November 13, 2025

From the office of:

Idaho Department of Parks and Recreation – Development Bureau
5657 Warm Springs Avenue
Boise, Idaho 83716

Re: IDPR Project No. 350341
Bear Lake State Park – Bear Lake North Beach Redesign
Idaho Department of Parks & Recreation
St. Charles, Idaho

NOTICE OF CHANGES:

This **Addendum No. One** is hereby made a part of the project requirements and contract documents for the referenced project. Be sure to acknowledge this addendum on your Bid/Proposal Form. Failure to do so may subject the bidder to disqualification.

It is the obligation of the General Contractors receiving sub-bids to notify their subcontractors and suppliers of items relating to their bid prior to the bid opening.

GENERAL:

1. SWPP- At the Prebid meeting we were asked to verify the need for a SWPP with this project. The project site is approximately 1.4 acres and adjacent to Bear Lake so it will require a SWPP and DEQ permit. As specified in the construction documents, it is up to the contractor to implement and provide this permit.
2. The ADA access to the restroom was changed from a concrete pathway to striping on the existing asphalt. This is shown in the attached drawing C-103.
3. The edge of the paving in front of the entry booth for the alternate shall extend to the fog boundary line shown in the attached drawing C-101.
4. There was a request for the full geotechnical report. It has been included in the attachments.

ADDITIONAL QUESTIONS:

1. Which areas on the project have the existing undocumented fill?
   A: Please refer to the geotech report. It is not specific in the area that has undocumented fill, so it should be assumed that all the parking lot has undocumented fill.
2. Do we need to plan on digging the whole proposed new asphalt area 24” deep and replacing with imported structural fill?
   A: Yes, minus the roadway section. The undocumented fill may possibly be used as structural fill if the bidder chooses to include the cost for a certified Geotech to evaluate and provide a recommendation that the undocumented fill may be used as structural fill.
3. After we remove the existing asphalt do you expect the contractor to over-ex that whole area by 24” also and import structural fill? And plan on importing new 8” thick roadbase?
   A: Answer is covered under question 2.
4. How thick is the existing asphalt that we need to plan on removing?
   A: It is assumed that the existing varies between 2”-6” thick.

5. Does the state park have a dump location where we can haul and dispose of the undocumented fill?
   A: Yes, there is a location about 7 miles away where the contractor can place the fill. However, the undocumented fill can be used as general fill, and possibly as structural fill if the bidder chooses to include the cost for a certified Geotech to evaluate and provide a recommendation that the undocumented fill may be used as structural fill.
6. Can you specify the requirements/spec for the imported structural fill needed after removing the 24" of undocumented fill?
   A: Refer to ISPWC Division 200 and the Geotech report.
7. Can you clarify the area of addendum 1 for the additional asphalt paving will be?
   A: The area is specified in the attached C-101 drawing.
8. There is a detail on the plan D2 "Scour Protection/Rip Rap, where on the project is this required to be installed?
   A: Refer to the crisscross hatch on C-102 for area.
9. Is there an official website where all documents/addenda are published?
   A: All documents and addenda will be sent to the plan holder's list, the pre-bid attendees, and sent to the plan rooms listed in the bid documents.
10. The drawings refer to some of the standard drawings for concrete details. Could those standard drawings be provided?
    A: The standard drawings are available through ISPWC.

DRAWINGS:

1. Drawings –
   a. C-101 Shows boundary of fog seal and limits of asphalt for Alternate 1.
   b. C-103 Shows the change in ADA access to the restroom from concrete to asphalt striping.

ATTACHMENTS:

1. Pre-Bid Agenda/Notes
2. Pre-Bid Sign In Sheet
3. Drawing – C-101
4. Drawing – C-103
5. Geotechnical Report

END OF ADDENDUM NO. ONE

Idaho Department of Parks and Recreation

PREBID CONFERENCE AGENDA */ NOTES*

Date: November 5, 2025

IDPR Project No: 350341

Project Name: Bear Lake North Bear Redesign

Project Location: Bear Lake State Park

1.0 Project Contacts

Engineer (firm)**: J-U-B**

Project Manager**: Quinn Dance**	Phone**:** 435-770-9920 m
Project Engineer: **Daniel Netzley**	Phone**:** 435-881-8988 m

IDPR:

Project Manager**: Sarah Sundquist**	Phone: 208-514-2472 o
Construction Manager: **Nathan Powers**	Phone: 208-497-1505 m
Bear Lake State Park	Phone: 208-945-2325 o
Park Manager: **Andy Stokes**	Phone: 208-530-3248 m

2.0 Bid Information

- Project issued for bid October 24th 2025
- Bids due Tuesday, **November 18, 2025 at 2pm** MST
- Bids are due at IDPR Regional Office in Idaho Falls. This is a formal bid, bids must be hand delivered or mailed. If mailed allow plenty of time to go through the state mail system, if shipped use: Department of Parks and Recreation, State of Idaho at 4279 Commerce Circle, Ste. B, Idaho Falls, ID 83401

2.1 Construction Time

- This project is expected to be complete by June 1st, 2026. *Work can begin at any time and it is noted that the fall/winter season is favorable for the boat ramp work due to lower water levels.*

2.2 Bidding Requirements

- Contractors must comply with Idaho Code pertaining to the employment of Idaho residents
- Contractors must comply with Idaho Code requiring an alcohol and drug-free workplace
- Contractors must comply with Executive Order 2009-10 pertaining to employment of persons not authorized to work in the United States.
- Contractors and Specialty Contractors must have an Idaho Public Works Contractors license as suitable for the work to be accomplished on this contract.
- The contractor agrees to pay all state sales and use taxes
- Alternates:

    - 1 - Additional Asphalt Paving
    - 2 – Concrete Ramp Extension
- Unit Prices: None specified
- Bidder must include signed affidavit concerning an Alcohol and drug-free workplace with bid.
- Bidder must include signed Bidder's Acknowledgment Statement
- Bid must be returned on the official Bid Proposal included in the Bid Documents.

2.3 Insurance

- Contractor must maintain Contractors Liability Insurance to include Workman's Comp (statutory), Employers Liability ($1,000,000 minimum) and Comprehensive General Liability (minimum of $1,000,000 combined single limits for bodily injury and property damage). Proof of insurance will be requested with the NOI.

2.4 Bonds

- A performance bond and labor and materials bond each in the amount of 100% of the contract amount will be required prior to the start of construction. The bond price shall be included in the bid price.
- A bid bond is required with the bid.

2.5 Permits and Fees.

- The Contractor will obtain and pay for all permits, licenses and fees arising from construction activities. Cost for all permits, licenses and fees should be included in the bid price.
- MVEF – The daily Motor Vehicle Entry fee is waived for the contractor.

2.6 Bid Addenda

- Bid Addenda must be issued 4 calendar days before the bid closing date unless the bid closing date is extended. That would make the last date for Addenda on November 14th.
- Submit any questions by November 12th at 9:00am so that an addenda can be issued.
- Remember to acknowledge addenda on your bid form.

3.0 Site Issues.

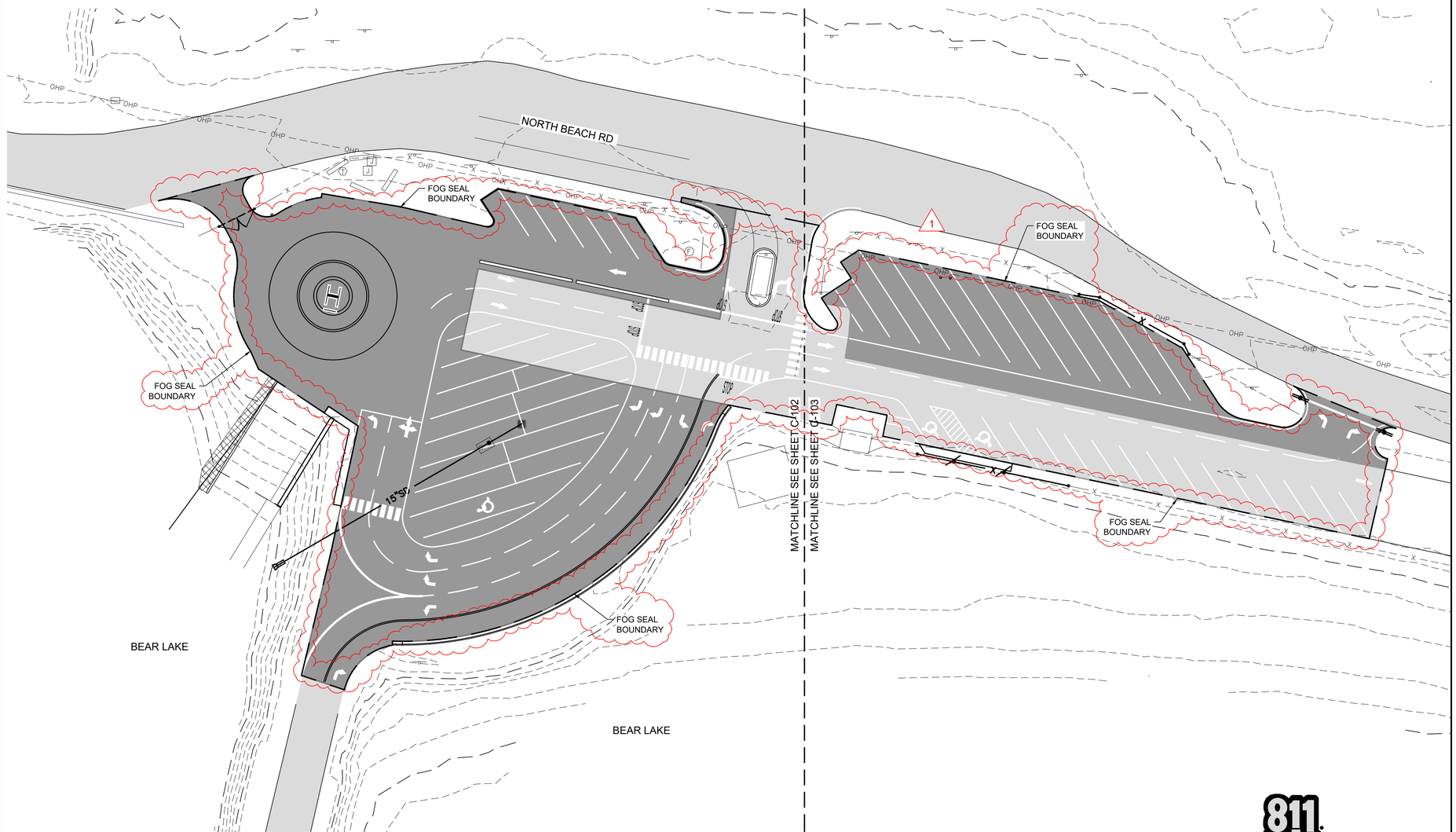
- Site Access – Discuss park hours. *Hours for construction are generally 7am – 6 pm.*
- Use of Site and lay down areas – Discuss location. *The parking area across the street from the boat ramp can be used for staging.*
- Site utilities – Discuss water and power availability. *There are no utilities available for construction use on site.*
- Site security – Discuss security issues. *The site is open to the public and it will be up to the contractor to secure their work area and equipment.*
- Coordination w/ utilities/digline. *The contractor is expected to call digline for a utility locate.*

4.0 Other concerns or issues.

- Discuss construction timing- *Work needs to be completed by June 1st. Construction may begin winter or spring.*
- *SWPP- The site is approximately 1.4 acres and will require a SWPP and DEQ Permit.*

Pre-Bid Site Visit Sign-In
IDPR Project No. 350341
Bear Lake State Park – Bear Lake North Beach Redesign
Wednesday November 5, 2025 – 10:00 AM

Name	Company	Phone & Email
Sarah Sundquist	IDPR	208-514-2472 (O) 208-912-3296 (C) Sarah.Sundquist@idpr.idaho.gov
Andrew Stokes	IDPR	208.530.3248 (C) 208.945.2325 (O) andrew.stokes@idpr.idaho.gov
Ty Jones	Whitaker Construction	435-890-9158 ~~jones~~ TyJones@whitcon.com
Colton Ford	BFC	208 520 6429 Adbtahe@gmail.com
Trey Petersen	MJM Construction	mjmconstruction.utah@gmail.com
NATE HANSEN	DWA CONSTRUCTION	435-760-1659 dwanate.ho@dwaconstruct.com
QUINN DANCE	J-U-B	435 713 9514 qdance@jub.com
TYLER GOODMUNDSON	BEAR LANDSCAPE / BIL	208-569-9817 tyler@bearlakelandscape.com
Nathan Powers	IDPR	208- 497- 1505 Nathan.Powers@idpr.idaho.gov



0 30 60

SCALE IN FEET

OVERALL SITE AND UTILITY NOTES

SP1	CONST. 2' WIDE CURB AND GUTTER (A3 C-501)
SP2	CONST. 6" CONCRETE CURB PER ISPWC DETAIL SD-701A
SP3	CONST. 12" CONCRETE CURB (A4 C-501)
SP4	CONST. 6" THICK CONCRETE SIDEWALK PER ISPWC DETAIL SD-709
SP5	CONST. 2-10' BARRIER ARM SWING GATE (B1 C-501)
SP6	CONST. 8' TALL "STOP" MESSAGE PER MUTCD
SP7	CONST. ARROW MESSAGE PER MUTCD
SP8	CONST. RELOCATED FENCE
SP9	INSTALL HANDICAP SYMBOL (A1 C-501)
SP10	CONST. HELICOPTER MESSAGE (C1 C-501)
SP11	CONST. BOLLARD (A2 C-501)
SP12	CONST. DO NOT ENTER (R5-1) 30"X30" (NORTH) AND STOP SIGN (R1-1) 30"X30" (SOUTH) (B4 C-501)
SP13	CONST. CURB TERMINUS PER ISPWC DETAIL SD-707
SP14	CONST. MODIFIED 12" CONCRETE CURB (B1 C-502)
SP15	ADD ALTERNATE - CONST. 2' WIDE CONCRETE SLAB (B3 C-502)

OVERALL EXISTING NOTES

EX1	PROTECT IN PLACE EXISTING UTILITY STRUCTURE
EX2	PROTECT IN PLACE EXISTING STRUCTURE
EX3	PROTECT IN PLACE EXISTING SIGN
EX4	PROTECT IN PLACE EXISTING CONCRETE BARRIERS
EX5	PROTECT IN PLACE EXISTING BOAT RAMP AND GANGWAY
EX6	PROTECT IN PLACE EXISTING RIPRAP
EX7	PROTECT IN PLACE EXISTING FLAG POLE
EX8	PROTECT IN PLACE EXISTING CURB
EX9	PROTECT IN PLACE EXISTING FENCE
EX10	PROTECT IN PLACE EXISTING BOLLARD

NOTES:
1. ALL UTILITIES ARE TO BE PROTECTED IN PLACE UNLESS CALLED OUT FOR REMOVAL.
2. ISPWC = IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION

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

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

Existing Asphalt Pavement Section (PROTECT IN PLACE)

ASPHALT PAVEMENT SECTION (A3 C-501)

SCOUR PROTECTION/RIPRAP (D2 C-501)

J-U-B ENGINEERS, INC.

J-U-B ENGINEERS, INC.
1047 South 100 West
Suite 180
Logan, UT 84321
Phone: 435.713.9514
www.jub.com

BID SET

PROFESSIONAL ENGINEER LICENSED 6171281 11-07-2025 STATE OF IDAHO DANIEL NETZLEY

NO	DESCRIPTION	DATE	BY
1	ADDENDUM 1	11/07/25	DAN

NORTH BEACH REDESIGN
IDAHO DEPARTMENT OF PARKS AND RECREATION

OVERALL SITE AND UTILITY PLAN

FILE : 57-24-031_C-101X
IDPR PROJ. # : 350341
JUB PROJ. # : 57-24-031
DRAWN/DESIGN BY: DAN
CHECKED BY: QVD
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 11/7/2025

SHEET NUMBER:
C-101

Plot Date:11/7/2025 11:33 AM Plotted By: Daniel Netzley
Date Created:11/7/2025 \\JUB\CENTRAL\CLIENTS\ID\PDR\PROJECTS\57-24-031_NORTHBEACH-BEARLAKE\DESIGN\CAD\SHEETS\57-24-031_C-101X.DWG

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

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

0 20 40
SCALE IN FEET

SITE AND UTILITY NOTES - C-103

- SP2 CONST. 6" CONCRETE CURB PER ISPWC DETAIL SD-701A
- SP4 CONST. 6" THICK CONCRETE SIDEWALK PER ISPWC DETAIL SD-709
- SP6 CONST. 8' TALL "STOP" MESSAGE PER MUTCD
- SP7 CONST. ARROW MESSAGE PER MUTCD
- SP8 CONST. RELOCATED FENCE
- SP9 INSTALL HANDICAP SYMBOL (A1 / C-501)
- SP11 CONST. BOLLARD (A2 / C-501)
- SP12 CONST. DO NOT ENTER (R5-1) 30"X30" (NORTH) AND STOP SIGN (R1-1) 30"X30" (SOUTH) (B4 / C-501)

EXISTING NOTES - C-103

- EX2 PROTECT IN PLACE EXISTING STRUCTURE
- EX3 PROTECT IN PLACE EXISTING SIGN
- EX9 PROTECT IN PLACE EXISTING FENCE

NOTES:
1. ALL UTILITIES ARE TO BE PROTECTED IN PLACE UNLESS CALLED OUT FOR REMOVAL.
2. ISPWC = IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION
3. CONTRACTOR TO CONFIRM ADA COMPLIANCE AROUND ADA PARKING. SEE DETAIL A1, C-502

STRIPING

SWL = SOLID WHITE LINE
SYL = SOLID YELLOW LINE
DYL = SOLID DOUBLE YELLOW LINE
SB = STOP BAR, 12" THICK SOLID WHITE LINE
BWL = BROKEN WHITE LINE
CW = CROSSWALK

Existing Asphalt Pavement Section (PROTECT IN PLACE)

ASPHALT PAVEMENT SECTION (A3 / C-501)

J-U-B ENGINEERS, INC.
J-U-B ENGINEERS, INC.
1047 South 100 West
Suite 180
Logan, UT 84321
Phone: 435.713.9514
www.jub.com

BID SET

PROFESSIONAL ENGINEER LICENSED 617281 11-07-2025 STATE OF IDAHO DANIEL NETZLEY

NO.	DESCRIPTION	BY	DATE
	REVISION		
1	ADDENDUM 1	DAN/QVD	11/07/25

NORTH BEACH REDESIGN
IDAHO DEPARTMENT OF PARKS AND RECREATION

EAST SITE AND UTILITY PLAN

FILE :	57-24-031_C-101X
IDPR PROJ. # :	350341
JUB PROJ. # :	57-24-031
DRAWN/DESIGN BY:	DAN
CHECKED BY:	QVD
ONE INCH	AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED:	11/7/2025

SHEET NUMBER:
C-103

Plot Date:11/7/2025 11:33 AM Plotted By: Daniel Netzley
Date Created:11/7/2025 \\JUBCENTRALCLIENTS\IDJ\IDPRPROJECTS\57-24-031_NORTHBEACH-BEARLAKE\DESIGN\CAD\SHEETS\57-24-031_C-101X.DWG

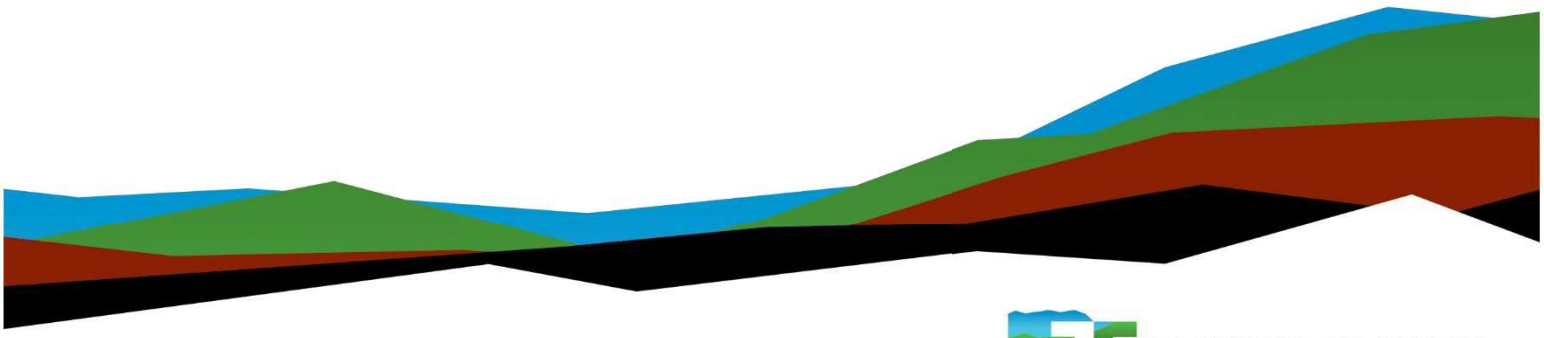
Bear Lake North Shore Boat Ramp – Final

Geotechnical Engineering Report

August 22, 2025 | Terracon Project No. 61255005

Prepared for:

J-U-B Engineers, Inc.
1047 S 100 W, Ste 180
Logan, UT 81321



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August 22, 2025

J-U-B Engineers, Inc.
1047 S 100 W, Ste 180
Logan, UT 81321

Attn: Quinn Dance
P: (435) 713-9514
E: qdance@jub.com

Re: Geotechnical Engineering Report
Bear Lake North Shore Boat Ramp – Final
Bear Lake State Park – North Beach
St. Charles, Idaho
Terracon Project No. 61255005

Dear Mr. Dance:

We have completed the scope of Geotechnical Engineering services for the above-referenced project in general accordance with Terracon Proposal No. P61255005 dated January 23, 2025. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of a concrete ramp and pavement section for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon

Jeremy Koch
Staff Geologist

Charles V. Molthen, P.E. (UT)
Operations Manager III

Lucas J. Marsh, P.E.
Department Manager II

Table of Contents

Figures

Attachments

Note: This report was originally delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks that direct the reader to that section and clicking on the Terracon logo will bring you

back to this page. For more interactive features, please view your project online at **client.terracon.com**.

Refer to each individual Attachment for a listing of contents.

Report Summary

Topic[1]	Overview statement[2]
Project Description	12,000 square foot paved parking for ready to launch vehicles Minimal fill to achieve final grade Minor excavation other than utility installation The traffic for pavement areas: ■ Class III traffic for asphalt pavements (ready to launch parking area) ■ Category C traffic for the Boat Ramp and ready to launch parking area.
Geotechnical Characterization	Ready to launch pavement area shows existing undocumented fill up to 3½ feet deep underlain by sands with varying amounts of gravel. Subsurface conditions at the boat ramp consists of sands with varying amounts of silt throughout the depth of the boring. Groundwater was observed at 2 feet during our exploration at the boat ramp location and not encountered in the pavement area.
Earthwork	■ Existing undocumented fill should be removed to a depth of 24 inches below existing grade. After this removal, the expose soils should be and scarified to a depth of 12 inches. Existing fill can be reused as General Fill and evaluated for reuse as Structural Fill. ■ Subgrade at the boat ramp should be scarified to a depth of 8 inches and re-compacted as noted in **Earthwork**.
Pavements	With subgrade prepared as noted in **Earthwork**. Parking area for passenger vehicles: 5 inches AC over 8 inches Aggregate Base or 6½ inches of PCC over 4 inches of Aggregate Base Boat Ramp: 6½ inches PCC over 8 inches Aggregate Base
General Comments	This section contains important information about the limitations of this geotechnical engineering report.

1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by simply clicking on the topic itself.
2. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes.

Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed boat ramp to be located at Bear Lake State Park – North Beach in St. Charles, Idaho. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- groundwater conditions
- site preparation and earthwork
- demolition considerations
- dewatering considerations
- pavement design and construction

The geotechnical engineering Scope of Services for this project included the advancement of three test borings, laboratory testing, engineering analysis, and preparation of this report.

Drawings showing the site and boring locations are shown in the **Site Location** and **Exploration Plan**, respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included in the boring logs and/or as separate graphs in the **Exploration Results** section.

Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information provided	An email request for qualification was provided by J-U-B on April 26, 2024. A request for scope and fee was sent on January 17, 2025.
Project description	The proposed improvements are located in the Bear Lake State Park – North Beach State Park. The proposed improvements include widening the existing boat ramp and paving a trailer parking area.

Item	Description
Proposed structure	Proposed improvements include: ■ flexible pavement design for the launch ready areas and parking near the ramp ■ rigid pavement design for the widening of the boat ramp ■ boat ramp repair
Grading/slopes	It is understood that the grading in the proposed paved area is to be mostly unaltered. Where the paved boat ramp is to be constructed, clearing, grubbing and fill placement will be required.
Pavements	Paved parking will be constructed on approximately 12,000 square feet of bare ground. The boat ramp will be widened approximately 12 feet west of the existing ramp. The ACI traffic categories and daily truck traffic will consist of: ■ Category C: ready to launch parking and boat ramp. The traffics classification will consist of: ■ Class III: ready to launch parking The pavement design period is 20 years.
Referenced Codes and Standards	Idaho Standards for Public Works Construction, published 2020 (ISPWC)

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel information	The project is located at Bear Lake State Park – North Beach near St. Charles, Idaho. Latitude/Longitude (approximate): latitude 42.1197803, longitude -111.2976258 See **Site Location**

Item	Description
Existing improvements	Existing parking, drive areas, sidewalks, and pit toilets are located within the project vicinity. A 0.2-mile-long boat ramp paved with asphalt and concrete is located on the south side of the proposed improvements.
Current ground cover	A combination of asphalt pavement north of the site, graded bare ground, concrete pavement along the boat ramp, and riprap along the boat ramp edges, including sparse vegetation.
Existing topography	The ready launch areas are relatively flat. A mild slope is observed at the boat ramp locations.

Geotechnical Characterization

We have developed a general characterization of the subsurface conditions based on our review of the subsurface exploration, laboratory data, geologic setting, and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of the site. Conditions observed at each exploration point are indicated in the individual logs. The individual logs can be found in the **Exploration Results** and the GeoModel can be found in the **Figures** attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model layer	Layer name	General description[1]
1	**Undocumented Fill**	Well graded gravel with varying amounts of sand and silty clayey sand with varying amounts of gravel
2	**Native — Fine Grained**	Nonplastic sandy silt, very stiff
3	**Native — Coarse Gained**	Sand with varying amounts of silt and gravel, loose to medium dense

1. Although not noted on the borings logs, topsoil and cobbles will be encountered if the boat ramp is widened.

Groundwater seepage was encountered at approximately 2 feet below the existing grade while drilling at boring B-01; groundwater was not encountered in borings B-02 and B-03. Groundwater conditions may be different at the time of construction. Mapping by the Natural Resources Conservation Service (NRCS) indicates a seasonal high groundwater level within 30 inches of the ground surface. Groundwater conditions may change

because of seasonal variations in rainfall, runoff, and other conditions not apparent at the time of drilling. Long-term groundwater monitoring was outside the scope of services for this project.

Median Grain Size D-50 for Scour Analysis

Grain size distribution testing was performed on the soils near the boat ramp at varying depths from 0 to 10 feet below the existing grade. Several D-50 grain size have been determined and should be used for scour mitigation and riprap design. Grain size distribution curves can be found in the **Exploration and Testing Procedures** section.

Geotechnical Overview

The site appears suitable for the proposed construction based on the geotechnical conditions encountered in the test borings, provided that the recommendations provided in this report are implemented in the design and construction phases of this project.

The subsurface materials generally consisted of sand with varying amounts of silt and gravel extending to the maximum depth of the borings. Groundwater was encountered within the maximum depths of exploration during or at the completion of drilling.

Undocumented fill was encountered at B-02 and B-03 to depths ranging from 3 to 3½ feet below existing grade. The material consisted of well graded gravel with varying amounts of sand, including silty clayey sand with varying amounts of gravel. Existing undocumented fill should be removed to a depth of 24 inches below existing grade. After this removal, the expose soils should be scarified to a depth of 12 inches and replaced and recompacted. Existing fill can be reused as General Fill and evaluated for reuse as Structural Fill.

Effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

Our opinion of pavement section thickness design has been developed based on our understanding of the intended use, assumed traffic, and subgrade preparation recommended herein using methodology contained in ACI 330 "Guide to Design and Construction of Concrete Parking Lots" / NAPA IS-109 "Design of Hot Mix Asphalt Pavements" and adjusted with consideration to local practice. The **Pavements** section includes minimum pavement component thickness.

The recommendations contained in this report are based on the results of field and laboratory testing (presented in the **Exploration Results**), engineering analyses, and our current understanding of the proposed project. The **General Comments** section provides an understanding of the report's limitations.

Earthwork

Earthwork is anticipated to include potential demolition of the existing ramp, clearing, excavations, and engineered fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for pavements.

Demolition

The existing concrete pavement at the existing boat ramp will be demolished prior to placement of the new pavement section. In addition to the concrete removal, any topsoil that is present within the new footprint of the concrete pavement section should be overexcavated by at least 1 foot. Topsoil and cobbles were not encountered but visible in the vicinity of the boat ramp area.

Site Preparation

Prior to placing fill, any existing vegetation, topsoil, and root mats should be removed. Complete stripping of the topsoil should be performed in the proposed parking/driveway areas.

Although no evidence of underground facilities (such as septic tanks, cesspools, basements, and utilities) was observed during the exploration and site reconnaissance, such features could be encountered during construction. If unexpected fills or underground facilities are encountered, such features should be removed, and the excavation thoroughly cleaned prior to backfill placement and/or construction.

Subgrade Preparation

All exposed areas, once properly cleared and benched where necessary, should be scarified to a minimum depth of 12 inches, moisture conditioned as necessary, and compacted per the compaction requirements in this report. Excessively wet or dry material should either be removed or moisture conditioned and recompacted. Compacted Structural Fill/Aggregate Base Course soils should then be placed to the proposed design

grade and the moisture content and compaction of subgrade soils should be maintained until pavement construction.

Based on the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed during construction are anticipated to be relatively workable; however, the workability of the subgrade may be affected by precipitation, repetitive construction traffic, or other factors. On most project sites, the site grading is accomplished relatively early in the construction phase. Fills are typically placed and compacted in a uniform manner. However, as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, or rainfall/snow melt. As a result, the subgrade may not be suitable for construction and corrective action will be required. The subgrade should be carefully evaluated at the time of construction for signs of disturbance or instability. We recommend the subgrade be thoroughly proofrolled with a loaded tandem-axle dump truck prior to final grading. All pavement subgrade areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to placement pavement section materials.

Existing Fill

As noted in **Geotechnical Characterization**, borings B-02 and B-03 encountered previously placed fill to depths ranging from about 3 to 3½ feet. The undocumented fill is considered reliable for support of vehicular loads for the asphaltic parking lot area and the concrete slab for the boat ramp. However, even with the recommended construction procedures, inherent risk exists for the owner that compressible fill or unsuitable material, within or buried by the fill, will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but can be reduced by following the recommendations contained in this report.

If the owner elects to construct the asphaltic or concrete pavement on the existing fill to reduce initial construction costs in exchange for increased potential longer-term distress, the following protocol should be followed. After the planned grading has been completed, the area should be undercut 2 feet below existing grade within the pavement area, and scarified and recompacted to a minimum depth of 12 inches. Following this overexcavation, the entire area should be proofrolled with heavy, rubber tire construction equipment to aid in delineating areas of soft or otherwise unsuitable soil. Once unsuitable materials have been remediated and the subgrade has passed the proofroll test, backfill to finished subgrade elevation can begin. The existing fill that was removed can be reused as General Fill and evaluated for reuse as Structural Fill.

Excavation

We anticipate that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to backfill placement and/or construction.

Soil Stabilization

Methods of subgrade improvement, as described below, could include scarification, moisture conditioning and recompaction, removal of unstable materials and replacement with granular fill (with or without geosynthetics), and chemical stabilization. The appropriate method of improvement, if required, would depend on factors such as schedule, weather, the size of the area to be stabilized, and the nature of the instability. More detailed recommendations can be provided during construction as the need for subgrade stabilization occurs. Performing site grading operations during warm seasons and dry periods would help reduce the amount of subgrade stabilization required.

If the exposed subgrade is unstable during proofrolling operations, it could be stabilized using one of the methods outlined below.

- **Scarification and Recompaction —** It may be feasible to scarify, dry, and recompact the exposed soils. The success of this procedure would depend primarily upon favorable weather and sufficient time to dry the soils. Stable subgrades likely would not be achievable if the thickness of the unstable soil is greater than about 1 foot, if the unstable soil is at or near groundwater levels, or if construction is performed during a period of wet or cool weather when drying is difficult.
- **Crushed Stone —** The use of crushed stone or crushed gravel is a common procedure to improve subgrade stability. Typical undercut depths would be expected to range from about 6 to 12 inches below finished subgrade elevation. The use of high modulus geotextiles (i.e., engineering fabric or geogrid) could also be considered after underground work, such as utility construction, is completed. Prior to placing the fabric or geogrid, we recommend that all below-grade construction, such as utility line installation, be completed to avoid damaging the fabric or geogrid. Equipment should not be operated above the fabric or geogrid until one full lift of crushed stone fill is placed above it. The maximum particle size of granular material placed over geotextile fabric or geogrid should not exceed 1½ inches.

Further evaluation of the need and recommendations for subgrade stabilization can be provided during construction as the geotechnical conditions are exposed.

Fill Material Types

Fill required to achieve design grade should be classified as Structural Fill and General Fill. Structural Fill is material used below or within 10 feet of pavements or constructed slopes. General Fill is material used to achieve grade outside of these areas.

Reuse of On-Site Soil: Excavated on-site soil is suitable for reuse as Structural Fill.

Material property requirements for on-site soil for use as General Fill and Structural Fill are noted in the table below:

Property	General Fill	Structural Fill
Composition	Free of deleterious material	Free of deleterious material
Maximum particle size	6 inches (or ⅔ of the lift thickness)	3 inches
Fines content	Not limited	Less than 20% Passing No. 200 sieve (local standard)
Plasticity	Not limited	Maximum plasticity index of 10
GeoModel layer expected to be suitable[1]	1, 2, 3	1, 3

1. Based on subsurface exploration. Actual material suitability should be determined in the field at the time of construction.

Imported Fill Materials: Imported fill materials should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

Soil type[1, 2]	Materials	Acceptable location for placement
Structural Fill	Structural Fill should consist of 3-inch minus uncrushed aggregates meeting the requirements of Idaho Standards for Public Works Construction (ISPWC) Section 801.	Pavement areas with the exception of those areas where Aggregate Base is specified.

Soil type[1, 2]	Materials	Acceptable location for placement
Aggregate Base	Aggregate Base should meet the requirements for ¾-inch (Type I) crushed aggregate in accordance with ISPWC Section 802.	Base course material for all locations within pavement areas.

1. Structural Fill should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.
2. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.

Fill Placement and Compaction Requirements

Fill should meet the following compaction requirements.

Item	Structural Fill and Aggregate Base	General Fill
Maximum lift thickness	8 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-guided equipment (e.g., jumping jack or plate compactor) is used	Same as Structural Fill
Minimum compaction requirements[1,2]	95% of max	92% of max
Water content range[1]	Low plasticity sand: 0% to +3% of optimum Granular: -3% to +3% of optimum	As required to achieve minimum compaction requirements

1. Maximum density and optimum water content as determined by the standard Proctor test (ASTM D 698).
2. If the granular material is a coarse sand or gravel, of a uniform size, or has a low fines content, compaction comparison to relative density may be more appropriate. In this case, granular materials should be compacted to at least 75% relative density (ASTM D 4253 and D 4254). Materials not amenable to density testing should be placed and compacted to a stable condition observed by the Geotechnical Engineer or representative.

Earthwork Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of grade-supported improvements such as pavement. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to pavement construction.

Pavement is understood to extend beneath the lake water level. To properly pave below the water level, the lake water surface must be lowered or a temporary coffer dam placed with the inside water pumped out.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices and in accordance with any applicable local and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied nor inferred.

Excavations or other activities resulting in ground disturbance have the potential to affect adjoining properties and structures. Our scope of services does not include review of available final grading information or consider potential temporary grading performed by the contractor for potential effects such as ground movement beyond the project limits. A preconstruction/precondition survey should be conducted to document nearby property/infrastructure prior to any site development activity. Excavation or ground disturbance activities adjacent to or near property lines should be monitored or instrumented for potential ground movements that could negatively affect adjoining property and/or structures.

Construction Observation and Testing

The earthwork efforts should be observed by the Geotechnical Engineer (or others under their direction). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil, and pavements), evaluation and remediation of existing fill materials, and proofrolling and mitigation of unsuitable areas delineated by the proofroll.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, as recommended by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 5,000 square feet in pavement areas. Where not specified by local ordinance, one density and water content test should be performed for every 100 linear feet of compacted utility trench backfill, and a minimum of one test should be performed for every 12 vertical inches of compacted backfill.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer's presence into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

Pavements

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

A California Bearing Ratio (CBR) of 8 was used for the subgrade for the asphaltic concrete (AC) pavement designs. The CBR of 8 is the equivalent of a subgrade support value of 200 pci for the Portland cement concrete (PCC) pavement design for the parking area. A CBR of 5 was used for the boat ramp which is the equivalent of a subgrade support value of 140 pci for the Portland cement concrete (PCC) pavement design. The value was empirically derived based on our experience with the well graded gravel subgrade soils and our expectation of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**. A modulus of rupture of 550 psi was used in design for the concrete.

Pavement Section Thicknesses

The following table provides our opinion on minimum thickness for AC sections:

Asphaltic Concrete Design

Layer	Thickness (inches)	
	Ready to Launch Parking[1]	Boat Ramp[1]
AC[2, 3]	5	---[4]
Aggregate Base	8	

1. See **Project Description** for more specifics regarding traffic assumptions.
2. All materials should meet the current ISPWC.
3. A minimum 1.5-inch surface course should be used on AC pavements.
4. AC pavement is not recommended for the boat ramp

The following table provides our estimated minimum thickness of PCC pavements.

Portland Cement Concrete Design

Layer	Thickness (inches)	
	Ready to Launch Parking[1]	Boat Ramp[1]
PCC[2]	6½	6½
Aggregate Base	4	8

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current ISPWC.

Areas for parking heavy vehicles, concentrated turns, and start/stop maneuvers could require thicker pavement sections. Edge restraints (e.g., concrete curbs or aggregate shoulders) should be planned along curves and areas for maneuvering vehicles.

The Aggregate Base layer helps reduce the potential for slab curl, shrinkage cracking, and subgrade pumping through joints. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer. PCC pavement details for joint spacing, joint reinforcement, and joint sealing should be prepared in accordance with ACI 330 and ACI 325.

Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting the concrete in its "green" state typically reduces the potential for

microcracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Microcracking of pavements may lead to crack formation in locations other than the sawed joints and/or reduction of fatigue life of the pavement.

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils, thereby degrading support of the pavement. Islands with raised concrete curbs, irrigated foliage, and low-permeability near-surface soils are particular areas of concern. The civil design for the pavements with these conditions should include features to restrict or collect and discharge excess water from the islands. Examples of such features are edge drains connected to the stormwater collection system, longitudinal subdrains, or other suitable outlets and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate subdrainage or connection to a suitable daylight outlet should be provided to remove water from the Aggregate Base.

Based on the possibility of shallow and/or perched groundwater, we recommend installing a pavement subdrain system to control groundwater, improve stability, and improve long-term pavement performance.

Due to frost-susceptible soils and the possibility of perched groundwater, consideration should be given to installing a pavement subdrain system to control subgrade moisture, improve stability, and improve long-term pavement performance.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic upkeep should be anticipated. Preventive maintenance should be planned and provided for through an ongoing pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Pavement care consists of both localized (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Additional engineering consultation is recommended to determine the type and extent of a cost-effective

program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum of 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of the curb and gutter.
- Place curb, gutter, and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

General Comments

Our analysis and opinions are based on our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, or bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials, or hazardous conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is

solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly affect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others.

Construction and site development have the potential to affect adjacent properties. Such impacts can include damage due to vibration, modification of groundwater/surface water flow during construction and noise or air quality concerns. Evaluation of these items on nearby properties is commonly associated with contractor means and methods and is not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of the surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

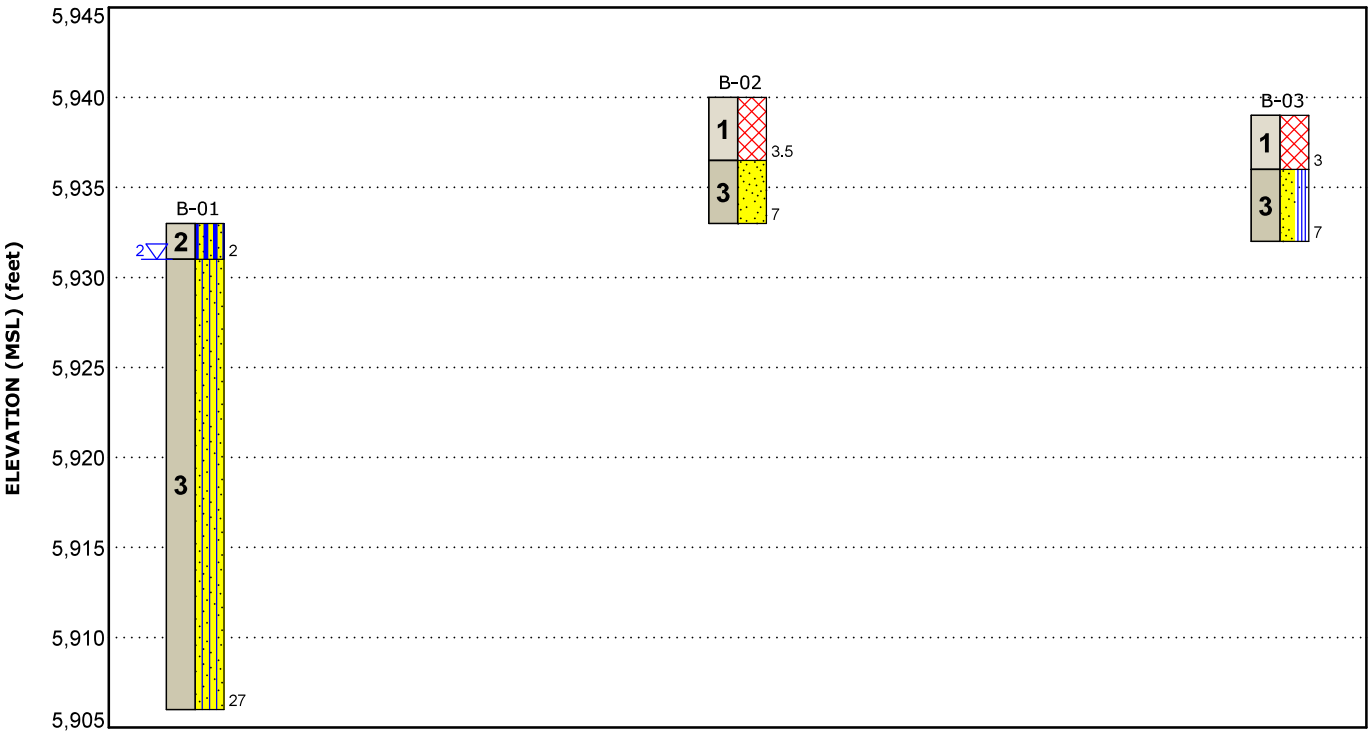
Figures

Contents:

Bear Lake North Shore Boat Ramp
4772 N Beach Rd | St. Charles, ID
Terracon Project No. 61255005

Terracon
6949 S High Tech Dr Ste 100
Midvale, UT

GeoModel



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Fill - Granular	Well graded gravel with varying amounts of sand and silty clayey sand with varying amounts of gravel
2	Native - Fine	Nonplastic sandy silt, very stiff
3	Native - Granular	Sand with varying amounts of silt and gravel, loose to medium dense

Legend

- Sandy Silt
- Silty Sand
- Fill
- Poorly-graded Sand
- Poorly-graded Sand with Silt

▽ First Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

Exploration and Testing Procedures

Field Exploration

Number of borings	Approximate boring depth (feet)	Location
1	27	Boat ramp
2	7	Ready to Launch parking area

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were estimated using Google Earth Pro. If elevations and a more precise boring layout are desired, we recommend borings be surveyed.

Subsurface Exploration Procedures: We advanced the borings with a track-mounted rotary drill rig using continuous hollow-stem flight augers. Seven samples were obtained in the upper 15 feet and at intervals of 5 feet after of boring B-01. Three samples were collected in the upper 5 feet in the pavement borings. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as *N*-values, are indicated in the boring logs at the test depths. A 3-inch O.D. split-barrel sampling spoon with a 2.5-inch I.D. ring-lined sampler was used for sampling in the upper 20 feet. Ring-lined, split-barrel sampling procedures are similar to standard split-spoon sampling procedures; however, blow counts are typically recorded at 6-inch intervals for a total of 12 inches of penetration. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings and bentonite chips after their completion.

The sampling depths, penetration distances, and other sampling information were recorded in the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soils by Mass
- ASTM D422: Standard Test Method for Particle-Size Analysis of Soils
- ASTM D4318: Liquid Limit, Plastic Limit, and Plasticity Index of soils

The laboratory testing program included examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Site Location and Exploration Plans

Contents:

Site Location Plan
Exploration Plan

Note: All attachments are one page unless noted above.

Site Location

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration and Laboratory Results

Contents:

Note: All attachments are one page unless noted above.

Bear Lake North Shore Boat Ramp
4772 N Beach Rd | St. Charles, ID
Terracon Project No. 61255005

Terracon
6949 S High Tech Dr Ste 100
Midvale, UT

Boring Log No. B-01

Location: See Exploration Plan
Latitude: 42.1198° Longitude: -111.2981°

Model Layer	Graphic Log	Depth (Ft.)	Elevation.: 5933 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
2		**SANDY SILT (ML)**, light brown with red, dense			▽		16	44-28-6-4 N=34	23.9		NP	51
		2.0	5931									
3		**SILTY SAND (SM)**, light brown, loose to medium dense, fine to coarse grained					18	5-8-9-10 N=17	24.9		NP	38
		- shells		5			19	6-5-10-10 N=15	27.2			
		- shells, hydrocarbon odor, tan to gray in color					18	2-4-7-11 N=11				
				10			17	5-8-9-11	28.2			16
							20	5-8-3-8 N=11	31.7			
				15			17	5-7-5-4 N=12				
		- color change to light brown, with trace clay		20			19	4-7-8-9 N=15				
				25			13	3-4-4-18	23.8			22
		27.0	5906									
		Boring Terminated at 27 Feet										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
▽ While drilling

Drill Rig
Geoprobe

Hammer Type
Automatic

Driller
DPS

Logged by
MW

Boring Started
02-20-2025

Boring Completed
02-20-2025

Notes
Elevation Reference: Elevations measured in the field using Google Earth Pro

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Bear Lake North Shore Boat Ramp
4772 N Beach Rd | St. Charles, ID
Terracon Project No. 61255005

Terracon
6949 S High Tech Dr Ste 100
Midvale, UT

Boring Log No. B-02

Location: See Exploration Plan

Latitude: 42.1199° Longitude: -111.2975°

Depth (Ft.) Elevation.: 5940 (Ft.)

Model Layer	Graphic Log		Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1		**FILL - WELL GRADED GRAVEL WITH SAND (GW)**, trace clay, red to light orange, fine gravel 3.5 5936.5				5	50/5"				
3		**POORLY GRADED SAND (SP)**, trace gravel, red to light grayish tan, medium dense, fine to coarse grained sand, fine gravel - color change to light brown 7.0 5933	5			18	40-16-10-7 N=26	4.0			
						18	4-4-8-7 N=12				
		Boring Terminated at 7 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Not encountered

Drill Rig
Geoprobe

Hammer Type
Automatic

Driller
DPS

Logged by
MW

Boring Started
02-20-2025

Boring Completed
02-20-2025

Notes
Elevation Reference: Elevations measured in the field using Google Earth Pro

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Bear Lake North Shore Boat Ramp
4772 N Beach Rd | St. Charles, ID
Terracon Project No. 61255005

Terracon
6949 S High Tech Dr Ste 100
Midvale, UT

Boring Log No. B-03

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 42.1197° Longitude: -111.2976° Depth (Ft.) Elevation.: 5939 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
1		**FILL - SILTY CLAYEY SAND WITH GRAVEL (SC-SM)**, red to light brown, fine gravel, medium grained sand 3.0 5936				7	48-50/4"	6.3		20-15-5	22
3		**POORLY GRADED SAND WITH SILT (SP-SM)**, trace gravel, light grayish brown, medium dense, fine gravel, fine to medium grained sand 7.0 5932	5			17	13-15-13-10 N=28				
						17	11-9-8-7 N=17	4.2			10
		Boring Terminated at 7 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Not encountered

Drill Rig
Geoprobe

Hammer Type
Automatic

Driller
DPS

Logged by
MW

Boring Started
02-20-2025

Boring Completed
02-20-2025

Notes
Elevation Reference: Elevations measured in the field using Google Earth Pro

Advancement Method
Hollow Stem Auger

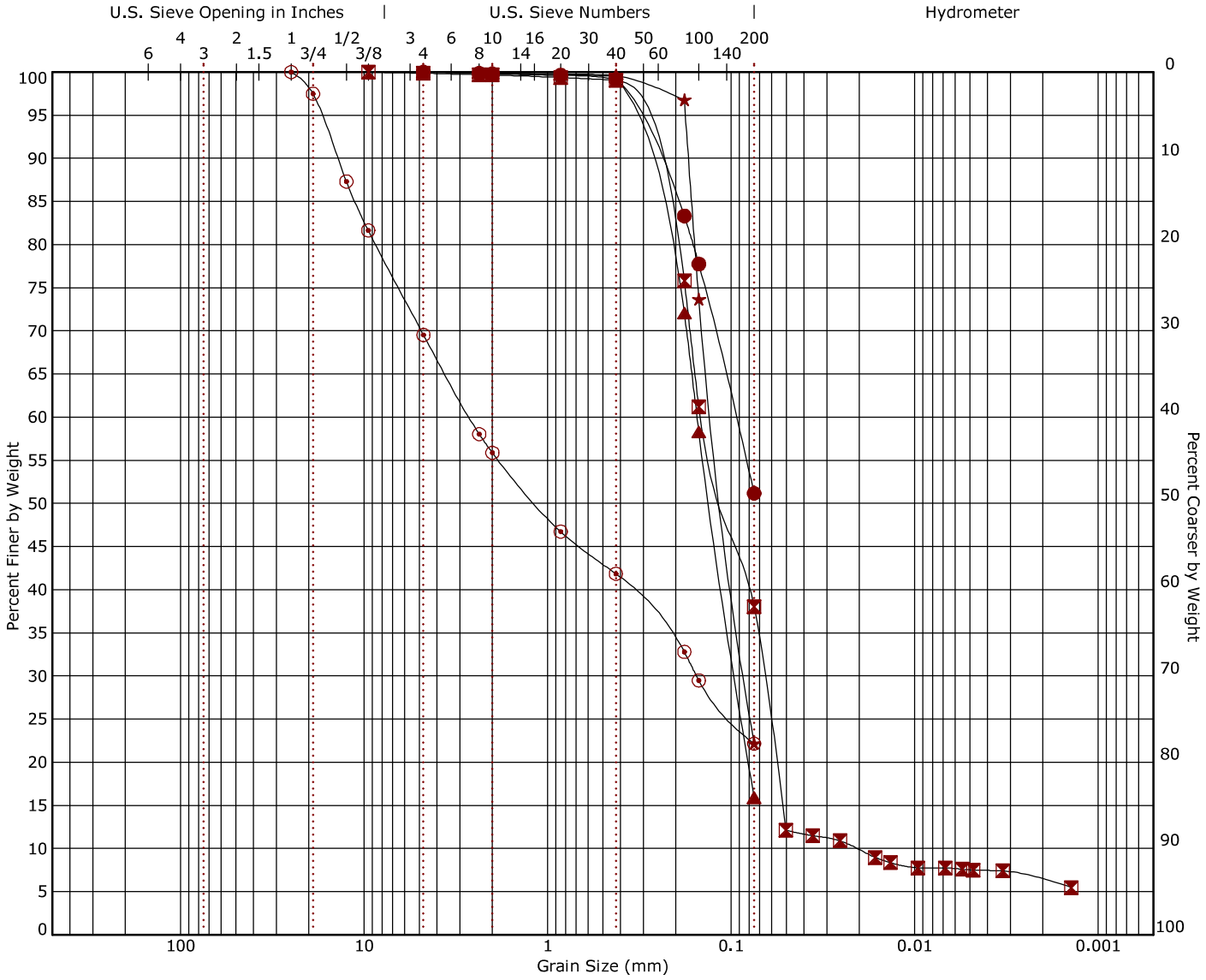
Abandonment Method
Boring backfilled with auger cuttings upon completion.

Bear Lake North Shore Boat Ramp
4772 N Beach Rd | St. Charles, ID
Terracon Project No. 61255005

Terracon
6949 S High Tech Dr Ste 100
Midvale, UT

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID		Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
●	B-01	0 - 2	SANDY SILT	ML	NP	NP	NP		
⊠	B-01	2 - 4	SILTY SAND	SM	NP	NP	NP	1.46	6.97
▲	B-01	10 - 12							
★	B-01	25 - 27							
⊙	B-03	0 - 0.8	SILTY, CLAYEY SAND with GRAVEL	SC-SM	20	15	5		

Boring ID		Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
●	B-01	0 - 2	4.75	0.094			0.0	0.0	48.8	51.2		
⊠	B-01	2 - 4	9.5	0.145	0.066	0.021	0.0	0.1	61.8	38.1	30.5	7.5
▲	B-01	10 - 12	4.75	0.153	0.094		0.0	0.0	84.1	15.9		
★	B-01	25 - 27	4.75	0.125	0.083		0.0	0.0	77.8	22.2		
⊙	B-03	0 - 0.8	25	2.66	0.154		0.0	30.5	47.4	22.2		

Bear Lake North Shore Boat Ramp
4772 N Beach Rd | St. Charles, ID
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Terracon
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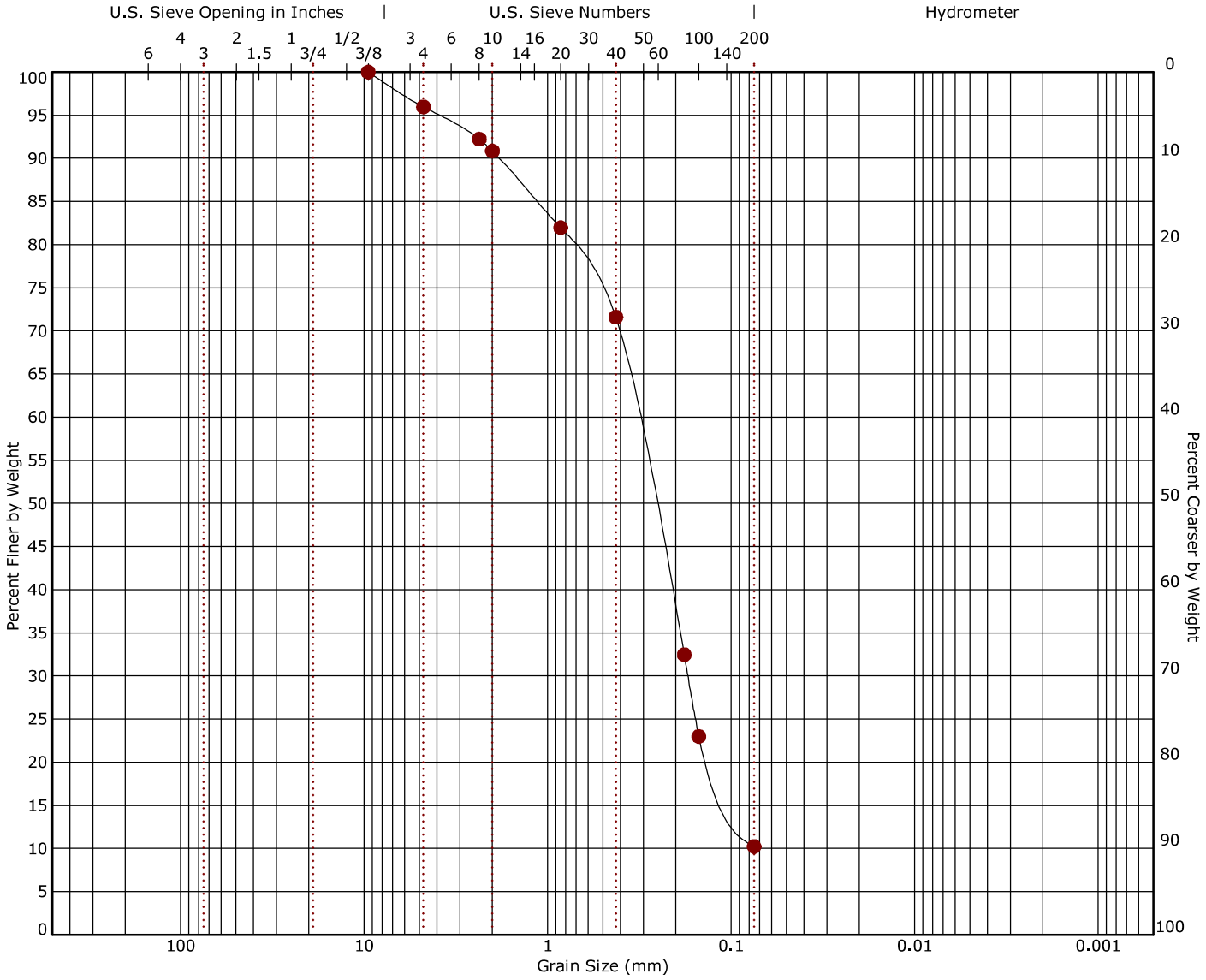
Midvale, UT

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID	Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
B-03	5 - 7						1.21	4.45

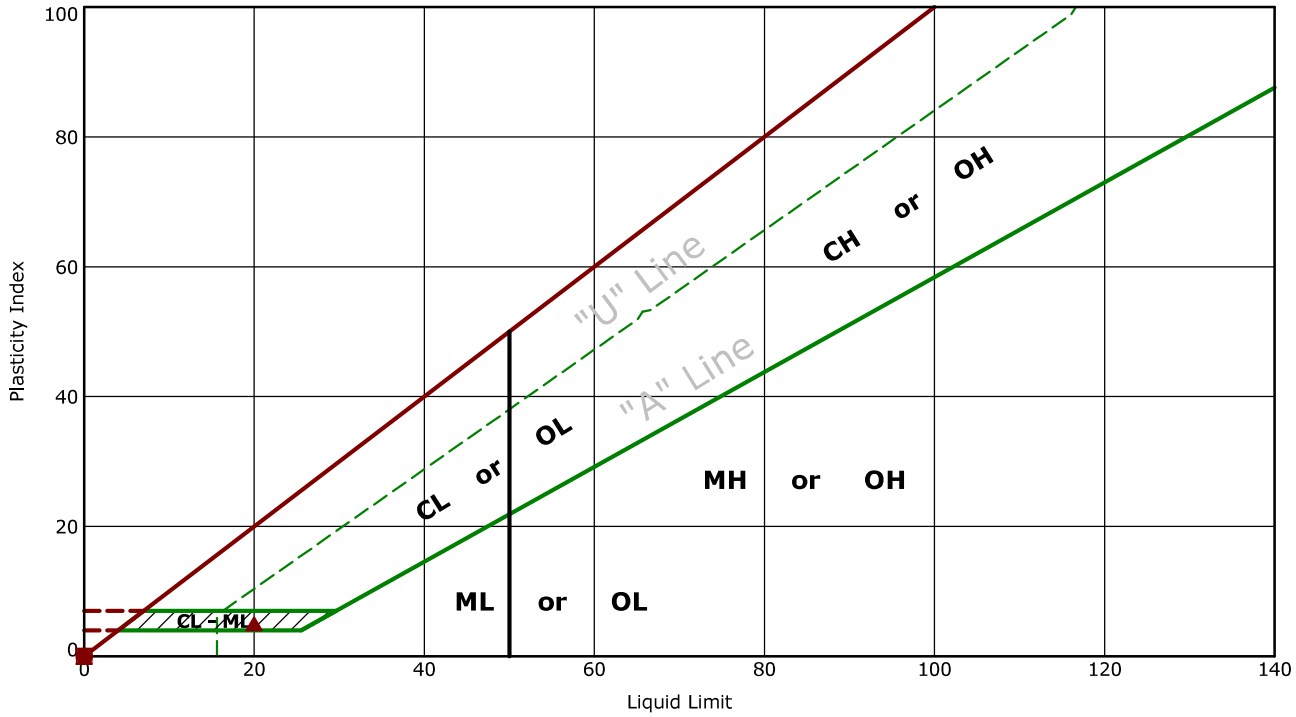
Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
B-03	5 - 7	9.5	0.33	0.172		0.0	4.0	85.7	10.2		

Bear Lake North Shore Boat Ramp
4772 N Beach Rd | St. Charles, ID
Terracon Project No. 61255005

Terracon
6952 S High Tech Dr, Ste B
Midvale, UT

Atterberg Limit Results

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	B-01	0 - 2	NP	NP	NP	51.2	ML	SANDY SILT
⊠	B-01	2 - 4	NP	NP	NP	38.1	SM	SILTY SAND
▲	B-03	0 - 0.8	20	15	5	22.2	SC-SM	SILTY, CLAYEY SAND with GRAVEL

Supporting Information

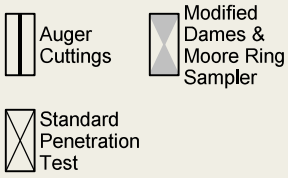
Contents:

Note: All attachments are one page unless noted above.

Terracon
6949 S High Tech Dr Ste 100
Midvale, UT

General Notes

Sampling



Water Level

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

Field Tests

N	Standard Penetration Test Resistance (Blows/Ft.)
(HP)	Hand Penetrometer
(T)	Torvane
(DCP)	Dynamic Cone Penetrometer
UC	Unconfined Compressive Strength
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils
(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

Relative Density	Standard Penetration or N-Value (Blows/Ft.)
Very Loose	0 - 3
Loose	4 - 9
Medium Dense	10 - 29
Dense	30 - 50
Very Dense	> 50

Consistency of Fine-Grained Soils
(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

Consistency	Unconfined Compressive Strength Qu (tsf)	Standard Penetration or N-Value (Blows/Ft.)
Very Soft	less than 0.25	0 - 1
Soft	0.25 to 0.50	2 - 4
Medium Stiff	0.50 to 1.00	4 - 8
Stiff	1.00 to 2.00	8 - 15
Very Stiff	2.00 to 4.00	15 - 30
Hard	> 4.00	> 30

Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If the field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to the group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to the group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to the group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to the group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to the group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to the group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.