web soil survey maps
FEMA floodplain map

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Transect (cross-section) drawing: (Choose a location that is representative of the dominant stream characteristics over some distance, label the OHWM and other features of interest along the transect; include an estimate of transect length)

D1 - Excavated Irrigation ditch



Break in Slope at OHWM: ■ Sharp (> 60°) | ■ Moderate (30–60°) | ■ Gentle (< 30°) | ■ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	Ø	30	10	50	10	Ø
Below OHWM	75	Ø	10	5	10	Ø

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	Ø	5	95	0
Below OHWM	Ø	Ø	10	90

1 bitter brush

Notes/Description:

Thick vegetation on bank above cement dam, below dam, rock lined + cheatgrass ⇒ suggestive of lack of water

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Defined bed + bank, excavated - OHWM is intermittent throughout length of channel
Identified by: • lack of veg
• change in substrate

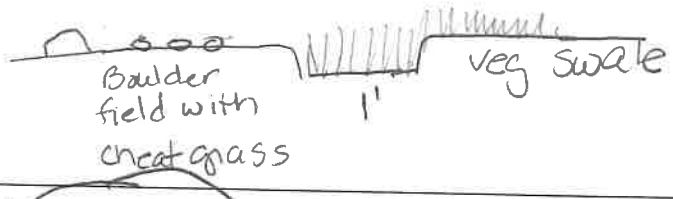
Ex. irrigation ditch, flow to upland swale/rock pile documented by T1-P1.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

D2b - Excavated Irrigation Ditch

N↑

OHWM-2: D2b



Break in Slope at OHWM: ■ Sharp (> 60°) | ■ Moderate (30–60°) | ■ Gentle (< 30°) | ■ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	10	30	10	40	10	∅
Below OHWM	80	10	10	∅	∅	∅

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

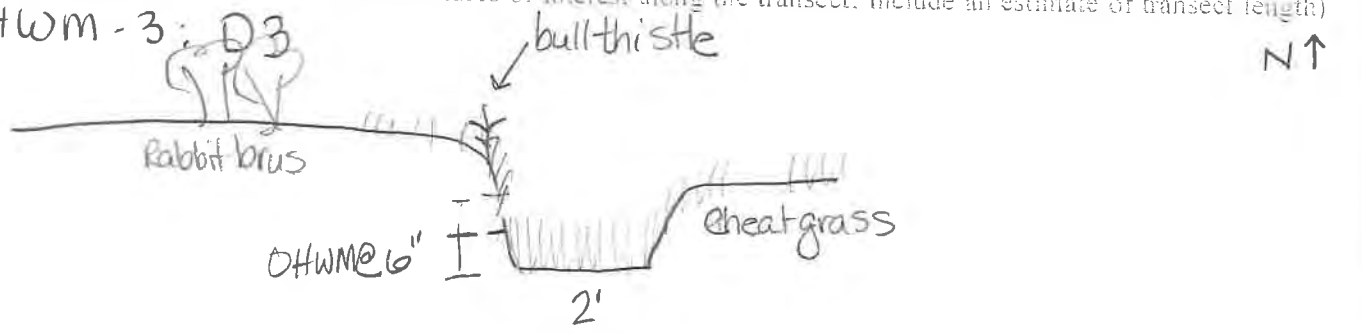
	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	∅	∅	100	∅
Below OHWM	∅	∅	100	∅

Notes/Description: at OHWM 2 - ditch has filled in with sedges,

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

- OHWM is intermittant throughout length of ditch and completly filled with vegetation along some reaches. When present OHWM was identified by:
  - lack of vegetation

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



irrigation ditch - originates at steam boat ditch flows SE, dissipates in field

Break in Slope at OHWM: ■ Sharp (> 60°) | ■ Moderate (30–60°) | ■ Gentle (< 30°) | ■ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	Ø	20	Ø	30	50	Ø
Below OHWM	Ø	80	Ø	20	Ø	Ø

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	Ø	10	70	20
Below OHWM	Ø	Ø	90	10

Notes/Description:

currently vegetated w/ cheatgrass and medusahead, both up land species

Dense bullthistle along TOB

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

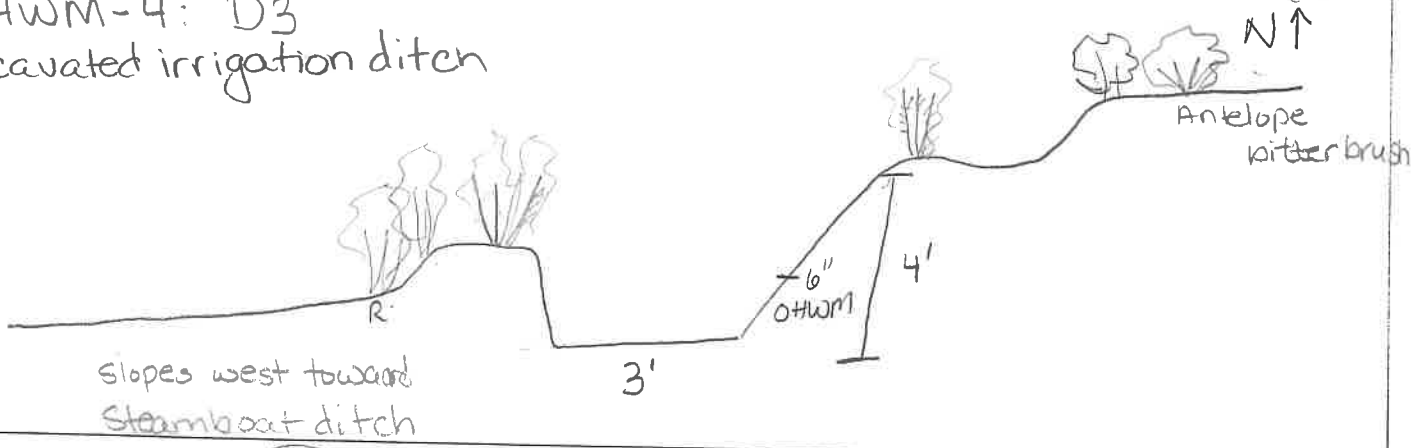
Defined bed + bank - Faint OHWM as ditch does not appear to be recently used.

- Change in substrate from boulder/cobble to silt

D-3 terminates with pasture. No surface water connection to an TNW.

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

OHWM-4: D3
Excavated irrigation ditch



Break in Slope at OHWM: ■ Sharp (> 60°) | ■ Moderate (30–60°) | ■ Gentle (< 30°) | ■ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	0	80	Ø	10	10	Ø
Below OHWM	80	10	Ø	10	Ø	Ø

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	5	30	55	10
Below OHWM	Ø	Ø	10	90

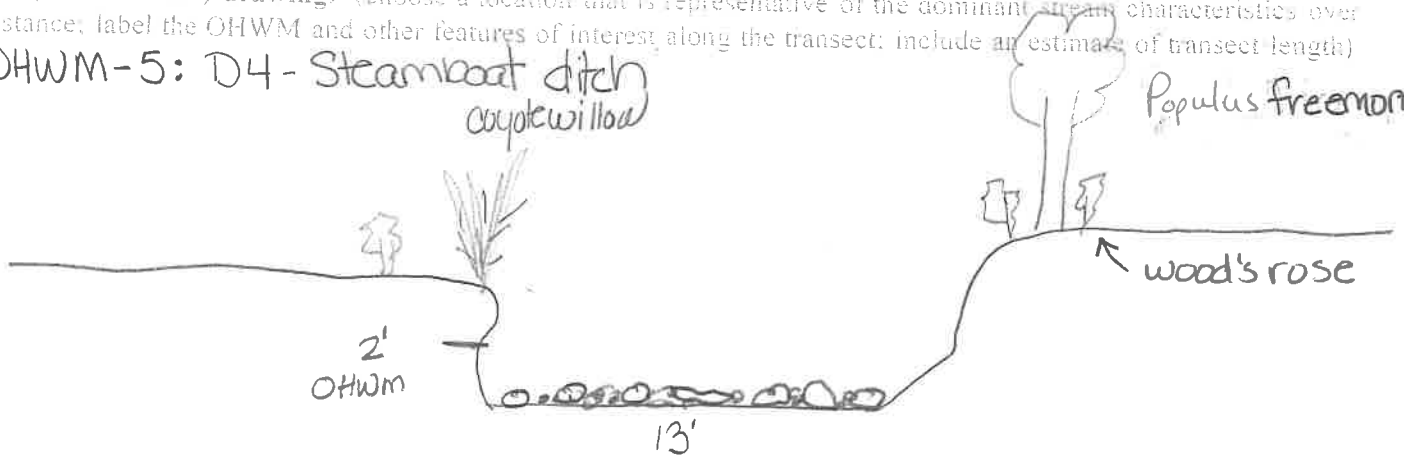
Notes/Description: thick rose bush on top of banks; bitter brush higher up on east side

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

-OHWM identified by: scour / lineon bank,
-lack of vegetation
- change in substrate

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

OHWM-5: D4 - Steamboat ditch



Break in Slope at OHWM: ■ Sharp (> 60°) | ■ Moderate (30–60°) | ■ Gentle (< 30°) | ■ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	35	40	10	10	5	Ø
Below OHWM	10	20	30	35	5	Ø

Notes/Description: gravel / cobble substrate

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	20	30	40	10
Below OHWM	Ø	Ø	Ø	100

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

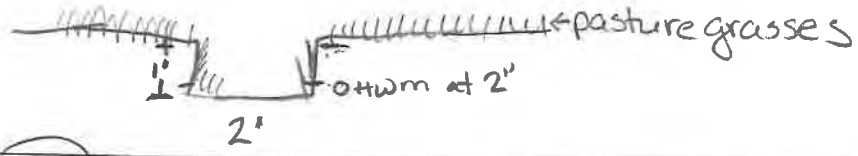
OHWM - ID in field by: • undercut bank
• lack of vegetation

Steamboat ditch flows to Steamboat Creek, a tributary to the Truckee River.

Transect (cross-section) drawing: Choose a location that is representative of the dominant stream characteristics over some distance. Label the OHWM and other features of interest along the transect. Include an estimate of transect length.

D5 - Excavated irrigation ditch

Water diverted from Steamboat Ditch to D5 through irrigation gate and culvert under access road.



Break in Slope at OHWM: ■ Sharp (> 60°) | ■ Moderate (30–60°) | ■ Gentle (< 30°) | ■ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	70	10	10	5	5	Ø
Below OHWM	90	10	Ø	Ø	Ø	Ø

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	Ø	Ø	100	Ø
Below OHWM	Ø	Ø	80	20

Notes/Description: Irrigation ditch has not been used recently, overgrown w/ veg

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

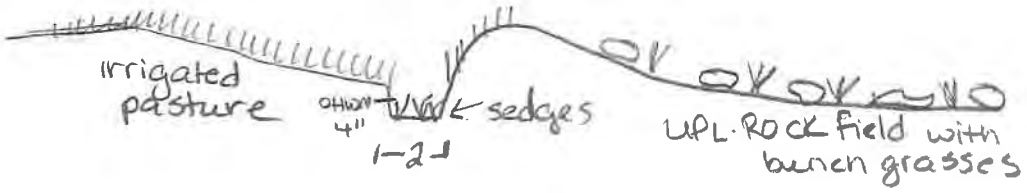
OHWM - intermittent
- lack of vegetation
- change in substrate.

Ditch appers to be blocked at end by boulders placed in channel; some water seeps through and irrigates pastureas shown in T3-P1

Datasheet # OHWM-7 **OHWM Delineation Datasheet** Page 8 of 9

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

D-7 : Excavated irrigation Ditch



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	0	40	10	50	ø	ø
Below OHWM	90	10	ø	ø	ø	ø

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	0	100	ø
Below OHWM	0	0	80	20

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

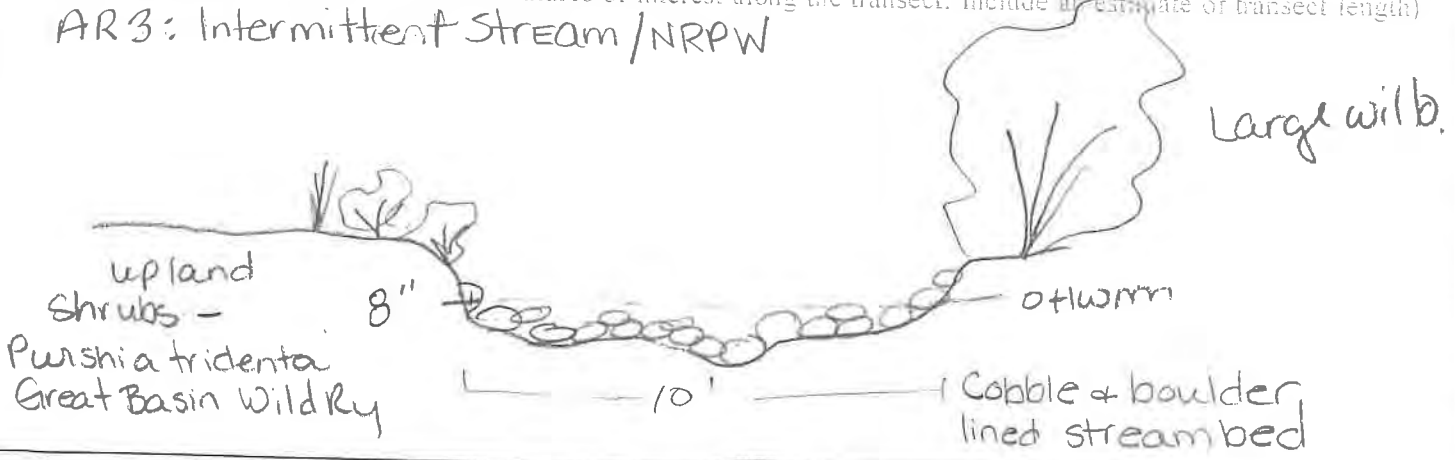
OHWM intermittent throughout ditch; some reaches fully vegetated.

OHWM identified by:
(when present) - lack vegetation
- scour

Transect # OHWM-8 | OHWM Delineation Datasheet | Page 9 of 9

Transect (cross-section) drawing: (Choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

AR3: Intermittent Stream / NRPW



Break in Slope at OHWM: ■ Sharp (> 60°) | ■ Moderate (30–60°) | ■ Gentle (< 30°) | ■ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	Ø	Ø	Ø	90	10	Ø
Below OHWM	Ø	Ø	Ø	60	40	Ø

Notes/Description: Channel bottom completely lined with Boulders & cobble

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	40	10	10	4
Below OHWM	Ø	Ø	20	80

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

OHWM – Identified in the field by
- rack lines
- sediment debris
- change in substrate

Attachment G

Signed Statement from Property Owner Allowing Access

Authorization to Access Site

I, _____, owner of subject survey area, authorize the Corps representatives to inspect the 8900 Lakeside, LLC Aquatic Resource Delineation Survey Area located on the Lakeside Dr. Parcel, (Washoe Co APN 162-240-01), Reno, Nevada and collect samples during normal business hours. The survey area is approximately 72 acres total.

Signature _____ *Title* _____

Date _____

Attachment H

Aquatic Resource Excel Sheet

8900 Lakeside, LLC - Lakeside Parcel Delineation

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
AR-1	NEVADA	PEM	SLOPE	Area	0.21	ACRE	ISOLATE	39.443527	-119.813468	
AR-2	NEVADA	PSS	DEPRESS	Area	0.89	ACRE	NRPWW	39.440428	-119.818567	
AR-3	NEVADA	R4	RIVERINE	Linear	565	FOOT	NRPW	39.444035	-119.818567	
D-1	NEVADA	R4	RIVERINE	Linear	1175	FOOT	NRPW	39.442197	-119.810862	
D-2	NEVADA	R4	RIVERINE	Linear	530	FOOT	NRPW	39.441434	-119.810862	
D-2B	NEVADA	R4	RIVERINE	Linear	850	FOOT	NRPW	39.43421902	-119.78186280	
D-3	NEVADA	R4	RIVERINE	Linear	1195	FOOT	NRPW	39.44086900	-119.81310500	
D-4	NEVADA	R4	RIVERINE	Linear	900	FOOT	NRPW	39.43560652	-119.78213890	Steamboat Ditch
D-5	NEVADA	R4	RIVERINE	Linear	635	FOOT	NRPW	39.43600213	-119.78218790	

Attachment I

Digital Information

GENERAL NOTES

1. ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER LOCAL GOVERNING CODES.
2. TREES
   - DECIDUOUS TREES SHALL HAVE A MIN. CALIPER OF 2 INCHES.
   - EVERGREEN TREES SHALL HAVE A MIN. HEIGHT OF 7 FEET.
   - TREES SHALL BE PLANTED AT A RATE OF AT LEAST ONE TREE PER 50 LN FT OF FRONT YARD (NOT INCLUDING DRIVEWAYS)
   - WHERE MORE THAN 4 TREES ARE REQUIRED, MORE THAN 4 SPECIES SHALL BE SPECIFIED.
3. FINAL PLANT SELECTION AND LAYOUT WILL BE BASED ON SOUND HORTICULTURAL PRACTICES RELATING TO MICRO-CLIMATE, SOIL, AND WATER REGIMES. ALL TREES WILL BE STAKED SO AS TO REMAIN UPRIGHT AND PLUMB FOLLOWING INSTALLATION. PLANT SIZE AND QUALITY AT TIME OF PLANTING WILL BE PER THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-1990).
4. ALL SHRUB BEDS WILL RECEIVE 4" DEPTH MULCH WITH WEED CONTROL.
5. ALL LANDSCAPING WILL BE AUTOMATICALLY IRRIGATED. CONTAINER PLANTINGS WILL BE DRIP IRRIGATED BASED ON THE SPECIFIC HORTICULTURAL REQUIREMENTS OF EACH SPECIES. A REDUCED-PRESSURE-TYPE BACKFLOW PREVENTOR WILL BE PROVIDED ON THE IRRIGATION SYSTEM AS REQUIRED PER CODE.
6. PLAN IS CONCEPTUAL. PLANT QUANTITIES INDICATED ARE PER WASHOE COUNTY CODE REQUIREMENTS. PLANT LOCATIONS, FINAL SPECIES SELECTION, AND SIZE AT PLANTING SHALL BE DETERMINED DURING DEVELOPMENT OF THE FINAL CONSTRUCTION DOCUMENTS.
7. EXISTING VEGETATION AND VEGETATIVE COMMUNITIES, AS DEFINED AND IDENTIFIED IN THE CONSERVATION ELEMENT OF THE WASHOE COUNTY MASTER PLAN, SHALL BE PROTECTED AND PRESERVED WHERE APPROPRIATE AND AS FEASIBLE. PROTECTION OF VEGETATION WITHIN THE CRITICAL STREAM ZONE BUFFER AREA, AS DEFINED IN ARTICLE 418, SHALL SATISFY THE LANDSCAPING REQUIREMENT AT A 2:1 RATIO.
8. PRESERVATION OF SIGNIFICANT TREES. EXISTING TREES (OF SPECIES NOT INCLUDED ON THE PROHIBITED PLANT LIST) WITH A CALIPER GREATER THAN SIX (6) INCHES, AS MEASURED FIFTYFOUR (54) INCHES FROM GRADE, SHALL BE PRESERVED, IF FEASIBLE. PROTECTION MEASURES, INCLUDING NON-DISTURBANCE AROUND THE DRIP-LINE AND/OR ROOT ZONE, SHALL BE INCORPORATED INTO THE LANDSCAPING PLAN. IN ADDITION TO ALL OTHER REQUIRED TREES, EACH SIGNIFICANT TREE THAT IS REQUIRED TO BE REMOVED SHALL BE REPLACED WITH A TREE/TREES OF THE SAME SPECIES AT A 1:1 CALIPER RATIO. TREE PRESERVATION/REMOVAL WILL BE FINALIZED DURING THE CREATION OF CONSTRUCTION DRAWINGS IN CONJUNCTION WITH FINAL GRADING.

PLANT LEGEND

- DECIDUOUS COMMON AREA STREET TREES
- EVERGREEN TREES
- COMMON AREA LANDSCAPING
- EXISTING TREES AND SHRUBS
- PROPOSED CUSTOM LOTS

LANDSCAPE DATA

SITE AREA = 3,171,168 SQ FT (72.8 ACRES)

ZONING:
- 16% MDR (MEDIUM DENSITY RURAL)
- 78% HDR (HIGH DENSITY RURAL)
- 6% GR (GENERAL RURAL)

STREETSCAPE COMMON AREA
TREES REQUIRED = 182 MIN.
- 1 TREE PER 50 LN FT OF STREET FRONTAGE (9,169 LN FT MINUS DRIVEWAYS)

REPLACEMENT OF SIGNIFICANT TREES, IF REQUIRED, SHALL BE PER GENERAL NOTE #8

SHRUBS REQUIRED = 1,092 MIN.
- (6 SHRUBS PER REQUIRED TREE)

0' 150' 300' 450'

Scale in Feet

L.A. StudioNevada
the landscape architecture studio
1552 C Street Sparks, NV 89431 (775) 323-2223 NV RLA #440
www.lastudionevada.com

REGISTERED LANDSCAPE ARCHITECT
RYAN HANSEN
440
12/7/2021
Expires: 6/30/22
STATE OF NEVADA

Custom Lot Subdivision Tentative Map
8900 LAKESIDE DRIVE
CFA

Nevada
Washoe Co.

No.	Revision Date

LA No:	682-547-07-21
Designed:	RAH
Drawn:	KMK
Checked:	RAH
Date:	12/1/21

Sheet L1 of 1