

Jordan River Innovation Center Aquatic Resources Report

Prepared for:



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Executive Summary

The Jordan River Innovation Center aquatic resource delineation was conducted according to the Corps of Engineers Wetlands Delineation Manual (ACOE 1987) and the Arid West Supplement (ACOE 2008).

A total of 24 acres were surveyed as part of this delineation. Three aquatic resources were identified during the delineation, for a total of 1,038 linear feet of the Jordan River and 0.12 acres of emergent wetlands. The aquatic resources identified in the project area are classified as R2UBH (Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded) and PEM5C (Palustrine Emergent *Phragmites australis* Seasonally Flooded). The condition of these resources was typical at the time of the delineation.

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INTRODUCTION

This document presents results of a delineation of jurisdictional waters of the United States conducted for Badiee Development (Badiee) by Bowen Collins & Associates (BC&A) at the Jordan River Innovation Center project site in Taylorsville City, Utah. Badiee is proposing the development of the project area, which would include the continuation of the existing roadway, parking areas, and buildings. The purpose of this delineation is to identify channel boundaries of the Jordan River and any potential wetlands in preparation for permitting this development project.

SITE LOCATION AND METHODOLOGY

The project area is located along the Jordan River in Taylorsville City, Salt Lake County, Utah, Section 2, Township 2S, Range 1W, and Section 35, Township 1S, Range 1W. Directions to the site are as follows: Proceed south on I-15 from Bountiful for 13 miles to Exit 301. Head right on the ramp for 4500 S to Taylorsville. Turn right onto Riverboat Road. In approximately half of a mile the road dead ends and the project area begins. (See Site Location Figures, Appendix A).

The area delineated is approximately 24 acres of land near the Jordan River in Taylorsville City, Utah. The project area is currently vacant except for a powerline which runs north/south through the site and the Jordan River Parkway Trail also running approximately north/south along the east boundary adjacent to the river. The Meadow Brook Golf Course is adjacent to the property to the west. This development would expand the current developed area to the south which has a mix of businesses and multi-unit residential properties. The point of access is the existing Riverboat Road, which is currently used to access the surrounding businesses. The project area is primarily flat open land with mixed vegetation.

Field work for this delineation was conducted on July 29, 2021, and April 8, 2022, by Merissa Davis of BC&A. The total area delineated was approximately 24 acres and this entire area was observed during the site visits. Field conditions during the surveys were clear and the area had not received precipitation for at least several weeks prior.

The custom soil report for the Salt Lake Area, Utah (NRCS 2022) was used to determine soil types for the area. National Wetlands Inventory (NWI) data was also examined to obtain the location of possible jurisdictional wetlands on the site (see NWI figure, Appendix B). The wetland delineation was conducted according to the Corps of Engineers Wetlands Delineation Manual (ACOE 1987), Arid West Supplement (ACOE 2008), with a minimum of one sampling point per possible wetland area. Upland points were also sampled to further confirm wetland boundaries. A total of four points were sampled to delineate the site, and these were sufficient to determine wetland boundaries. All points and boundaries were recorded using ArcGIS Collector connected with a Trimble R1 GPS receiver for sub-meter accuracy.

Based on the Manual, jurisdictional wetlands were identified using three criteria:

- Hydrophytic Vegetation
- Wetlands Hydrology
- Hydric Soils

All three criteria must be present for a wetland to be considered jurisdictional. An explanation of these wetland criteria follows.

Hydrophytic Vegetation

Hydrophytic plants are plants that are adapted to wet conditions. The National Wetland Plant List for the Arid West Region (ACOE 2012/2016) was used to determine the wetland indicator status of dominant plant species encountered on sample plots. Sight-identification was used to determine most plant species with additional research made online and in plant keys post field work.

Wetland Hydrology

Wetland hydrology is present when an area is inundated either permanently or periodically at mean water depths of two meters, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation. Primary hydrologic indicators also include high water tables, saturation, surface water, and sediment or drift deposits. Common secondary hydrologic indicators include watermarks, drainage patterns, and the FAC neutral test.

Hydric Soils

In Field Indicators of Hydric Soils in the U.S. (NRCS 2010) the Natural Resources Conservation Service (NRCS) defines hydric soils as soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the top 12 to 20 inches of soil, depending on soil texture. Hydric properties of soils were assessed using a spade to excavate the soil pit, and Munsell soil color charts to determine soil color.

RESULTS

Vegetation

Vegetation was identified primarily based on flowering parts and structural characteristics. Vegetation data collected and photos of the general vegetation for each sample point can be found in the Wetland Determination Data Forms (see Appendix C). The delineated area is dominated by native grasses and other herbaceous plants. Dominant plants that occur at the sampling locations are listed in Table 1 on the next page.

Table 1
Plants Observed at the Badiie Riverboat Road Warehouse Development Site

Latin Binomial	Common Name	Region 8 Indicator Status
<i>Salix exigua</i>	Narrowleaf Willow	FACW
<i>Phragmites australis</i>	Common Reed	FACW
<i>Elymus repens</i>	Quackgrass	FAC
<i>Chenopodium album</i>	Lambsquarter	FACU
<i>Cirsium arvense</i>	Canada Thistle	FACU
<i>Cirsium vulgare</i>	Bull Thistle	FACU
<i>Sisymbrium altissimum</i>	Tumble Mustard	FACU
<i>Cardaria draba</i>	Whitetop	UPL
<i>Populus fremontii</i>	Fremont Cottonwood	NL
<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	NL

*Indicator Status:

OBL = occurs in aquatic resources > 99% of time

FACW = occurs in aquatic resources 67-99% of time

FAC = occurs in aquatic resources 34-66% of time

FACU = occurs in aquatic resources 1-33% of time

UPL = occurs in uplands > 99% of time

(Note: Hydrophytic plant species are shaded gray)

Hydrology

The primary hydrology of the site comes from the adjacent Jordan River. The emergent wetlands on the site border the Jordan River, which was included in the delineation area where it overlaps the county parcel lines. The river itself is within the management and ownership of the Sovereign Lands of the State of Utah, so these overlaps are more likely due to river meander and changes over time and not because Badiee owns any part of the river. The ordinary high water mark was identified along the Jordan River based on changes in soil types and vegetation as well as drift deposits.

Other areas throughout the site that were investigated for wetlands where small topographical depressions appear to potentially hold water during and after storm events. Depending on the season and conditions, these depressions may hold water for a period of time before it evaporates or infiltrates depending on the soil permeability. None of these depressions had any surface water, saturation, or a water table during the field investigations.

Soils

The soils at the site are primarily alluvial deposits derived from mixed sources. The Salt Lake Area, Utah Soil Survey (NRCS 2022) was referenced to determine soil types for the area. In addition to areas with water, the following soil type occurs within the delineated area:

- Sandy alluvial lands

This soil is found on the national and Utah hydric soils lists (NRCS 2015). A custom soil resource report from the NRCS for the site is located in Appendix D.

Sample Points

Sample points were taken throughout the project area where hydrophytic vegetation was present to investigate potential wetlands and these locations can be found in the Delineation Results Figure of Appendix E. At three of these points (SP1, SP2, and SP3), isolated topographical depressions of 1-3 feet in depth were noted but none had any potential outlet or connection to any channels where typical storm water levels could leave the depression. The remaining point (SP4) was taken in a more typical upland for comparison of indicators. Two of these points (SP2 and SP3) were just west of the pathway and are likely receiving runoff from that paved area where storm water would sheet to the west based on grading. SP1 was closer to the west boundary of the project area and appears to be a depression left from ground disturbance during the installation of the adjacent powerline tower. Common reeds (*Phragmites australis*) was present at SP1, SP2, and SP3, which is an invasive plant with an obvious seed bank nearby, however the majority of dominant plants encountered were upland varieties. The lack of primary indicators for vegetation and hydrology meant that none of these areas met the criteria of wetlands. The data sheets to elaborate these findings can be found in Appendix C.

None of the four sample points taken at the site were located in wetlands. The Delineation Figure in Appendix E displays the sample point locations and Table 2 below summarizes the sample point data.

Table 2
Wetland Delineation Sample Point Summary
and Determination Matrix

Sample Point	Hydrophytes Dominant?	Hydric Soils Present?	Primary Hydrologic Indicator(s) Present?	Is the Sample Point in a Wetland?
1	No	Yes	No	No
2	No	Yes	No	No
3	No	Yes	No	No
4	No	No	No	No

Aquatic Resources

Aquatic resources were observed along the north and eastern edges of the project area. This is where the project area boundary based on parcel lines crossed into the Jordan River and the wetland fringe along parts of its banks.

The portions of the Jordan River identified (W1) within the project area total to 1,038 linear feet or 0.37 acres. This channel has hydrology year-round which was present at the time of the delineation. The Jordan River has clear flow patterns, drift lines, and vegetation/soil changes to identify channel boundaries and the ordinary high water marks is shown in the delineation results

figure found in Appendix E. This channel was identified as R2UBH (Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded) according to the NWI classification system.

The emergent wetlands identified (W2 and W3) within the project area total to 0.12 acres. These wetlands are along the bank of the Jordan River, from which they source hydrology. These wetlands are comprised entirely of dense common reeds, therefore no sample points were taken within the wetlands. Due to 100% hydrophytic vegetation and the location of the plants adjacent to the river, primary indicators for hydric soils and hydrology were assumed to be present. These wetland areas are classified as PEM5C (Palustrine Emergent *Phragmites australis* Seasonally Flooded) according to the NWI classification system.

The wetlands described above are shown in the Delineation Results Figures found in Appendix E and are listed in the Aquatic Resources spreadsheet in Appendix F and Table 3 on the below.

Table 3
Aquatic Resources Within the Survey Area

Aquatic Resource Name	Aquatic Resources Classification		Aquatic Resource Size (acres)	Aquatic Resource Size (feet)
	Cowardin*	Location		
W1	R2UBH	40.682629 / -111.913857	(0.37)	1038 LF
W2	PEM5C	40.326084 / -111.934089	0.03	
W3	PEM5C	40.328022 / -111.932826	0.09	

*Cowardin Codes:

R2UBH– Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded

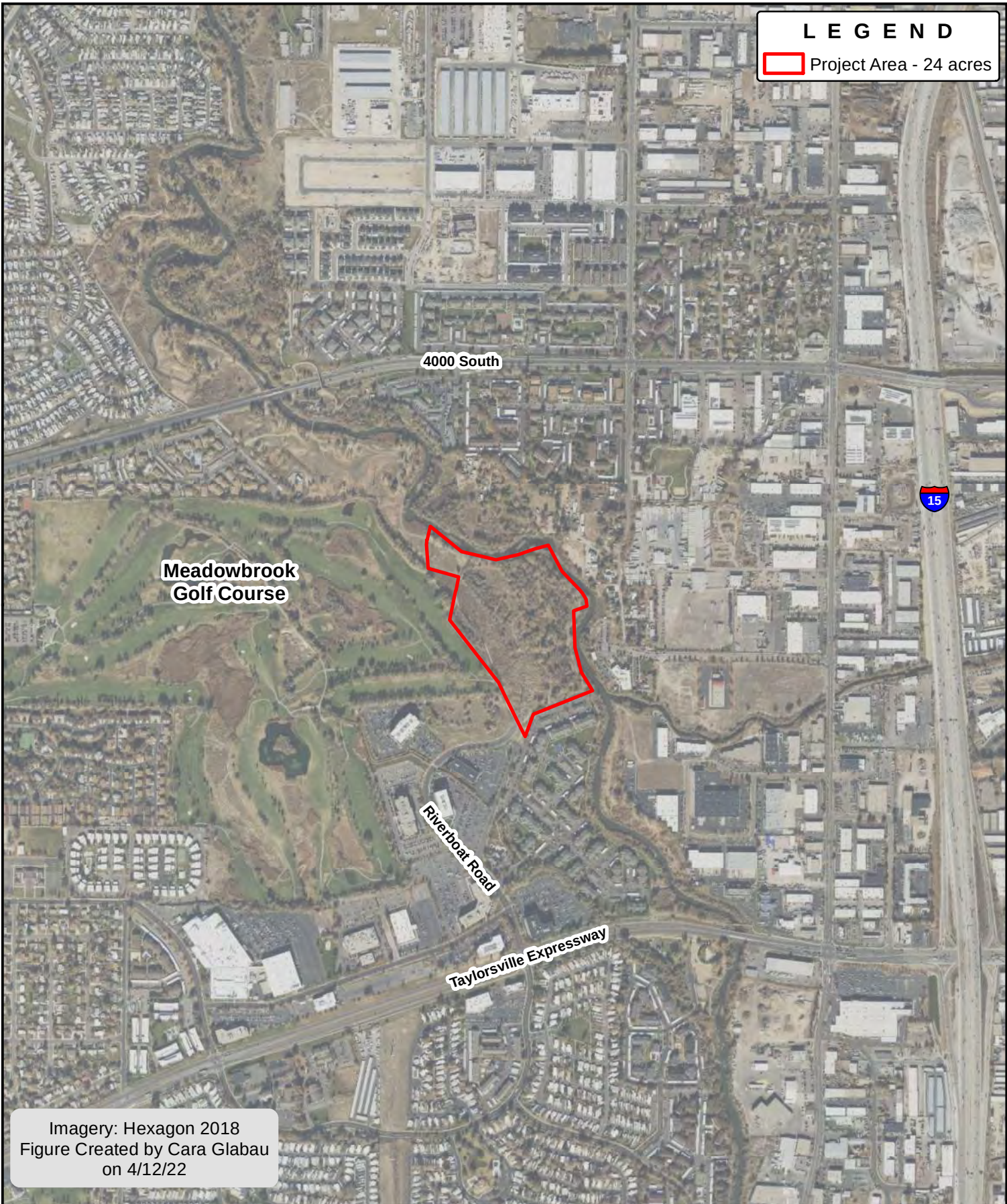
PEM5C– Palustrine Emergent *Phragmites australis* Seasonally Flooded

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Appendix A

Site Location Figures



Imagery: Hexagon 2018
Figure Created by Cara Glabau
on 4/12/22



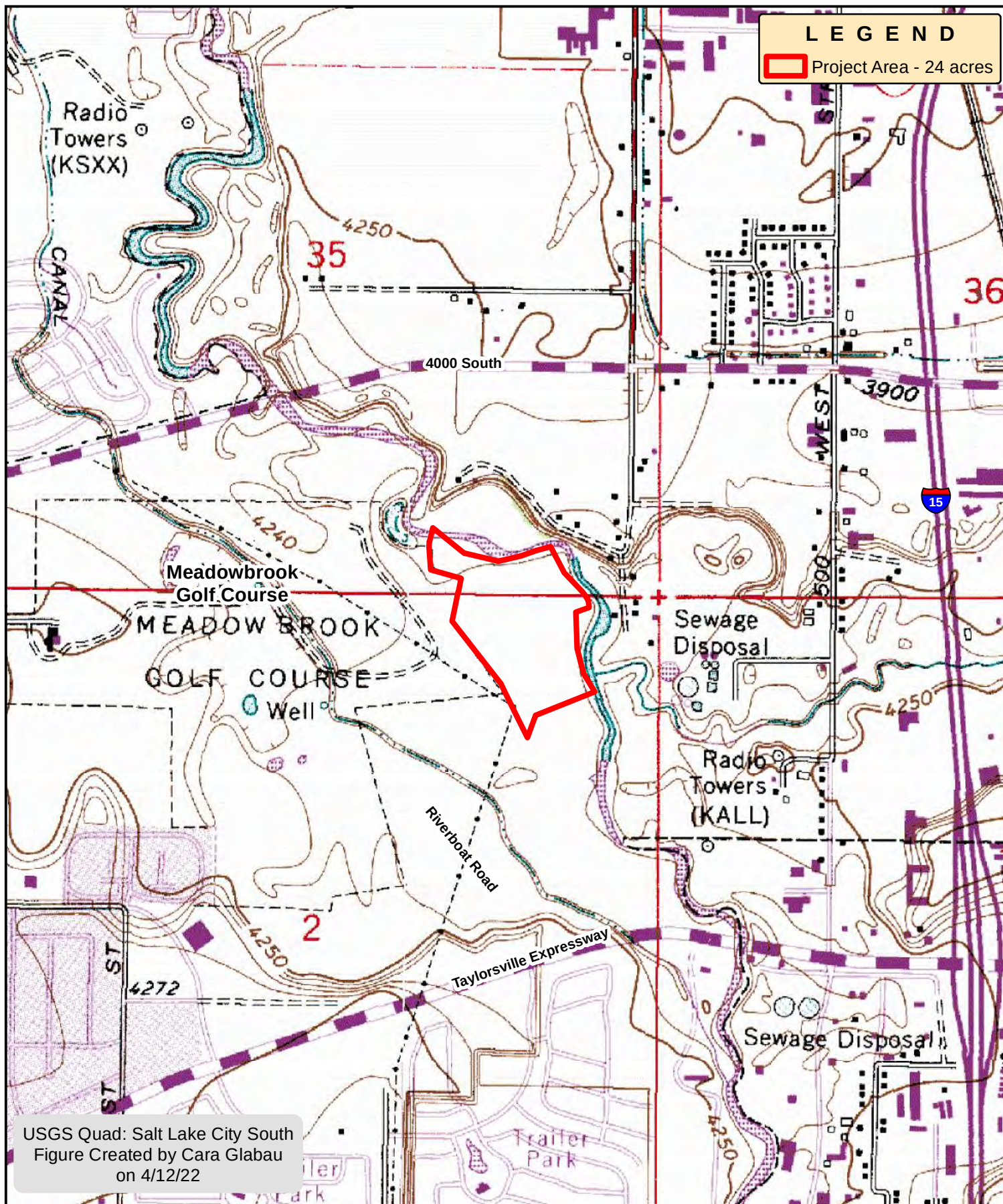
SITE LOCATION

Badiee Development
Jordan River Innovation Center



SCALE:
0 500 1,000
Feet

FIGURE NO.
1A



 BOWEN COLLINS & ASSOCIATES	SITE LOCATION (USGS Quad) Badiee Development Jordan River Innovation Center	NORTH: 	SCALE: 0 500 1,000 Feet FIGURE NO. 1B
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Appendix B

NWI Figure



Appendix C

Wetland Determination Data Forms & Photographs

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Jordan River Innovation Center City/County: Taylorsville / Salt Lake Co Sampling Date: 4/08/2022
 Applicant/Owner: Badiee Development State: UT Sampling Point: SP1
 Investigator(s): M. Davis Section, Township, Range: Section 2 T2S R1W
 Landform (hillslope, terrace, etc.): River Corridor Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR): D Lat: 40.679975 Long: -111.914447 Datum: UTM NAD 83
 Soil Map Unit Name: Sandy Alluvial Soils NWI classification: None

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: Site was previously cleared of some cottonwood trees by previous owner. Sample point is located in a small topographical depression with phragmites present which triggered the investigation at this location	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. <u>Populus fremontii</u> (Fremont cottonwood)	<u>10</u>	<u>Yes</u>	<u>NL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>10</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>30</u> x 2 = <u>60</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>35</u> x 4 = <u>140</u> UPL species <u>50</u> x 5 = <u>250</u> Column Totals: <u>120</u> (A) <u>465</u> (B) Prevalence Index = B/A = <u>3.9</u>
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Salix exigua</u> (Narrowleaf Willow)	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	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.
5. _____	_____	_____	_____	
<u>10</u> = Total Cover				
Herb Stratum (Plot size: _____)				
1. <u>Chenopodium album</u> (Lambsquarter)	<u>25</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Pseudoroegneria spicata</u> (Bluebunch Wheatgrass)	<u>20</u>	<u>Yes</u>	<u>NL</u>	Hydrophytic Vegetation Present? Yes ☐ No ☒
3. <u>Cardaria draba</u> (Whitetop)	<u>20</u>	<u>Yes</u>	<u>UPL</u>	
4. <u>Elymus repens</u> (Quack Grass)	<u>5</u>	_____	<u>FAC</u>	
5. <u>Phragmites australis</u> (Common Reed)	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
6. <u>Cirsium vulgare</u> (Bull Thistle)	<u>5</u>	_____	<u>FACU</u>	
7. <u>Cirsium arvense</u> (Canada Thistle)	<u>5</u>	_____	<u>FACU</u>	Hydrophytic Vegetation Present? Yes ☐ No ☒
8. _____	_____	_____	_____	
<u>100</u> = Total Cover				Hydrophytic Vegetation Present? Yes ☐ No ☒
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☐ No ☒
2. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes ☐ No ☒
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____			
Remarks:				

SOIL

Sampling Point: SP1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10 YR 3/2	100					clay loam	
8-16+	10 YR 4/3	95	2.5 YR 4/8	5	C	PL	loamy cl+ (loamy clay)	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: 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 Soils³:

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

³Indicators 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:

Clays appear to be holding storm water in this small depression which has enough loam on top of the clay to allow plant growth with hydrology assistance from the periodically ponded storm water which has no topographical outlet

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (**Nonriverine**)
☐ Sediment Deposits (B2) (**Nonriverine**)
☐ Drift Deposits (B3) (**Nonriverine**)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): _____Water Table Present? Yes ☐ No ☒ Depth (inches): _____Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)**Wetland Hydrology Present?** Yes ☐ No ☒

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

Remarks:

Completely dry

Jordan River Innovation Center Delineation Photos



SP1 – Upland



SP1 – Upland Area

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Jordan River Innovation Center City/County: Taylorsville / Salt Lake Co Sampling Date: 4/08/2022
 Applicant/Owner: Badiee Development State: UT Sampling Point: SP2
 Investigator(s): M. Davis Section, Township, Range: Section 2 T2S R1W
 Landform (hillslope, terrace, etc.): River Corridor Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR): D Lat: 40.682657 Long: -111.913694 Datum: UTM NAD 83
 Soil Map Unit Name: Sandy Alluvial Soils NWI classification: None

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: Site was previously cleared of some cottonwood trees by previous owner. Sample point is located in a small topographical depression with phragmites present which triggered the investigation at this location	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. <u>Populus fremontii</u> (Fremont cottonwood)	<u>10</u>	<u>Yes</u>	<u>NL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>10</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>50</u> x 3 = <u>150</u> FACU species <u>30</u> x 4 = <u>120</u> UPL species <u>20</u> x 5 = <u>100</u> Column Totals: <u>110</u> (A) <u>390</u> (B) Prevalence Index = B/A = <u>3.5</u>
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				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. <u>Chenopodium album</u> (Lambsquarter)	<u>10</u>	_____	<u>FACU</u>	
2. <u>Cirsium vulgare</u> (Bull Thistle)	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Cardaria draba</u> (Whitetop)	<u>10</u>	_____	<u>UPL</u>	
4. <u>Elymus repens</u> (Quack Grass)	<u>50</u>	<u>Yes</u>	<u>FAC</u>	
5. <u>Phragmites australis</u> (Common Reed)	<u>10</u>	_____	<u>FACW</u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>100</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☐ No ☒
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				

Remarks:

SOIL

Sampling Point: SP2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11	10 YR 4/2	100					sandy lo ⁺	
11-16+	10 YR 5/3	95	10 YR 5/8	5	C	PL	sand	

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

This small depression appears to be holding storm water which has enough loam in the upper layer to allow plant growth with hydrology assistance from the periodically ponded storm water which has no topographical outlet

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

Completely dry

Jordan River Innovation Center Delineation Photos



SP2 – Upland



SP2 – Upland Area

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Jordan River Innovation Center City/County: Taylorsville / Salt Lake Co Sampling Date: 4/08/2022
 Applicant/Owner: Badiee Development State: UT Sampling Point: SP3
 Investigator(s): M. Davis Section, Township, Range: Section 2 T2S R1W
 Landform (hillslope, terrace, etc.): River Corridor Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR): D Lat: 40.681698 Long: -111.91289 Datum: UTM NAD 83
 Soil Map Unit Name: Sandy Alluvial Soils NWI classification: None

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: Site was previously cleared of some cottonwood trees by previous owner. Sample point is located in a small topographical depression with phragmites present which triggered the investigation at this location	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>Populus fremontii</u> (Fremont cottonwood)	<u>10</u>	<u>Yes</u>	<u>NL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>10</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>30</u> x 2 = <u>60</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>50</u> x 5 = <u>250</u> Column Totals: <u>110</u> (A) <u>370</u> (B) Prevalence Index = B/A = <u>3.4</u>
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				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. <u>Elymus repens</u> (Quack Grass)	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Phragmites australis</u> (Common Reed)	<u>30</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Cardaria draba</u> (Whitetop)	<u>40</u>	<u>Yes</u>	<u>UPL</u>	
4. _____	_____	_____	_____	
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes ☐ No ☒
Remarks:				

SOIL

Sampling Point: SP3

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
☐ Surface Water (A1)	☐ Salt Crust (B11)	☐ Water Marks (B1) (Riverine)
☐ High Water Table (A2)	☐ Biotic Crust (B12)	☐ Sediment Deposits (B2) (Riverine)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Drift Deposits (B3) (Riverine)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Thin Muck Surface (C7)	☐ Shallow Aquitard (D3)
☐ Water-Stained Leaves (B9)	☐ Other (Explain in Remarks)	☐ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Completely dry		

Jordan River Innovation Center Delineation Photos



SP3 – Upland



SP3 – Upland Area

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Jordan River Innovation Center City/County: Taylorsville / Salt Lake Co Sampling Date: 4/08/2022
 Applicant/Owner: Badiee Development State: UT Sampling Point: SP4
 Investigator(s): M. Davis Section, Township, Range: Section 2 T2S R1W
 Landform (hillslope, terrace, etc.): River Corridor Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR): D Lat: 40.681581 Long: -111.912845 Datum: UTM NAD 83
 Soil Map Unit Name: Sandy Alluvial Soils NWI classification: None

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: Site was previously cleared of some cottonwood trees by previous owner.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>Populus fremontii</u> (Fremont cottonwood)	<u>10</u>	<u>Yes</u>	<u>NL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>10</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>35</u> x 3 = <u>105</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>35</u> x 5 = <u>175</u> Column Totals: <u>110</u> (A) <u>350</u> (B) Prevalence Index = B/A = <u>3.2</u>
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Salix exigua</u> (Narrowleaf Willow)	<u>5</u>	<u>Yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>5</u> = Total Cover				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.
Herb Stratum (Plot size: _____)				
1. <u>Sisymbrium altissimum</u> (Tumble mustard)	<u>10</u>	_____	<u>FACU</u>	
2. <u>Cirsium arvense</u> (Canada Thistle)	<u>5</u>	_____	<u>FACU</u>	
3. <u>Cardaria draba</u> (Whitetop)	<u>25</u>	<u>Yes</u>	<u>UPL</u>	
4. <u>Elymus repens</u> (Quack Grass)	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>100</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☐ No ☒
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>25</u> % Cover of Biotic Crust _____				

Remarks:

SOIL

Sampling Point: SP4**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10 YR 4/3	100						fine sandy loam
10-16+	10 YR 4/3	95						rocky sandy loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

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

³Indicators 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:

Clays appear to be holding storm water in this small depression which has enough loam on top of the clay to allow plant growth with hydrology assistance from the periodically ponded storm water which has no topographical outlet

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (**Nonriverine**)
☐ Sediment Deposits (B2) (**Nonriverine**)
☐ Drift Deposits (B3) (**Nonriverine**)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:Surface Water Present? Yes _____ No ☒ Depth (inches): _____Water Table Present? Yes _____ No ☒ Depth (inches): _____Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)**Wetland Hydrology Present?** Yes _____ No ☒

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

Remarks:

Completely dry

Jordan River Innovation Center Delineation Photos



SP4 – Upland



SP4 – Upland Area

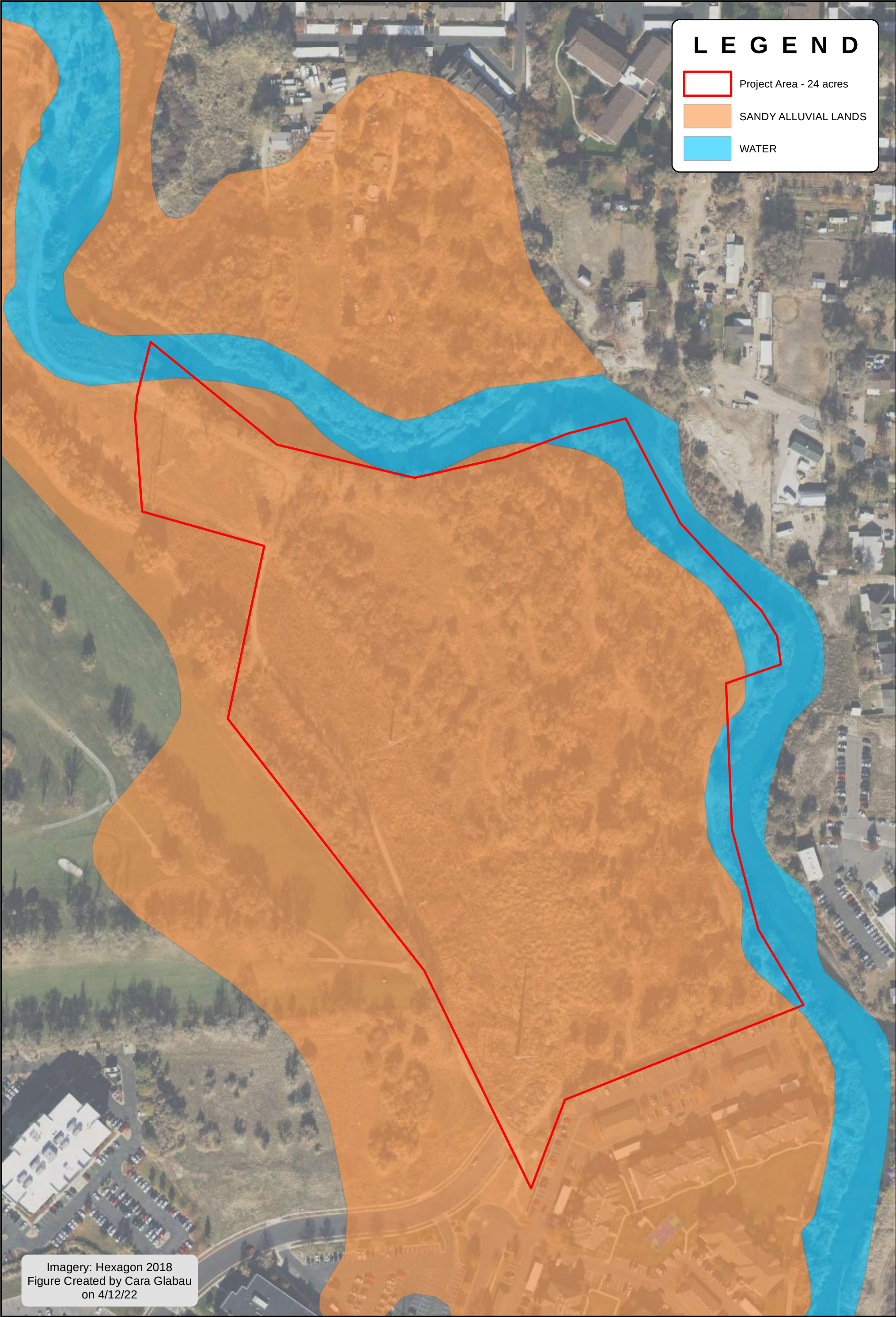
Jordan River Innovation Center Delineation Photos



SP4 – Upland Area

Appendix D

Soil Figure and NRCS Custom Soils Resource Report



LEGEND

Project Area - 24 acres

SANDY ALLUVIAL LANDS

WATER

Imagery: Hexagon 2018
Figure Created by Cara Glabau
on 4/12/22



United States
Department of
Agriculture

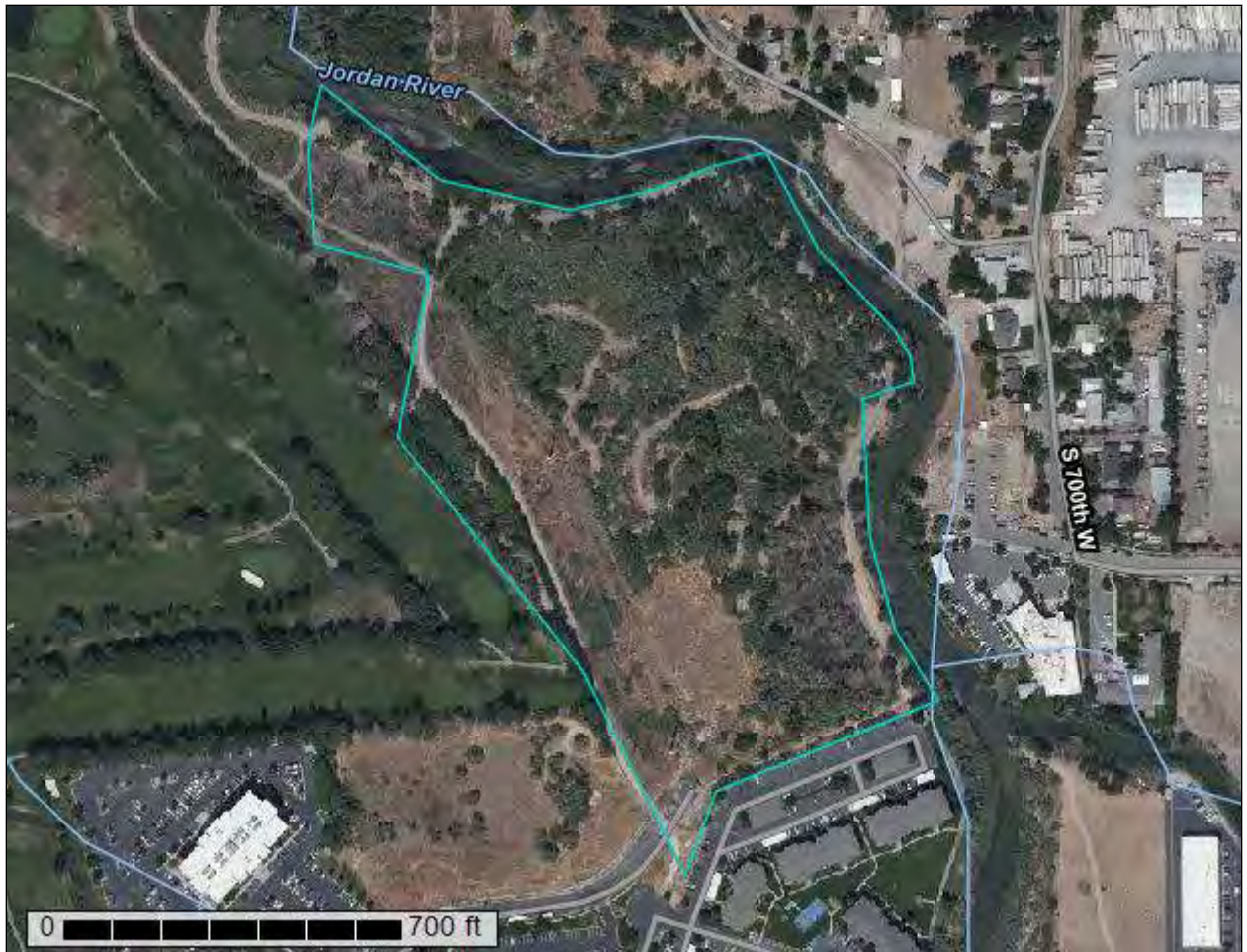
NRCS

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 **Salt Lake Area, Utah**

**Jordan River
Innovation Center**



April 12, 2022

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Custom Soil Resource Report Soil Map



Custom Soil Resource Report

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 1:20,000.

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: Salt Lake Area, Utah
Survey Area Data: Version 14, Sep 7, 2021

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

Date(s) aerial images were photographed: Aug 5, 2018—Sep 14, 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
Sd	Sandy alluvial lands	22.7	93.7%
W	Water	1.5	6.3%
Totals for Area of Interest		24.3	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.

Salt Lake Area, Utah

Sd—Sandy alluvial lands

Map Unit Setting

National map unit symbol: j6kq
Elevation: 4,200 to 4,350 feet
Frost-free period: 130 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Sandy alluvial land and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sandy Alluvial Land

Setting

Landform: Flood plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave

Typical profile

H1 - 0 to 20 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: About 13 to 36 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: R028AY022UT - Wet Fresh Streambank
Hydric soil rating: No

Minor Components

Poorly drained soils

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R028AY024UT - Wet Saline Meadow (Saltgrass)
Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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Custom Soil Resource Report

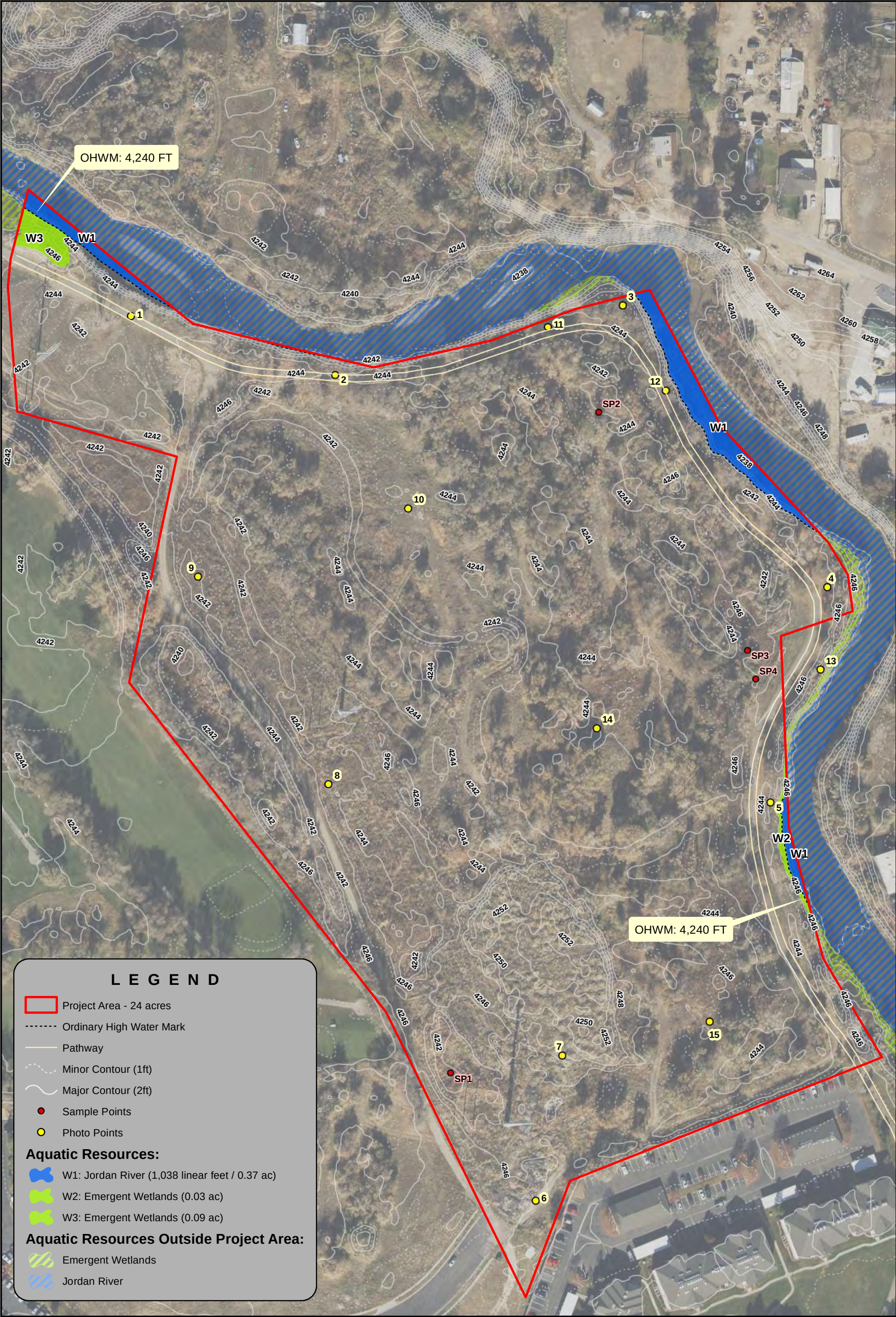
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Appendix E

Delineation Results Figure



Appendix F

Aquatic Resources Spreadsheet

Jordan River Innovation Center Aquatic Resources

Waters Name	State	Cowardin Code	HGM Code	Meas Type	Amount	Units	Waters Type	Latitude	Longitude	Local Waterway
W1	UTAH	R2UBH	Riverine	Length	1038.00	Feet	TNW	40.682629	-111.913857	Jordan River
W2	UTAH	PEM5C	Riverine	Area	0.03	Acres	TNWW	40.680933	-111.912659	Emergent Wetland from River
W3	UTAH	PEM5C	Riverine	Area	0.09	Acres	TNWW	40.68336	-111.916657	Emergent Wetland from River

Appendix G

Additional Photos

Jordan River Innovation Center Delineation Photos



Photo Point 1 – Facing east across the river (July 29, 2021)



Photo Point 2 – Facing southeast (July 29, 2021)

Jordan River Innovation Center Delineation Photos



Photo Point 3 – Facing east across the river (July 29, 2021)



Photo Point 3 – Facing north towards the river (July 29, 2021)

Jordan River Innovation Center Delineation Photos



Photo Point 4- Facing north(July 29, 2021)



Photo Point 4 – Facing east towards river (July 29, 2021)

Jordan River Innovation Center Delineation Photos



Photo Point 4 – Facing south (July 29, 2021)



Photo Point 5 – Facing north (July 29, 2021)

Jordan River Innovation Center Delineation Photos



Photo Point 5 – Facing east towards river (July 29, 2021)



Photo Point 5 – Facing south (July 29, 2021)

Jordan River Innovation Center Delineation Photos



Photo Point 6



Photo Point 6

Jordan River Innovation Center Delineation Photos



Photo Point 7



Photo Point 7

Jordan River Innovation Center Delineation Photos



Photo Point 7



Photo Point 7

Jordan River Innovation Center Delineation Photos



Photo Point 8



Photo Point 8

Jordan River Innovation Center Delineation Photos



Photo Point 9



Photo Point 9

Jordan River Innovation Center Delineation Photos



Photo Point 10



Photo Point 10

Jordan River Innovation Center Delineation Photos



Photo Point 10



Photo Point 10

Jordan River Innovation Center Delineation Photos



Photo Point 11



Photo Point 11

Jordan River Innovation Center Delineation Photos



Photo Point 11



Photo Point 12

Jordan River Innovation Center Delineation Photos



Photo Point 12



Photo Point 12

Jordan River Innovation Center Delineation Photos



Photo Point 13



Photo Point 13

Jordan River Innovation Center Delineation Photos



Photo Point 13



Photo Point 14

Jordan River Innovation Center Delineation Photos



Photo Point 14



Photo Point 14

Jordan River Innovation Center Delineation Photos



Photo Point 14



Photo Point 15

Jordan River Innovation Center Delineation Photos



Photo Point 15



Photo Point 15

Jordan River Innovation Center Delineation Photos



Photo Point 15

Appendix H

Signed Access Waiver

Property Access Statement

Badiee Development hereby allows U.S. Army Corps of Engineers personnel to enter the properties described in the attached delineation report for the Jordan River Innovation Center to collect samples as needed.

Name Scott Merry

Title Vice President of Construction

Signature _____

Date _____

Phone Number (888) 815-8886