Appendix B
Geotechnical Investigation

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812 W. Wabash Avenue, Eureka, CA 95501-2138

Reference: 020025

April 27, 2020

Michael Love
Principal Engineer
Michael Love & Associates, Inc.
P.O. Box 4477
Arcata, CA 95518

Subject: **Limited Geotechnical Evaluation, Tryon Creek Proposed New Bridge and Channel Restoration, Del Norte County, California**

Dear Michael Love:

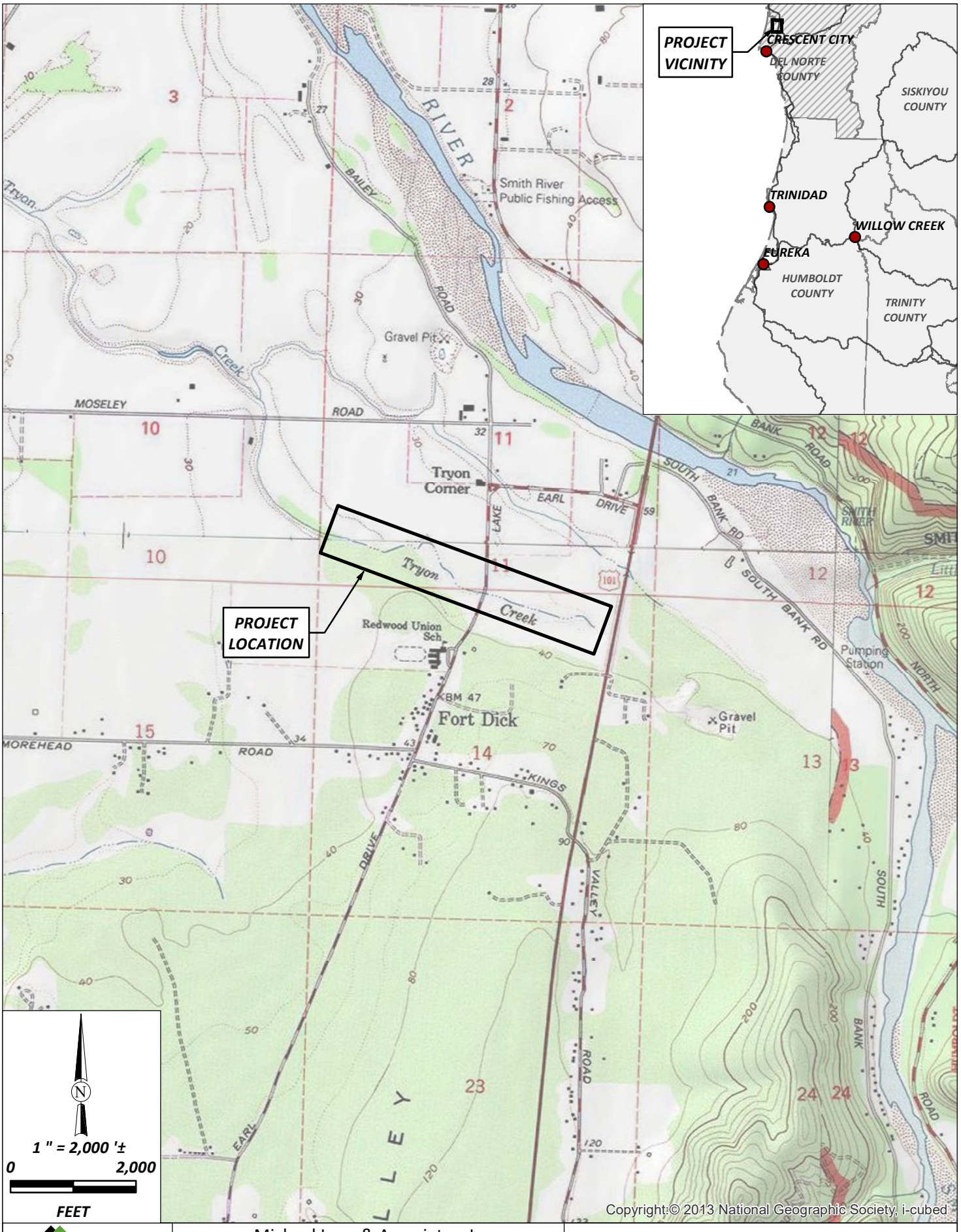
This report presents the results of the limited geotechnical evaluation performed by SHN for the Tryon Creek Proposed Bridge and Channel Restoration project your firm is performing for the Smith River Alliance. The proposed project consists of the removal of an existing 30-inch culvert and replacement with a new approximately 50-foot span bridge at a ranch road stream crossing on Tryon Creek (a salmon-bearing stream), in the community of Fort Dick in Del Norte County, California (Figure 1).

Our understanding of the project is based on the conceptual design prepared by Michael Love & Associates, "Smith River Alliance Plans for Construction of Upper Tryon Creek Enhancement Project, 30% Design," Sheets 1 through 11, dated February 2020. We understand that the approaches for the new bridge will raise the site grade by up to 8 feet and will have an approach gradient of 6 percent. The new channel in this location is anticipated to be 8 feet wide with side slopes at 1.5:1 H:V (horizontal to vertical). Additionally, the project consists of the restoration of approximately 4,700 feet of Tryon Creek to a more natural state and the installation of large wood channel structures (anchored logs and root wads).

This geotechnical investigation is focused on the characterization of the site soils and the assessment of their capacity to support the proposed improvements, specifically the bridge foundation system. This report is intended to inform the design engineer relative to options for developing an appropriate bridge support system, as well as stable approach fills.

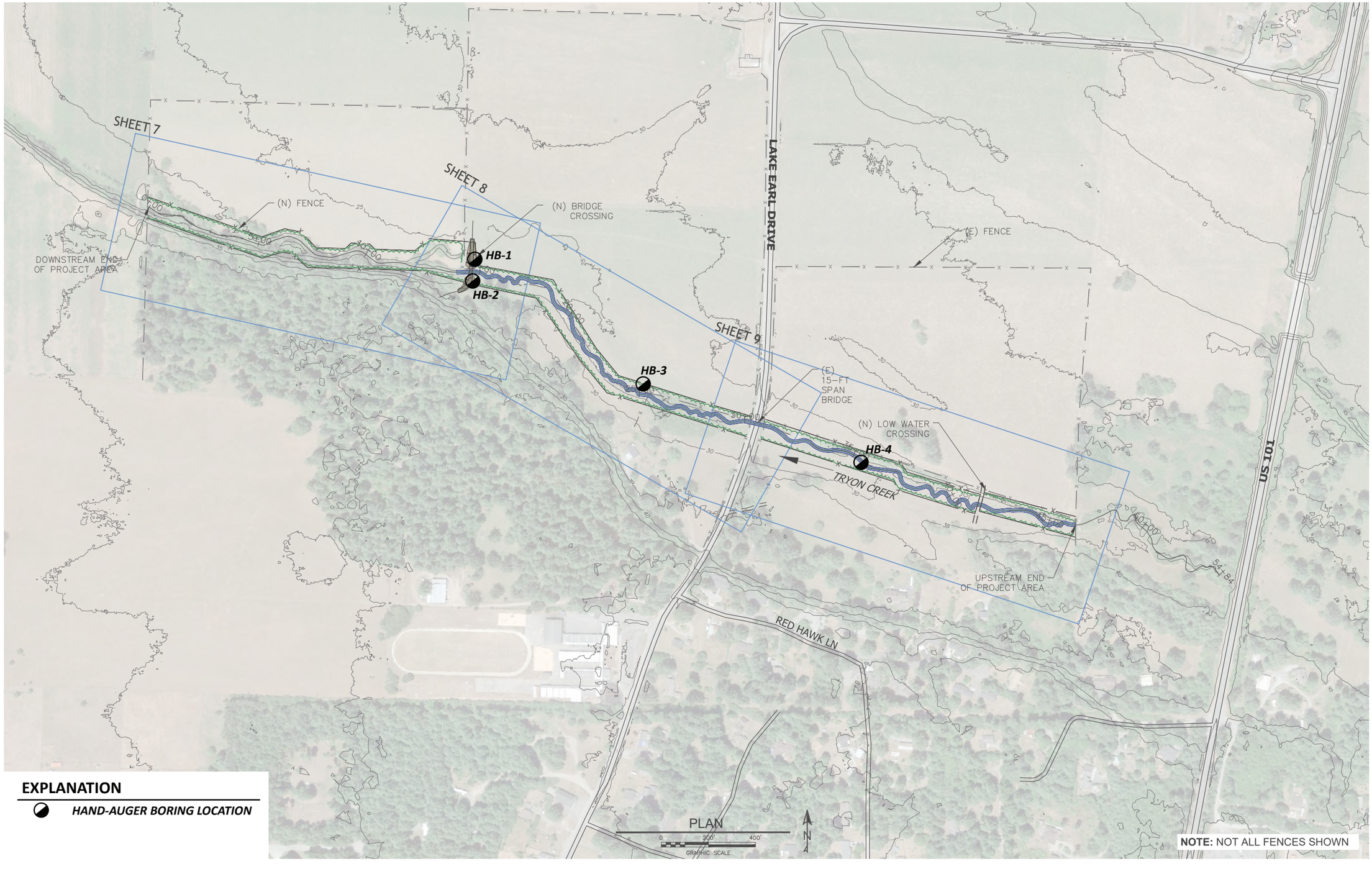
Field Exploration Program

On March 25, 2020, a project geologist from SHN logged and sampled four hand-auger borings at the project site: two in the location of the proposed new bridge approaches and one upstream and one downstream of Lake Earl Drive within the areas of the proposed channel restoration (Figure 2). Borings HB-1 and HB-2 (Figure 3) were advanced at the north and south bridge approaches, respectively. HB-3 was drilled near project station 24+00 north of the existing channel, and HB-4 was drilled downstream of project station 36+00, south of the existing channel. The borings were advanced to the maximum depth explored of 8 feet.



Path: \\eureka\projects\2020\020025-Tryon-Ck-GEO\GIS\PROJ_MXD\Figure1_ProjectLocationMap.mxd User Name: psundberg DATE: 4/9/20, 3:55PM

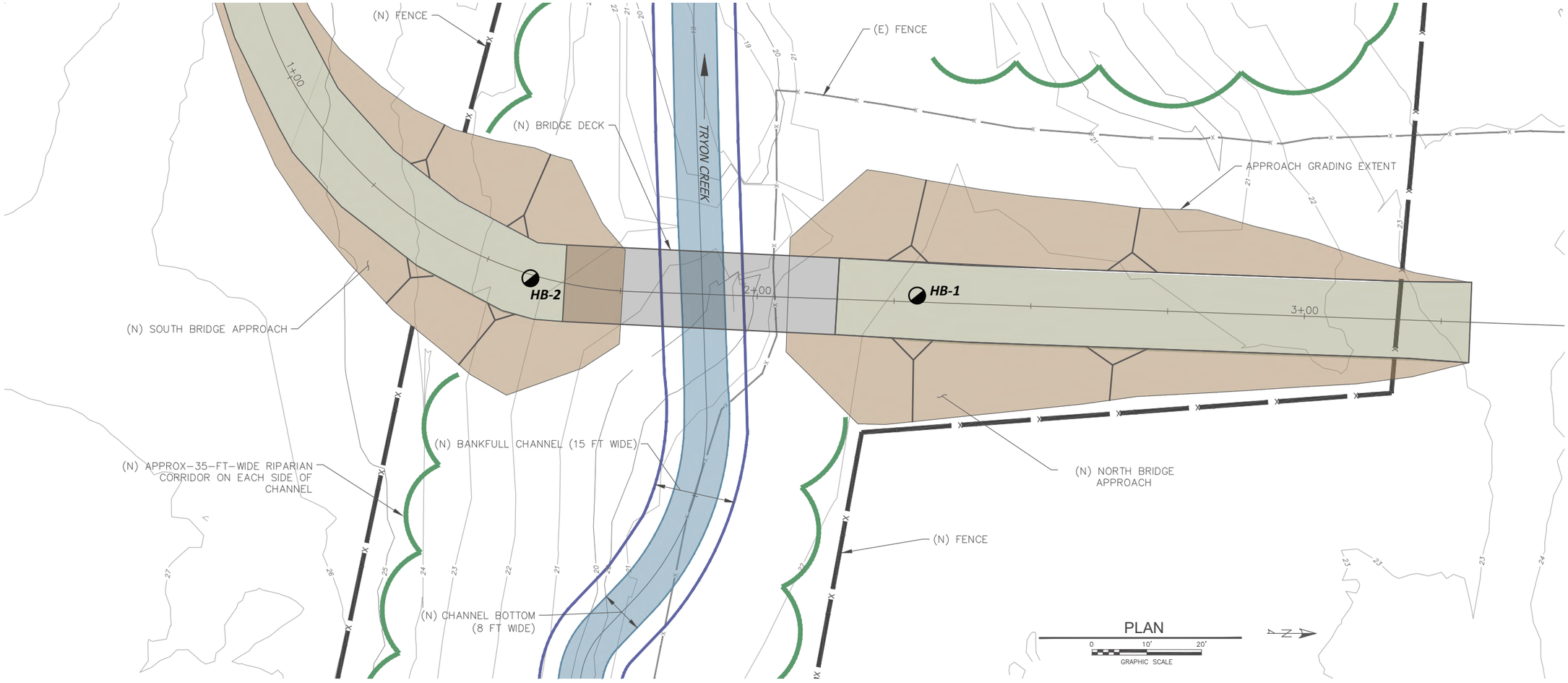
SHN	Michael Love & Associates, Inc. Tryon Creek Soils Report Fort Dick, California	Project Location Map SHN 020025
April 2020	Figure1_ProjectLocationMap	Figure 1

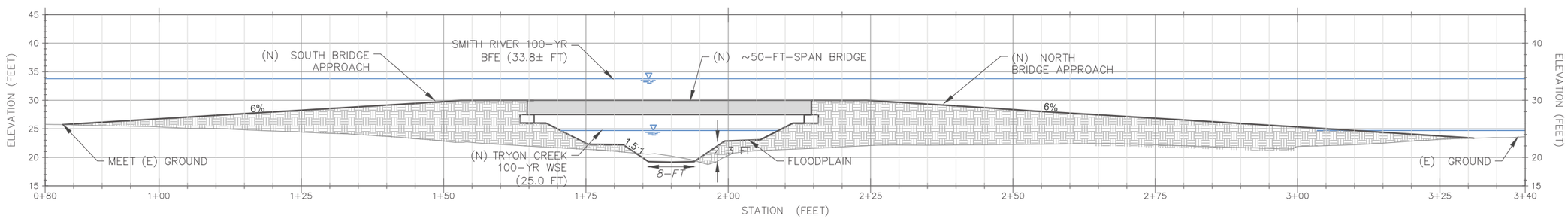


BASEMAP FROM MICHAEL LOVE & ASSOCIATES, INC., UPPER TRYON CREEK ENHANCEMENT PROJECT, "CONCEPT PLAN OVERVIEW", SHEET 6 OF 11, DATED FEBRUARY 2020

Path: \\eureka\projects\2020\020025-Tryon-Ck-GEO\GIS\FIGURES\Figure2_SitePlanMap.ai User Name: psundberg DATE: 4/22/20, 3:04PM

SHN	Michael Love & Associates, Inc. Tryon Creek Soils Report Fort Dick, California	Site Plan Map Showing Hand-Auger Boring Locations SHN 020025
	April 2020 | Figure2_SitePlanMap	Figure 2





CROSS SECTION OF CROSS SECTION OF NEW BRIDGE CROSSING AT 14+63

EXPLANATION

HAND-AUGER BORING LOCATION

BASEMAP FROM MICHAEL LOVE & ASSOCIATES, INC., UPPER TRYON CREEK ENHANCEMENT PROJECT, "BIDGE DETAILS", SHEET 10 OF 11, DATED FEBRUARY 2020

Michael Love & Associates, Inc. Tryon Creek Soils Report Fort Dick, California	Proposed Bridge Details SHN 020025	
April 2020	Figure3_ProposedBridgeMap	Figure 3

Path: \\eureka\projects\2020\020025-Tryon-Ck-GEO\GIS\FIGURES\Figure3_ProposedBridgeMap.ai User Name: psundberg DATE: 4/22/20, 3:55PM

The soils encountered in the hand-auger borings were logged and field classified in general accordance with the Manual-Visual Classification Method (ASTM-International [ASTM] D 2488). During hand-auger drilling, the project geologist evaluated the in situ soil consistency based on equipment performance and the level of effort required to advance the hand auger. Final hand-auger boring logs, presented in Appendix 1, were prepared based on the field logs, examination of samples in the laboratory, and laboratory test results.

Laboratory Testing

Selected soil samples were tested in SHN's certified soils-testing laboratory in Eureka, California to determine index properties of the subsurface materials. Samples were tested for unconfined compression, percent fines (percent passing the #200 sieve), and Atterberg Limits (liquid limit and plasticity index). Results of the laboratory tests are provided at the corresponding sample locations on the hand-auger boring logs (Appendix 1) and are included as Appendix 2.

Site Conditions

The project is located on the Smith River floodplain within the Tryon Creek watershed, west of Highway 101 and approximately 3,100 to 3,400 feet south of the Smith River. The project encompasses an area with elevations between 20 and 30 feet. The proposed restoration project is along roughly 4,700 feet of Tryon Creek. Tryon Creek is straightened and channelized for agricultural purposes approximately 720 feet northwest of Highway 101. A river terrace, roughly 5 to 6 feet higher than the Tryon Creek floodplain, is south of the creek. The northside of Tryon Creek is generally barren, vegetated with grasses, while a mature forest of redwood and fir trees is present along the south side.

The proposed new bridge site is at an existing low water crossing of Tryon Creek that uses a 30-inch concrete culvert. The site of the proposed new bridge spans Tryon Creek from an upper river terrace on the south side of Tryon Creek to the Smith River floodplain on the north side (Figure 3). The difference in elevation from the south side to the existing channel at the proposed bridge location, is approximately 5 feet.

Subsurface Soil and Groundwater Conditions

The results of our subsurface investigation indicate that soils in the project area are consistent with stream and floodplain deposits, including sand, silt, clay, and gravel. Soils at the proposed bridge site were slightly different at the proposed north and south bridge approach locations. The boring at the north approach (HB-1) encountered medium stiff to stiff silt with sand (ML), medium dense silty sand (SM), medium stiff to stiff sandy lean clay (CL), and stiff lean clay with sand (CL). The boring at the south approach (HB-2) encountered medium stiff silt with sand (ML) and medium stiff to stiff lean clay with sand (CL). HB-2 was terminated at 1.75 feet due to auger refusal on coarse gravel.

Boring HB-3 was advanced downstream of Lake Earl Drive in the area proposed for channel restoration. Soils encountered in the boring consist of medium stiff to stiff lean clay with sand (CL), medium stiff to stiff sandy lean clay (CL), and interbedded sandy lean clay (CL) and clayey sand (SC) to the maximum depth explored of 4.75 feet. The boring was terminated due to auger refusal on coarse gravel.

Boring HB-4 was advanced upstream of Lake Earl Drive in the area proposed for channel restoration. Soils encountered in the boring consist of stiff lean clay with sand (CL) and medium stiff sandy lean clay (CL) to the maximum depth explored of 2.75 feet. The boring was terminated due to auger refusal on coarse gravel.

Groundwater was encountered at a depth of 2.75 feet in HB-1, at a depth of 2.25 feet in HB-3, and 2.75 feet in HB-4. Groundwater was not encountered in HB-2. Mottled soils, indicative of historical high groundwater conditions, were observed at a depth of 0.5 feet in HB-1, 1-foot below ground surface (BGS) in HB-3, and beginning at the surface in HB-4. Groundwater levels are expected to fluctuate seasonally, on the order of several feet in elevation. We anticipate groundwater will be encountered during site grading activities, during excavation operations for the new bridge installation, and during excavation and construction of large wood structures for the channel restoration. It is recommended that earth work be done during the dry season.

Conclusions and Recommendations

Conclusions

Based on the results of our field and laboratory investigations, it is our opinion that the project site can be developed as proposed, if our recommendations are followed, and noted conditions and risks are acknowledged.

Soils will be easy to excavate using almost any equipment. Excavated soils will have over-optimum moisture content and will be difficult to dry out. Groundwater should be anticipated within all but the very shallowest excavations.

The primary geotechnical site consideration is the high groundwater and pervasive saturated soil conditions. Due to the potential weak, saturated and compressible soils, placement and compaction of the engineered approach fills is anticipated to be difficult for support of the proposed bridge abutments. Subgrade for the proposed approach fills may need to be stabilized with a layer of triaxial geogrid in order to place properly compacted engineered fill. In addition, we recommend designing the bridge and its abutments to accommodate some settlement. We provide foundation design criteria recommendations for these structures below.

Bridge Foundation

For a bridge span of 50 feet, with a potential of its foundation being submerged during a flood event, consideration should be given to using a two-part system, which includes a stabilization mat and the bridge footing itself. The purpose of the stabilization mat is to distribute the load of the bridge footing

through a flexible, low density, laterally constrained structure that will maintain its integrity while undergoing anticipated significant differential settlement. Figure 4 presents a schematic drawing of this concept.

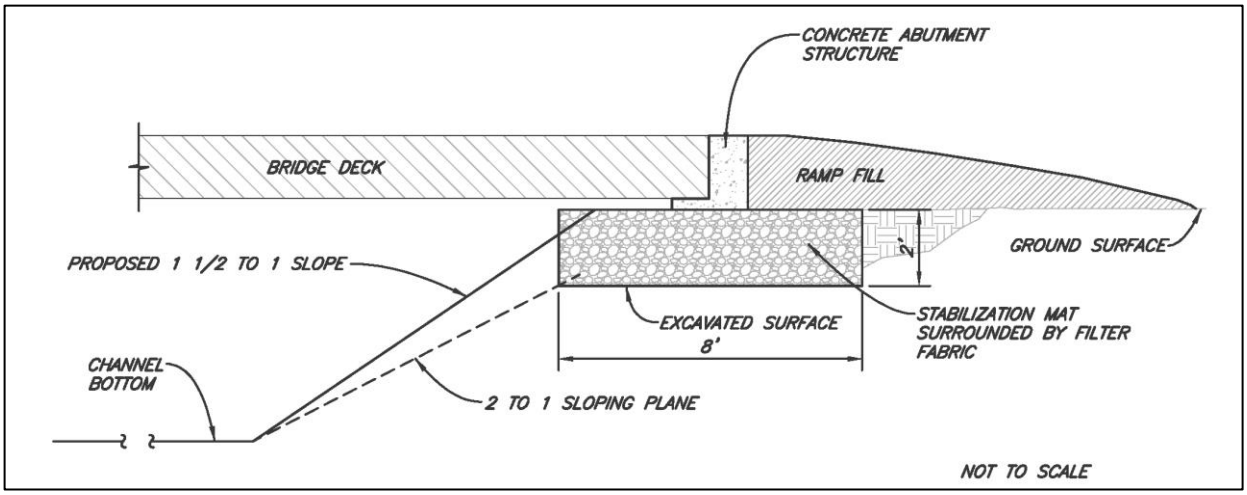


Figure 4. Schematic Drawing of Foundation System for Bridges with Spans Greater Than 30 feet
(actual dimensions will vary)

- We suggest the use of welded wire gabions wrapped with filter fabric, because it will result in minimal excavations, and a relatively easy installation process. Another option would be a laterally constrained multi-layered bed of well-graded crushed aggregate and two layers of geogrid (Mirafi BXG120 or equivalent), one at the base of the crushed rock stabilization mat, and one at mid-height.
- The stabilization mats should be designed for equivalent basal footing loads of 1,000 pounds per square foot (psf) or less.
- The bridge footing load should be centered on the stabilization mat structure and should not exceed a footing load of 2,500 psf.
- The thickness of the stabilization mat should be at a ratio of 1:4 with the basal width. For example, an 8-foot basal-width stabilization mat would be at least 2 feet thick.
- The base of the stabilization mat closest to the channel should be constructed on or behind a sloping plane of 2H:1V (horizontal to vertical) starting at the edge of the channel bottom.

If the suggested stabilization mat is not incorporated in the foundation for the bridge abutments, the allowable bridge footing load should be limited to 1,000 psf.

Site Preparation and Grading

Site preparation includes demolition/removal of existing surface and subsurface improvements, and removal of debris, organics, organic topsoil, loose soil, and any other unsuitable material. Site preparation operations should extend at least 5 feet beyond the limits of improvements. We anticipate that stripping to a depth of about 2 to 4 inches will be required to remove the organics and topsoil.

Deeper stripping may be locally required to remove concentrations of vegetation, such as, brush and tree roots. Where the removal of large trees is required, it will be necessary to remove all major root systems, then fill the excavations with properly placed engineered fill compacted to at least 90 percent relative compaction[1]. The cleared vegetation and debris should be removed from the site, but the stripped topsoil can be stockpiled for reuse in landscape areas.

Any vegetation and organic topsoil with more than 2 percent organic material by dry weight should be removed. The Geotechnical Engineer should observe and approve the prepared site prior to any excavation, subgrade preparation, and placement of fill or improvements.

All areas to receive engineered fill should be stripped of loose and/or soft surface soils and vegetation and benched into firm soil. If zones of weak or saturated soils are encountered during site preparation, they should be removed by further excavation to expose firm natural soil and replaced with engineered fill.

Following stripping and removal of unsuitable subgrade soils, the surface of the newly created excavation should be scarified to a depth of 6 inches and compacted to a minimum of 90 percent relative compaction, with moisture conditioning, as necessary. Following recompaction of the exposed soils, place and compact fill to achieve the planned subgrade elevation. Engineered fill should be placed in loose lifts not exceeding 8 inches in thickness and compacted to a minimum of 90 percent relative compaction. If the surface of the newly created excavation is unable to be compacted to the recommended 90 percent relative compaction, a layer of triaxial geogrid (Tensar TriAx® TX140 Geogrid, or equivalent) should be placed on the subgrade prior to the first layer of engineered fill. Other alternatives may be appropriate based on conditions exposed in the field.

Fill placed in swales and drainage channels should be benched into firm soils along the bottom and sides to provide a firm level surface on which to place new engineered fill. Fill slopes should be placed no steeper than 2H:1V (horizontal to vertical).

Site grading during and shortly after the rainy season is typically difficult and/or uneconomical. Onsite soils will have moisture contents well above optimum and will require greater than normal spreading, mixing, and/or aeration to achieve a near-optimum moisture content suitable for required compaction.

The Contractor shall be responsible for the stability of all temporary excavations and should comply with applicable Occupational Safety and Health Administration (OSHA) regulations (California Construction Safety Orders, Title 8). The Contractor should periodically monitor all open cuts for evidence of incipient stability failures.

[1] Relative compaction refers to the in-place dry density of a soil expressed as a percentage of the maximum dry density of the same soil, as determined by the ASTM D1557 compaction test procedure. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density.

Closure and Limitations

The conclusions and recommendations presented in this report are based on site conditions that we observed at the time of our investigation, data from our subsurface explorations and laboratory tests, and our current understanding of proposed project elements. We have assumed that the information obtained from our limited subsurface explorations is representative of subsurface conditions throughout the site.

We recommend that a representative of our firm confirm site conditions during the construction phase. If subsurface conditions differ significantly from those disclosed by our investigation, we should be given the opportunity to re-evaluate the applicability of our conclusions and recommendations. Some alteration of recommendations may be appropriate.

If the scope of the proposed construction (including the proposed loads, grades, or structural locations) changes from that described in this report, our recommendations should also be reviewed.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we should review our report to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse. This report is applicable only to the project and site studied.

The conclusions and recommendations presented in this report are professional opinions derived in accordance with current standards of professional practice. Our recommendations are tendered on the assumption that design of the improvements will conform to their intent. No warranty is expressed or implied.

The field and laboratory work were conducted to investigate the site characteristics specifically addressed by this report. Assumptions about other site characteristics, such as, hazardous materials contamination, or environmentally sensitive or culturally significant areas, should not be made from this report.

If you have any questions as to our conclusions or recommendations, please call Paul Sundberg at (707) 441-8855 or John Dailey at (707) 484-2639

Respectfully,

SHN

PROFESSIONAL GEOLOGIST
PAUL SUNDBERG
No. 9723
STATE OF CALIFORNIA
4/28/20

REGISTERED PROFESSIONAL ENGINEER
JOHN H. DAILEY
GE 256
EXP: 03/31/22
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Paul R. Sundberg, PG 9723
Project Geologist

John H. Dailey, GE 256
Senior Geotechnical Engineer

PRS:JHD:lam

Appendices:
1. Hand-Auger Boring Logs
2. Laboratory Data

References

Michael Love & Associates, Inc. (February 2020). Smith River Alliance, Plans for Construction of Upper Tryon Creek Enhancement Project, 30% Design. Plan Sheets 1 through 11. Arcata, CA:Michael Love & Associates, Inc.

Hand-Auger Boring Logs

1

PROJECT: Tryon Creek Soils Report
JOB NUMBER: 020025
LOCATION: Proposed North Bridge Approach
DATE DRILLED: 3/25/2020
GROUND SURFACE ELEVATION: 22 Feet
TOTAL DEPTH OF BORING: 8 Feet
EXCAVATION METHOD: Hand Auger
SAMPLER TYPE: Hand-driven tube/Bulk
LOGGED BY: PRS

BORING NUMBER **HB-1**

DEPTH (FT)	BULK SAMPLE	TUBE SAMPLE		USCS	PROFILE	DESCRIPTION	Pocket Pen. (tsf)	Unc. Com. (psf)	% Passing 200	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Index	REMARKS
0.0				ML		SILT with SAND; Grayish-brown, medium stiff to stiff, very fine sand, non-plastic, mottled						Water at the surface
-1.0						slightly mottled at 0.5'						
						slight increase in plasticity	3.0	2224		47	16	
-2.0				ML		SANDY SILT; Brown, medium stiff to stiff, moist to wet, very fine to fine sand, mottled.			69.7			
-3.0				CL		SANDY LEAN CLAY; Brown, medium stiff to stiff, moist, fine sand, non-plastic, mottled.	2.25					3" of recovery
-4.0				CL		LEAN CLAY with SAND; Brown, stiff, moist, very fine sand, non-plastic, mottled.						
-5.0						low plasticity						
-6.0												
-7.0						charcoal and wood at 7'						
-8.0						Boring terminated at a depth of 8 feet. Groundwater encountered at a depth of 2.75 feet. Borehole backfilled with soil cuttings.						
-9.0												
-10.0												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF BORING

PROJECT: Tryon Creek Soils Report

LOCATION: Proposed South Bridge Approach

GROUND SURFACE ELEVATION: 22 Feet

EXCAVATION METHOD: Hand Auger

LOGGED BY: PRS

JOB NUMBER: 020025

DATE DRILLED: 3/25/2020

TOTAL DEPTH OF BORING: 1.75 Feet

SAMPLER TYPE: Hand-driven tube/Bulk

BORING NUMBER **HB-2**

DEPTH (FT)	BULK SAMPLE	TUBE SAMPLE		USCS	PROFILE	DESCRIPTION	Pocket Pen. (tsf)	Unc. Com. (psf)	% Passing 200	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Index	REMARKS
0.0				ML		SILT with SAND; Dark brown, medium stiff, moist, non-plastic, fine sand, roots.						
-1.0				CL		CLAY with SAND; Brown, medium stiff to stiff, moist, fine sand, low plasticity.	3.0	2059				
-2.0						Boring terminated at a depth of 1.75 feet due to auger refusal on coarse gravel. Groundwater not encountered. Borehole backfilled with soil cuttings.						
-3.0												
-4.0												
-5.0												
-6.0												
-7.0												
-8.0												
-9.0												
-10.0												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF BORING

PROJECT: Tryon Creek Soils Report

LOCATION: Downstream of Lake Earl Drive

GROUND SURFACE ELEVATION: 26 Feet

EXCAVATION METHOD: Hand Auger

LOGGED BY: PRS

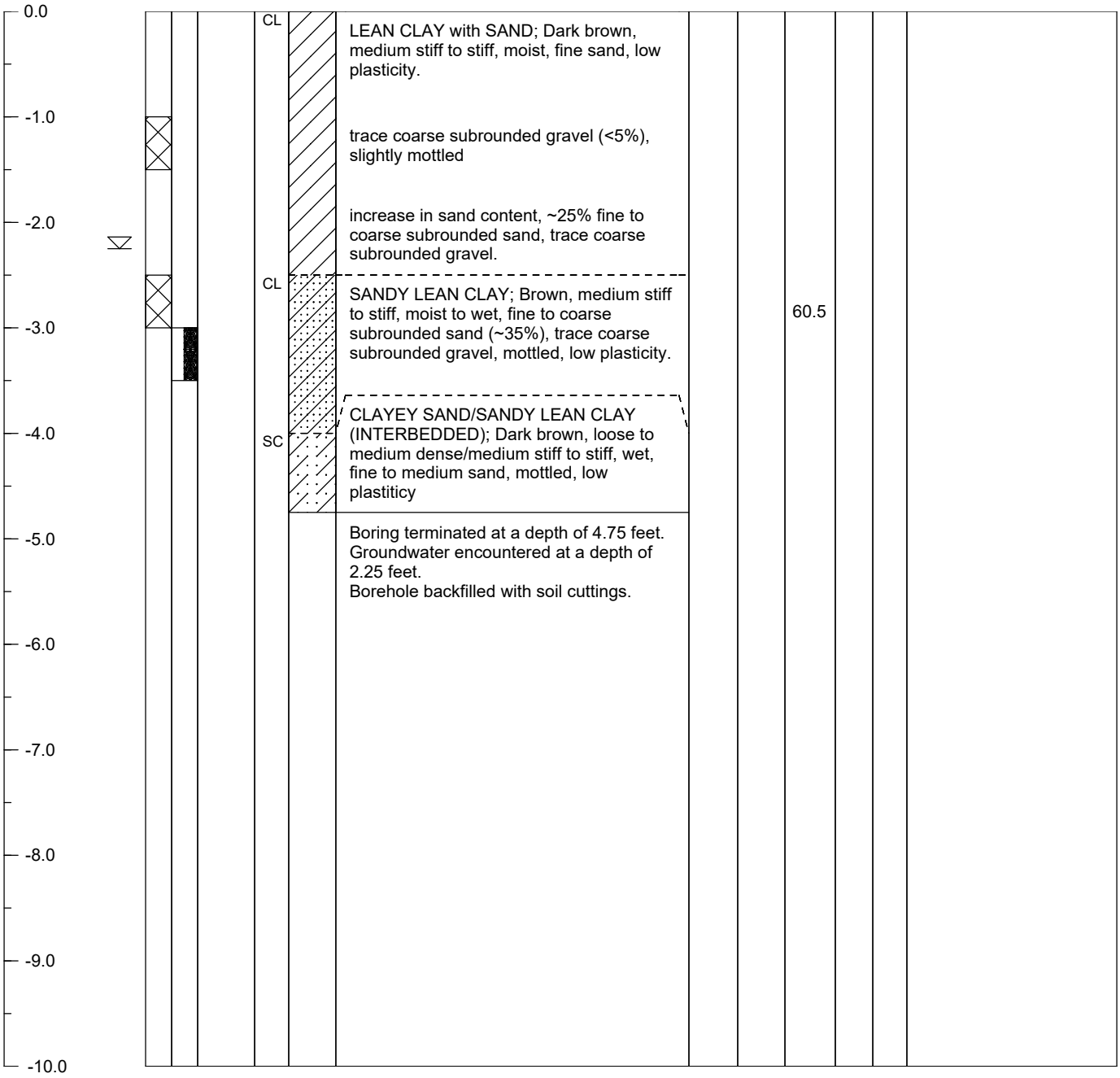
JOB NUMBER: 020025

DATE DRILLED: 3/25/2020

TOTAL DEPTH OF BORING: 4.75 Feet

SAMPLER TYPE: Hand-driven tube/Bulk

BORING NUMBER **HB-3**



DEPTH (FT)	BULK SAMPLE	TUBE SAMPLE		USCS	PROFILE	DESCRIPTION	Pocket Pen. (tsf)	Unc. Com. (psf)	% Passing 200	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Index	REMARKS
0.0				CL		LEAN CLAY with SAND; Dark brown, medium stiff to stiff, moist, fine sand, low plasticity.						
-1.0						trace coarse subrounded gravel (<5%), slightly mottled						
-2.0						increase in sand content, ~25% fine to coarse subrounded sand, trace coarse subrounded gravel.						
-3.0				CL		SANDY LEAN CLAY; Brown, medium stiff to stiff, moist to wet, fine to coarse subrounded sand (~35%), trace coarse subrounded gravel, mottled, low plasticity.			60.5			
-4.0				SC		CLAYEY SAND/SANDY LEAN CLAY (INTERBEDDED); Dark brown, loose to medium dense/medium stiff to stiff, wet, fine to medium sand, mottled, low plastiticy						
-5.0						Boring terminated at a depth of 4.75 feet. Groundwater encountered at a depth of 2.25 feet. Borehole backfilled with soil cuttings.						
-6.0												
-7.0												
-8.0												
-9.0												
-10.0												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF BORING

PROJECT: Tryon Creek Soils Report
LOCATION: Upstream of Lake Earl Drive
GROUND SURFACE ELEVATION: 29 Feet
EXCAVATION METHOD: Hand Auger
LOGGED BY: PRS

JOB NUMBER: 020025
DATE DRILLED: 3/25/2020
TOTAL DEPTH OF BORING: 2.75 Feet
SAMPLER TYPE: Hand-driven tube/Bulk

BORING NUMBER **HB-4**

DEPTH (FT)	BULK SAMPLE	TUBE SAMPLE		USCS	PROFILE	DESCRIPTION	Pocket Pen. (tsf)	Unc. Com. (psf)	% Passing 200	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Index	REMARKS
0.0				CL		LEAN CLAY; Brown, stiff, moist, low plasticity, fine sand, slightly mottled.						
-1.0						grades dark brown, low to medium plasticity.			90.4			
-2.0				CL		SANDY LEAN CLAY; Dark brown, medium stiff, moist to wet, ~35% sand, fine to medium sand.						
-3.0						Boring terminated at a depth of 2.75 feet due to auger refusal on coarse rock. Groundwater encountered at a depth of 2.75 feet. Borehole backfilled with soil cuttings.						
-4.0												
-5.0												
-6.0												
-7.0												
-8.0												
-9.0												
-10.0												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF BORING

2 Laboratory Data

Phone: (707) 441-8855 Email: info@shn-engr.com Web: shn-engr.com
812 W. Wabash Avenue, Eureka, CA 95501-2138

PERCENT PASSING # 200 SIEVE (ASTM - D1140)

Project Name:	Tryon Creek	Project Number:	020025
Performed By:	JMA	Date:	4/14/2020
Checked By:	GDS	Date:	4/22/2020
Project Manager:	NAN		

Lab Sample Number	20-497	20-502	20-504		
Boring Label	HB1	HB3	HB4		
Sample Depth	2-2.5	2.5-3	1.25-1.75		
Pan Number	ss2	ss9	ss14		
Dry Weight of Soil & Pan	645.5	608.0	533.5		
Pan Weight	193.8	196.5	193.4		
Weight of Dry Soil	451.7	411.5	340.1		
Soil Weight Retained on #200&Pan	330.8	359.1	226.0		
Soil Weight Passing #200	314.7	248.9	307.5		
Percent Passing #200	**69.7**	**60.5**	**90.4**		

Lab Sample Number					
Boring Label					
Sample Depth					
Pan Number					
Dry Weight of Soil & Pan					
Pan Weight					
Weight of Dry Soil					
Soil Weight Retained on #200&Pan					
Soil Weight Passing #200					
Percent Passing #200					

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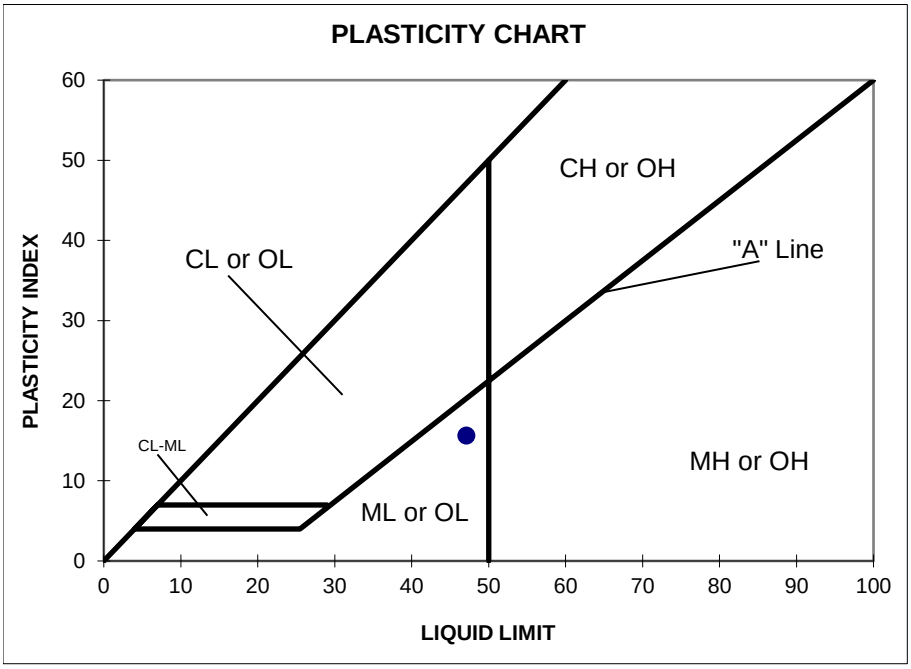
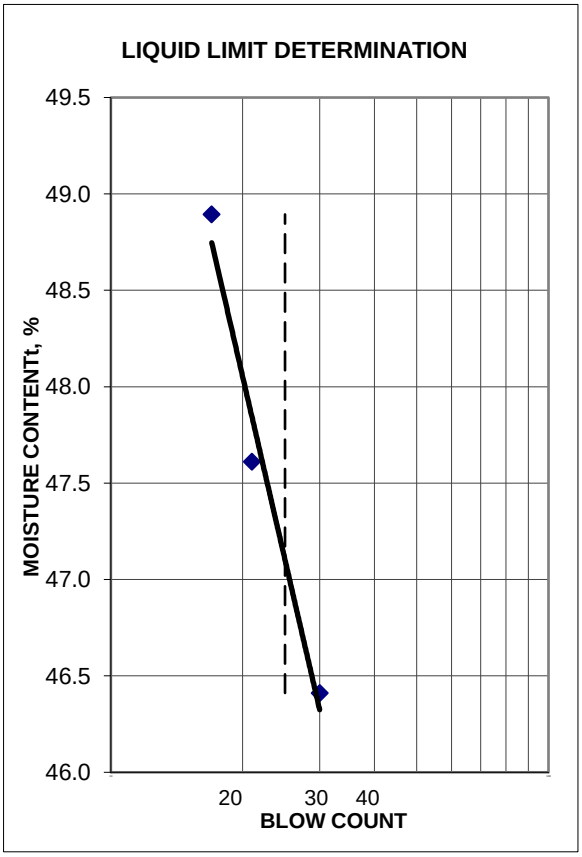
LIQUID LIMIT, PLASTIC LIMIT, and PLASTICITY INDEX (ASTM-D4318)

JOB NAME:	**Tryon Creek**	JOB #:	**020025**	LAB SAMPLE #:	**20-496**
SAMPLE ID:	**HB1 @ 1.25-1.75**	PERFORMED BY:	**JMA**	DATE:	**4/14/2020**
PROJECT MANAGER:	**GDS**	CHECKED BY:	**NAN**	DATE:	**4/22/2020**

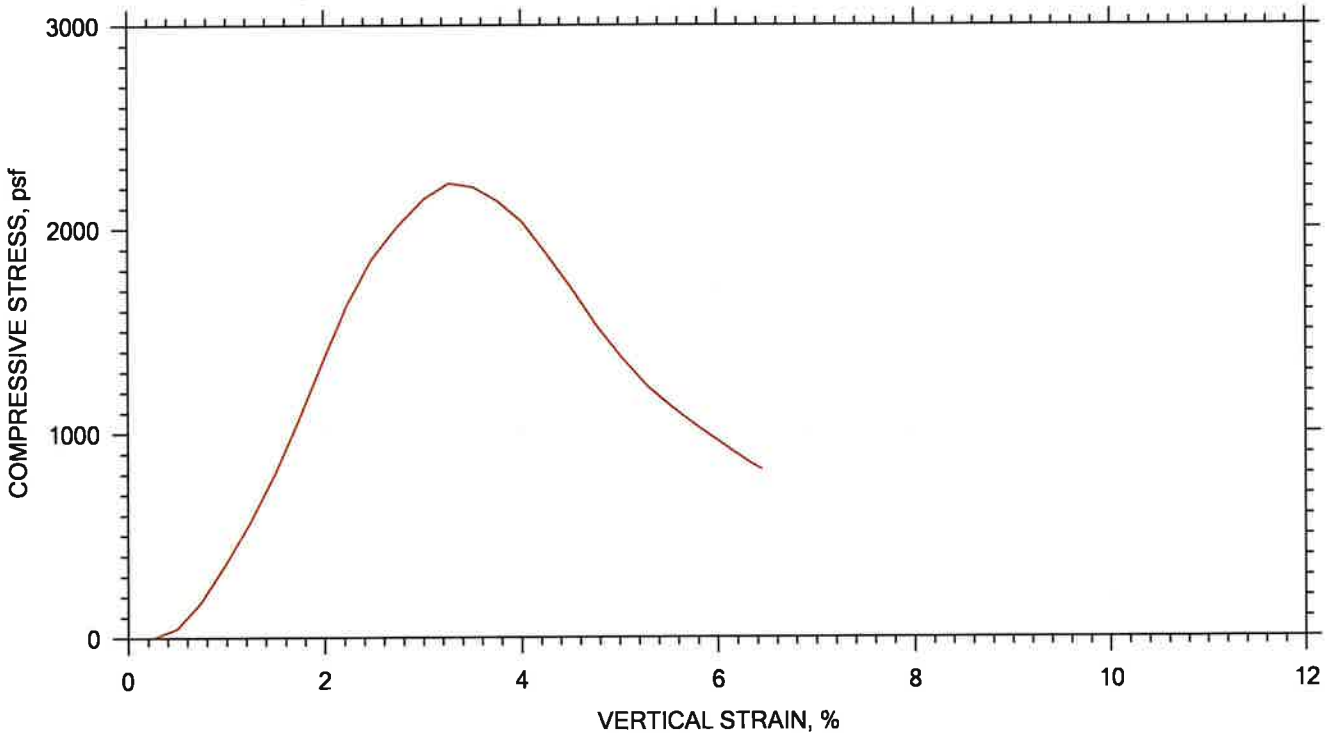
LINE NO.		TRIAL NO. 1	TRIAL NO. 2	TRIAL NO. 1	TRIAL NO. 2	TRIAL NO. 3
A	PAN #	19	20	10	11	12
B	PAN WT. (g)	16.860	17.150	29.570	28.680	29.410
C	WT. WET SOIL & PAN (g)	23.560	23.270	38.750	37.950	36.810
D	WT. DRY SOIL & PAN (g)	21.940	21.820	35.840	34.960	34.380
E	WT. WATER (C-D)	1.620	1.450	2.910	2.990	2.430
F	WT. DRY SOIL (D-B)	5.080	4.670	6.270	6.280	4.970
G	BLOW COUNT	--	--	30	21	17
H	MOISTURE CONTENT (E/F*100)	31.9	31.0	46.4	47.6	48.9

LIQUID LIMIT	**PLASTIC INDEX**	PLASTIC LIMIT
47	**16**	31





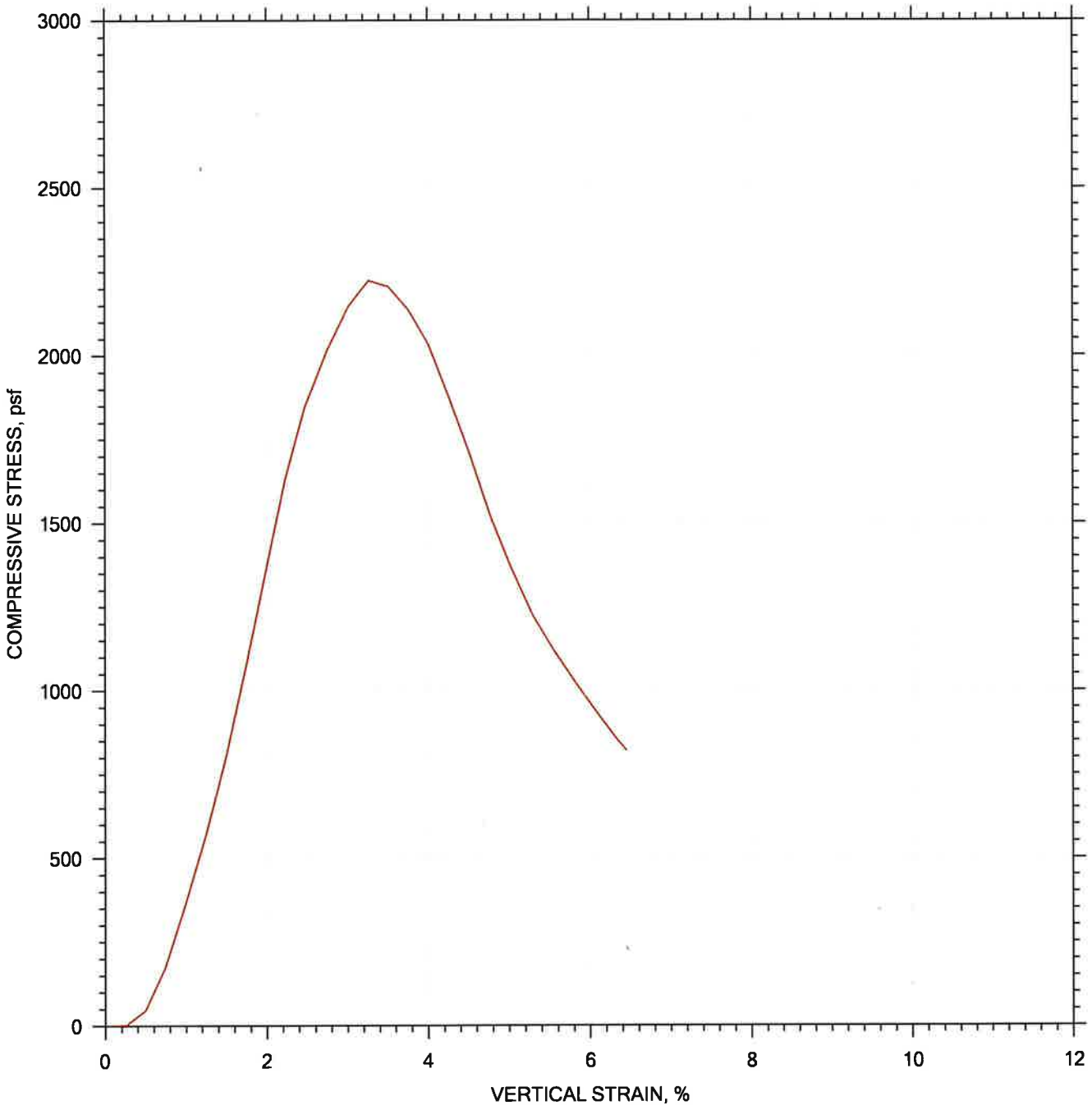
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		20-496			
Initial	Diameter, in	2.38			
	Height, in	5.2			
	Water Content, %	31.32			
	Dry Density, pcf	86.53			
	Saturation, %	91.01			
	Void Ratio	0.912			
Unconfined Compressive Strength, psf		2224			
Undrained Shear Strength, psf		1112			
Time to Failure, min		3.2521			
Strain Rate, %/min		0.01			
Measured Specific Gravity		2.65			
Liquid Limit		47			
Plastic Limit		31			
Plasticity Index		16			
Failure Sketch					

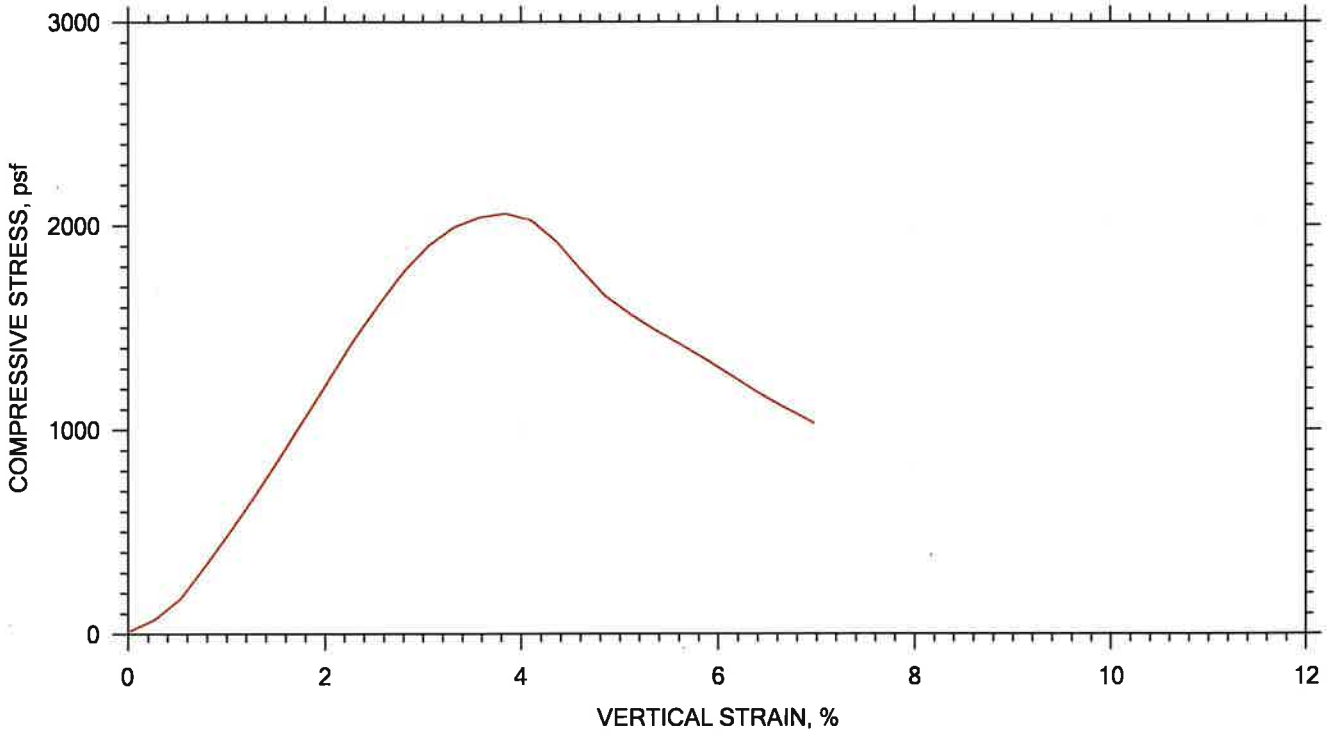
	Project: Tryon	Location:	Project No.: 020025
	Boring No.: HB1 @ 1.25-1.75	Tested By: JMA	Checked By:
	Sample No.: 1	Test Date: 4/10/20	Elevation:
	Test No.: 20-496	Preparation: 2.5" shelby	Depth: 1.25-1.75
	Description: Strong Brown CLAY		
	Remarks:		

UNCONFINED COMPRESSION TEST REPORT



	Project: Tryon	Location:	Project No.: 020025
	Boring No.: HB1 @ 1.25-1.75	Tested By: JMA	Checked By:
	Sample No.: 1	Test Date: 4/10/20	Elevation:
	Test No.: 20-496	Preparation: 2.5" shelby	Depth: 1.25-1.75
	Description: Strong Brown CLAY		
	Remarks:		

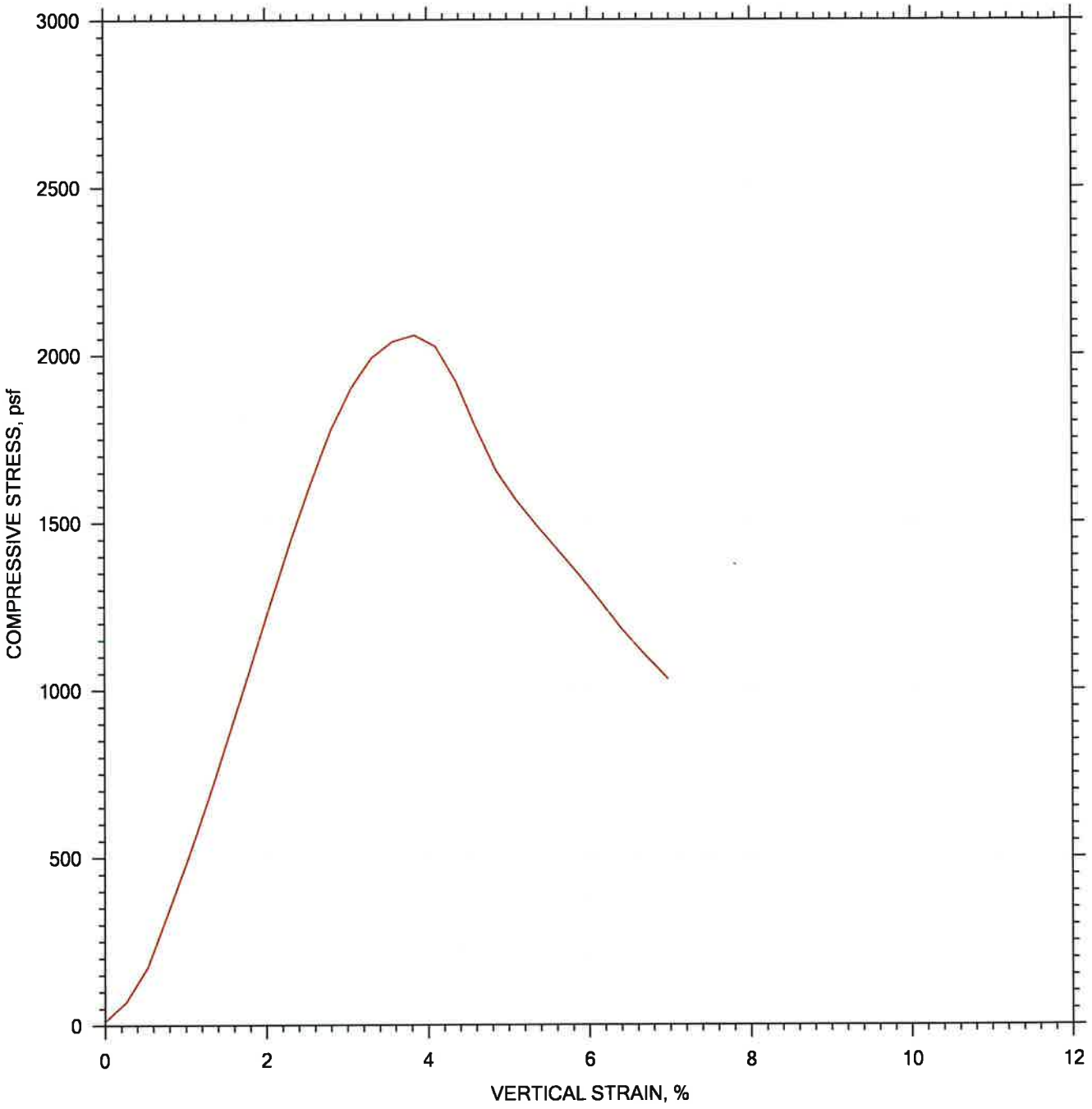
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		20-500			
Initial	Diameter, in	2.38			
	Height, in	5.03			
	Water Content, %	8.73			
	Dry Density, pcf	91.03			
	Saturation, %	28.32			
	Void Ratio	0.817			
Unconfined Compressive Strength, psf		2059			
Undrained Shear Strength, psf		1030			
Time to Failure, min		3.7531			
Strain Rate, %/min		0.01			
Measured Specific Gravity		2.65			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: Tryon	Location:	Project No.: 020025
	Boring No.: HB2 @ 1-1.5	Tested By: JMA	Checked By:
	Sample No.: 1	Test Date: 4/10/20	Elevation:
	Test No.: 20-500	Preparation: 2.5" shelby	Depth: 1-1.5
	Description: Strong Brown CLAY		
	Remarks:		

UNCONFINED COMPRESSION TEST REPORT



	Project: Tryon	Location:	Project No.: 020025
	Boring No.: HB2 @ 1-1.5	Tested By: JMA	Checked By:
	Sample No.: 1	Test Date: 4/10/20	Elevation:
	Test No.: 20-500	Preparation: 2.5" shelby	Depth: 1-1.5
	Description: Strong Brown CLAY		
	Remarks:		