

Midway City Council
7 July 2020
Regular Meeting

Whispering Creek Estates /
Preliminary Approval



CITY COUNCIL MEETING STAFF REPORT

DATE OF MEETING: July 7, 2020

NAME OF PROJECT: Whispering Creek Estates

NAME OF APPLICANT: Mike Harvie

OWNER OF RECORD: Cari Lane LLC

AGENDA ITEM: Preliminary Approval

LOCATION OF ITEM: 515 Cari Lane

ZONING DESIGNATION: R-1-15

ITEM: 7

Mike Harvie of the Ramp Group, agent for Cari Lane LLC, is proposing preliminary approval for Whispering Creek Estates. The proposal contains seven lots and is on 4.81 acres. The property is located at 515 Cari Lane and is in the R-1-15 zone.

BACKGROUND:

This request is for preliminary approval of a large-scale subdivision on 4.81 acres and will contain seven lots. The seven lots proposed in the subdivision will obtain frontage along a new road built within the subdivision. The property is in the R-1-15 zone and all lots in the subdivision do comply with the requirements of the code regarding frontage and acreage. The proposed subdivision will combine two parcels (OMI-0186-0 and OMI-0550-0) and the Cospers Subdivision. The Cospers Subdivision is a one lot plat that was recorded 5-31-2017. The plat will be vacated before the proposed subdivision may be recorded which requires approval by the City Council. There is one dwelling on the property that will be on lot 2 in Whispering Creek Estates.

LAND USE SUMMARY:

- 4.81-acre property
 - OMI-0186-0 – 1.22 acres
 - OMI-0550-0 – 2.25 acres
 - Cosper Subdivision 1.57 acres
- R-1-15 zoning
- Proposal contains seven lots
- Access from Cari Lane
- Sensitive lands are present including floodplain and wetlands
- The lots will connect to the Midway Sanitation District sewer, Midway City's culinary water line, and Midway Irrigation Company's secondary water line

ANALYSIS:

Access – Access will be from Cari Lane. A second access is not required because the cul-de-sac is less than 1,300' in length and there are not more than 11 lots in the subdivision. The new road will create a four-way intersection on Cari Lane and 520 West which accesses the Lodges at Snake Creek.

Geotechnical Study – A Geotechnical Study has been submitted to the City and portions of that study are attached to the preliminary staff report. A copy of the report is available in the Planning Office for review.

Sensitive lands – There are wetlands and FEMA floodplain areas in the proposed subdivision area. A wetland map has been submitted to the City along with a wetlands delineation and inventory investigation (please see attached). The code requires a 25' buffer area for any structures and disturbance from any delineated wetlands. The buffer area has been included in the plans. The study has been submitted to the City and to the US Army Corp. of Engineers for their review and approval. The City has not received information that the delineation report has been approved by the US Army Corp.

The proposal includes FEMA flood zone areas including Zone AE (1% annual flood) which requires a 50' setback. The 50' setback has been marked on the plans from Zone AE. No structures may be located in this area, but the setback area may be filled and landscaped. Landscaping is allowed in the FEMA flood area, but nothing is allowed that will modify the FEMA flood zone, this includes placing rocks or fill of any type in this area that impacts the functionality of the floodplain. There is area in the subdivision that is designated Zone X which is area of the 500-year flood (0.2%

annual chance flood) and is considered a low risk area but there is flooding potential. Flood insurance is not federally required but it is recommended in the Zone X area. A note should be placed on the plat that advises future owners of lots 4 and a small section of lots 2 and 5 (though the dwelling may be located completely outside of the zone on lots 2 and 5) of the potential flood hazard. To meet the 50' setback, the building pads for lots 4 and 5 must be adjusted.

Water Connection – The lots will connect to water lines that will be built by the developer and connect to the City's water lines along Cari Lane.

Sewer Connection – The lots will connect to Midway Sanitations District's sewer lines located in the area.

Secondary Water Connection – The lots will connect to Midway Irrigation Company's secondary which is already servicing the property. Laterals will be created for all seven lots. Secondary water meters are required for each lateral.

Trails – There are no planned trails on the Trail System Master Plan in the proposal area. 5' sidewalks will be included on both sides of the proposed street and around the cul-de-sac.

Public Street – The developer will build the proposed road that will create access and frontage for the development. The right-of-way will be 56' wide except where it will extend at the bulb of the cul-de-sac. The street will be 30', with modified curb, 5' park strips, and 5' sidewalks.

Open Space – Because the property is less than six acres there is not an open space requirement.

100' Setback Requirement – The subdivision code requires a 100' setback from the edge of the right-of-way for Cari Lane for any structures. The setback line will be noted on the plat so no structures, including accessory structures, are placed in this area.

Lot 3 Access – The driveway for lot 3 will cross Snake Creek and a Stream Alteration Permit is required for the crossing. Approval for the crossing must be given by the Army Corps of Engineers before the subdivision receives final approval. The developer must build the crossing to lot 3 as part of the subdivision infrastructure.

WATER BOARD RECOMMENDATION:

The Water Board has recommended that 16.73-acre feet are tendered to the City before the recording of the plat. The Water Board also recommended secondary water meters are installed on each lot.

PLANNING COMMISSION RECOMMENDATION:

Motion: Commissioner McKeon: I make a motion that we approve the proposed preliminary approval for Whispering Creek Estates and accept the staff report, Water Board recommendation and the findings including the proposed conditions listed in the staff report that states that a wetlands study must be approved by the Army Corps of Engineers before the item is reviewed for preliminary approval by the City Council, a stream alteration permit must be approved before final approval is granted by the City Council, a note shall be placed on the plat that advises future owners that lots 2, 4 and 5 of the potential flood hazards, the developer must build the driveway crossing in lot 3 as part of the subdivision infrastructure and that the building envelope for lot 5 must be updated so that no part of the building envelope is within 50' of the FEMA AE floodplain.

Seconded: Commissioner Whitney

Vice-Chairman Bouwhuis: Any discussion on the motion?

There was none

Vice-Chairman Bouwhuis: All in favor.

Ayes: Commissioners: Ream, McKeon, Whitney, Bouwhuis

Motion: Passed

POSSIBLE FINDINGS:

- The proposal does meet the intent of the General Plan for the R-1-15 zone
- The proposal does comply with the land use requirements of the R-1-15 zone
- Sensitive lands are on the property and setbacks will be included on the plat along with notes informing future lot owners of any risk
- The City has not received approval of the wetlands study by the Army Corps of Engineers
- A stream alteration permit is required for the driveway crossing on lot 3

ALTERNATIVE ACTIONS:

1. Approval (conditional). This action can be taken if the City Council finds that conditions placed on the approval can resolve any outstanding issues.
 - a. Accept staff report
 - b. List accepted findings
 - c. Place condition(s)

2. Continuance. This action can be taken if the City Council finds that there are unresolved issues.
 - a. Accept staff report
 - b. List accepted findings
 - c. Reasons for continuance
 - i. Unresolved issues that must be addressed
 - d. Date when the item will be heard again

3. Denial. This action can be taken if the City Council finds that the request does not meet the intent of the ordinance.
 - a. Accept staff report
 - b. List accepted findings
 - c. Reasons for denial

PROPOSED CONDITIONS:

1. A wetlands study must be approved by the Army Corps of Engineers before the item is receives preliminary approval by the City Council.
2. A stream alteration permit must be approved before final approval is granted by the City Council.
3. A note shall be placed on the plat that advises future owners of lots 2, 4 and 5 of the potential flood hazards.
4. The developer must build the driveway crossing in lot 3 as part of the subdivision infrastructure.
5. The building envelope for lot 5 must be updated so that no part of the building envelope is within 50' of the FEMA Zone AE floodplain.

June 9, 2020

Midway City
Attn: Michael Henke
75 North 100 West
Midway, Utah 84049
(sent via E-mail)

Subject: Whispering Creek Estates – Preliminary Review

Dear Michael:

Horrocks Engineers recently reviewed the Whispering Creek Estates for Preliminary Review. The proposed subdivision is located at approximately 515 West Cari Lane. The proposed subdivision consists of 7 lots. We find the Preliminary plans to be complete. The following items should be addressed.

General Comments

- The roads, culinary water, pressurized irrigation system, and storm drain systems within this development will be public infrastructure and maintained by Midway City.
- All drawings and standards should meet the Midway City updated 2020 specifications.

Water

- The proposed development will be served from the Cottages on the Green pressure zone.
- The water line will connect to the existing 12” water line in Cari Lane.

Roads

- The proposed road within the development will be a 56’ public right-of-way, with a cul-de-sac at the south end of the development.

Trails:

- There are no proposed trails located within the subdivision. There will be a five-foot sidewalk on each side of the proposed road.

Storm Drain

- The storm water within the proposed development will be collected and retained onsite using a *Stormtec* System. The *Stormtec* System will be a public system.

Sensitive Lands

- A stream alteration permit should be obtained prior to application for final approval.
- A wetland delineation has been submitted to the Army Corp. The Corp should accept the delineation prior to approval.
- The wet land and flood plains with their required setbacks on plans should be shown on the plat map.

- The 25 foot setbacks shall be maintain around all delineated wet lands as approved by the Corp.
- The 50' setbacks shall be maintained around all FEMA flood Zones.

Please feel free to call our office with any questions.

Sincerely,
HORROCKS ENGINEERS

A handwritten signature in blue ink, appearing to read 'Wesley Johnson', with a stylized flourish at the end.

Wesley Johnson, P.E.
Midway City Engineer

cc: Rocky Malin, Epic Engineering, (sent via E-mail)

Exhibits

Exhibit 1 – Location Map

Exhibit 2 – Recorded Plat

Exhibit 3 – Proposed Plan

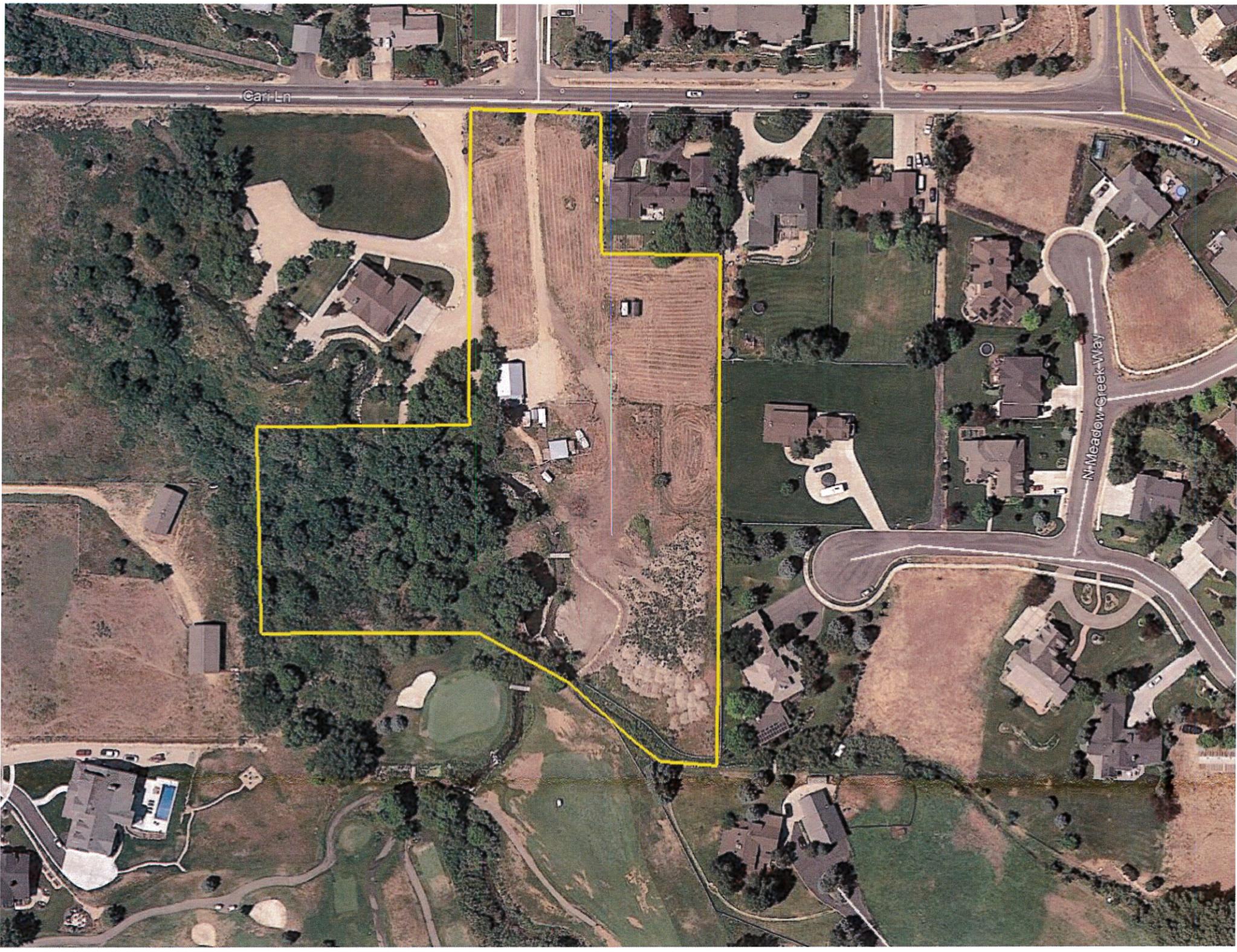
Exhibit 4 – Wetland/Flood Map

Exhibit 5 – Federal Wetlands Application

Exhibit 6 – Wetlands Study/Delineation

Exhibit 7 – Geotechnical Report (partial – full report will be sent by request)

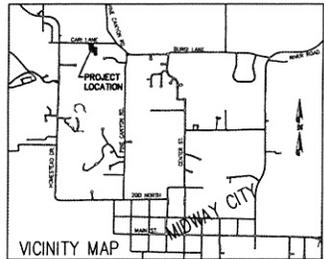
Exhibit 1



Carr Ln

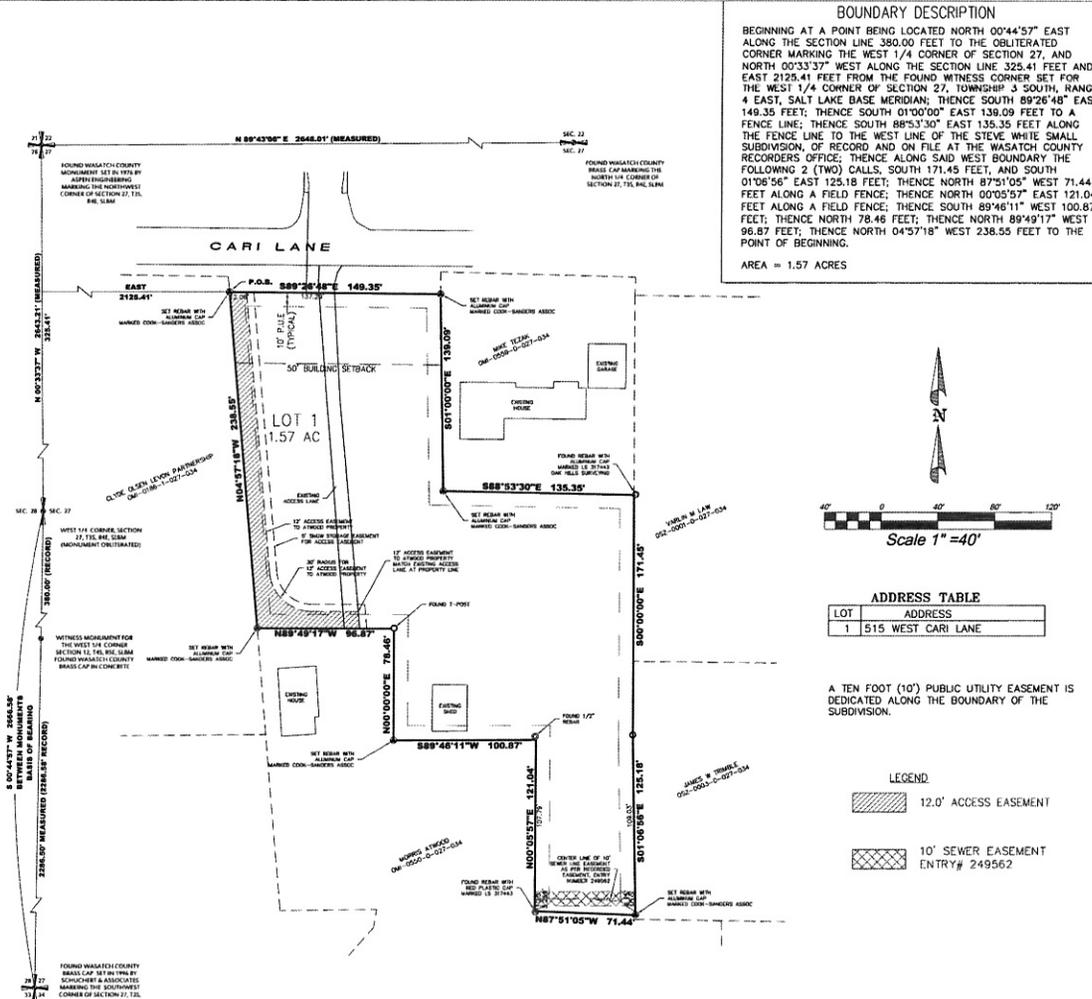
N Meadow Creek Way

Exhibit 2

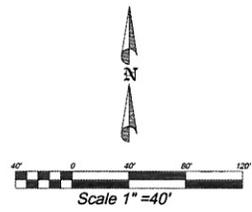


LOCATED IN THE NORTHWEST QUARTER OF SECTION 27, TOWNSHIP 3 SOUTH, RANGE 4 EAST, SALT LAKE BASE MERIDIAN.

DRIVEWAY REQUIREMENTS
 LOT 1 SHALL HAVE ONLY 1 DRIVEWAY. ACCESS EASEMENT AND DRIVEWAY FOR LOT 1 SHALL BE COMBINED BEFORE CONNECTING TO CARI LANE. THE DRIVEWAY FOR LOT 1 SHALL HAVE A TURNAROUND ON THE LOT TO AVOID VEHICLES BACKING INTO TRAFFIC ON CARI LANE.



BOUNDARY DESCRIPTION
 BEGINNING AT A POINT BEING LOCATED NORTH 00°44'57" EAST ALONG THE SECTION LINE 390.00 FEET TO THE OBLITERATED CORNER MARKING THE WEST 1/4 CORNER OF SECTION 27, AND NORTH 00°33'37" WEST ALONG THE SECTION LINE 325.41 FEET AND EAST 2125.41 FEET FROM THE FOUND WITNESS CORNER SET FOR THE WEST 1/4 CORNER OF SECTION 27, TOWNSHIP 3 SOUTH, RANGE 4 EAST, SALT LAKE BASE MERIDIAN; THENCE SOUTH 89°26'48" EAST 149.35 FEET; THENCE SOUTH 01°00'00" EAST 138.09 FEET TO A FENCE LINE; THENCE SOUTH 89°53'30" EAST 135.35 FEET ALONG THE FENCE LINE TO THE WEST LINE OF THE STEVE WHITE SMALL SUBDIVISION, OF RECORD AND ON FILE AT THE WASATCH COUNTY RECORDERS OFFICE; THENCE ALONG SAID WEST BOUNDARY THE FOLLOWING 2 (TWO) CALLS, SOUTH 171.45 FEET, AND SOUTH 01°06'56" EAST 125.18 FEET; THENCE NORTH 87°51'05" WEST 71.44 FEET ALONG A FIELD FENCE; THENCE SOUTH 00°05'57" EAST 121.04 FEET ALONG A FIELD FENCE; THENCE SOUTH 89°46'11" WEST 100.87 FEET; THENCE NORTH 78.46 FEET; THENCE NORTH 89°49'17" WEST 96.87 FEET; THENCE NORTH 04°57'18" WEST 238.55 FEET TO THE POINT OF BEGINNING.
 AREA = 1.57 ACRES



ADDRESS TABLE

LOT	ADDRESS
1	515 WEST CARI LANE

A TEN FOOT (10') PUBLIC UTILITY EASEMENT IS DEDICATED ALONG THE BOUNDARY OF THE SUBDIVISION.

- LEGEND**
- 12.0' ACCESS EASEMENT
 - 10' SEWER EASEMENT ENTRY# 249562

COSPER SUBDIVISION PLAT - 12 APRIL 2017

SURVEYOR
 TROY L. TAYLOR, PLS
 COOK SANDERS ASSOCIATES
 331 SOUTH RIO GRANDE AVE
 SALT LAKE CITY, UT 84101
 PHONE (801) 364-4001
 DATE OF SURVEY: APRIL 2015

Steve Linnell DATE: 5/22/17
 MIDWAY IRRIGATION COMPANY
Don G. ... DATE: 5-22-17
 MIDWAY SANITATION DISTRICT
 COUNTY RECORDER

ENTRY: 138767 BOOK: 1191 PAGE: 1816-1855
 DATE: 05-28-2017 TIME: 2:24 PM FEE: \$31.00
 FOR: COSPER STEPHANOWICZ
 BY: LA - WASATCH COUNTY RECORDER REGS FOR ALBANA

COUNTY SURVEYOR
 APPROVED AS TO FORM ON THIS 22nd DAY OF April, 2017
 ROS # 2763
James C. ...
 COUNTY SURVEYOR

SURVEYOR'S CERTIFICATE
 IN ACCORDANCE WITH SECTION 10-96-803 OF THE UTAH CODE, I, KYLE A. COOK, DO HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR HOLDING LICENSE NUMBER 270852 IN ACCORDANCE WITH TITLE 58, CHAPTER 22, OF THE PROFESSIONAL ENGINEERS AND PROFESSIONAL LAND SURVEYORS LICENSING ACT.
 I FURTHER CERTIFY THAT COOK-SANDERS ASSOCIATES HAS COMPLETED A SURVEY OF THE PROPERTY DESCRIBED ON THE PLAT IN ACCORDANCE WITH SECTION 17-23-17 OF THE UTAH CODE, AND HAVE VERIFIED ALL MEASUREMENTS, AND HAVE PLACED MONUMENTS AS REPRESENTED ON THE PLAT.

4/13/17
 DATE *Kyle A. Cook*
 SURVEYOR (SEE SEAL BELOW)

BASIS OF BEARING
 THE BASIS OF BEARING FOR THIS SURVEY IS SOUTH 00°44'57" EAST 2666.58 FEET (MEASURED) FROM A FOUND WASATCH COUNTY BRASS CAP MARKING THE WITNESS MONUMENT FOR THE WEST 1/4 CORNER OF SECTION 27, T3S R4E, AND THE FOUND WASATCH COUNTY BRASS CAP MARKING THE SOUTHWEST CORNER OF SECTION 27, T3S R4E SALT LAKE BASE MERIDIAN.

OWNER'S DEDICATION
 KNOW ALL MEN BY THESE PRESENTS THAT, THE UNDERSIGNED OWNER(S) OF THE PROPERTY DESCRIBED HEREON, HAVE CAUSED THE SAME TO BE SUBDIVIDED INTO LOTS, PUBLIC STREETS, AND EASEMENTS, AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE DECLARATION HEREBY DEDICATE THOSE AREAS LABELED AS PUBLIC STREETS AND EASEMENTS FOR THE CONSTRUCTION AND MAINTENANCE OF PUBLIC UTILITIES AND EMERGENCY VEHICLE ACCESS.

DATED THIS 31 DAY OF May, A.D. 2017
 BY: *Stephenie Cosper*
 COSPER INVESTMENT COMPANY LLC

ACKNOWLEDGMENT
 STATE OF UTAH }
 COUNTY OF WASATCH } ss.
 ON THE 31st DAY OF May, A.D. 2017 PERSONALLY APPEARED BEFORE ME *Stephenie Cosper* at *Cosper Investment Company LLC* WHO DULY ACKNOWLEDGED TO ME THAT HE/SHE DID EXECUTE THE SAME IN THE CAPACITY INDICATED.
 MY COMMISSION EXPIRES: 12/31/18 *Robert D. ...*
 NOTARY PUBLIC

ACCEPTANCE BY MIDWAY CITY
 THE CITY COUNCIL OF MIDWAY CITY, WASATCH COUNTY, STATE OF UTAH, HEREBY APPROVES THIS SUBDIVISION AND ACCEPTS THE DEDICATION OF LOTS, EASEMENTS, STREETS AND PUBLIC RIGHTS-OF-WAY HEREOF SHOWN.
 THIS 18th DAY OF May, A.D. 2017
 APPROVED *Alana Obenauer* ATTEST *David Wilson*
 MAYOR CLERK-RECORDER
 APPROVED *Stephanie ...* APPROVED *Carla ...*
 CITY ENGINEER (SEE SEAL BELOW) CITY ATTORNEY

PLANNING COMMISSION APPROVAL
 APPROVED THIS 11th DAY OF May, A.D. 2017 BY THE
 MIDWAY CITY PLANNING COMMISSION
Thad K. ... *Don ...*
 PLANNING DIRECTOR CHAIRMAN, PLANNING COMMISSION

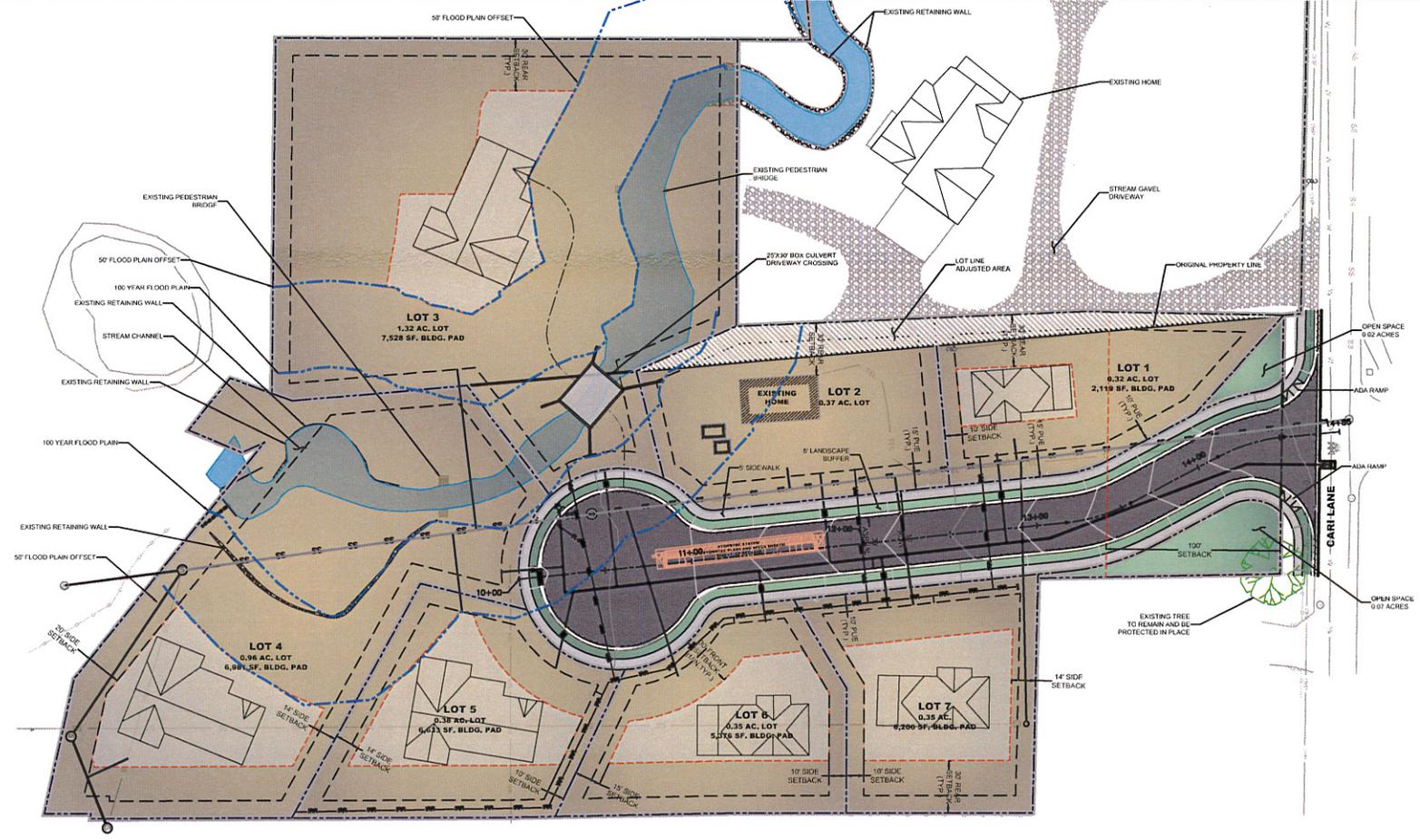
COSPER SUBDIVISION
 MIDWAY CITY, WASATCH COUNTY, STATE OF UTAH
 LOCATED IN THE NORTHWEST QUARTER OF SECTION 27, TOWNSHIP 3 SOUTH, RANGE 4 EAST, SALT LAKE BASE MERIDIAN.
 SCALE: 1" = 40 FEET

SURVEYOR'S SEAL, NOTARY PUBLIC SEAL, CITY ENGINEER SEAL, CLERK-RECORDER SEAL

Exhibit 3

5/17/2025

C:\Users\j... Desktop\Whispering Creek\Whispering Creek - 11.1.2025.dwg



- CONSTRUCTION NOTES**
- CONTRACTOR TO FOLLOW MIDWAY CITY STANDARDS AND SPECIFICATIONS IN THE EVENT MIDWAY DOES NOT HAVE A SPECIFIC STANDARD APWA STANDARDS SHALL BE FOLLOWED.
 - CONTRACTOR TO MAINTAIN 10' HORIZONTAL SEPARATION BETWEEN SEWER AND WATER AND 1" VERTICAL SEPARATION.
 - CONTRACTOR TO POT-HOLE AND FIELD VERIFY ALL EXISTING UTILITIES LOCATIONS AND DEPTHS AND COORDINATE ANY DISCREPANCIES WITH THE ENGINEER PRIOR TO ANY CONSTRUCTION TO AVOID ANY CONFLICTS OR CHANGE ORDERS.
 - CONTRACTOR TO COORDINATE AND SCHEDULE ALL CONSTRUCTION WITH ALL PRIVATE, PUBLIC OR CITY OWNED UTILITIES.
 - POWER TO BE DESIGNED BY OTHERS

WARNING
CALL BLUE STAKES

epic
ENGINEERS

REVISIONS

NO.	DATE	DESCRIPTION

DRAWN: RJM
DESIGNER: RJM
CHECKED: JRS

PROJECT #

SCALE

HORIZ 1"=20'
VERT N/A
(24" X 36" SHEET)

AS SHOWN ON THIS SHEET
SEE PLAN SHEET 11.1 & 11.2 FOR SCALE

PROJECT NAME

WHISPERING CREEK ESTATES

SHEET TITLE

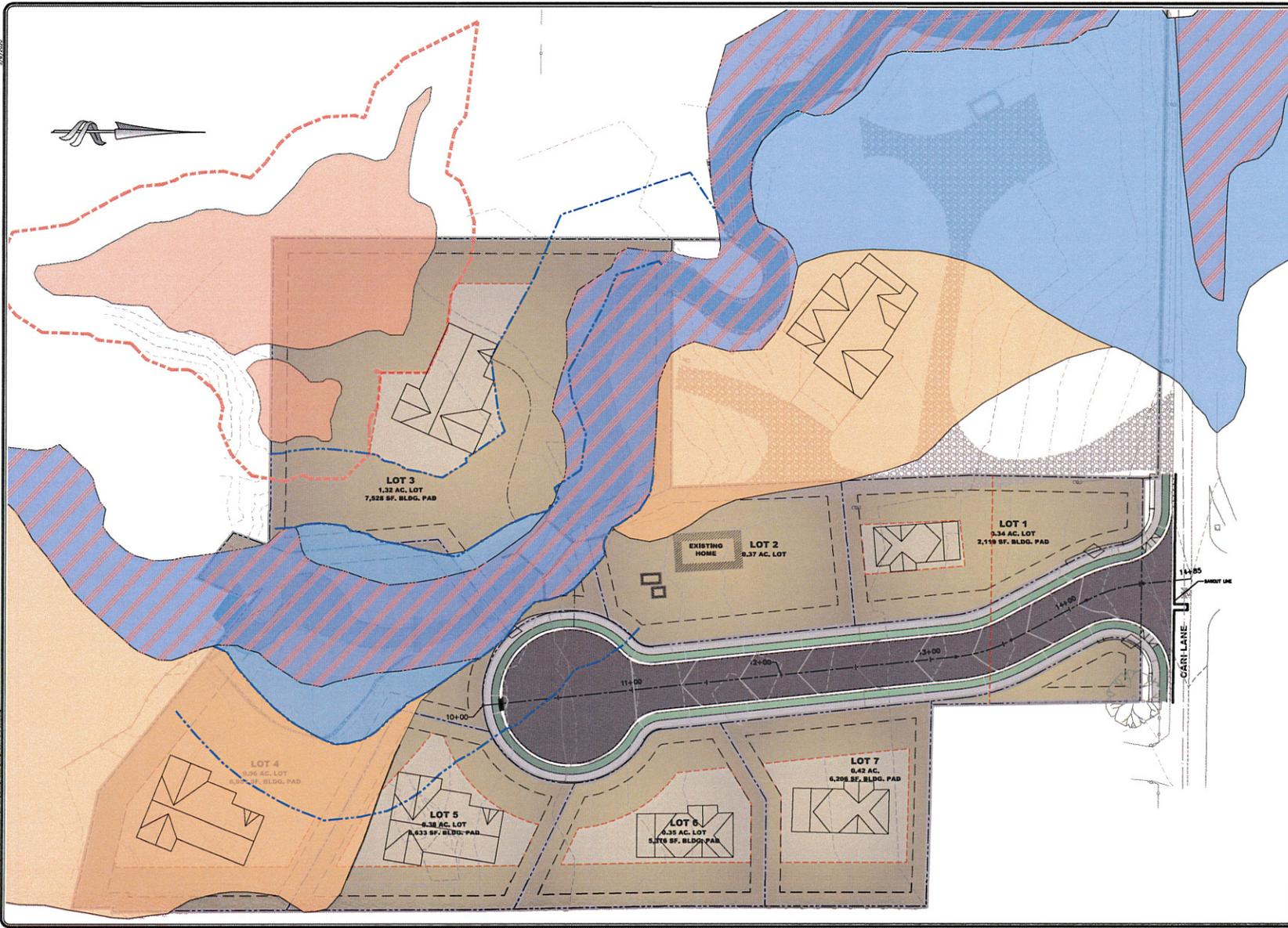
SITE PLAN

PLAN SET	SHEET
PRELIM	2.0

Exhibit 4

3/1/2025

Client: Whispering Creek Estates, LLC. Project: Wetland/Flood Map. Scale: 1" = 30'



CONSTRUCTION NOTES

SEE THE ATTACHED WETLAND DELINEATION MAP FOR THE WETLAND LOCATION

Legend

SPECIAL FLOOD HAZARD AREAS

- Wetland Base Flood Elevation (BFE)
- Wet DFE or Depth (100, 500, 1000, 5000)
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard Area of 25 Annual Chance Flood with average depth of 100 feet over 100 ft or more in length
- 1% Annual Chance Flood Hazard Area of 1% Annual Chance Flood Hazard
- Area with Potential Flood Risk Due to Chain Saw Ties
- Area with Flood Risk Due to Levees

OTHER AREAS

- Area of Potential Flood Hazard
- Channel, Embankment or Stream Bank
- Area of Underestimation Flood Hazard

GENERAL

- Channel, Embankment or Stream Bank
- Levee, Dike, or Floodwall

WETLANDS

- Disturbed wetlands as of May 2, 2024
- Wetland offset
- Wetland plan offset

WARNING
CALL BLUE STAKES



REVISIONS

1	
---	--

DRAWN: RJM
DESIGNED: RJM
CHECKED: RJM

PROJECT #

SCALE

HORIZ	1"=30'
VERT	N/A

(24" x 36" SHEET)

DATE PLOTTED: 11/11/24
BY: RJM

PROJECT NAME
WHISPERING CREEK ESTATES

SHEET TITLE
WETLAND/FLOOD MAP

PLAN SET	SHEET
PRELIM	2.5

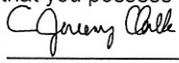
Exhibit 5

REQUEST FOR AQUATIC RESOURCES DELINEATION VERIFICATION

OR JURISDICTIONAL DETERMINATION

A separate jurisdictional determination (JD) is not necessary to process a permit. An Approved Jurisdictional Determination (AJD) is required to definitively determine the extent of waters of the U.S. and is generally used to disclaim jurisdiction over aquatic resources that are not waters of the U.S., in cases where the review area contains no aquatic resources, and in cases when the recipient wishes to challenge the water of the U.S. determination on appeal. Either an Aquatic Resources Delineation Verification or a Preliminary Jurisdictional Determination (PJD) may be used when the recipient wishes to assume that aquatic resources are waters of the U.S. for the purposes of permitting. In some circumstances an AJD may require more information, a greater level of effort, and more time to produce. If you are unsure which product to request, please speak with your project manager or call the Sacramento District's general information line at (916) 557-5250.

I am requesting the product indicated below from the U.S. Army Corps of Engineers, Sacramento District, for the review area located at:

Street Address: <u>535 Cari Lane</u> City: <u>Midway</u> County: <u>Wasatch</u>	
State: <u>Utah</u> Zip: <u>84049</u> Section: <u>27</u> Township: <u>3S</u> Range: <u>4E</u>	
Latitude (decimal degrees): <u>40.528449°</u> Longitude (decimal degrees): <u>-111.483788°</u>	
The approximate size of the review area for the JD is _____ acres. (Please attach location map)	
Choose one: <input checked="" type="checkbox"/> I own the review area <input type="checkbox"/> I hold an easement or development rights over the review area <input type="checkbox"/> I lease the review area <input type="checkbox"/> I plan to purchase the review area <input type="checkbox"/> I am an agent/consultant acting on behalf of the requestor <input type="checkbox"/> Other: _____	Choose one product: <input checked="" type="checkbox"/> I am requesting an Aquatic Resources Delineation Verification <input type="checkbox"/> I am requesting an Approved JD <input type="checkbox"/> I am requesting a Preliminary JD <input type="checkbox"/> I am requesting additional information to inform my decision about which product to request
Reason for request: (check all that apply) <input checked="" type="checkbox"/> I need information concerning aquatic resources within the review area for planning purposes. <input type="checkbox"/> I intend to construct/develop a project or perform activities in this review area which would be designed to avoid all aquatic resources. <input type="checkbox"/> I intend to construct/develop a project or perform activities in this review area which would be designed to avoid those aquatic resources determined to be waters of the U.S. <input type="checkbox"/> I intend to construct/develop a project or perform activities in this review area which may require authorization from the Corps; this request is accompanied by my permit application. <input type="checkbox"/> I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district's list of navigable waters under Section 10 of the Rivers and Harbors Act of 1899 and/or is subject to the ebb and flow of the tide. <input type="checkbox"/> My lender, insurer, investors, local unit of government, etc. has indicated that an aquatic resources delineation verification is inadequate and is requiring a jurisdictional determination. <input type="checkbox"/> I intend to contest jurisdiction over particular aquatic resources and request the Corps confirm that these aquatic resources are or are not waters of the U.S. <input type="checkbox"/> I believe that the review area may be comprised entirely of dry land. <input type="checkbox"/> Other: _____	
Attached Information: <input checked="" type="checkbox"/> Maps depicting the general location and aquatic resources within the review area consistent with Map and Drawing Standards for the South Pacific Division Regulatory Program (Public Notice February 2016, http://www.spd.usace.army.mil/Missions/Regulatory/Public-Notices-and-References/Article/651327/updated-map-and-drawing-standards/) <input checked="" type="checkbox"/> Aquatic Resources Delineation Report, if available, consistent with the Sacramento District's Minimum Standards for Acceptance (Public Notice January 2016, http://1.usa.gov/1V68IYa)	
By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the review area. Your signature shall be an affirmation that you possess the requisite property rights for this request on the subject property.	
*Signature: <u></u>	Date: <u>5/6/2020</u>
Name: <u>Jeremy Clark</u>	Company name: <u>Cari Lane LLC</u>
Address: <u>PO Box 195</u>	
<u>Midway, UT 84049</u>	
Telephone: <u>719-330-7854</u>	Email: <u>clarkj1229@gmail.com</u>

***Authorities:** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Exhibit 6



epic
ENGINEERING

50 East 100 South
Heber City, Utah 84032
Phone: (435) 654-6600

**Wetlands Delineation and Inventory Investigation
Cari Lane Estates
Wasatch County, Utah**

Prepared by:

Epic Engineering
50 East 100 South
Heber City, Utah 84032

Epic Job Number: 20-RR-002

Prepared for:

Rimrock, LLC
12731 North 4400 West
Cornish, UT 84308

May 2020

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FIGURE 1: SITE VICINITY MAP AND USGS TOPOGRAPHIC 7.5' QUADRANGLE

FIGURE 2: NATIONAL WETLANDS INVENTORY

FIGURE 3: NRCS SOILS MAP

FIGURE 4: 1953 IMAGERY

FIGURE 5: 1962 IMAGERY

FIGURE 6: 1990 IMAGERY

FIGURE 7: 2006 IMAGERY

FIGURE 8: EPIC DELINEATED WETLANDS

APPENDIX B – CUSTOM SOILS RESOURCES REPORT

APPENDIX C – FIELD FORMS

APPENDIX D – FIELD PHOTOS



U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands_team@fws.gov

LEGEND	
	AOI
WETLANDS	
	Freshwater Emergent Wetland
	Freshwater Forested/ Shrub Wetland
	Riverine
WETLAND CODES:	
PEM1C-Palustrine, Emergent, Persistent Seasonally Flooded	
PSS/EM1C-Palustrine, Scrub-shrub, Emergent, Persistent, Seasonally Flooded	
SOURCE UTAH AGRC, EPIC ENGINEERING PC	
FOR GENERAL ILLUSTRATIVE PURPOSES ONLY; BOUNDARIES NOT SURVEYED.	
DATE	
5/6/2020	
REVISIONS	
1	
DRAWN: JRC	
DESIGNER: JRC	
REVIEWER: INS	
PROJECT #	
20RR002	
SCALES	
HORIZ: 1"=100'	
(11"X17")	
PROJECT NAME:	
CARI LANE ESTATES WETLAND DELINEATION	
SHEET TITLE:	
NATIONAL WETLAND INVENTORY	
PLAN SET:	FIGURE:
	2

S:\PROJSMALL PROJECTS\2020 PROJECTS\Cosper Subdivision-Midway\GIS\Data\Wetlands\DelimitedWetlands.mxd



LEGEND

- LIMIT OF DELINEATION
- CROSS SECTION
- DATA POINT

Delimited Wetlands

- PEM1C
- PABGx

Riverine

- PEM1D
- R4SBA

SOURCE UTAH AGRC, EPIC ENGINEERING PC

FOR GENERAL ILLUSTRATIVE PURPOSES ONLY; BOUNDARIES NOT SURVEYED.

DATE
5/6/2020



REVISIONS	

DRAWN: JRC	
DESIGNER: JRC	
REVIEWED: JNS	
PROJECT #	
20RR002	

SCALES	
HORIZ: 1"=80'	
(11"X17")	

PROJECT NAME:
CARI LANE ESTATES
WETLAND DELINEATION

SHEET TITLE:
DELIMITED WETLANDS
MAP

PLAN SET:	FIGURE:
	2

Exhibit 7

**REPORT
GEOTECHNICAL STUDY
PROPOSED CREEKSIDE ESTATES
515 CARI LANE
MIDWAY, UTAH**

February 27, 2020

Job No. 609-004-20

Prepared for:
Construction Services Consulting
PO Box 571363
Murray, Utah 84157

Prepared by:
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February 27, 2020
Job No. 609-004-20

Construction Services Consulting
PO Box 571363
Murray, Utah 84157

Attention: Mr. Pete Skolmoski

Ladies and Gentlemen:

Re: Report
Geotechnical Study
Proposed Creekside Estates
515 Cari Lane
Midway, Utah

1. INTRODUCTION

1.1 GENERAL

This report presents the results of our geotechnical study performed at the site of the proposed Creekside Estates which is located at 515 Cari Lane in Midway, Utah. The general location of the site with respect to major topographic features and existing facilities, as of 1998 and 1999, is presented on Figure 1, Vicinity Map. A detailed location of the site showing existing roadways and surrounding facilities, on an air photograph base, is presented on Figure 2, Area Map. The locations and alignments of photographs taken of the site during the field portion of study are also shown on Figure 2. A more detailed layout of the site showing the proposed lot boundaries and building footprints is presented on Figure 3, Site Plan. The locations of the test pits excavated in conjunction with this study are also presented on Figure 3.

1.2 OBJECTIVES AND SCOPE

The objectives and scope of our study were planned in discussions between Mr. Pete Skolmoski of Construction Services Consulting and Mr. Patrick Emery of Gordon Geotechnical Engineering, Inc. (G²).

In general, the objectives of this study were to:

1. Accurately define and evaluate the subsurface soil and groundwater conditions across the site.
2. Provide appropriate foundation, earthwork, pavement, and geoseismic recommendations to be utilized in the design and construction of the proposed development.

In accomplishing these objectives, our scope has included the following:

1. A field program consisting of the excavating, logging, and sampling of five test pits at the site.
2. A laboratory testing program.
3. An office program consisting of the correlation of available data, engineering analyses, and the preparation of this summary report.

1.3 AUTHORIZATION

Authorization was provided by returning a signed copy of our professional services agreement No. 20-0102 dated January 2, 2020.

1.4 PROFESSIONAL STATEMENTS

Supporting data upon which our recommendations are based are presented in subsequent sections of this report. Recommendations presented herein are governed by the physical properties of the soils encountered in the exploration test pits, measured and projected groundwater conditions, and the layout and design data discussed in Section 2., Proposed Construction, of this report. If subsurface conditions other than those described in this report are encountered and/or if design and layout changes are implemented, G² must be informed so that our recommendations can be reviewed and amended, if necessary.

Our professional services have been performed, our findings developed, and our recommendations prepared in accordance with generally accepted engineering principles and practices in this area at this time.

2. PROPOSED CONSTRUCTION

A seven-lot single-family residential subdivision is planned for the three and one-half-acre site. The proposed structures are anticipated to be two to three levels above grade with a partial- to full-depth basement level. Construction will be of reinforced concrete below grade and wood-

frame construction above grade. Maximum column and wall loads are projected to be on the order of 40 to 60 kips and 2 to 3 kips per lineal foot, respectively.

Site development will require a minor amount of earthwork in the form of site grading. It is estimated that maximum cuts and fills to achieve design grades will be on the order of three to four feet.

A 435-foot long at-grade roadway terminating in a cul-de-sac will provide access to the lots. Traffic over the pavement will consist of a light to moderate volume of automobiles and light trucks, and some medium-weight trucks.

3. INVESTIGATIONS

3.1 FIELD PROGRAM

In order to define and evaluate the subsurface soil and groundwater conditions across the site, five test pits were excavated to a depths ranging from two to eight and one-half feet below existing grade. It should be noted that excavation refusal was encountered on hard hot spring deposits (tufa) at all test pits except for Test Pit TP-5. The limited depth of Test Pit TP-5 was due to saturated granular soils flowing into the test pit. Locations of the test pits are presented on Figure 3.

The field portion of our study was under the direct control and continual supervision of an experienced member of our geotechnical staff. During the course of the excavation operations, a continuous log of the subsurface conditions encountered was maintained. In addition, relatively undisturbed and small disturbed samples of the typical soils encountered were obtained for subsequent laboratory testing and examination. The soils were classified in the field based upon visual and textural examination. These classifications have been supplemented by subsequent inspection and testing in our laboratory. Detailed graphical representation of the subsurface conditions encountered is presented on Figures 4A through 4E, Log of Test Pits. Soils were classified in accordance with the nomenclature described on Figure 5, Unified Soil Classification System.

Disturbed bag samples were collected from the soils brought up by the backhoe bucket. Additionally, relatively undisturbed samples were obtained utilizing thin-walled hand sampling equipment.

Following completion of excavating and logging, each test pit was backfilled. The backfill was not placed in uniform lifts and compacted to a specific density. Consequently, settlement of the backfill with time is likely to occur.

3.2 LABORATORY TESTING

3.2.1 General

In order to provide data necessary for our engineering analyses, a laboratory testing program was performed. The program included collapse-consolidation tests, partial gradation, and chemical tests. The following paragraphs describe the tests and summarize the test data.

3.2.2 Collapse-Consolidation Tests

In order to assess moisture sensitivity and load deformation characteristics, two collapse-consolidation tests were performed on representative samples of the relatively fine-grained silty sand and sandy silt soil encountered in Test Pits TP-1 and TP-2. The collapse test was performed as follows:

1. Load sample at in-situ moisture content to specific axial pressure.
2. Measure and record axial deflection.
3. Saturate sample.
4. Measure and record resulting collapse.

The test results are tabulated below:

Test Pit No.	Depth (feet)	Soil Classification	Natural Dry Density (pcf)	Natural Moisture Content (percent)	Axial Load When Saturated (psf)	Collapse (percent)
TP-1	3.0	SM	95	10.8	800	0.54*
TP-2	2.5	ML	96	8.2	1,600	1.38*

* Some of the measured collapse is due to sample disturbance.

The results of the tests indicate that the silty sand and sandy silt soils encountered at the site to depths of two to six and one-half feet are slightly moisture sensitive and exhibit a slight collapse potential when saturated or nearly saturated. Some of the measured collapse is attributable to disturbance of the soil during the sampling process.

Following the collapse portion of the test, normal consolidation loading was applied. The results of the test indicate that the silty sand and sandy silt soils encountered are moderately over-

consolidated and exhibit moderately low compressibility and moderate strength characteristics when loaded below the preconsolidation pressure. Results of the test are maintained within our files and can be provided upon request.

3.2.3 Partial Gradation Tests

To aid in classifying the soils and to provide general index parameters, a partial gradation test was performed upon four representative samples of the soils encountered in the exploration test pits. The results of the test are tabulated below:

Test Pit No.	Depth (feet)	Sieve Percent Passing		Soil Classification
		No. 4	No. 200	
TP-1	5.0	58.6	4.0	SP/GP
TP-2	2.5	--	63.6	ML
TP-4	6.0	--	31.6	SM
TP-5	7.0	44.8	2.5	SP/GP

3.2.4 Chemical Tests

To determine if the site soils will react detrimentally with concrete, chemical tests were performed on a representative sample of the near-surface fine-grained soils encountered. The results of the chemical tests are tabulated below:

Test Pit No.	Depth (feet)	Soil Classification	pH	Total Water-Soluble Sulfate (mg/kg-dry)
TP-3	3.0	CL	8.31	< 5.35

4. SITE CONDITIONS

4.1 SURFACE

The overall site is irregular in shape and contains one existing single-family residential structure established slab-on-grade. The remainder of the site consists of vacant/undeveloped land. The site was covered with four to six inches of snow at the time of our field work. Topography across the site slopes gently down to the south with up to approximately 20 feet of overall relief. Snake Creek flows to the south on the southwestern portion of the site. A stacked rock

retaining wall and numerous piles of end-dumped fill material were observed to be raising the grade of the southern portion of the site. The observed fills have not been properly placed and compacted and are considered non-engineered.

The site is bordered by Cari Lane to the north, and single-family residential structures to the east, south, and west.

Representative photographs of the site area are shown on Figure 6, Photographs.

4.2 SUBSURFACE SOIL

The soil conditions encountered in each of the test pits, to the depths penetrated were relatively similar. At the surface in Test Pits TP-4 and TP-5, clayey fine to coarse sand and gravel fill was encountered extending to depths of one and one-half to two and one-half feet below the ground surface. The fill was observed to be loosely end-dumped and without documentation and compaction testing results, the fill must be considered non-engineered. Non-engineered fills will exhibit variable and most likely poor engineering characteristics. This non-engineered fill may be re-utilized as structural fill; however, due to the clay content, the on-site non-engineered fill will require close moisture control and will be difficult during wet and cold periods of the year.

Below the fill Test Pits TP-4 and TP-5, and from the ground surface in the remainder of the test pits, natural soils were encountered to the maximum explored depths, two to eighth and one-half feet below existing grade. The natural soils consist of silty fine sand (SM), fine sandy silt (ML), and fine to coarse sand and gravel with trace silt (SP/GP). Collapse-consolidation tests indicate that the silty sand (SM) and sandy silt (ML) soils are slightly moisture sensitive and exhibit a slight collapse potential when saturated or nearly saturated.

The natural sands and gravels (SP/GP) are slightly moist to saturated, loose to medium dense, and are projected to exhibit high strength and low compressibility characteristics under the anticipated loading range.

Excavation refusal was encountered on hard rock comprised of hot spring deposits calcareous tufa. The tufa is white to light brown in color, moderately closely fractured, porous, hard, and relatively unweathered.

The upper three inches of the soil profile contains major roots and is classified as topsoil.

The lines designating the interface between soil types on the test pit logs generally represent approximate boundaries. In-situ, the transition between soil types may be gradual.

4.3 GROUNDWATER

Groundwater was encountered in Test Pit TP-5, at the lowest portion of the site, at a depth of three feet below existing grade. Very moist soils were encountered in Test Pit TP-4 at a depth of eight feet below existing grade, possibly due to infiltration of water from the nearby creek. Seasonal fluctuations of the groundwater table on the order of one to two feet are expected, with the highest levels occurring during the late spring and early summer months.

5. DISCUSSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The proposed structures may be supported upon conventional spread and continuous wall foundations over suitable natural soils or tufa and/or structural fill extending to suitable natural soils or tufa.

The most significant geotechnical aspects of the site are:

1. The non-engineered fill encountered to depths of one and one-half to two and one-half feet at Test Pits TP-4 and TP-5 as well as end-dumped fills observed on the southern portion of the site. Non-engineered fills must be completely removed from beneath the building footprint and rigid pavement areas. Due to the variable nature of the non-engineered fills encountered, a qualified geotechnical engineer from our staff must aid in verifying that all non-engineered fills have been completely removed prior to the placement of structural site grading fills, footings, or foundations.
2. Excavation on refusal on hard tufa at depths of two to eight and one-half feet below existing grade. Deeper excavations into the tufa will be difficult in confined areas. However, in our experience, mass excavations for building footprints are typically feasible with standard excavation equipment. There have been instances in Midway where rock trenching machines were required for utility installation. Due to the porosity of the tufa, rock breakers are typically ineffective.
3. The relatively shallow groundwater encountered at a depth of three feet at Test Pit TP-5. For design groundwater recommendations see Section 5.9, Design Water Table. Groundwater was encountered in Test Pit TP-5 at a depth of three feet below the ground surface at the lowest area of the site. However, it is projected that site grading fill will be utilized to raise the overall grade of the southern portion of the site, where the numerous end-dumped fill piles are currently positioned. For design groundwater recommendations see Section 5.9, Design Water Table.

4. Slightly collapsible soils encountered to depths of two to six and one-half feet at Test Pits TP-1 through TP-4. The silty sand and sandy silt soils encountered at the site are slightly moisture sensitive and exhibit a slight collapse potential when saturated or nearly saturated. Ideally, potentially collapsible soils should be completely removed from below foundations where feasible. However, due to the limited thickness of the slightly collapsible soils encountered, and the relatively low collapse potential, additional settlement upon saturation of the subgrade soils will be within the tolerable range for structures of this type. Therefore, footings may be established directly on undisturbed natural soils utilizing a reduced bearing pressure. See Section 5.3.1, Design Data for details.
5. Potential for "perched" groundwater conditions. Due to the potential for "perched" groundwater conditions, foundation subdrains are recommended around below-grade portions of structures.

Detailed discussions pertaining to earthwork, foundations, floor slabs, lateral resistance, pavement, and the geoseismic setting of the site are discussed in the following sections.

5.2 EARTHWORK

5.2.1 Site Preparation

Preparation of the site must consist of the removal of all non-engineered fills, vegetation, loose surficial soils, topsoil, debris, and other deleterious materials from beneath an area extending at least three feet beyond the perimeter of the proposed building, rigid pavement, and exterior flatwork areas.

Non-engineered fills may remain in flexible pavement areas as long as they are properly prepared. Proper preparation will consist of scarifying and moisture conditioning the upper eight inches and recompacting to the requirements of structural fill. However, it should be noted that compaction of fine-grained soils (clays and silts) as structural site grading fill will be very difficult, if not impossible, during wet and cold periods of the year. As an option for proper preparation and recompaction, the upper eight inches of the non-engineered fills may be removed and replaced with granular subbase over proofrolled subgrade. Even with proper preparation, flexible pavements established on non-engineered fills may experience some long-term movements. If the possibility of these movements is not acceptable, these non-engineered fills must be completely removed.

Subsequent to the above operations and prior to the placement of footings, structural site grading fill, or floor slabs, the exposed natural subgrade must be proofrolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If any loose, soft, or disturbed zones are encountered, they must be completely removed in footing and floor slab areas and replaced with granular structural fill. If removal depth required

is greater than two feet, G² must be notified to provide further recommendations. In pavement areas, unsuitable soils encountered during recompaction and proofrolling must be removed to a maximum depth of two feet and replaced with compacted granular structural fill.

5.2.2 Excavations

Groundwater is anticipated to be encountered only in the lowest area of the site at a depth of three feet below existing grade. Temporary construction excavations not exceeding four feet in depth may be constructed with near-vertical sideslopes. If cohesionless granular soils and groundwater are encountered, flatter sideslopes may be required. This condition is anticipated in the area of Test Pit TP-5. Deeper excavations are not anticipated at the site.

Utility trench excavations must be constructed in accordance with OSHA trench safety guidelines.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated.

5.2.3 Structural Fill

Structural fill is defined as all fill which will ultimately be subjected to structural loadings, such as imposed by footings, floor slabs, pavements, etc. Structural fill will be required as backfill over foundations and utilities, as site grading fill, and in some areas, as replacement fill below footings. All structural fill must be free of sod, rubbish, topsoil, frozen soil, and other deleterious materials. Structural site grading fill is defined as fill placed over fairly large open areas to raise the overall site grade. For structural site grading fill, the maximum particle size should generally not exceed four inches; although, occasional larger particles, not exceeding six inches in diameter may be incorporated if placed randomly in a manner such that "honeycombing" does not occur and the desired degree of compaction can be achieved. The maximum particle size within structural fill placed within confined areas should generally be restricted to two inches.

The on-site natural silty sand, sandy silt, and non-engineered fill soils may be utilized as structural site grading fill. However, it should be noted that compaction of silty and clayey soils will require close moisture control and will be very difficult if not impossible during wet and cold periods of the year.

To stabilize soft subgrade conditions or where structural fill is required to be placed below a level one foot above the water table at the time of construction, a mixture of coarse gravels and cobbles and/or one and one-half- to two-inch gravel (stabilizing fill) should be utilized. Stabilizing fill may be required in the lowest area of the site.

Non-structural site grading fill is defined as all fill material not designated as structural fill and may consist of any cohesive or granular soils not containing excessive amounts of degradable material.

5.2.4 Fill Placement and Compaction

Structural fill shall be placed in lifts not exceeding eight inches in loose thickness. Structural fills shall be compacted in accordance with the percent of the maximum dry density as determined by the AASHTO¹ T-180 (ASTM² D-1557) compaction criteria in accordance with the table below:

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending at least 3 feet beyond the perimeter of the structures	0 to 8	95
Outside area defined above	0 to 6	90
Outside area defined above	6 to 8	92
Road base	-	96

Structural fills greater than eight feet thick are not anticipated at the site.

Subsequent to stripping and prior to the placement of structural site grading fill, the subgrade must be prepared as discussed in Section 5.2.1, Site Preparation, of this report. In confined areas, subgrade preparation should consist of the removal of all loose or disturbed soils.

Non-structural fill may be placed in lifts not exceeding 12 inches in loose thickness and compacted by passing construction, spreading, or hauling equipment over the surface at least twice.

Coarse gravel and cobble mixtures (stabilizing fill), if utilized, shall be end-dumped, spread to a maximum loose lift thickness of 15 inches, and compacted by dropping a backhoe bucket onto the surface continuously at least twice. As an alternative, the fill may be compacted by passing moderately heavy construction equipment or large self-propelled compaction equipment over the surface at least twice. Subsequent fill material placed over the coarse gravels and cobbles shall be adequately placed so that the “fines” are “worked into” the voids in the underlying coarser gravels and cobbles.

¹ American Association of State Highway and Transportation Officials

² American Society for Testing and Materials

5.2.5 Utility Trenches

All utility trench backfill material below structurally loaded facilities (flatwork, floor slabs, roads, etc.) should be placed at the same density requirements established for structural fill. If the surface of the backfill becomes disturbed during the course of construction, the backfill should be proofrolled and/or properly compacted prior to the construction of any exterior flatwork over a backfilled trench. Proofrolling may be performed by passing moderately loaded rubber tire-mounted construction equipment uniformly over the surface at least twice. If excessively loose or soft areas are encountered during proofrolling, they should be removed to a maximum depth of two feet below design finish grade and replaced with structural fill.

Most utility companies and City-County governments are now requiring that Type A-1 or A-1-a (AASHTO Designation – basically granular soils with limited fines) soils be used as backfill over utilities. These organizations are also requiring that in public roadways the backfill over major utilities be compacted over the full depth of fill to at least 96 percent of the maximum dry density as determined by the AASHTO T-180 (ASTM D-1557) method of compaction. We recommend that as the major utilities continue onto the site that these compaction specifications are followed.

The on-site silty sand and sandy silt soils are not recommended for use as utility trench backfill. Some of the non-engineered fill may be utilized for utility trench backfill provided it meets the requirements stated above.

5.3 SPREAD AND CONTINUOUS WALL FOUNDATIONS

5.3.1 Design Data

The proposed structures may be supported upon conventional spread and continuous wall foundations established upon suitable natural soils or tufa and/or structural fill extending to suitable natural soils or tufa. Under no circumstances shall footings be placed overlying non-engineered fills.

For design, the following parameters are provided with respect to the projected loading discussed in Section 2., Proposed Construction, of this report:

Minimum Recommended Depth of Embedment for Frost Protection	- 42 inches
Minimum Recommended Depth of Embedment for Non-frost Conditions	- 15 inches
Recommended Minimum Width for Continuous Wall Footings	- 18 inches
Minimum Recommended Width for Isolated Spread Footings	- 24 inches
Recommended Net Bearing Pressure for Real Load Conditions	
For footings on suitable <u>natural soils</u> and/or structural fill extending to suitable <u>natural soils</u>	- 1,500 pounds per square foot
For footings established entirely on tufa and/or Structural fill extending to tufa	- 2,500 pounds per square foot
Bearing Pressure Increase for Seismic Loading	- 50 percent*

* Not applicable for edge bearing pressure when the footings are established upon granular soil. Use 25 percent for overturning or other inclined loading.

The term "net bearing pressure" refers to the pressure imposed by the portion of the structure located above lowest adjacent final grade. Therefore, the weight of the footing and backfill to the lowest adjacent final grade need not be considered. Real loads are defined as the total of all dead plus frequently applied live loads. Total load includes all dead and live loads, including seismic and wind.

5.3.2 Installation

Under no circumstances shall the footings be established upon non-engineered fills, loose or disturbed soils, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. If unsuitable soils are encountered, they must be completely removed and replaced with compacted structural fill.

The width of structural replacement fill below footings should be equal to the width of the footing plus one foot for each foot of fill thickness.

5.3.3 Settlements

Settlements of foundations designed and installed in accordance with the above recommendations and supporting maximum projected structural loads are anticipated to be on the order of one-half of an inch or less. Settlements are expected to occur rapidly with approximately 60 to 70 percent of the settlements occurring during construction.

5.4 FOUNDATION SUBDRAINS

Due to the potential for “perched” groundwater conditions, and to provide additional protection, we recommend the installation of foundation subdrains around footings in partial- and full-depth basement areas.

Foundation subdrains should consist of a four-inch diameter perforated or slotted plastic or PVC pipe enclosed in clean gravel. The invert of a subdrain should be at least two feet below the top of the lowest adjacent floor slab. The gravel portion of the drain should extend two inches laterally and below the perforated pipe and at least one foot above the top of the lowest adjacent floor slab. The gravel zone must be installed immediately adjacent to the perimeter footings and the foundation walls. To reduce the possibility of plugging, the gravel must be wrapped with a geotextile, such as Mirafi 140N or equivalent. Above the subdrain, a minimum four-inch-wide zone of “free-draining” sand and gravel should be placed adjacent to the foundation walls and extend to within two feet of final grade. The upper two feet of soils should consist of a compacted clayey cap to reduce surface water infiltration into the drain. As an alternative to the zone of permeable sand and a prefabricated “drainage board,” such as Miradrain or equivalent, may be placed adjacent to the exterior below grade walls. Prior to the installation of the footing subdrain, the below-grade walls should be dampproofed. The slope of the subdrain should be at least 0.3 percent. The gravel placed around the drain pipe should be clean three-quarters to one-inch minus gap-graded gravel and/or “pea” gravel. The foundation subdrains can be discharged into the area subdrains, storm drains, or other suitable down-gradient location.

5.5 LATERAL RESISTANCE

Lateral loads imposed upon foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footings and the supporting soils. In determining frictional resistance on fine-grained soils, a coefficient of 0.40 should be utilized. In determining frictional resistance on granular soils, a coefficient of 0.45 should be utilized. Passive resistance provided by properly placed and compacted granular structural fill above the water table may be considered equivalent to a fluid with a density of

300 pounds per cubic foot. Below the water table, this granular soil should be considered equivalent to a fluid with a density of 150 pounds per cubic foot.

A combination of passive earth resistance and friction may be utilized provided that the friction component of the total is divided by 1.5.

5.6 FLOOR SLABS

Floor slabs may be established upon suitable undisturbed natural soils, and/or upon structural fill extending to suitable natural soils. Non-engineered fills and topsoil are not considered suitable. To provide a capillary break, it is recommended that floor slabs be directly underlain by at least four inches of "free-draining" fill, such as "pea" gravel or three-quarters- to one-inch minus clean gap-graded gravel. Settlements of lightly to moderately loaded floor slabs are anticipated to be minor.

5.7 PAVEMENTS

The properly prepared non-engineered fills will exhibit poor engineering characteristics when saturated or nearly saturated. Non-engineered fills and collapsible soils may remain in flexible pavement areas if properly prepared, as stated previously in this report. Rigid pavements shall not be placed overlying non-engineered fills, even if properly prepared. Considering the existing non-engineered fill and sandy silt as the pavement subgrade and the projected traffic, the following pavement sections are recommended:

Primary Roadway Area

(Moderate Volume of Automobiles and Light Trucks,
Light Volume of Medium-Weight Trucks,
and Occasional Heavy-Weight Trucks)
[5 equivalent 18-kip axle loads per day]

Flexible:

3.0 inches	Asphalt concrete
8.0 inches	Aggregate base
Over	Properly prepared natural soils, properly prepared non-engineered fills, and/or structural site grading fill extending to suitable stabilized natural soils.

Rigid:

5.5 inches	Portland cement concrete (non-reinforced)
5.0 inches	Aggregate base
Over	Properly prepared natural soils, and/or structural site grading fill extending to suitable stabilized natural soils.*

- * Rigid pavements shall not be placed over non-engineered fills, even if properly prepared.

For dumpster pads, we recommend a pavement section consisting of six and one-half inches of Portland cement concrete, four inches of aggregate base, over properly prepared natural stabilized subgrade or site grading structural fills.

These above rigid pavement sections are for non-reinforced Portland cement concrete. Concrete should be designed in accordance with the American Concrete Institute (ACI) and joint details should conform to the Portland Cement Association (PCA) guidelines. The concrete should have a minimum 28-day unconfined compressive strength of 4,000 pounds per square inch and contain 6 percent \pm 1 percent air-entrainment.

5.8 GEOSEISMIC SETTING

5.8.1 General

In July 2019, the State of Utah adopted the International Building Code (IBC) 2018 but is still using the International Residential Code (IRC) 2015. The IRC 2015 code includes provisions for seismic design under the IBC 2015 code. The IBC 2015 code determines the seismic hazard for a site based upon 2008 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points).

The structures must be designed in accordance with the procedure presented in Section 1613, Earthquake Loads, of the IBC 2015 edition.

5.8.2 Faulting

Based on our review of available literature, no active faults pass through or immediately adjacent to the site.

5.8.3 Soil Class

Based on our experience in the area, for dynamic structural analysis, the Site Class D - Stiff Soil Profile as defined in Table 20.3-1, Site Classification, of ASCE 7-10 can be utilized.

5.8.4 Ground Motions

The IBC 2015 code is based on 2008 USGS mapping, which provides values of short and long period accelerations for the Site Class B boundary for the Maximum Considered Earthquake (MCE). This Site Class B boundary represents a hypothetical sandstone bedrock surface and must be corrected for local soil conditions. The following table summarizes the peak ground and short and long period accelerations for a MCE event and incorporates a soil amplification factor for a Site Class D soil profile in the second column. Based on the site latitude and longitude (40.5292 degrees north and -111.4830 degrees west, respectively), the values for this site are tabulated below:

Spectral Acceleration Value, T Seconds	Site Class B-C Boundary [mapped values] (% g)	Site Class D [adjusted for site class effects] (% g)
Peak Ground Acceleration (Geo-Mean)	25.7	33.1
0.2 Seconds (Short Period Acceleration)	$S_s = 64.2$	$S_{MS} = 82.6$
1.0 Seconds (Long Period Acceleration)	$S_1 = 21.4$	$S_{M1} = 42.2$

The IBC 2015 code design accelerations (S_{DS} and S_{D1}) are based on multiplying the above accelerations (S_{MS} and S_{M1}) for the MCE event by two-thirds ($\frac{2}{3}$).

5.8.5 Liquefaction

The site is located in an area that has been identified by the Utah Geological Survey as having "very low" liquefaction potential. Liquefaction is defined as the condition when saturated, loose, finer-grained sand-type soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event.

Due to the non-liquefiable tufa encountered at the test pit locations, and the coarse nature of the saturated granular soils encountered at Test Pit TP-5, the likelihood of liquefaction at the site during the design seismic event is very low.

5.9 CEMENT TYPES

Laboratory tests indicate that the site soils contain negligible amounts of water-soluble sulfates. Therefore, all concrete which will be in contact with the site soils may be prepared using Type I or IA cement.

5.10 SITE OBSERVATIONS

As stated previously, due to the variable nature of the non-engineered fills encountered, a qualified geotechnical engineer from our staff must aid in verifying that all non-engineered fills have been completely removed prior to the placement of structural site grading fills, footings, or foundations.

5.11 DESIGN INFILTRATION RATE

A conservative design infiltration rate of 30 minutes per inch is recommended for retention basins terminating in the natural silty sand and sandy silt soils encountered. A higher rate may potentially be utilized if infiltration testing is performed in the proposed basin location.

5.12 DESIGN WATER TABLE

The water table of our study was measured at a depth of three feet below existing grade at the lowest portion of the site (Test Pit TP-5). Considering seasonal and long-term groundwater fluctuations, we recommend that a design groundwater table of one foot below existing grade at Test Pit TP-5 be utilized in the design for the structures. Based on the provided topographic survey, this design water table corresponds to an elevation of approximately 5,683 feet. We recommend that all habitable floor slabs be established a minimum of two feet above the design water table.

Job No. 609-004-20
Geotechnical Study
February 27, 2020



We appreciate the opportunity of providing this service for you. If you have any questions or require additional information, please do not hesitate to contact us.

Respectfully submitted,

Gordon Geotechnical Engineering, Inc.

Reviewed By:

A handwritten signature in black ink, appearing to read 'Jordan K. Culp'.

A handwritten signature in black ink, appearing to read 'Patrick R. Emery'.

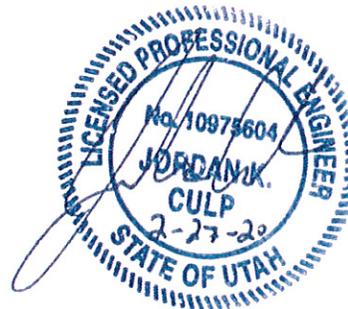
Jordan K. Culp, State of Utah No. 10975604
Professional Engineer

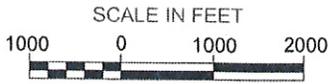
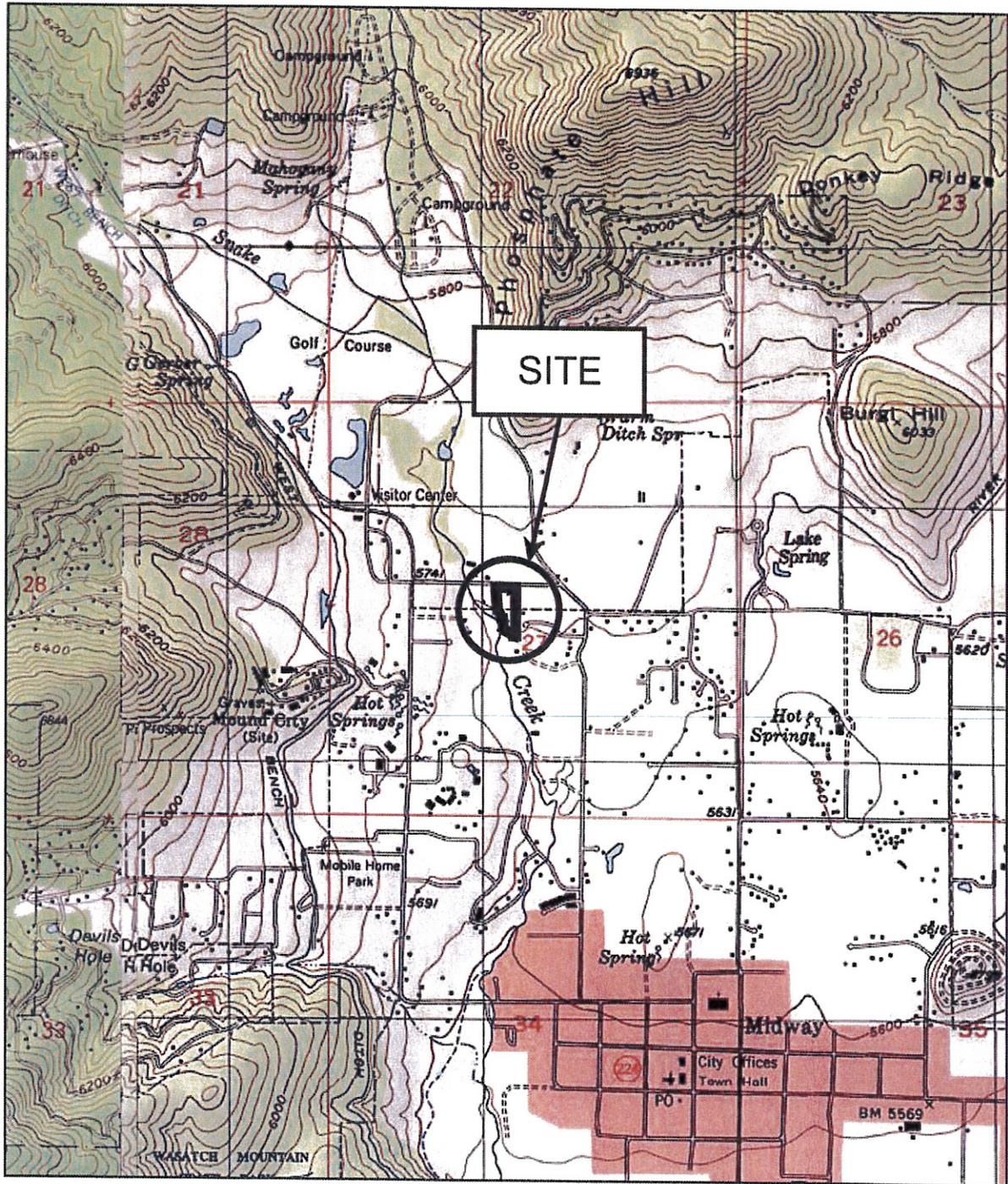
Patrick R. Emery, State of Utah No. 7941710
Professional Engineer

JKC/PRE:sn

- Encl. Figure 1, Vicinity Map
- Figure 2, Area Map
- Figure 3, Site Plan
- Figures 4A through 4E, Log of Test Pits
- Figure 5, Unified Soil Classification System
- Figure 6, Photographs

Addressee (3 + email)





REFERENCE:
USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAPS
TITLED "HEBER CITY, UTAH", DATED 1999 AND
"BRIGHTON, UTAH", DATED 1998

FIGURE 1
VICINITY MAP

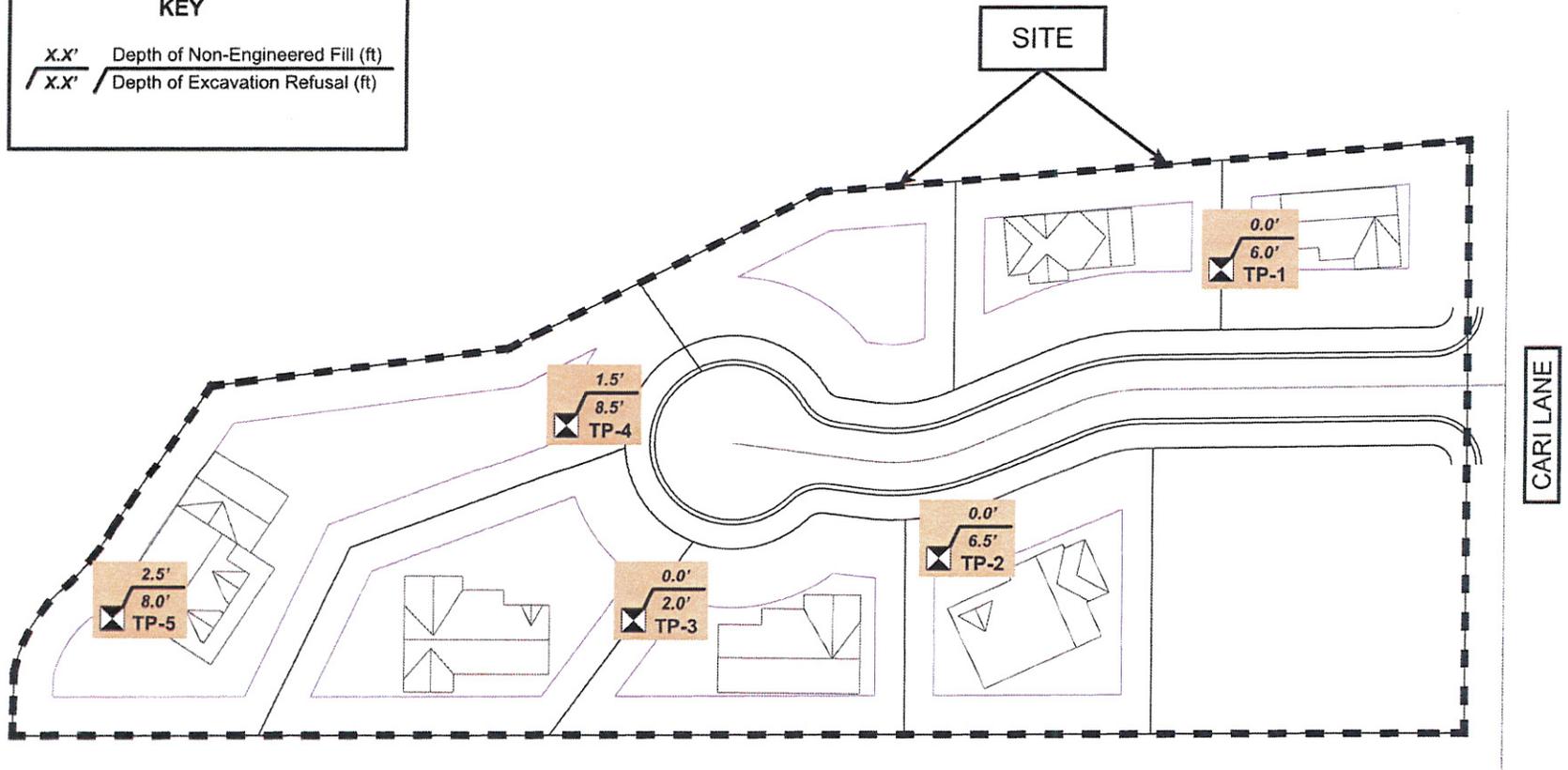


↑ # see Figure 6, Photographs
→

REFERENCE:
ADAPTED FROM AERIAL PHOTOGRAPH
DOWNLOADED FROM 2019 GOOGLE EARTH
IMAGERY DATED JULY 18, 2019

↑ **FIGURE 2
AREA MAP**

KEY	
$\frac{X.X'}{X.X'}$	Depth of Non-Engineered Fill (ft)
$\frac{X.X'}{X.X'}$	Depth of Excavation Refusal (ft)



REFERENCE:
ADAPTED FROM DRAWING PROVIDED
BY CLIENT, NOT DATED

NOT TO SCALE

➔
FIGURE 3
SITE PLAN