



**REQUEST FOR QUALIFICATIONS (RFQ)
FOR TRENCHLESS PIPELINE CONTRACTORS FOR THE
VENTURA-SANTA BARBARA COUNTIES INTERTIE**

May 29, 2025

Statements of Qualification will be received

via email to bids@casitaswater.com

until Wednesday, July 9 2025, at 4:00 p.m.

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**ANNOUNCEMENT OF PRE-QUALIFICATION PROCEDURES
FOR THE TRENCHLESS CONSTRUCTION PORTION OF
THE VENTURA-SANTA BARBARA COUNTIES INTERTIE PROJECT**

Notice is hereby given that all bidders/subcontractors for the trenchless construction portion of the Ventura-Santa Barbara Counties Intertie must be pre-qualified prior to submitting bids. All Licensed Contractors who intend to submit bids either as the prime contractor or as a subcontractor must fully complete the pre-qualification questionnaire, provide all materials requested herein, and be approved by the District to be on the final Bidders list. No bid will be accepted from a Contractor as a prime contractor or subcontractor who has failed to comply with these requirements. If two or more business entities submit a bid on a project as a Joint Venture or expect to submit a bid as part of a Joint Venture, each entity within the Joint Venture must be separately qualified to bid.

An optional pre-qualification meeting will be held **via Google Meet on Wednesday, June 11, 2025, at 10:30 a.m. PDT**. To request web link and/or call-in information, send a request to Julia Aranda, PE, Engineering Manager, at jaranda@casitaswater.com. Questions regarding this RFQ must be submitted in writing no later than **Friday, June 20, 2025, at 4:00 p.m.**

Prequalification packages will be accepted until **Wednesday, July 9, 2025, at 4:00 p.m.** *via email to bids@casitaswater.com*. No prequalification packages will be accepted after this date and time. It is the Contractor's responsibility to ensure the prequalification package is received prior to the deadline.

Answers to questions contained in the attached questionnaire, information about current bonding capacity, notarized statement from surety, and the most recent reviewed or audited financial statements, with accompanying notes and supplemental information, are required. Casitas will use these documents as the basis of rating Contractors in respect to the size and scope of contracts upon which each Contractor is qualified to bid. Casitas reserves the right to check other sources available. Casitas' decision will be based on objective evaluation criteria.

Casitas reserves the right to adjust, increase, limit, suspend or rescind the pre-qualification rating based on subsequently learned information. Contractors whose rating changes are sufficient to disqualify them will be notified and given an opportunity for a hearing consistent with the hearing procedures described below for appealing a pre-qualification rating.

While it is the intent of the pre-qualification questionnaire and documents required therewith to assist Casitas in determining bidder responsibility prior to bid and to aid Casitas in selecting the lowest responsible bidder, neither the fact of pre-qualification, nor any pre-qualification rating, will preclude Casitas from a post-bid consideration and determination of whether a bidder has the quality, fitness, capacity and experience to satisfactorily perform the proposed work, and has demonstrated the requisite trustworthiness.

The pre-qualification applications should be submitted under seal and marked "CONFIDENTIAL" to jaranda@casitaswater.com.

The pre-qualification applications (questionnaire answers and financial statements) submitted by Contractors are not public records and are not open to public inspection. All information provided will be kept confidential to the extent permitted by law. However, the contents may be disclosed to third parties for the purpose of verification, or investigation of substantial allegations, or in the appeal hearing. State law requires that the names of contractors applying for pre-qualification status shall be public records subject to disclosure, and the first page of the questionnaire will be used for that purpose.



Each questionnaire must be signed under penalty of perjury in the manner designated at the end of the form, by an individual who has the legal authority to bind the Contractor on whose behalf that person is signing. If any information provided by a Contractor becomes inaccurate, the Contractor must immediately notify [Public Entity] and provide updated accurate information in writing, under penalty of perjury.

Casitas reserves the right to waive minor irregularities and omissions in the information contained in the pre-qualification application submitted, to make all final determinations, and to determine at any time that the pre-qualification procedures will not be applied to a specific future public works project.

Contractors who submit a complete pre-qualification application will be notified of their qualification status no later than ten (10) business days after submission of the information.

Casitas may refuse to grant pre-qualification where the requested information and materials are not provided. There is no appeal from a refusal for an incomplete or late application, but re-application for a later project is permitted. The closing time for bids will not be changed in order to accommodate supplementation of incomplete submissions, or late submissions.

Where a timely and completed application results in a rating below that necessary to pre-qualify, an appeal can be made. An appeal is begun by the Contractor delivering notice to Casitas of its appeal of the decision with respect to its pre-qualification rating, no later than ten (10) business days prior to the closing time for the receipt of bids for this public works project. Without a timely appeal, the Contractor waives any and all rights to challenge the decision of Casitas, whether by administrative process, judicial process or any other legal process or proceeding.

If the Contractor gives the required notice of appeal and requests a hearing, the hearing shall be conducted so that it is concluded no later than five business days after Casitas' receipt of the notice of appeal, and no later than five business days prior to the last date for the receipt of bids on the project. The hearing shall be an informal process conducted by a panel to whom the Board of Directors has delegated responsibility to hear such appeals (the "Appeals Panel"). At or prior to the hearing, the Contractor will be advised of the basis for Casitas' prequalification determination. The Contractor will be given the opportunity to present information and present reasons in opposition to the rating. Within one day after the conclusion of the hearing, the Appeals Panel will render its decision. It is the intention of Casitas that the date for the submission and opening of bids will not be delayed or postponed to allow for completion of an appeal process.

Note: A contractor may be found not pre-qualified for bidding on a specific public works contract to be let by Casitas, or on all contracts to be let by Casitas until the contractor meets Casitas' requirements. In addition, a contractor may be found not pre-qualified for either:

- (1) Omission of requested information or
- (2) Falsification of information



INTRODUCTION

Casitas Municipal Water District (Casitas or District) is requesting Statements of Qualifications (SOQ) from construction contractors to perform trenchless pipeline construction for the Ventura-Santa Barbara Counties Intertie project.

Casitas is a Municipal Water District established in 1952, providing potable water to Western Ventura County including approximately 6,000 agricultural, commercial, and residential customers. The District boundaries (Figure 1-1) encompass the City of Ojai, Upper Ojai, the Ventura River Valley area, the City of Ventura (west of Mills Road), and the beach communities of Solimar, La Conchita, and Rincon.

Casitas operates the Robles Diversion Facility, Robles Canal, Lake Casitas, Casitas Dam (owned by the US Bureau of Reclamation), Lake Casitas Recreation Area, Casitas Water Treatment Plant, as well as 14 steel tanks totaling 30 million gallons of storage, nine pump stations, and approximately 160 miles of pipelines.

Casitas acquired the Ojai Water System in 2017, which obtains its water supplies from local wells in the Ojai Valley Basin and from Casitas and serves approximately 2,800 customers. The Ojai Water System includes 32 miles of pipelines, five tanks totaling 1.544 million gallons of storage, five booster pump stations, five active groundwater wells, and an iron and manganese treatment facility.

An optional pre-qualification meeting will be held via Google Meet on **Wednesday, June 11, 2025, at 10:30 a.m.** To request conference call information, send a request to Julia Aranda, PE, Engineering Manager, at jaranda@casitaswater.com. Questions regarding this RFQ must be submitted in no later than **Friday, June 20, 2025, at 4:00 p.m.** to jaranda@casitaswater.com.

Prequalification packages will be accepted until **Wednesday, July 9, 2025, at 4:00 p.m.** via email to bids@casitaswater.com. No prequalification packages will be accepted after this date and time. It is the Contractor's responsibility to ensure the prequalification package is received prior to the deadline.

There will be no formal opening of the pre-qualification packages received. This solicitation does not commit the District to award any work nor to pay any costs incurred from the preparation of pre-qualification packages. Firms responding to this RFQ are solely responsible for all costs and expenses incurred during the pre-qualification process.

PROJECT BACKGROUND

The District intends to pre-qualify Contractors to perform trenchless pipeline construction for the Ventura-Santa Barbara Counties Intertie project. Casitas is preparing to construct the project in 2026/2027, which includes approximately 2,700 linear feet of 20-inch high density polyethylene (HDPE) pipe installed via horizontal directional drilling (HDD) under agricultural land, Rincon Creek, and Highway 192. Figure 1-2 shows the Project vicinity. A profile of the proposed HDD pipeline is provided as Exhibit A. A Technical Memorandum dated September 26, 2022, titled Geotechnical and Trenchless Engineering Evaluations for Design is provided as Exhibit B.



CONTRACTOR PRE-QUALIFICATION QUESTIONNAIRE

A. CONTRACTOR INFORMATION

(All Questions Must Be Answered)

Firm Name (as it appears on CSLB license): _____

Firm Type (Select one): ☐ Corporation ☐ LLC ☐ Partnership ☐ Sole Proprietorship ☐ Joint
Venture

Contact Person/Title: _____
(List Owner(s) if Firm is a Sole Proprietorship or Partnership)

Local Address (P.O. Box is not acceptable):

Address 1: _____

Address 2: _____

City: _____

Zip: _____

Office Telephone: _____

Contact Mobile: _____

E-mail Address: _____

List all California construction or other professional license numbers, classifications and expiration dates held by your firm:

License Number	Classification	Expiration Date

List your firm's DIR Public Works Contractor (PWCR) Registration Number(s):

PWCR Number	Entity Name	Expiration Date

If any of your firm's license(s) are held in the name of a corporation, limited liability company, or partnership, list below the names of the qualifying individual(s) listed on the CSLB records who meet(s) the experience and examination requirements for each license.



Request For Qualifications
for Trenchless Pipeline Contractors for
the Ventura-Santa Barbara Counties Intertie
May 29, 2025

License Number	Qualifying Individual	Expiration Date



B. CURRENT ORGANIZATION AND STRUCTURE

Complete the section below for the appropriate type of firm:

For Firms That Are Corporations:

- 1a. Date incorporated: _____
- 1b. Under the laws of what state: _____
- 1c. Provide all the following information for each person who is either (a) an officer of the corporation (president, vice president, secretary, treasurer), or (b) the owner of at least ten percent of the corporation's stock:

Name	Position	Years with Firm	% Ownership

- 1d. Identify every construction firm that any person listed above has been associated with (as owner, general partner, limited partner or officer) at any time during the last five years.
NOTE: For this question, "owner" and "partner" refer to ownership of ten percent or more of the business, or ten percent or more of its stock, if the business is a corporation.

Person's Name	Construction Firm	Date of Person's Participation with Firm

For Firms That Are Limited Liability Companies (LLC):

- 1a. Date Article of Organization filed: _____
- 1b. Under the laws of what state: _____
- 1c. Provide all the following information for all members of the LLC:

Name	Position	Years with Firm	% Ownership



- 1d. Identify every construction firm that any person listed above has been associated with (as owner, general partner, limited partner or officer) at any time during the last five years.
NOTE: For this question, “owner” and “partner” refer to ownership of ten percent or more of the business, or ten percent or more of its stock, if the business is a corporation.

Person's Name	Construction Firm	Date of Person's Participation with Firm

For Firms That Are Partnerships:

- 1a. Date incorporated:
1b. Under the laws of what state:
1c. Provide all the following information for each partner who owns ten percent or more of the firm.

Name	Position	Years with Firm	% Ownership

- 1d. Identify every construction firm that any person listed above has been associated with (as owner, general partner, limited partner or officer) at any time during the last five years.
NOTE: For this question, “owner” and “partner” refer to ownership of ten percent or more of the business, or ten percent or more of its stock, if the business is a corporation.

Person's Name	Construction Firm	Date of Person's Participation with Firm



For Firms That Are Sole Proprietorships:

- 1a. Date of commencement of business
- 1b. Identify every construction firm that the business owner has been associated with (as owner, general partner, limited partner or officer) at any time during the last five years. **NOTE: For this question, “owner” and “partner” refer to ownership of ten percent or more of the business, or ten percent or more of its stock, if the business is a corporation.**

Person's Name	Construction Firm	Date of Person's Participation with Firm

For Firms That Intend to Make a Bid as Part of a Joint Venture:

- 1a. Date of commencement of joint venture:
- 1b. Provide all the following information for each firm that is a member of the joint venture that expects to bid on one or more projects

Name of Construction Firm	% Ownership

Note: Explain on a separate sheet. Provide all other pertinent information required in the sections above, for each Corporation, LLC, Partnership, or Sole-Proprietorship that is a part of the Joint Venture.

FOR ALL FIRMS:

2. At any time during the past five years, has your firm shared office space, warehouse space, yard, plant or shop facilities, staff, equipment, telecommunications or other assets with any other construction firm? (If yes, identify and explain below.)

Construction Firm	Description of Sharing Agreement	Location of Facilities



3. State your firm's gross revenues for each of the last three fiscal years:
Current year (\$): _____
Previous year (\$): _____
Year prior to previous year (\$): _____
4. How many years has your firm been in business in California as a contractor under your present business name and license number? _____
5. Bonding Capacity – Provide documentation from your surety identifying the following:
Name of Bonding Company/Surety: _____
Name of Surety Agent: _____
Address: _____
Telephone number: _____
6. If your firm was required to pay a premium of more than one percent for a performance and payment bond on any project(s) on which your firm worked at any time during the last three years, state the percentage that your firm was required to pay. You may provide an explanation for a percentage rate higher than one percent, if you wish to do so.

7. List all other sureties (name and full address) that have written bonds for your firm during the last five years, including the dates on which they were issued:
- | Name | Address | Date |
|-------|---------|-------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
8. How often do you require documented safety meetings to be held for construction employees and field supervisors during the course of a project? _____
9. List your firm's Experience Modification Rate (EMR) (California workers' compensation insurance) for each of the past three premium years:
Current year rate: _____
Previous year rate: _____
Year prior to previous year rate: _____
10. Does your firm regularly utilize a third party consultant to review labor compliance documents of subcontractors on a public works project? ☐ Yes ☐ No



11. Provide the name, address and telephone number of the apprenticeship program (approved by the California Apprenticeship Council) from whom you intend to request the dispatch of apprentices to employ on any public works project awarded by Casitas.

Name	Address	Phone

12. Provide the name, address and telephone number of the apprenticeship program (approved by the California Apprenticeship Council) from whom you have requested and/or employed apprentices in the past three years.

Name	Address	Phone

13. If your firm operates its own State-approved apprenticeship program:
- (a) Identify the craft or crafts in which your firm provided apprenticeship training in the past year;
 - (b) State the year in which each such apprenticeship program was approved and attach evidence of the most recent California Apprenticeship Council approval(s);
 - (c) For each craft, list the number apprentices employed by your firm and the number of individuals that completed apprenticeships while employed by your firm during the last three years.

Craft	Year	No. Apprentices	No. Completed

14. Has your firm changed names or license number in the past five years? ☐ Yes ☐ No
(If yes, explain on a separate sheet, including the reason for the change.)

15. Has there been any change in ownership of your firm at any time during the last five years? ☐ Yes ☐ No
(If yes, explain on a separate sheet.)

NOTE: A corporation whose shares are publicly traded is NOT required to answer this question.



16. Is your firm a subsidiary, parent, holding company or affiliate of another construction firm? ☐ Yes ☐ No
(If yes, explain on a separate sheet.)

NOTE: Include information about other firms if one firm owns 50 percent or more of another, or if an owner, partner, or officer of your firm holds a similar position in another firm.

Has any owner, partner and/or officer of your firm operated or been connected to a construction firm under any other name in the last five years not listed in Section A or Section B above at any time in the past five years? ☐ Yes ☐ No
(If yes, provide the person's name, construction firm name, and dates of participation.)

Name	Construction Firm	Dates of Participation



C. ESSENTIAL CRITERIA QUESTIONS

Circle Answer

- | | | |
|--|-----|----|
| 1. Does your firm possess a valid and current California Contractor's or other professional license as required by law for the project or projects for which it intends to submit a bid? | Yes | No |
| 2. Is your firm registered with DIR as a Public Works Contractor for the current fiscal year? | Yes | No |
| 3. Does your firm have a liability insurance policy with a policy limit of at least \$1,000,000 per occurrence and \$2,000,000 aggregate? | Yes | No |
| 4. Does your firm have current workers' compensation insurance policy as required by the Labor Code or is your firm legally self-insured pursuant to Labor Code section 3700 et. seq.? | Yes | No |
| 5. Have you attached your firm's latest copy of reviewed or audited financial statements with accompanying notes and supplemental information? * | Yes | No |

Financial statements that are not either reviewed or audited are not acceptable. A letter verifying availability of a line of credit may also be attached; however, it will be considered as supplemental information only and is not a substitute for the required financial statements.

- | | | |
|---|-----|----|
| 6. Have you attached a notarized statement from an admitted surety insurer (approved by the California Department of Insurance) authorized to issue bonds in the State of California, which states that: (a) your current bonding capacity is sufficient for the project for which you seek pre-qualification if you are seeking pre-qualification for a single project; or valid for a year if you are seeking pre-qualification valid for a year; and (b) your current available bonding capacity? ** | Yes | No |
|---|-----|----|

Notarized statement must be from the surety company, not an agent or broker.

- | | | |
|--|-----|----|
| 7. Has your contractor's or other professional license been revoked at any time in the last five years? | Yes | No |
| 8. Has a surety firm completed a contract on your behalf, or paid for completion because your firm was in default and/or terminated by the project owner within the last five years? | Yes | No |



Circle Answer

- | | |
|---|--------------------|
| <p>9. Is your firm, any of its officers, supervisors, managers, or any firm or individual identified above in Section A and/or Section B, ineligible to bid on or be awarded a public works contract, or perform as a subcontractor on a public works contract, pursuant to Labor Code section 1777.1, Labor Code section 1777.7, or any other federal, state, county, municipal or other local law providing for the debarment of contractors from public works?</p> | <p>Yes No</p> |
| <p>10. Has your firm, any of its officers, supervisors, managers, or any firm or individual identified above in Section A and/or Section B been convicted of a crime involving the awarding of a contract of a government construction project, the bidding or performance of a government contract, antitrust statutes, racketeering statutes, safety and health regulations, environmental laws, laws banning workplace discrimination, laws governing wages, hours or labor standards, or laws involving fraud, theft, or any other act of dishonesty?</p> | <p>Yes No</p> |
| <p>11. Is your firm currently the debtor in a bankruptcy case?
(If yes, attach a copy of the bankruptcy petition showing the case number and date on which the petition was filed.)</p> | <p>Yes No</p> |
| <p>12. Has your firm, any of its officers, supervisors, managers, or any firm or individual identified above in Section A and/or Section B ever been terminated from a public works contract, including but not limited to termination based on any misconduct, such as failure to comply with contractual, statutory, or other legal obligations from any public construction project?</p> | <p>Yes No</p> |
| <p>13. Does your firm, any of its officers, supervisors, managers, or any firm or individual identified above in Section A and/or Section B currently have any delinquent liability to an employee, the state, or any awarding body for any assessment of back wages or related damages, interest, fines or penalties pursuant to any final judgment, order, or determination by any court or any federal, state, or local administrative agency, including a confirmed arbitration award?</p> | <p>Yes No</p> |



Request For Qualifications
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the Ventura-Santa Barbara Counties Intertie
May 29, 2025

* Public Contract Code section 20101(e) exempts from this requirement a contractor who has qualified as a small business pursuant to Government Code section 14837(d)(1), if the bid is "no more than 25 percent of the qualifying amount provided in section 14837(d)(1)." As of January 1, 2001, the qualifying amount is \$10 million, and 25 percent of that amount, therefore, is \$2.5 million.

** An additional notarized statement from the surety may be requested by [Public Entity] at the time of submission of a bid, if this pre-qualification questionnaire is submitted more than 60 days prior to submission of the bid.

PRE-QUALIFICATION CRITERIA QUESTIONS

Prior History

Circle Answer

1. How many times has your firm, or any of its officers, supervisors, or managers, declared bankruptcy at any time during the last five years? **0 1 2 3 4 5+**

(This question refers only to a bankruptcy action that was not described in your answer to Question 11 in Section C. If yes, attach a copy of the bankruptcy petition showing the case number and the date on which the petition was filed, a copy of the Bankruptcy Court's discharge order or any other document that concluded the case if no discharge order was issued.)

2. How many times has your firm, or any of its officers, supervisors, or managers, had an injunction, judgment, order, or lien entered against it for outstanding taxes assessed or fines, penalties and/or unpaid employee wages at any time in the last five years? **0 1 2 3 4 5+**

(Explain on a separate sheet. Provide details, including the name of the government agency, caption, date, case or docket number, and disposition. Be sure to note any judgments or liens that have not been fully satisfied.)

3. How many times in the past five years, has your firm, or any of its officers, supervisors, or managers, been a party in any civil litigation or administrative proceeding alleging violation of any of the following: contract antitrust statutes, racketeering statutes, safety and health regulations, environmental laws, laws banning workplace discrimination, laws governing wages, hours or labor standards, or laws involving fraud, theft, or any other act of dishonesty? **0 1 2 3 4 5+**

(Explain on a separate sheet. Provide details including the nature of the claims and defenses, caption, date, case or docket number, name of the court or agency before which the case is pending or which it was heard, and current status.)

4. How many times in the past five years has your firm, or any of its officers, supervisors, or managers, been a party in any civil litigation or administrative proceeding alleging a violation by a subcontractor hired by your firm of any of the following: contract antitrust statutes, racketeering statutes, safety and health regulations, environmental laws, laws banning workplace discrimination, laws governing wages, hours or labor standards, or laws involving fraud, theft, or any other act of dishonesty? **0 1 2 3 4 5+**



Request For Qualifications
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the Ventura-Santa Barbara Counties Intertie
May 29, 2025

(Explain on a separate sheet. Provide details including the nature of the claims and defenses, caption, date, case or docket number, name of the court or agency before which the case is pending or which it was heard, and current status.)

Circle Answer

5. How many times in the past five years has your firm, or any of its officers, supervisors, or managers, paid any amount, fine or otherwise, regardless of characterization, to settle any of the allegations listed in Questions 3 and 4 above, whether with or without an admission of responsibility or liability? **0 1 2 3 4 5+**

(Explain on a separate sheet. Provide details, including the caption, date, case or docket number, and name of the court or agency before which the case was brought.)

6. How many times has your firm or any of its officers, supervisors, or managers, been debarred, suspended, disqualified, denied a classification rating or pre-qualification or otherwise been declared not responsible to or prevented from bidding or performing work on any public works contract or subcontract in the last five years? **0 1 2 3 4 5+**

(Explain on a separate sheet. State whether the firm involved was the firm applying for pre-qualification here or another firm. Identify by name of the company, name of the person within your firm who was associated with that company, date, owner of the project, project name and information, basis for the action, and case or docket number.)

7. How many times in the last five years has your firm been assessed and paid liquidated damages after completion of a project under a construction contract with either a public or private owner? **0 1 2 3 4 5+**

(Explain on a separate sheet. Identify all such projects by owner, owner's address, date of completion of the project, amount of liquidated damages assessed and all other information necessary to fully explain the assessment of liquidated damages.)

8. How many times during the past five years has any surety company made any payments on your firm's behalf as a result of a default, to satisfy any claims made against a performance or payment bond issued on your firm's behalf, in connection with a construction project, either public or private? **0 1 2 3 4 5+**

(Explain on a separate sheet. Identify the amount of each such claim, name and telephone number of the claimant, date of claim, grounds for claim, present status of claim, date of resolution of such claim if resolved, method by which claim was resolved if resolved, nature of resolution and amount, if any, at which claim was resolved.)

9. How many times in the last five years has any insurance carrier, for any form of insurance, refused to renew an insurance policy for your firm? **0 1 2 3 4 5+**

(Explain on a separate sheet. Name the insurance carrier, form of insurance, and year of refusal.)



10. How many times during the last five years has your firm been denied bond coverage by a surety company, or has there been a period of time when your firm had no surety bond in place during a public works construction project when one was required? **0 1 2 3 4 5+**

(Explain on a separate sheet. Indicate the date when your firm was denied coverage, name of the company or companies which denied coverage, and the time period during which you had no surety bond in place.)

Criminal Matters and Civil Suits

Circle Answer

11. How many times has your firm or any of its officers, supervisors, or managers, ever been convicted of a crime involving any federal, state, or local law related to construction? **0 1 2 3 4 5+**

(Explain on a separate sheet. Identify who was involved, name of the public agency, date of conviction, and grounds for conviction.)

12. How many times has your firm or any of its officers, supervisors, or managers, ever been found liable in a civil suit or convicted of a federal or state crime of fraud, theft, or involving any other act of dishonesty, such as making any false claim or material misrepresentations? **0 1 2 3 4 5+**

(Explain on a separate sheet. Identify the person or persons convicted or found liable, court [the county if a state court, the district or location if federal court], year, and conduct involved.)

The following two questions refer only to disputes between your firm and the owner of a project. You need not include information about disputes between your firm and a supplier, another contractor, or subcontractor. You need not include information about "pass-through" disputes in which the actual dispute is between a sub-contractor and a project owner. Also, you may omit reference to all disputes involving amounts of less than \$50,000.

13. How many times in the last five years has any claim against your firm concerning your firm's work on a construction project been filed in court or arbitration? **0 1 2 3 4 5+**

(Explain on a separate sheet. Identify the claim(s) by providing the project name, date of the claim, name of the claimant, a brief description of the nature of the claim, the court in which the case was filed and a brief description of the status of the claim [e.g. "pending" or, if resolved, a brief description of the resolution].)

14. How many times in the last five years has your firm made any claim against a project owner concerning work on a project or payment for a contract and filed that claim in court or arbitration? **0 1 2 3 4 5+**

(Explain on a separate sheet. Identify the claim(s) by providing the project name, date of the claim, name of the entity (or entities) against whom the claim was filed, a brief description of the nature of the claim, the court in which the case was filed and a brief description of the status of the claim [e.g. "pending" or if resolved, a brief description of the resolution].)



Occupational Health and Safety Compliance

Circle Answer

15. How many times in the last five years has CalOSHA cited and assessed penalties against your firm for any “serious,” “willful” or “repeat” violation(s) or the federal Occupational Safety and Health Administration cited and assessed penalties against your firm for violation(s) of safety or health regulations?

0 1 2 3 4 5+

If you have filed an appeal of a citation, and the Occupational Safety and Health Appeals Board has not yet ruled on your appeal, you need not include information about it.

16. How many times in the last five years has the EPA or any Air Quality Management District or any Regional Water Quality Control Board cited and assessed penalties against either your firm or the owner of a project on which your firm was the contractor?

0 1 2 3 4 5+

(Explain on a separate sheet describing each citation.)

If you have filed an appeal of a citation and the Appeals Board has not yet ruled on your appeal, or if there is a court appeal pending, you need not include information about the citation.

17. How many times within the last five years has there ever been a period when your firm had employees but was without workers’ compensation insurance or state-approved self-insurance?

0 1 2 3 4 5+

(Explain the reason for each absence of workers’ compensation insurance on a separate sheet. If “None,” please provide a statement by your current workers’ compensation insurance carrier that verifies periods of workers’ compensation insurance coverage for the last five years. If your firm has been in the construction business for less than five years, provide a statement by your workers’ compensation insurance carrier verifying continuous workers’ compensation insurance coverage for the period that your firm has been in the construction business.)

Prevailing Wage and Apprenticeship Compliance

18. How many times during the last five years has your firm been required to pay back wages and/or penalties related to state or federal prevailing wage laws for work performed by your firm?

(Explain on a separate sheet. Describe the nature of each violation and identify the name of the project, date of its completion, public agency for which it was constructed, number of employees underpaid, and amount(s) of back wages and penalties your firm was required to pay.)

Question 18 refers only to the violation of prevailing wage laws by your firm, not to violations by a subcontractor.



DRAFT Request For Qualifications
for Trenchless Pipeline Contractors for
the Ventura-Santa Barbara Counties Intertie
March 31, 2025
Circle Answer

19. How many times during the last five years has your firm or any subcontractors hired by your firm been required to pay back wages and/or penalties related to state or federal prevailing wage laws for work performed by a subcontractor? **0 1 2 3 4 5+**

(Explain on a separate sheet. Identify the subcontractor's business name and CSLB license number, describe the nature of each violation, and identify the name of the project, date of its completion, public agency for which it was constructed, number of employees underpaid, and amount(s) of back wages and penalties your firm was required to pay.)

This question refers only to the violation of prevailing wage laws by subcontractors, not to violations by your firm.

20. How many times during the last five years has your firm paid any penalties related to any provision of California apprenticeship laws or regulations, or the laws pertaining to use of apprentices on public works projects, including Labor Code sections 1777.5 and 1777.7? **0 1 2 3 4 5+**

(Explain on a separate sheet. Provide the date(s) of such findings, case number(s), and attach copies of the Department's final decision(s).)

21. How many times during the last five years has any subcontractor hired by your firm paid any penalties related to any provision of California apprenticeship laws or regulations, or the laws pertaining to use of apprentices on public works projects, including Labor Code sections 1777.5 and 1777.7? **0 1 2 3 4 5+**

(Explain on a separate sheet. Provide the date(s) of such findings, case number(s), and attach copies of the Department's final decision(s).)

Omissions, misrepresentations and any failure to disclose associations with other firms or any prior history of alleged violations may lead to loss of your eligibility to register as a Public Works Contractor, disqualification of bids, and/or grounds for termination of a contract.



PART III. RECENT CONSTRUCTION PROJECTS COMPLETED

Provide information about your most recently completed public works projects within the last six years. **Names and references must be current and verifiable.** Use separate sheets of paper that contain all the following information:

1. Trenchless HDD contractor must have the following experience for a minimum of three (3) HDD pipeline projects in the last seven (7) years. Provide project profiles and include the following list on the cover sheet for each project profile and check experience that qualifies for that sheet.
 - ☐ Minimum 2,500 LF in length and minimum 18" OD sized carrier pipe
 - ☐ Minimum 2,500 LF in length 36-inch casing
 - ☐ Drilled through gravel, cobbles and boulders
 - ☐ Drilled through a minimum 2,500-LF of mixed and changing bore path materials consisting of interlayered sedimentary formation sandstone and claystone
 - ☐ Drilled through 2,500 LF of rock using mud motor
 - ☐ Drilled under 50 feet of groundwater head
 - ☐ Drilled under a creek or river with freestanding water
 - ☐ Utilized steel conductor casings
 - ☐ At least one project must have a minimum 48"-OD sized casing
 - ☐ At least one project must have a conductor casing a minimum 200-LF in length.
 - ☐ Utilized wire line or gyro locator systems
 - ☐ Utilized downhole pressure sensors and sensors used to monitor drilling fluid pressures
 - ☐ Utilized drilling fluid design and measurement and field adjustments of drilling fluid physical properties including but not limited to unit weight and viscosity.
 - ☐ Where an inadvertent drilling fluid release to the ground surface or actively flowing creeks/rivers occurred, was monitored, and cleaned up.
 - ☐ Operated and maintained drilling fluids slurry separation plant
2. Trenchless HDD contractor owns and maintains a minimum of 2 maxi-HDD rigs with pull back force greater than 200,000 lbs and torque greater than 20,000 ft-lbs and drilling fluid pump capacity greater than 200 gpm.
3. Trenchless HDD contractor will provide specific members staff with the following minimum experience. Provide a staff member profile, list of qualifications, and project profiles.
 - ☐ HDD rig lead operator with at least three (3) maxi-rig HDD projects in the last ten years
 - ☐ Drilling fluids and slurry separation plant lead operator with at least three (3) maxi-rig HDD projects in the last ten years



Request For Qualifications
for Trenchless Pipeline Contractors for
the Ventura-Santa Barbara Counties Intertie
May 29, 2025

- ☐ Lead HDPE pipe fusion operator with experience fusing minimum 2,500-LF of minimum DR-9 and 18" OD PE4710 HDPE. All operators shall be qualified (trained and certified). Training received more than two years prior to operation with no evidence of activity within the past 6 months shall not be considered current. Certifications must include a current McElroy Fusion Training Certificate, or equivalent, for the equipment to be used on the project.

Project Name: _____

Location: _____

Owner: _____

Owner Contact (with knowledge of the project)

Name: _____

Phone: _____

Email: _____

Engineer: _____

Engineer Contact

Name: _____

Phone: _____

Email: _____

Construction Manager:

Name: _____

Phone: _____

Email: _____

Description of Project, Scope of Work Performed:

Total Value of Construction (including change orders): \$_____



Request For Qualifications
for Trenchless Pipeline Contractors for
the Ventura-Santa Barbara Counties Intertie
May 29, 2025

Original Scheduled Completion Date: _____

Time Extensions Granted (number of days): _____

Actual Date of Completion: _____

END OF SECTION III



Request For Qualifications
for Trenchless Pipeline Contractors for
the Ventura-Santa Barbara Counties Intertie
May 29, 2025

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Section D. PRE-QUALIFICATION CRITERIA QUESTIONS AND SCORING

Question Number	Factor #1 - Points	Factor #2 - Points	Multiplying Factor	Total Points
1			x2	
2			x2	
3			x2	
4			x1	
5			x2	
6			x2	
7			1	
8			x2	
9			x1	
10			x2	
11			x2	
12			x2	
13			x1	
14			x1	
15			x2	
16			x2	
17			x2	
18			x2	
19			x1	
20			x2	
21			x1	
Total			=	

Factor #1: Whether the incident was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the Contractor or Subcontractor.

Factor #2: Whether the Contractor or Subcontractor has a prior history or several incidents are reported.

Questions Type:

14 Red Flag Questions (x2)

7 Non-Red Flag Questions (x1)

Notes: The awarding body will review additional documents provided by the Contractor in response to the questions in Section D to calculate a final score using the two factors listed above. A score on a scale of 1 to 5 is assigned to each factor.

Factor #1: A score of 1 is assigned where the incident is clearly the result of a good-faith mistake, and a score of 5 is assigned where the incident is clearly an overtly willful action for which the Contractor is culpable.

Factor #2: A score of 1 is assigned where only a single incident exists, and a score of 5 is assigned where five or more incidents of that kind are reported.

A contractor is **PRE-QUALIFIED** if the total score above is: **35 points or LESS.**

A contractor is **DISQUALIFIED** if the total score above is: **GREATER THAN 35 points.**



Request For Qualifications
for Trenchless Pipeline Contractors for
the Ventura-Santa Barbara Counties Intertie
May 29, 2025

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MODEL INTERVIEW QUESTIONS – FOR INFORMATION ONLY

The following questions will be used to interview randomly selected contacts from at least two completed projects. Casitas will conduct the interviews. No action on the Contractor's part is necessary. These questions are included in the package given to the Contractor for information only.

The highest possible score is 120 Points. A score less than 55 points disqualifies a Contractor from bidding on, or being a subcontractor on, projects that are proposed by Casitas. A score of between 56 and 83 indicates Casitas should conduct an interview of another contact, that is, a manager of another completed project. A score of 84 or higher on each of two interviews is sufficient for pre-qualification.

First, please give a brief description of the project.

1. Are there any outstanding stop notices, liens, or claims by the contractor that are currently unresolved on contracts for which notices of completion were recorded more than 120 days ago? (1 point for each is deducted from overall score; maximum amount to be deducted is 5 points)
2. On a scale of 1-10, with 10 being the best, did the contractor provide adequate personnel? (Max. 10 points)
3. On a scale of 1-10, with 10 being the best, did the contractor provide adequate supervision? (Max. 10 points)
4. On a scale of 1-10, with 10 being the best, was there adequate equipment provided on the job? (Max. 10 points)
5. On a scale of 1-10, with 10 being the best, was the contractor timely in providing reports and other paperwork, including change order paperwork and scheduling updates? (Max. 10 points)
6. On a scale of 1-10, with 10 being the best, did the contractor adhere to the project schedule that your [agency] [business] approved? (Max. 10 points)
7. Was the project completed on time? (10 points if the answer is "Yes").
Or, if the answer is "no," on a scale of 1-10, with 10 being the best, to what extent was the contractor responsible for the delay in completion?
8. On a scale of 1-10, with 10 being the best, rate the contractor on the timely submission of reasonable cost and time estimates to perform change order work. (Max. 10 points)
9. On a scale of 1-10, with 10 being the best, rate the contractor on how well the contractor performed the work after a change order was issued, and how well the contractor integrated the change order work into the existing work. (Max. 10 points).
10. On a scale of 1-10, with 10 being the best, rate how has the contractor been performing in the area of turning in Operation & Maintenance manuals, completing as-built drawings, providing required training and taking care of warranty items? (Max. 10 points)



Request For Qualifications
for Trenchless Pipeline Contractors for
the Ventura-Santa Barbara Counties Intertie
May 28, 2025

11. On a scale of 1-10, with 10 being the best, rate the contractor on whether there were an unusually high number of claims, given the nature of the project, or unusual difficulty in resolving them. (Max. 10 points)
12. On a scale of 1-10, with 10 being the highest, rate the contractor with respect to timely payments by the contractor to either subcontractors or suppliers. (If the person being interviewed knows of no such difficulties, the score on this question should be "10.")
13. On a scale of 1-10, with 10 being the best, how would you rate the quality of the work overall? (Max. 10 points)



Request For Qualifications
for Trenchless Pipeline Contractors for
the Ventura-Santa Barbara Counties Intertie
May 28, 2025

I, the undersigned, certify and declare I have read all the foregoing answers to this pre-qualification questionnaire and know their contents. The matters stated in the questionnaire answers are true of my own knowledge and belief, except as to those matters stated on information and belief, and as to those matters I believe them to be true. I declare under penalty of perjury under the laws of the State of California, that the foregoing is correct.

Dated: _____

Signed:_____

Printed Name: _____

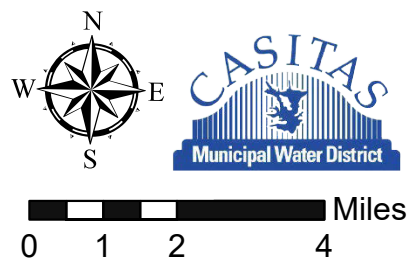
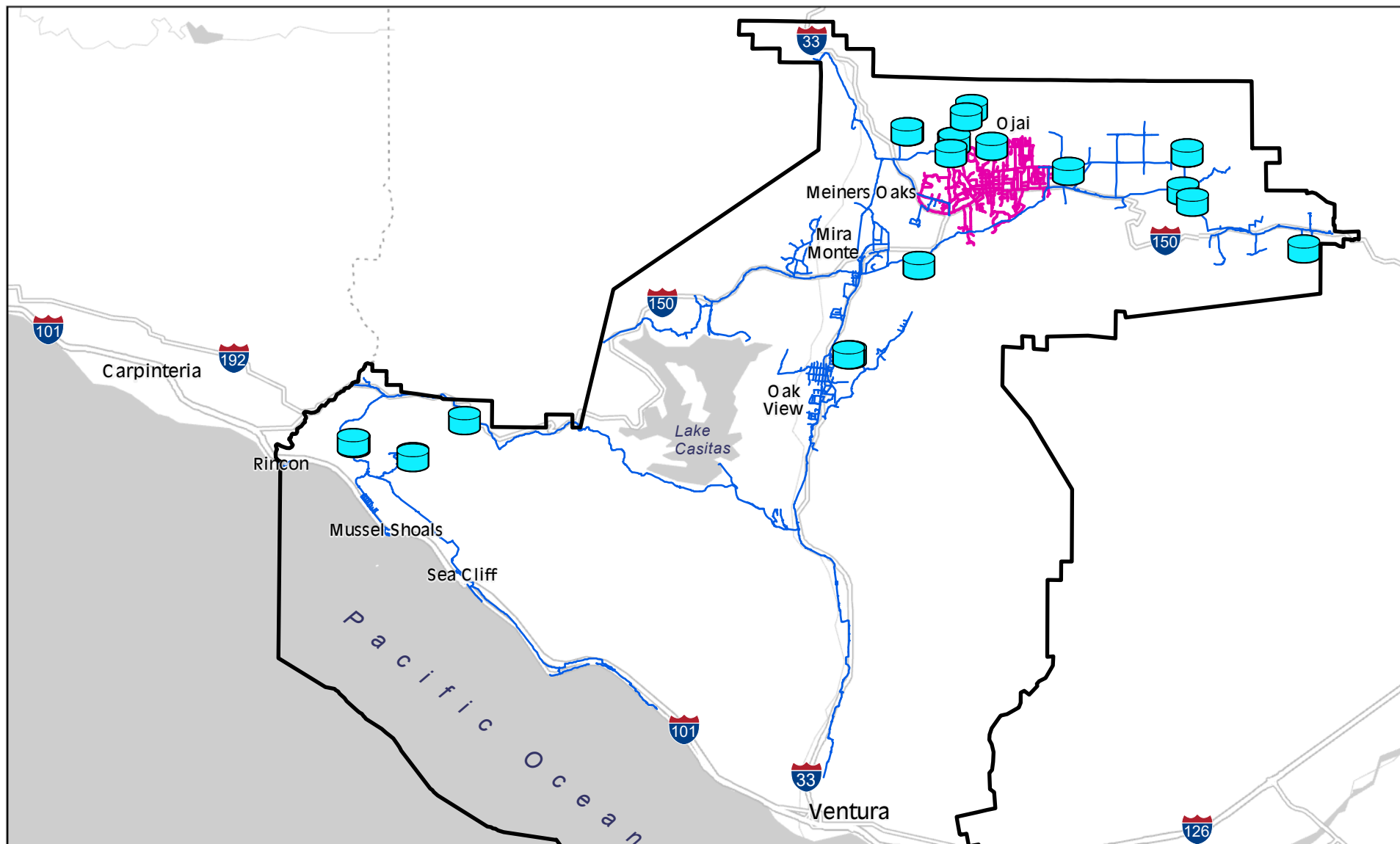
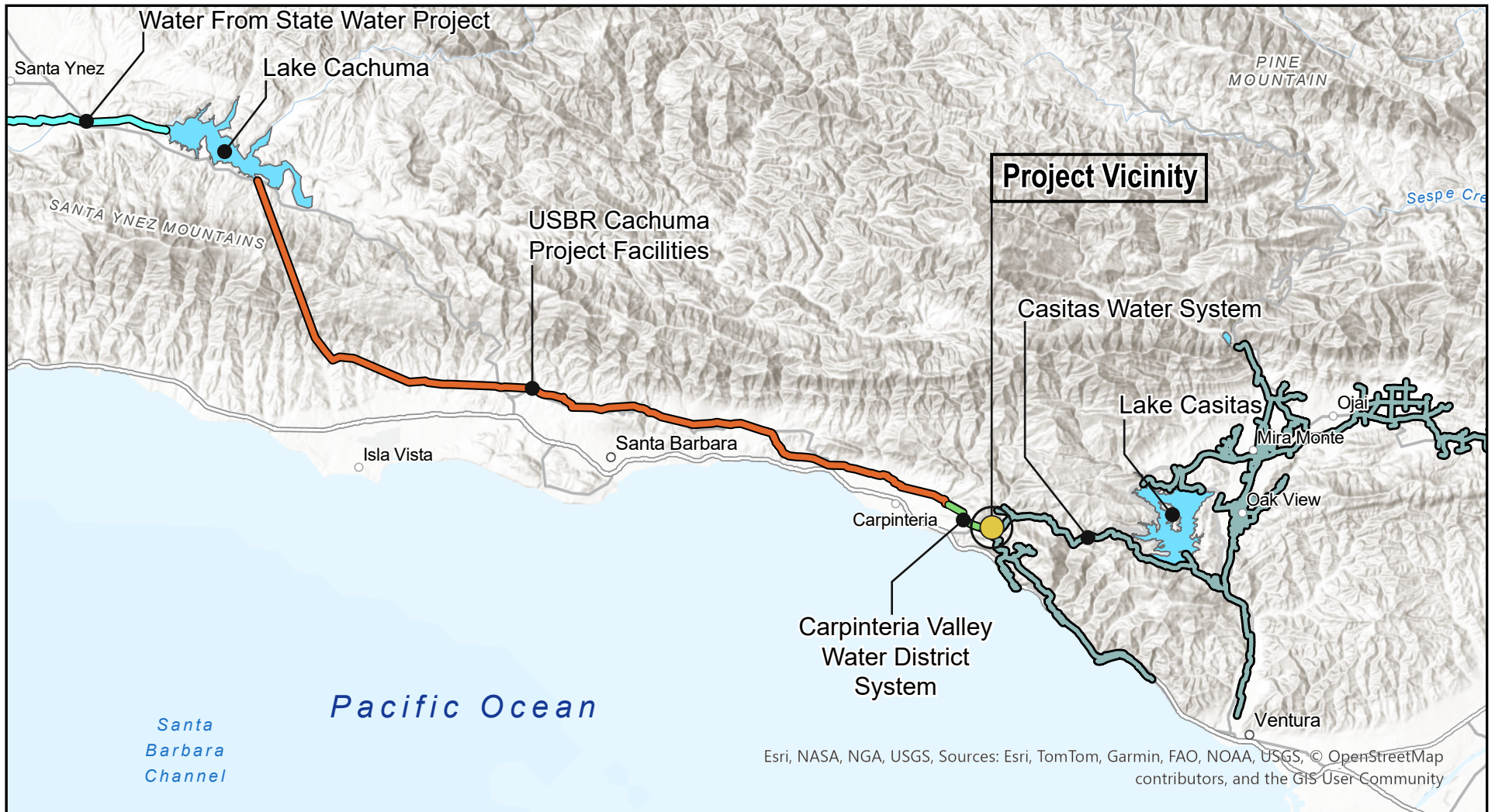


Figure 1.1
Ventura-Santa Barbara Counties Intertie
District Boundary

- Legend**
- CMWD Jurisdiction
 - Tank
 - Casitas Water System Pipe
 - Ojai Water System Pipe

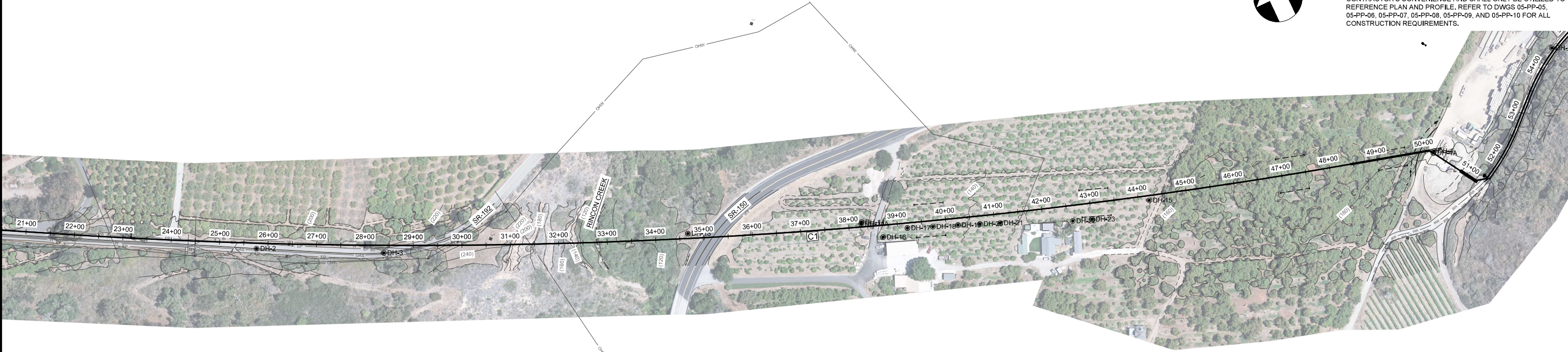


0 2.5 5 10 Miles

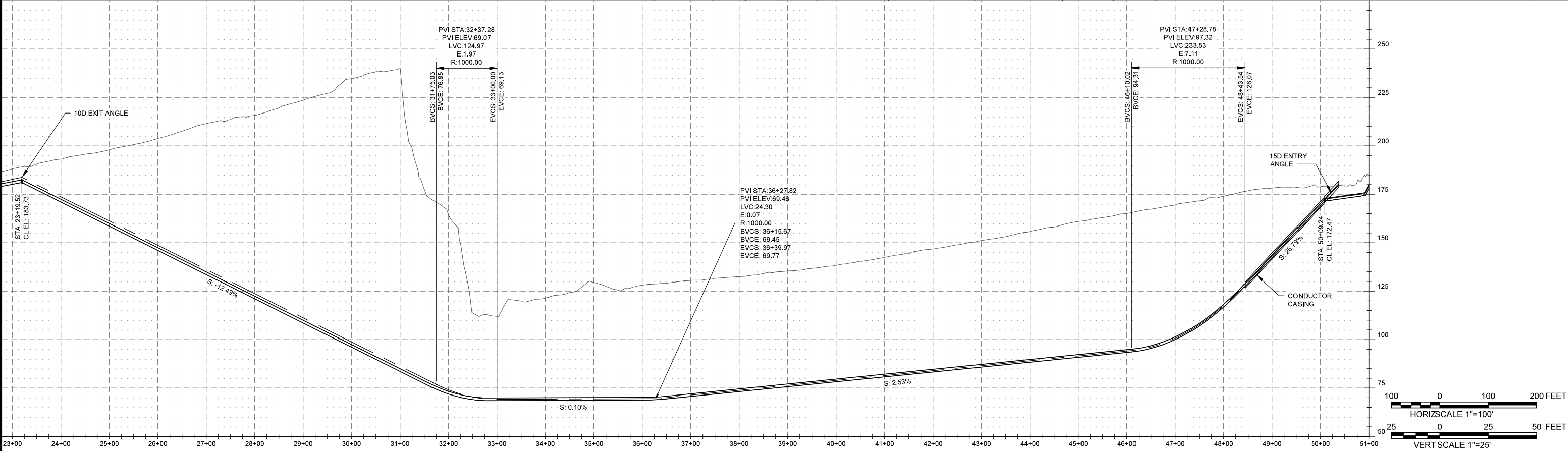
Figure 1.2
Ventura-Santa Barbara Counties Intertie
Project Vicinity

GENERAL NOTES

1. THIS HDD GEOMETRY EXHIBIT HAS BEEN PROVIDED FOR THE CONTRACTOR'S CONVENIENCE AND SHALL ONLY BE UTILIZED TO REFERENCE PLAN AND PROFILE. REFER TO DWGS 05-PP-05, 05-PP-06, 05-PP-07, 05-PP-08, 05-PP-09, AND 05-PP-10 FOR ALL CONSTRUCTION REQUIREMENTS.



WATER ALIGNMENT CURVE TABLE							
CURVE	RADIUS	LENGTH	CHORD DIRECTION	START (N.E)	END (N.E)	START (STA)	END (STA)
C1	11255.5	2667.38	S67° 47' 45.49"E	(1967503.09,6117494.42)	(1966497.43,6119958.22)	21+68.57	48+35.95



REV	DATE	BY	DESCRIPTION

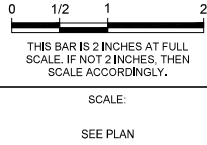


DESIGNED:	P WEBSTER
DRAWN:	M TRUITT
CHECKED:	T LEWIS
QA/QC:	T DURBIN
CONSTRUCTABILITY:	T KOTHEY



PROJECT ENGINEER: R.C.E. EXP. WWE PROJECT NO: 09-018

DATE



CASITAS MUNICIPAL WATER DISTRICT
VENTURA - SANTA BARBARA COUNTIES INTERTIE PROJECT PHASE 1A: INTERTIE PIPELINE

HDD GEOMETRY EXHIBIT

PROJECT NUMBER	22-451
DRAWING NUMBER	PP-19
SHEET NUMBER	X OF XX

Technical Memorandum

P.O. Box 225, Lafayette, CA 94549, Telephone: 925.322.9590

www.dcmconsults.com

To:	Andrew Borgic, Tim Lewis Water Works Engineers	Date: September 26, 2022
From:	Dave Mathy DCM Consulting, Inc.	File No.: 309
Subject:	Ventura County/Santa Barbara County Water Intertie Geotechnical and Trenchless Engineering Evaluations for Design Casitas Municipal Water District Ventura and Santa Barbara Counties, California	
Reference A:	Preliminary (Desktop) Geotechnical Report Santa Barbara – Ventura Tie-in Pipeline Santa Barbara and Ventura Counties, California By Bajada Geosciences Dated: March 2018	
Reference B:	Preliminary Geotechnical and Trenchless Evaluation for the Rincon Creek Undercrossing Santa Barbara – Ventura Tie-in Pipeline Santa Barbara and Ventura Counties, California By: DCM Consulting, Inc. Dated: May 6, 2019	
Reference C:	Draft Geotechnical Report Ventura – Santa Barbara Water System Intertie Project Ventura and Santa Barbara Counties, California By: Bajada Geosciences, Inc. Dated: August 26, 2022	

1.0 INTRODUCTION

This technical memorandum has been prepared for the exclusive use of Water Works Engineers (WWE) for design of a trenchless undercrossing of Rincon Creek as part of the Ventura County/Santa Barbara County Water Intertie Project (Intertie Project). The Intertie Project consists of approximately 7,000 feet of nominal 16-inch diameter pressurized water transmission pipeline connecting Casitas Municipal Water District in Ventura County with Carpinteria Valley Water District in Santa Barbara County. The new intertie pipeline will be installed by conventional open cut trenching except for the undercrossing of Rincon Creek southwest of the intersection of Rincon Road (Highway 150) and Casitas Pass Road (Highway 192). The Rincon Creek undercrossing will be installed by horizontal directional drilling (HDD). This technical memorandum supersedes DCM Consulting's Preliminary Geotechnical and Trenchless project evaluation (Reference B) and has been prepared exclusively for evaluation of the HDD undercrossing of Rincon Creek and does not address any other aspects of the Intertie Project.

The project design team consists of: project design civil engineers – Water Works Engineers (WWE), project geotechnical engineer – Bajada Geosciences, and project trenchless consultant – DCM Consulting, Inc. All references to the project design contained in this technical memorandum such as project stationing, pipeline alignment, pipeline diameter and pipeline elevations are based on the following design drawings by WWE.

- Casitas Municipal Water District
Ventura – Santa Barbara Counties Intertie Project Phase 1A: Intertie Pipeline
HDD Project Design
Drawing Nos. PP-1 through PP-10 and PP-Exhibit
Plot Date: September 23, 2022

All references to subsurface soil, bedrock and groundwater conditions are based on the project geotechnical investigations completed by Bajada Geosciences and Caltrans reference borings for bridge No. 51-0316 over Rincon Creek.

2.0 PROJECT DESCRIPTION

2.1. Project

The nominal 16-inch-inside-diameter water distribution pipeline will cross under Rincon Creek southwest of the intersection of Rincon Road (Highway 150) and Casitas Pass Road (Highway 192). At this location Rincon Creek represents the border between Ventura County (to the east) and Santa Barbara County (to the west). The undercrossing area is rural/agricultural lands with lemon and avocado orchards and sparse farm houses and residences. In order to minimize open cut trenching construction impacts on the avocado orchards on the east side of Rincon Creek, the HDD undercrossing has been extended to the east of Rincon Creek by about 1,600 feet making the total length of HDD installation approximately 2,689 feet (see Photos 1, 2 and 3). For purposes of reference the Rincon Creek undercrossing by HDD is from approximately project Station 23+20 to 50+09.

The HDD entry point will be on the east end within a clearing in the orchards at about Station 50+09 (see Photos 4 and 5). The HDD exit point will be on Casitas Pass Road (Highway 192) at about Station 23+20 (see Photo 6). Casitas Pass Road will serve as the HDPE pipeline laydown area (see Photo 7). The ground surface elevation at the entry point is about Elevation 180 and the Casitas Pass Road roadway surface at the exit point is at about Elevation 190 making the HDD bore path exit point about 10 feet higher than the entry point (see Photo 1).



Photo 1 - HDD alignment under Rincon Creek and Rincon Road.
See Figures 2 and 3 for Caltrans boring logs at Bridge No. 51-0316.



Photo 2 – View of HDD alignment looking down eastward from Casitas Pass Road (Highway 192) to the Abbott/Solis orchards.

Caltrans Bridge 51-0316 to photo right, see Photos 8 and 9.



Photo 3 – View looking up westward from the Abbott/Solis orchards to Casitas Pass Road (Highway 192), top of hill at approx. El. 190.



Photo 4 – HDD rig side entry area, approximately El. 180.



Photo 5 – HDD rig side entry area. Gravel piles to be removed (the gravel, cobbles and boulders stockpiled here are imported, not derived from the project alignment).

The stockpiles of gravel, cobbles and boulders to be removed in preparation of HDD rig set up.



Photo 6 - HDD exit area on Casitas Pass Road (Highway 192) looking northeast, approximately El. 190. Layout pipe string area down Casitas Pass Road to photo foreground.



Photo 7 – Pipe string fusion and lay out area along Casitas Pass Road (Highway 192), looking northwest. HDD exit area to photo foreground.

The following Figures A and B are geologic cross-sections developed from geophysical testing and test borings, respectively. Geophysical testing (resistivity) was used to look for ancient buried creek channel deposits from meanders of Rincon Creek (paleochannels). The results of geophysical testing then informed the locations of test borings in the orchard area east of Rincon Creek. The agreement between the geophysical profile and test boring profile is good. Cross reference the geophysical profile to the test boring profile by the locations of DH-14 and DH-15 shown on both profiles. The test borings are reliable with respect to the soils logged and specifically the depth (i.e., bottom elevation) of ancient buried creek channel deposits. Creek channel deposits of gravel, cobbles and boulders are to be avoided in the HDD bore path. For a full and detailed description of the project geotechnical investigation including geophysical testing, boring logs and laboratory testing refer to Reference C.

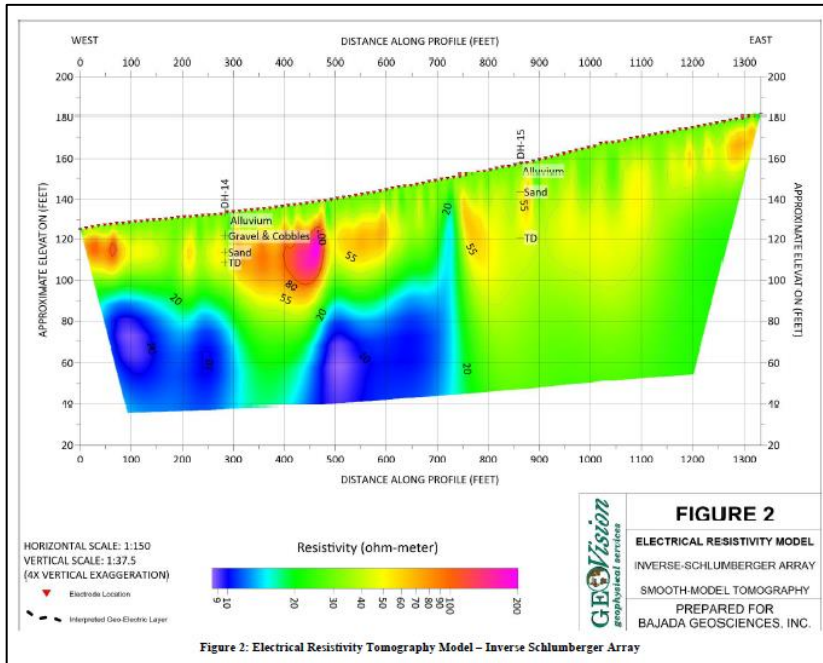


Figure A – Geophysical testing profile used to look for ancient buried creek channel deposits (paleochannels) of gravel, cobbles and boulders.

red/magenta = high resistivity gravel, cobbles and boulders (paleochannels)

yellow/orange = medium resistivity sands

blue/green = low resistivity clays and Casitas Formation

(See Reference C for complete Geophysical report)

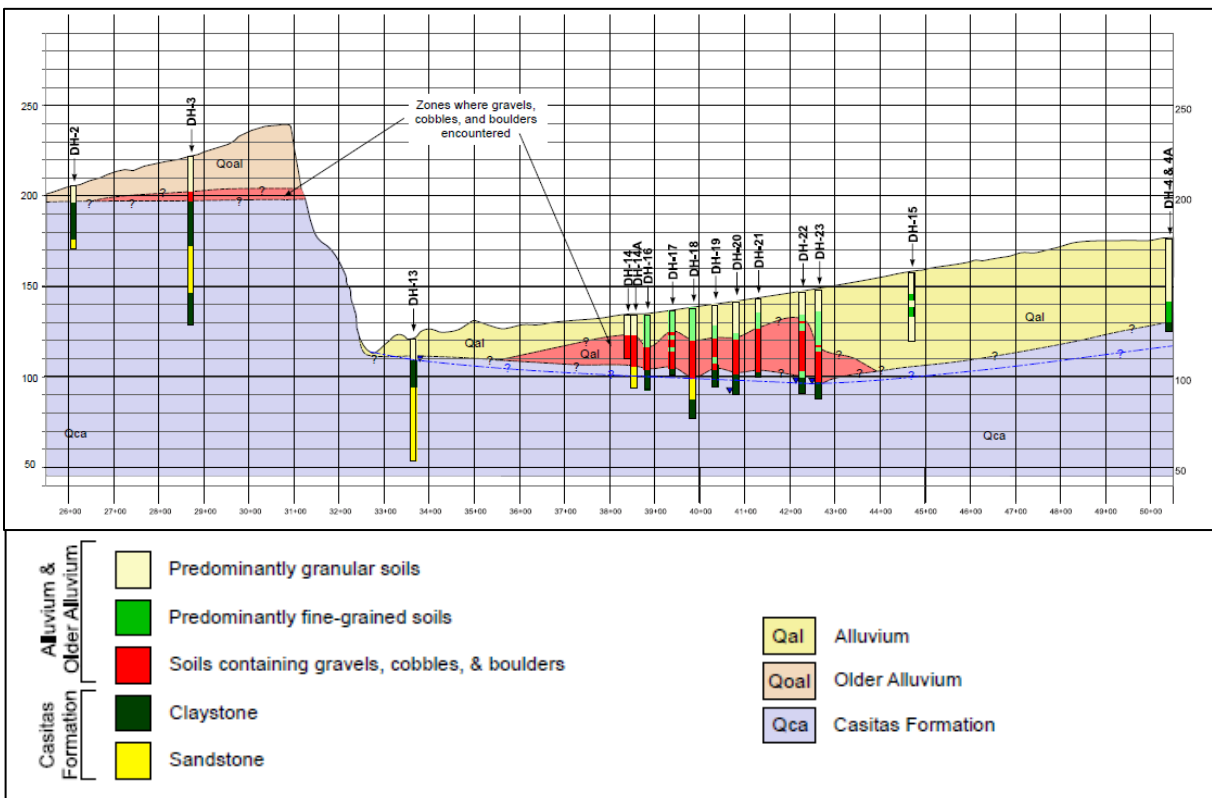


Figure B - Geologic cross-section and project test boring locations. The red coded section from about Station 36+00 to 44+00 are ancient creek channel deposits (paleochannels) of gravel, cobbles and boulders. (from Bajada Geosciences, Reference C)

2.2. Geologic Setting

The project alignment is located within the Transverse Ranges geologic province of California characterized by generally east-west trending mountain ranges composed of sedimentary and volcanic rock. Site specific geology includes younger and older alluvial soils associated with Rincon Creek. Alluvial soils are underlain by the Casitas Formation. The Casitas Formation as described in geologic mapping is a middle Pleistocene age (approx. 1.3 million years old) nonmarine sedimentary deposit consisting of moderately to well consolidated siltstone and silt, multi-colored sandstone and sand and conglomerate and gravel deposited mainly as alluvium likely shed off of the Santa Ynez mountains and other nearby uplands. This unit resembles, and may be at least partly correlative with, the older alluvial deposits and the conglomerate of the Ojai Valley (also middle Pleistocene).

In general, the Casitas Formation classifies as a Very Soft rock (compressive strength approximately 140 psi to 3,500 psi), see Reference 1, Table B-12 used herein for Hardness Classification of Intact Rock. However, the degree of cementation within the sandstone component of the Casitas Formation can vary widely. Where cementation is locally stronger the sandstone rock hardness classification could increase to Soft (compressive strength approximately 3,500 psi to 7,000 psi)

2.3. Summary of Geotechnical Conditions

The following summary of geotechnical conditions is based on the following:

- Draft Geotechnical Report
Ventura – Santa Barbara Water System Intertie Project
Ventura and Santa Barbara Counties, California
By: Bajada Geosciences, Inc.
Dated: August 26, 2022
- Reference Borings, B1-02 and B2-02
Caltrans Bridge 51-0316
Borings Dated: June 25 through 27, 2002
12 pages

The specific physical properties of alluvial soils and Casitas Formation sandstone and claystone listed herein are pertinent to HDD design and construction and were used for HDD calculations related to maximum allowable drilling fluid pressure to avoid hydrofracture and systemic settlement (see Sections 3.1.5 and 3.1.6). For a complete description of geologic setting and geotechnical investigation findings including boring logs, geophysical testing and laboratory testing refer to the Bajada Geosciences project specific geotechnical investigation report. Caltrans reference borings B1-02 and B2-02 for Bridge 51-0316 were first included in project documents in the Bajada Geosciences Preliminary (Desktop) Geotechnical Report dated March, 2018 (see Reference A).

Caltrans reference borings B1-02 and B2-02 for Bridge 51-0316 with annotations specific to HDD design and construction added by DCM are included herein as Figure 2 and Figure 3, respectively.

2.3.1. Alluvial Soils

The Younger Alluvium is described as Holocene Age (less than 11,700 years old) poorly consolidated (i.e., loose) silt, sand and gravel deposits occupying valley floors and floodplains of modern drainages (see Reference A, Plate 3). The Younger Alluvium also includes localized deposits of gravel, cobbles and boulders in the present channel of Rincon Creek (see Caltrans borings Figures 2 and 3) and in buried paleochannels (ancient creek channels from meanders of Rincon Creek) as depicted in Reference C, Plate 5 and above in Figures A and B. Younger Alluvium logged by Caltrans borings along Rincon Creek is on the order of 15 to 18 feet thick at Bridge No. 51-0316. Caltrans borings were drilled at and near bridge abutment locations. The range of physical and geotechnical engineering properties of alluvium as encountered in Bajada Geosciences project specific borings and Caltrans' bridge reference borings pertinent to HDD design and construction are:

- Composition: Silty sand, silty sand with fine to medium gravel, clayey sand, sandy gravel with cobbles and boulders, silty clay with fine sand
- Unified Soil
Classification: SM, SC, GP, CL
- Consistency: Standard Penetration Test Blow Count, N-values = 2 to 23, average N = 10 in loose silty sands and clayey sands (SM, SC); N > 50 in sandy gravel with cobbles and boulders (GP)

N = 13 to 18, average N = 16 in stiff to very stiff silty clays (CL)
- Moisture
content: 1.1% to 11.6%, average = 6.4%
- Total Unit
Weight: 108.8 pcf to 127.8 pcf, average = 119.3 pcf
- Fines content
(< #200 sieve): 33% to 40%, average = 36%
- Plasticity: Liquid Limit = 24% to 41%, Plasticity Index = 5 to 26 in silty clay (CL)
- Strength: Clays Unconfined compressive strength = 3,320 psf (lab test in silty clay)
Clays Unconfined compressive strength = 4,000 psf (by avg. SPT N-value = 16)

Silty sands, Direct Shear $\phi = 28^\circ$ to 40° (lab tests)
Silty sands, $\phi = 30^\circ$ (by avg. SPT N-value = 10)
- Shear modulus (G): Loose sands = 100,000 psf
Stiff to very stiff clays = 250,000 psf

- **Cobbles and Boulders:** Described as hard, subrounded sandstone, appear nested (i.e., not evenly distributed) as in creek channel deposits, see Caltrans borings B1-02 and B2-02 for bridge 51-0316 in Figures 2 and 3 and Bajada borings DH-4 and 4a and DH-14 through DH-23 in Reference C. Also see Photos 8 and 9.
- **Permeability:** Very high through sandy gravel, cobbles and boulders (GP), moderate through silty sands (SM), low through silty clays (CL)
- **Abrasivity:** High through sandy gravel, cobbles and boulders (GP)
- **Clogging potential:** Avg. Consistency Index = 1.1 in clayey alluvium (CL),
Clogging potential = medium in clays
- **Tunnelman's Ground Classification:** Non-cohesive, loose silty sands (SM) and sandy gravels (GP) = Running above groundwater and Flowing below groundwater. Cohesive stiff to very stiff silty clays (CL) = Firm (see Figure 1)



Photo 8 – Caltrans Bridge 51-0316 over Rincon Creek close to the HDD alignment, approx. 100 feet south of the HDD alignment.

Foundation recommendations for this bridge in an October 15, 2002 Caltrans Memorandum include deep steel H-Piles or deep cast-in-drilled-hole (CIDH) reinforced concrete piers.



Photo 9 – View of cobbles and boulders in the creek bed of Rincon Creek taken from Caltrans Bridge 51-0316.

Typical of creek channel deposits within alluvial soils.

The source of these cobbles and boulders is the Coldwater Sandstone approximately 1.8 miles upstream, these rocks are hard “survivors” with high unconfined compressive strengths.

2.3.2. *Casitas Formation*

The Casitas Formation underlies Younger and Older alluvial soils. As shown in Figure B, Older Alluvium along the HDD alignment is limited to the top of the hillside west of Rincon Creek along Casitas Pass Road (Highway 192). The Older Alluvium contains some cobbles and boulders (see DH-3). The Younger Alluvium at and east of Rincon Creek is directly underlain by Casitas Formation (see Figure B). Both the Older Alluvium and Casitas Formation are described as middle Pleistocene Age (i.e., approx. 1.3 million years old). The Casitas Formation is described as nonmarine moderately to well-consolidated (i.e., dense) siltstone and silt, multi-colored sandstone and sand and conglomerate and gravel deposited mainly as alluvium likely shed off the Santa Ynez Mountains and other nearby uplands (see Reference A). The range of physical and geotechnical engineering properties of the Casitas Formation as encountered in Bajada Geosciences project specific borings and Caltrans’ bridge reference borings pertinent to HDD design and construction are:

- **Elevation of top of Casitas Formation:** The elevation of the top of the Casitas Formation as encountered in Caltrans reference borings (Figures 2 and 3) and project borings by Bajada Geosciences east of Rincon Creek varies from El. 99.5 to El. 113
- **Composition:** Sandstone and claystone, poorly indurated, moderately weathered, weak, very soft to soft in bedrock terms (see Reference 1, Table B-12 used herein for Hardness Classification of Intact Rock)

- Consistency: Standard Penetration Test Blow Count, N-values are $N > 50$ blows for 6" of penetration in sandstone, for claystone $N = 55$ to $N > 50$ blows for 6" of penetration.
- Moisture Content: Sandstone: 6% to 20.2%, average = 12.6%
Claystone: 8.9% to 21.8%, average = 15.1%
- Total Unit weight: Sandstone: 116.2 pcf to 134.3 pcf, average = 128.4 pcf
Claystone: 123.9 pcf to 134.5 pcf, average = 130.8 pcf
- Fines content: Sandstone: 5% (see SP in Caltrans borings) to 47%, average = 24%
($< \#200$ sieve) Claystone: 62% to 98%, average = 87%
Claystone: 41% to 56% silt and 26% to 44% clay fractions
- Plasticity: Claystone: Liquid Limit = 38% to 56%, average = 41%
Plasticity Index = 18 to 35, average = 22
- Shear strength: Sandstone $\phi = 33^\circ$ to 37° (lab tests)
Sandstone $\phi = 44^\circ$ by SPT N-value correlation
Claystone unconfined compressive strength = 6,890 to 11,197 psf (lab tests)
Claystone unconfined compressive strength $> 8,000$ psf by SPT N-value correlation
- Compressive Strength: Casitas Formation is very soft rock with approx. compressive strength of 100 psi to 3,500 psi, where cementation of sandstone is locally stronger producing soft rock, the compressive strength can increase to approximately 3,500 psi to 7,000 psi (see Reference 1, Table B-12)
- Cementation: Erratic cementation of sandstone noted in interlayered strata (variable compressive strength)
- Shear modulus (G): Sandstone $\sim 800,000$ psf (by Young's Modulus correlation)
Claystone $\sim 640,000$ psf (by Young's Modulus correlation)
- Cobbles and boulders: Not expected in Casitas Formation sandstone and claystone
- Permeability: Varies widely from low to medium/high with claystone = low permeability and clean sandstone ($< 5\%$ fines) = medium/high permeability
- Abrasivity: Sandstone = high
- Clogging potential: Claystone, avg. Consistency Index = 1.2
Clogging potential = high

- Tunnelman's
Ground
Classification: Firm in both sandstone and claystone (see Figure 1)

2.3.3. Groundwater

Groundwater was encountered within the Caltrans reference borings in June of 2002 at about Elevation 108 to 111 at Bridge No. 51-0316 (see Figures 2 and 3). This groundwater elevation is within the coarse-grained younger alluvium within Rincon Creek channel deposits on top of the Casitas Formation. Equilibrium groundwater is logged in July of 2022 at Elevation 110 within a groundwater piezometer in Bajada Geosciences boring DH-13. Refer to Bajada Geosciences Final Geotechnical Report for updated groundwater elevations in DH-13.

DRAFT

APPENDIX A

Subsurface Exploration



APPENDIX A

SUBSURFACE EXPLORATION

The subsurface exploration program for this study consisted of the advancement of twenty-seven exploratory drill holes at selected locations, as shown on Plates 3.1 through 3.3 and 4.1 through 4.3. Prior to exploration, a drilling permit was obtained from Santa Barbara and Ventura County Environmental Health Departments. In addition, an encroachment permit was obtained from Caltrans District 5 for exploration along SR 192.

The drill holes were advanced on October 4 through 7, 2021, January 17 & 18, 2022, April 29, 2022, and July 18 through 25, 2022. Exploration was performed using CME 75 track-mounted drill rigs provided by Britton Exploration of Los Gatos, California and GeoEx Exploration, Inc., of Dixon, California. In addition, a Geoprobe 4-inch diameter double-walled sonic coring system provided by GeoEx Subsurface Exploration, Inc., was utilized during a portion of the exploration. Drill holes were advanced using 8.25-inch diameter hollow-stem auger, 4-inch diameter rotary-wash drilling methods, or 3-inch diameter sonic coring methods.

Samples of soils were collected from selected depth increments in the drill holes using California modified split-spoon and/or Standard Penetration Test (SPT) samplers. Samplers were driven by a 140-pound hammer situated on the drill rig, in accordance with standard test method ASTM D1586-11. Bulk samples were also obtained at selected depth intervals. Sample types and depths are presented on Plates A-1.1 through A-1.27. All samples were returned to Bajada's office for assignment of laboratory testing. The results of the testing procedures are attached within Appendix B.

One drill hole, DH-13, was completed as a groundwater monitoring well. The well was completed using 2-inch-diameter slotted and solid pipeline, protected by a flush-mount well protector. Construction details of the monitoring well are shown on Plate A-3.1.

The exploration log describes the earth materials encountered. The logs also show the location, exploration number, date of exploration, and the names of the logger and equipment used. BAJADA geologists logged the explorations using ASTM 2488 for visual soil classification. The boundaries between soil types shown on the logs are approximate because the transition between different soil layers may be gradual and may change with time. The drill holes were backfilled with cement grout. Soils generated by drilling operations were spread across the project site.

The drill hole logs are presented as Plates A-1.1 through A-1.27. A legend to the drill hole logs is presented as Plate A-2.1. The details of monitoring well DH-13 are presented as Plate 3.1.

LOG OF EXPLORATION: DH-1

PROJECT: VTA-SB Intertie Project PROJECT NO.: 2101.0113 LOCATION: Station: 14+20 START DATE: 10/04/2021 END DATE: 10/04/2021	EXPL. VENDOR: Britton Exploration Inc. EXPL. METHOD: 8.25" HSA LOGGED BY: Bryan Puleri CHECKED BY: J. Bianchin HAMMER TYPE: 140-lb Auto Trip Hammer	ELEVATION: 175' DEPTH TO WATER: Not Encountered DEPTH OF HOLE: 16.5 feet BACKFILLED WITH: Grout/ Cuttings
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Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0	175					SM	: OLDER ALLUVIUM (Qoal) Silty SAND, brown to dark brown, moist, with abundant organic material and subangular to subrounded fine to medium grained gravels.							
				1	(31)	CH	: CLAY, dark brown, dry, slightly plastic, very stiff, with trace roots and organic material.	115.2	12.7					P.P.= 4.5, 4.5, 4.5
5	170			2	(25)		: At 5 feet: abundant white caliche, and light brownish red mottling.	110.2	17.1		47	31		P.P.= 4.5, 4.5, 4.5  At 5':PI, Soil Chem
				3	(24)			104.6	20.0					P.P.= 4.5, 4.5, 4.5
				4	(26)									P.P.= 4.5, 4.5, 4.5
10	165			5	(28)									P.P.= 4.5, 4.5, 4.5
15	160			6	(32)									P.P.= 4.5, 4.5, 4.5
							: Bottom of Drill Hole at a Depth of 16.5 feet							

LOG OF EXPLORATION: DH-2

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station 26+25
START DATE: 10/04/2021
END DATE: 10/04/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 205'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 36.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0	205		B1			SM	: OLDER ALLUVIUM (Qoal) Silty SAND, brown to dark brown, moist, with fine to medium grained subangular to subrounded gravels, and trace charcoal.				37			GS, Curve
5	200		1	(36)			: At 5 feet: dense with abundant fine pores.	112.3	7.0	49				GS
10	195		2	(41)	CL	: CASITAS FORMATION (Qca) CLAY, dark brown to reddish brown mottled dark grey to black, moist, plastic, very stiff, with trace fine to medium grained rounded gravels, and abundant pores and carbon.	113.7	14.9					 P.P.= 4.5, 4.5, 4.5	
15	190		3	(19)		: At 15 feet: dark brown to greyish brown, stiff.	107.3	19.8	41	26	P.P.=4.5, 4.0, 4.5 PI			
20	185	4	(40)		: At 20 feet: very stiff, increase in dark black mottling, increase in carbon content.	116.4	15.0	78			P.P.=4.0, 4.5, 4.5 GS			

LOG OF EXPLORATION: DH-2

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station 26+25
START DATE: 10/04/2021
END DATE: 10/04/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 205'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 36.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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25	180			5	(54)	CL	: Sandy CLAY, dark brown to light brown, dry, slightly plastic, very stiff to hard, with abundant caliche, pores, and tannish white to grey mottling.	121.6	10.6					
30	175			6	(27)	SW/SP	: SAND, brown to orangish brown, dry, medium dense, with trace fines.	109.6	6.0	10				GS, DS
35	170			7	(71)		: At 35 feet: very dense	119.9	5.5	18				GS
							: Bottom of Drill Hole at a Depth of 36.5 feet							

LOG OF EXPLORATION: DH-3

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 28+50
START DATE: 10/05/2021
END DATE: 10/05/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: Rotary Wash
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 222'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 94.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: OLDER ALLUVIUM (Qoa) Silty SAND, brown to dark brown, moist, with fine to medium grained subangular to subrounded gravels, minor fines, and minor charcoal.							
220														
5				1	(61)		: At 5 feet: dense, with trace black and greenish brown to tan mottling, and trace organic material.	116.7	11.2					
215														
10				2	(53)		: At 10 feet: trace fine pores.	118.4	12.8					
210														
15				3	(20)		: At 15 feet: medium dense, with trace carbon	114.3	9.5	36				GS
205														
20				4	50:6"	GP	: CASITAS FORMATION (Qca) Sandy GRAVEL, light brown to tannish brown, moist, very dense, with abundant fine to medium grained subrounded to rounded gravels, subrounded cobbles and boulders, trace organics, black mottling, and carbon.			12.6	14			GS
200														
25				5	(54)	CL	: CLAY, light to dark tannish brown, dry, hard, non-plastic, with trace coarse grained sands.	115.3	8.9					
195														
30				6	(32)	CL/ ML	: Silty CLAY / Clayey SILT, dark brown to brown, moist, very stiff to hard, slightly plastic, with abundant fine to medium grained subrounded to subangular gravels, and trace tan to black mottling and caliche.	121.7	8.9					
190														

LOG OF EXPLORATION: DH-3

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 28+50
START DATE: 10/05/2021
END DATE: 10/05/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: Rotary Wash
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 222'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 94.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
35	185			7	(50:5")		: At 40 feet: hard, with trace coarse sand grains.	118.9	11.9					
40	180			8	(50:6")			118.8	9.0	62	24	5	PI, GS	
45	175			9	(50:6")			120.2	10.2					
50	170			10	(50:5")	SP	: SAND, light brown to orangish brown, dry, very dense, with trace medium to coarse grained well rounded gravels.	126.2	6.4	18				GS 
55	165			11	50:5"		: At 55 feet: abundant medium to coarse grained well rounded gravels.		15.0					
60	160			12	50:6"		: At 60 feet: trace fine to medium grained gravels.		14.8	28				GS
65	155			13	(50:5")			117.7	8.0					DS

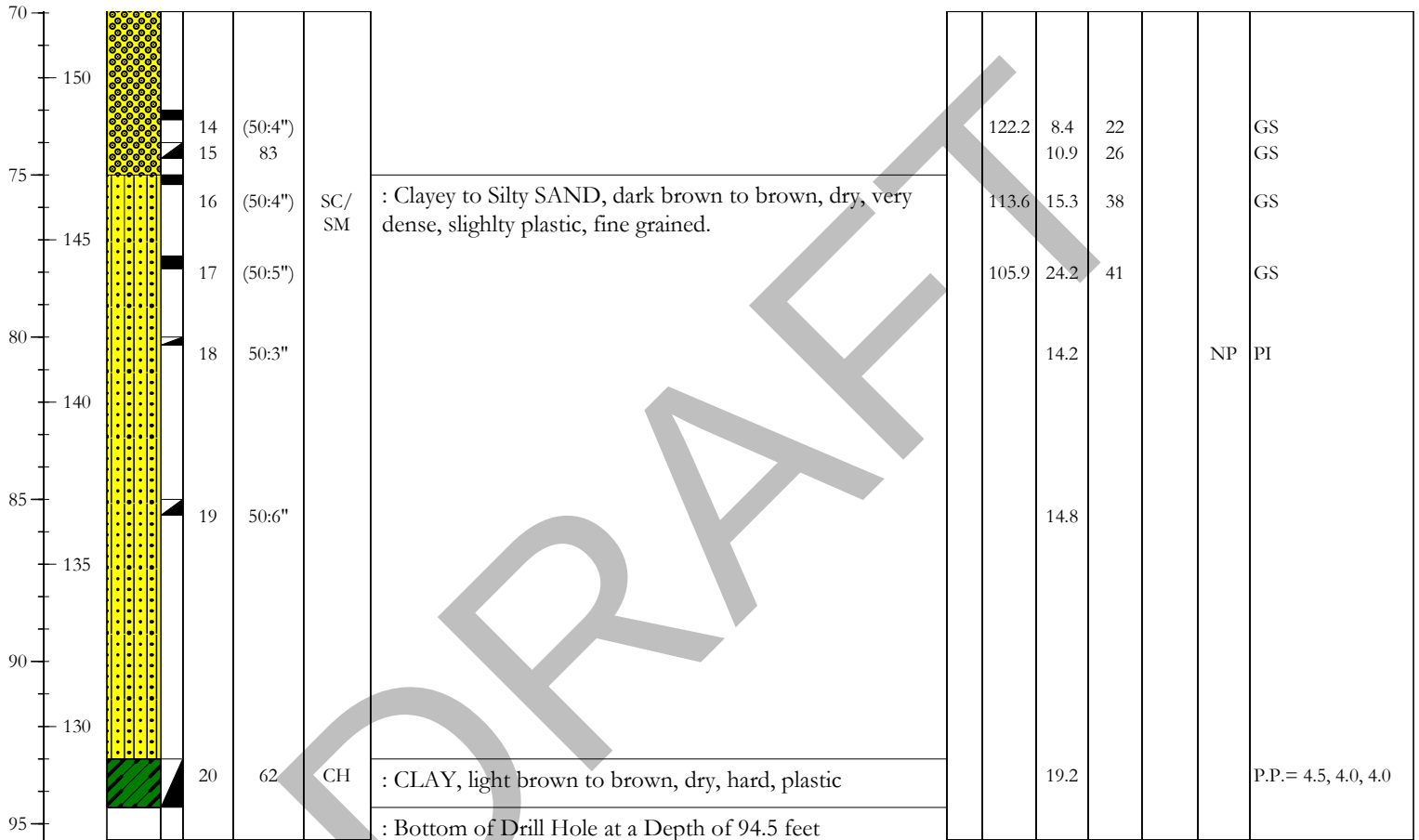
LOG OF EXPLORATION: DH-3

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 28+50
START DATE: 10/05/2021
END DATE: 10/05/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: Rotary Wash
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 222'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 94.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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LOG OF EXPLORATION: DH-4

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 50+25
START DATE: 10/04/2021
END DATE: 10/04/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 179'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 36.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, light brown to dark brown, dry to moist, with abundant organic material, and trace fine to medium grained subangular to subrounded gravels.							
175				1	(7)		: At 5 feet: loose.	100.1	8.7					
170				2	(12)			109.2	4.9					
165				3	(14)		: At 15 feet: loose to medium dense.	117.1	7.5	33				GS
160				4	(13)		: At 20 feet: trace caliche and white mottling.	107.1	8.4	40				GS, DS
155				5	(18)			109.3	11.6					

LOG OF EXPLORATION: DH-4

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 50+25
START DATE: 10/04/2021
END DATE: 10/04/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 179'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 36.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
				5	(18)		: At 25 feet: medium dense, lacking organics.	109.3	11.6					
				6	(21)			116.9	10.1					
				7	(21)	CL	: CLAY, dark greenish brown, moist, very stiff, slightly plastic, with trace white mottling, and caliche.	110.2	15.8	69	30	16	PI, GS, UC	
							: Bottom of Drill Hole at a Depth of 36.5 Feet							

LOG OF EXPLORATION: DH-4A

PROJECT:	VTa-SB Intertie Project	EXPL. VENDOR:	GeoEx Subsurface Expl.	ELEVATION:	179'
PROJECT NO.:	2101.0113	EXPL. METHOD:	4" SSA	DEPTH TO WATER:	Not Encountered
LOCATION:	Station: 50+25	LOGGED BY:	G. Butler	DEPTH OF HOLE:	51.5 feet
START DATE:	7/19/2022	CHECKED BY:	J. Bianchin	BACKFILLED WITH:	Grout
END DATE:	7/19/2022	HAMMER TYPE:	140-lb Auto Trip Hammer		

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, light brown to dark brown, dry to moist, with abundant organic material, and trace fine to medium grained subangular to subrounded gravels.							
175							: At 5 feet: loose.							
5														
170							: At 15 feet: loose to medium dense.							
10														
165							: At 20 feet: trace caliche and white mottling.							
15														
160							: At 25 feet: medium dense, lacking organics.							
20														
155														
25														
150														
30														

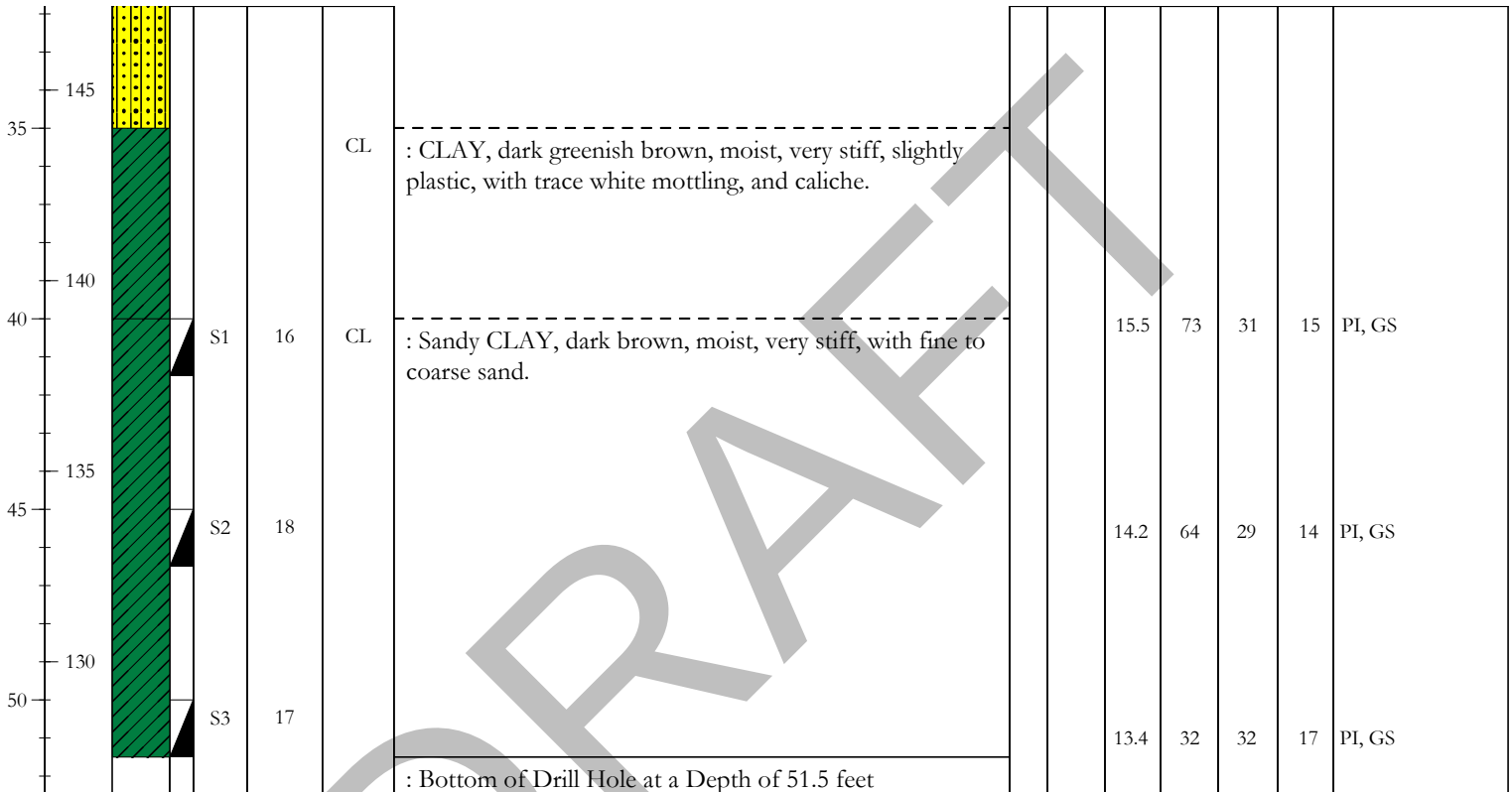
LOG OF EXPLORATION: DH-4A

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 50+25
START DATE: 7/19/2022
END DATE: 7/19/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 4" SSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 179'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 51.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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LOG OF EXPLORATION: DH-5

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 54+40
START DATE: 10/06/2021
END DATE: 10/06/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 199'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 16.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						GP/ GW	: COLLUVIUM (Qcol) Sandy GRAVEL, light brown to tan, dry, with abundant medium grained subangular to angular gravels.							
195														
5				1	(34)	CL	: CASITAS FORMATION (Qca) Silty SAND, light brown to greenish brown, dry, medium dense, with trace fine pores, white and tan mottling, and fine grained subangular gravels.	106.0	11.1			42	23	PI
190				2	(72)		: At 7.5 feet: very dense, with trace black and tannish brown mottling.	109.0	6.1					Soil Chem
10				3	(50:5")									
185														
15				4	(81)									
							: Bottom of Drill Hole at a Depth of 16.5 feet.							

LOG OF EXPLORATION: DH-6

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-A (Brown)
START DATE: 10/06/2021
END DATE: 10/06/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 183'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 51.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0				B1		CL	: ALLUVIUM (Qal) Sandy CLAY, light brownish tan, dry, slightly plastic, with abundant fine to coarse grained subrounded to rounded gravels, with trace organics.							Curve, Soil Chem
5				1	(9)		At 5 feet: soft, plastic, trace tan mottling, and fine to medium grained subangular gravels.	96.8	7.3					DS
10				2	(23)		At 10 feet: slightly plastic, stiff to very stiff, trace caliche.	93.1	20.4			29	10	PI
15				3	(13)		At 15 feet: stiff, increase in mottling, trace fine to coarse grained subangular gravels.	103.7	13.8					
20				4	(16)	SM	: Silty SAND, brown to dark brown, moist, medium dense, with trace fines, and fine to coarse grained subrounded to rounded gravels.	105.3	10.2	36				GS
25				5	(12)	CL	: Silty to Sandy CLAY, dark brown to tannish brown mottled greenish tan, dry, firm to stiff, slightly plastic, with abundant caliche and trace fine to coarse grained subrounded to rounded gravels.	114.3	11.7					
30				6	10					18.2				

LOG OF EXPLORATION: DH-6

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-A (Brown)
START DATE: 10/06/2021
END DATE: 10/06/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 183'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 51.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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150														
35				7	8	SP / SW	: SAND, light brown to brown, dry, loose, with trace fine to medium grained subangular gravels, greenish tan mottling, caliche, and fines.			12.8				
145														
40				8	11	CL	: CLAY, dark brown, moist, firm, non-plastic.			16.5				
140														
45				9	14	SC/ SM	: Clayey to Silty SAND, dark brown to brown, dry, loose to medium dense, with abundant fine to medium grained subangular to subrounded gravels, and trace thin interbedded lenses of clay.			8.2				
135														
50				10	14					7.3				
							: Bottom of Drill Hole at a Depth of 51.5 feet							

LOG OF EXPLORATION: DH-7

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-A (Brown)
START DATE: 10/06/2021
END DATE: 10/06/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 183'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 23.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						CL/ML	: ALLUVIUM (Qal) Silty CLAY / Clayey SILT, light brown to tan, slightly plastic, dry, with trace fine grained angular gravels, coarse sands, and organics.							
5				1	(10)		: At 5 feet: dark brown to green, soft, with trace light green mottling and caliche.	90.7	9.5			29	8	PI
10				2	(18)	SM	: Silty SAND, dark greenish brown, dry, medium dense, with abundant white and tan caliche, and trace fine to medium grained subangular to angular gravels.	105.9	13.3					
15				3	(11)		: At 15 feet: loose.	102.7	15.1					
20				4	(26)		: At 20 feet: medium to coarse grained gravel.							
23.5				5	56		: Clayey GRAVEL, brown, dry, very dense, slightly plastic, with fine grained sands, and fine to coarse grained subrounded gravels.							
							: Bottom of Drill Hole at a Depth of 23.5 feet							

LOG OF EXPLORATION: DH-8

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 170+65
START DATE: 10/06/2021
END DATE: 10/06/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 221'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 11.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, light brown to brownish tan, dry, with abundant medium to fine grained subangular to angular gravels.							
220														
5				1	(28)	SP /SW	: SAND, light brown to tanish orange brown, dry, medium dense, with abundant fine to coarse grained subangular to angular gravels, organics, and trace black and brown mottling and white caliche.	104.7	10.2	42				At 5': GS
215				2	(7)	CL/ ML	: Silty CLAY/ Clayey SILT, brown to dark brown, dry, slightly plastic to non-plastic, very loose to loose, with trace white caliche and tannish brown mottling.	92.9	9.7					
10				3	(10)		: At 10 feet: dry to moist, with trace reddish brown mottling.							
210							: Bottom of Drill Hole at a Depth of 11.5 feet.							

LOG OF EXPLORATION: DH-9

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 310+00 (vault)
START DATE: 10/07/2021
END DATE: 10/07/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 278'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 21.5 feet
BACKFILLED WITH: Grout/Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0			B1			SM	: ALLUVIUM (Qal) Silty SAND, dark brown, moist, with abundant fine to medium grained subangular to angular gravels, and organic material.							
2.75														
5			1	(9)		CL/ML	: Silty CLAY/ Clayey SILT, dark brown, dry to moist, slightly plastic, soft to firm, with abundant caliche, tan mottling, fine to medium grained subangular to angular gravels, and trace organic material.	103.3	11.8					At 5': soil chem
2.70														
10			2	(21)			: At 10 feet: firm to stiff, increase in caliche and mottling, lacking trace organics.	89.8	14.8			30	8	PI, DS
2.65														
15			3	43		SM/SC	: CASITAS FORMATION (Qca) Sandy SILT/ Silty SAND, light brown to brownish green, dry, stiff to very stiff, with abundant fine to coarse grained subangular to angular gravels.			25				GS
2.60														
20			4	(50:4")			: Bottom of Drill Hole at a Depth of 20.5 feet.							Boulder at about 18 feet Coarse sandstone gravel (or fine cobble) jammed in sampling shoe at 20 feet.

LOG OF EXPLORATION: DH-10

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-B
START DATE: 10/07/2021
END DATE: 10/07/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 806'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 20.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0	805					CL/ML	: ALLUVIUM (Qal) / COLLUVIUM (Qc) Silty CLAY/ Clayey SILT, dark brown to brown mottled light green, dry to moist, with trace organics.							
5	800			1	(15)		: At 5 feet: stiff, lacking mottling.	108.2	6.3			26	9	PI, DS
10	795			2	(24)		: At 10 feet: very stiff, lacking trace organics.	111.7	7.9					
15	790			3	(41)	CL	: CLAY, dark brown to brown mottled dark greenish grey, dry, non-plastic, very stiff to hard, with abundant pores.	115.0	12.1					Stiff drilling at 17 feet
20	785			4	(50:6")	RX	: SESPE FORMATION SANDSTONE, reddish brown to brown, dry, poorly indurated, weak, fine grained.							

LOG OF EXPLORATION: DH-11

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-B
START DATE: 10/07/2021
END DATE: 10/07/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 804'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 11.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0				B1		CL/ML	: ALLUVIUM (Qal) / COLLUVIUM (Qc) Silty CLAY/ Clayey SILT, dark brown to brown mottled light green, dry to moist, slightly plastic, with trace fine to medium grained subangular to angular gravels, organics.							Curve, Soil Chem
				1	(36)	SP/SW	: SAND, light brown, dry, medium dense, with fine trace pores.	113.6	4.6	37				GS
5				2	(85)	SM/SC	: Silty SAND/ Sandy SILT, light brown to tan, dry, very dense, with trace pores.	111.4	3.3					
7.95				3	(50:5")		: SESPE FORMATION SANDSTONE, reddish brown to brown, dry, poorly indurated, weak, fine grained.							
10							: Bottom of Drill Hole at a Depth of 11.5 feet.							

LOG OF EXPLORATION: DH-12

PROJECT: VTA-VTA Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-B
START DATE: 10/07/2021
END DATE: 10/07/2021

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Bryan Puleri
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 801'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 20.5 feet
BACKFILLED WITH: Grout/ Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0	800					CL/ML	: ALLUVIUM (Qal) / COLLUVIUM (Qc) Silty CLAY/ Clayey SILT, dark brown to brown, dry to moist, slightly plastic, with trace fine to medium grained subangular to angular gravels, and organics.							
5	795		1	(41)		CL/ML	: At 5 feet: dense to very dense, trace coarse sands.	120.6	9.1					
			2	(35)			: At 7 feet: trace light green mottling.	118.6	9.8					
10	790		3	(32)			: At 10 feet: abundant pores.	118.1	9.6					
15	785		4	(50:5")		SM/ML	: Silty SAND/ Sandy SILT, light brownish tan, dry, very dense, with abundant pores.	111.0	2.7					
20	780		5	(50:5")		RX	: SESPE FORMATION SANDSTONE, reddish brown to brown, dry, very dense. : Bottom of Drill Hole at a Depth of 20.5 feet.							

LOG OF EXPLORATION: DH-13

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station 34+60
START DATE: 1/18/2022
END DATE: 1/18/2022

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: Mud Rotary
LOGGED BY: Gary Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 125
DEPTH TO WATER: Unknown
DEPTH OF HOLE: 65.5 feet
BACKFILLED WITH: Monitoring Well

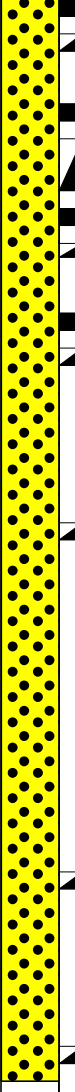
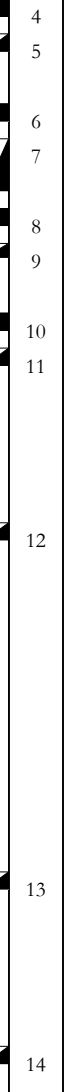
Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0	125					SM	: ALLUVIUM (Qal) Silty SAND, yellowish brown, moist, very fine to fine grained.							
5	120													
10	115			1	14		: At 10 feet: dark yellowish brown, medium dense.			5.3	35			GS
15	110					RX	: CASITAS FORMATION (Qca) CLAYSTONE, dark gray, moist, weak.							
20	105			2	(50:6)		: At 20 feet: moderately indurated, weak, with pale brown sand inclusions.				94	38	20	PI
25	100													
30	95			3	52	Rx	: SANDSTONE, dark gray, moist, fine grained, moderately weathered, moderately hard, weak. : At 30 feet: fine to medium grained.			13.4				

LOG OF EXPLORATION: DH-13

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station 34+60
START DATE: 1/18/2022
END DATE: 1/18/2022

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: Mud Rotary
LOGGED BY: Gary Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 125
DEPTH TO WATER: Unknown
DEPTH OF HOLE: 65.5 feet
BACKFILLED WITH: Monitoring Well

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
35	90			4	(50:4)		: At 35 feet: with sacttered thin sandstone beds.			12.0	19			Combined sample nos. 4 - 11
				5	50:6									
				6	(50:5)									
40	85			7	76									
				8	(50:4)									
				9	50:3									
				10	(50:5)									
45	80			11	50:6									
50	75			12	50:5					12.7	46	20	3	Combined sample nos. 12 - 14
55	70						: At 50 feet: with interbedded claystone.							
60	65			13	50:5									
65	60			14	50:4									
							: Bottom of Drill Hole at a Depth of 66 Feet.							

LOG OF EXPLORATION: DH-14

PROJECT:	VTa-SB Intertie Project	EXPL. VENDOR:	Britton Exploration Inc.	ELEVATION:	134'
PROJECT NO.:	2101.0113	EXPL. METHOD:	8.25" HSA	DEPTH TO WATER:	Not Encountered
LOCATION:	Station 38+50	LOGGED BY:	Gary Butler	DEPTH OF HOLE:	25 feet
START DATE:	1/17/2022	CHECKED BY:	J. Bianchin	BACKFILLED WITH:	Grout
END DATE:	1/17/2022	HAMMER TYPE:	140-lb Auto Trip Hammer		

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, dark brown, moist, very fine to fine grained, with minor clay.							
130														
5														
10				1	3		: At 10 feet: dark yellowish brown, very loose.			4.3	36			GS
125						GP	: Sandy GRAVEL with cobbles and possible boulders.							Heavy rig chatter
120														
15														
20				2	50:6		: At 20 feet: very pale brown, moist, very dense, with very fine to fine sand, interbedded with Silty SAND, yellowish brown, moist, very dense, fine to medium grained.			1.1				
115														
25					50:<1		: Practical Refusal at a Depth of 25 Feet.							No sample recovery

LOG OF EXPLORATION: DH-14A

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station 38+50
START DATE: 1/17/2022
END DATE: 1/17/2022

EXPL. VENDOR: GeoEX Subsurface Expl.
EXPL. METHOD: 3" Sonic Core
LOGGED BY: Gary Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 134'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 40.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, dark brown, moist, very fine to fine grained, with minor clay.							
130														
5														
125							: At 10 feet: dark yellowish brown, very loose.							
10						GP	: Sandy GRAVEL with cobbles and possible boulders.							
120														
15														
115							: From 20 to 22 feet: with interbedded Silty SAND, yellowish brown, moist, very dense, fine to medium grained.							
20														
110														
25														
105				S1	95	RX	: CASITAS FORMATION (Qca) SANDSTONE, moderate brown, moist, weak, poorly indurated, fine to medium grained, with trace clay.		11.5	47			GS	
30														

LOG OF EXPLORATION: DH-14A

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station 38+50
START DATE: 1/17/2022
END DATE: 1/17/2022

EXPL. VENDOR: GeoEX Subsurface Expl.
EXPL. METHOD: 3" Sonic Core
LOGGED BY: Gary Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 134'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 40.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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100														
35				S2	50:5		: At 35 feet: mottled green and reddish brown.			12.6	45			GS
95														
40							: Bottom of Drill Hole at a Depth of 40.5 Feet							

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LOG OF EXPLORATION: DH-15

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station 44+55
START DATE: 1/17/2022
END DATE: 1/17/2022

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Gary Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 158'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 37 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, dark brown, moist, very fine to fine grained, with minor clay.							
155														
5														
150														
10				1	5		: At 10 feet: brown, loose.			2.0				
145														
15						CL	: Silty CLAY, dark yellowish brown, moist, moderately plastic, with very fine to fine sand.							
140														
20				2	(14)	SM	: Silty SAND, dark yellowish brown, moist, loose, very fine grained.							
135						CL	: Silty CLAY, dark yellowish brown, moist, moderately plastic, with very fine to fine sand.							
25				3	(9)	SM								

LOG OF EXPLORATION: DH-15

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station 44+55
START DATE: 1/17/2022
END DATE: 1/17/2022

EXPL. VENDOR: Britton Exploration Inc.
EXPL. METHOD: 8.25" HSA
LOGGED BY: Gary Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 158'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 37 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
				3	(9)	SM	: CASITAS FORMATION (Qca) Silty SAND, dark yellowish brown, moist, loose, very fine grained.							
				4	(14)					100.8	13.4	55		GS
				5	(16)									
130														
30				6	(13)					105.2	13.4			DS
				7	(22)		: At 31 feet: dark brown, medium dense			108.1	15.1	48		GS
125				8	(26)									
				9	(27)					102.9	12.3			DS
35				10	(32)		: At 35.5 feet: vertical fracture separating brownish yellow and dark brown silty sands.							
							: Bottom of Drill Hole at a Depth of 37 feet.							
120														

LOG OF EXPLORATION: DH-16

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 39+00
START DATE: 7/18/2022
END DATE: 7/18/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: Mud Rotary
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 138'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 41.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0	135					CL	: ALLUVIUM (Qal) Sandy CLAY to CLAY, brown, moist, fine grained, with trace medium sand interbeds.							
5	130													
10	125						: At 9 feet: with trace to moderate gravel							
15	120													
20	115					GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
25	110													

LOG OF EXPLORATION: DH-16

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 39+00
START DATE: 7/18/2022
END DATE: 7/18/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: Mud Rotary
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 138'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 41.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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30	105					CH/CL	: CASITAS FORMATION (Qca) Silty CLAY to CLAY, grayish brown, moist, hard (soil term), poorly indurated, weak (rock term), slightly weathered, plastic.							
35	100		S1		55					18.7				Soil Chem
40	95		S2		59					21.8	91	38	18	PI, GS
							: Bottom of Drill Hole at a Depth of 41.5 feet							

LOG OF EXPLORATION: DH-17

PROJECT:	VTa-SB Intertie Project	EXPL. VENDOR:	GeoEx Subsurface Expl.	ELEVATION:	137'
PROJECT NO.:	2101.0113	EXPL. METHOD:	Mud Rotary	DEPTH TO WATER:	Not Encountered
LOCATION:	Station: 39+50	LOGGED BY:	G. Butler	DEPTH OF HOLE:	34.5 feet
START DATE:	7/18/2022	CHECKED BY:	J. Bianchin	BACKFILLED WITH:	Grout
END DATE:	7/18/2022	HAMMER TYPE:	140-lb Auto Trip Hammer		

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						CL	: ALLUVIUM (Qal) Sandy CLAY to CLAY, brown, moist, fine grained, with trace medium sand interbeds.							
135														
5														
130														
10														
125														
15						GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
						CL	: Silty CLAY to CLAY, brown, fine grained.							
120						GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
20														
115														
25							: Silty CLAY to CLAY, brown, fine grained.							
110							: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							

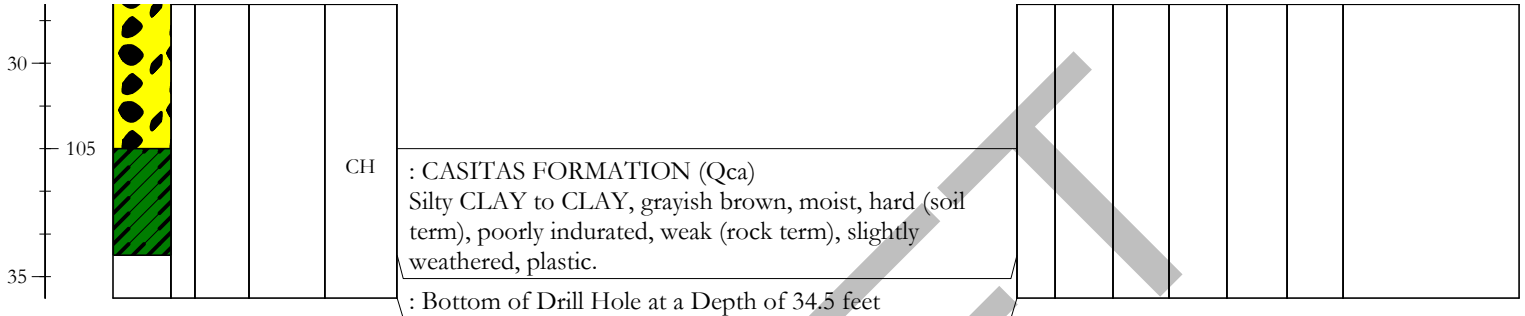
LOG OF EXPLORATION: DH-17

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 39+50
START DATE: 7/18/2022
END DATE: 7/18/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: Mud Rotary
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 137'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 34.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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LOG OF EXPLORATION: DH-18

PROJECT:	VTa-SB Intertie Project	EXPL. VENDOR:	GeoEx Subsurface Expl.	ELEVATION:	138'
PROJECT NO.:	2101.0113	EXPL. METHOD:	Mud Rotary	DEPTH TO WATER:	Not Encountered
LOCATION:	Station: 40+00	LOGGED BY:	G. Butler	DEPTH OF HOLE:	61.5 feet
START DATE:	7/19/2022	CHECKED BY:	J. Bianchin	BACKFILLED WITH:	Grout
END DATE:	7/20/2022	HAMMER TYPE:	140-lb Auto Trip Hammer		

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						CL	: ALLUVIUM (Qal) Sandy CLAY to CLAY, brown, moist, fine grained, with trace medium sand interbeds.							
135														
5														
130														
10														
125														
15														
120						GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
20														
115														
25														
110														
30														

LOG OF EXPLORATION: DH-18

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 40+00
START DATE: 7/19/2022
END DATE: 7/20/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: Mud Rotary
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 138'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 61.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
105														
35														
100														
40				S1	65	SC	: CASITAS FORMATION (Qca) Clayey SAND, moderate brown, moist, very dense, slightly plastic, fine grained, with trace medium grains.			20.2				
95														
45														
90														
50				S2	83	CH/ CL	: Silty CLAY to CLAY, moderate brown, moist, hard, slightly plastic to plastic, with trace fine sand.			19.4				
85														
55														
80														
60				S3	51					19.2	88	46	28	PI, GS
							: Bottom of Drill Hole at a Depth of 61.5 feet							

LOG OF EXPLORATION: DH-19

PROJECT:	VTa-SB Intertie Project	EXPL. VENDOR:	GeoEx Subsurface Expl.	ELEVATION:	139'
PROJECT NO.:	2101.0113	EXPL. METHOD:	4" SSA	DEPTH TO WATER:	Not Encountered
LOCATION:	Station: 40+50	LOGGED BY:	G. Butler	DEPTH OF HOLE:	45 feet
START DATE:	7/20/2022	CHECKED BY:	J. Bianchin	BACKFILLED WITH:	Grout
END DATE:	7/20/2022	HAMMER TYPE:	140-lb Auto Trip Hammer		

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, moderate brown, dry to moist, fine to medium grained with trace to moderate fine to medium subrounded gravel.							
135														
5														
130														
10														
						CL	: Sandy CLAY, moderate brown, moist, plastic, fine grained.							
125														
15														
120						GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
20														
115														
25														

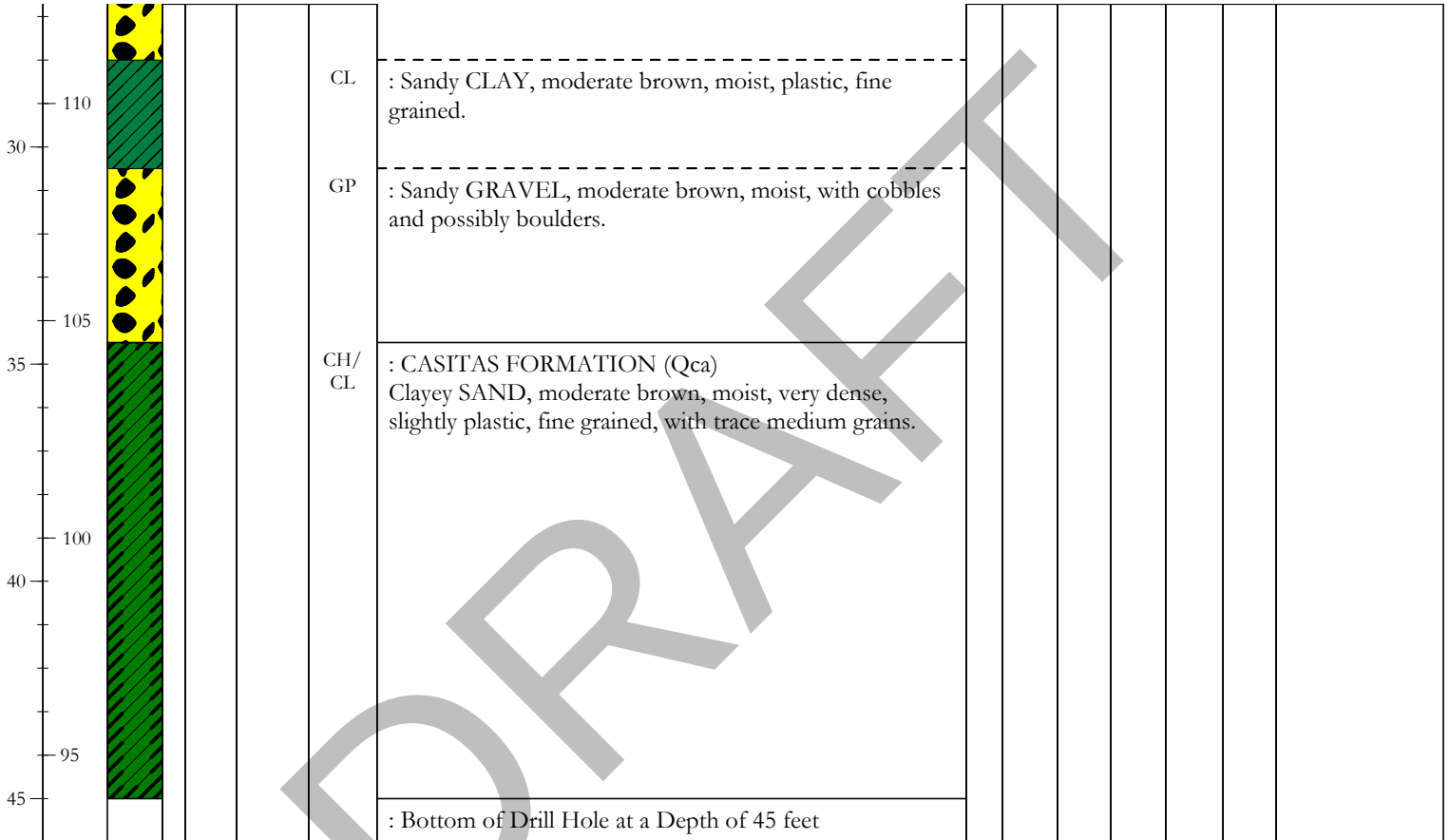
LOG OF EXPLORATION: DH-19

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 40+50
START DATE: 7/20/2022
END DATE: 7/20/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 4" SSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 139'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 45 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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LOG OF EXPLORATION: DH-20

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 41+00
START DATE: 7/20/2022
END DATE: 7/20/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 4" SSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 142'
DEPTH TO WATER: 40 Feet
DEPTH OF HOLE: 51 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, moderate brown, moist, fine to medium grained.							
140														
5														
135														
10														
130														
15						CL	: At 14 feet: approximately one-foot-thick layer of gravel. : Silty to Sandy CLAY, moderate brown, moist, slightly plastic, fine to medium grained.							
125														
20						GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
120														
25														

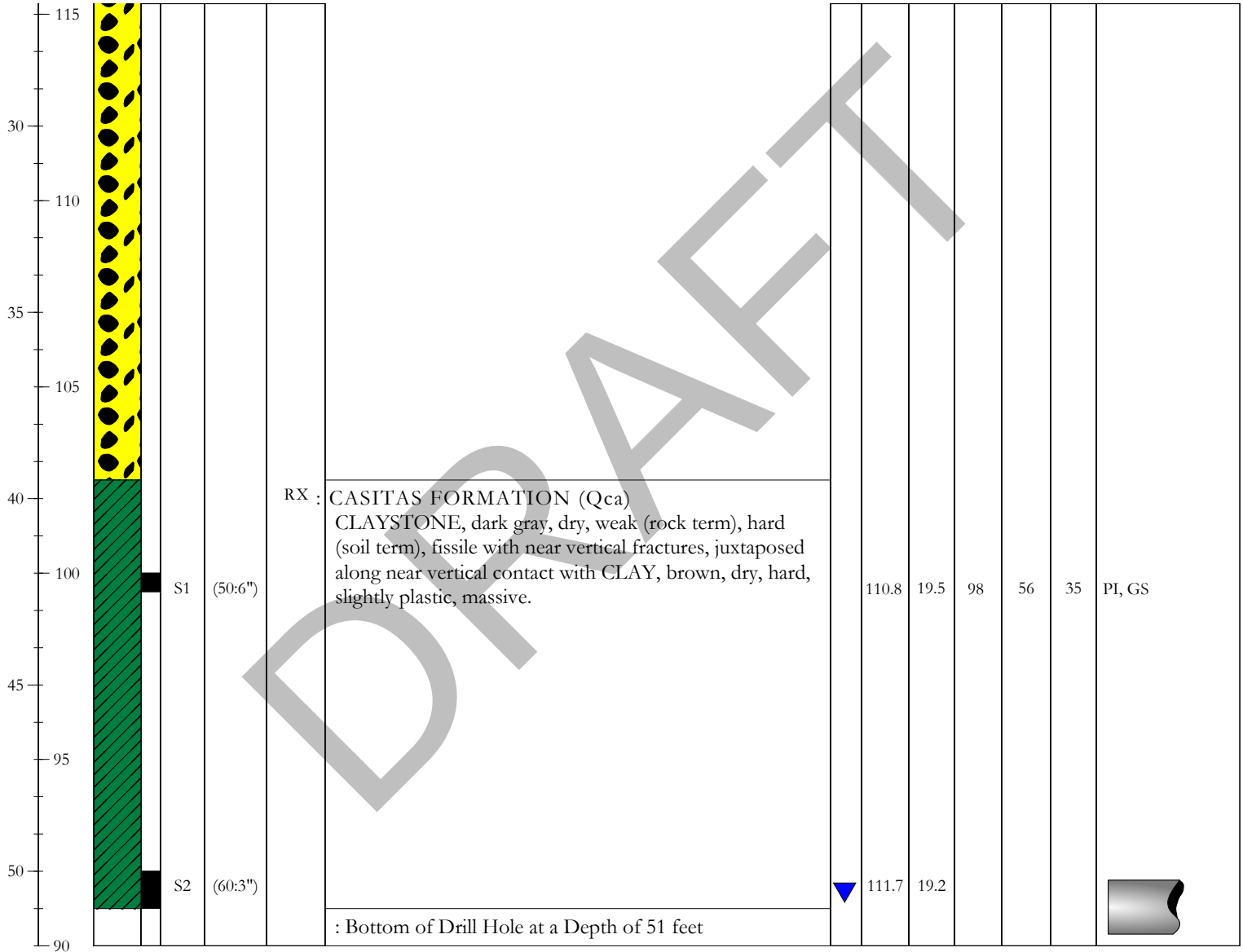
LOG OF EXPLORATION: DH-20

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 41+00
START DATE: 7/20/2022
END DATE: 7/20/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 4" SSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 142'
DEPTH TO WATER: 40 Feet
DEPTH OF HOLE: 51 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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LOG OF EXPLORATION: DH-21

PROJECT:	VTa-SB Intertie Project	EXPL. VENDOR:	GeoEx Subsurface Expl.	ELEVATION:	143'
PROJECT NO.:	2101.0113	EXPL. METHOD:	4" SSA	DEPTH TO WATER:	Not Encountered
LOCATION:	Station: 41+50	LOGGED BY:	G. Butler	DEPTH OF HOLE:	44 feet
START DATE:	7/21/2022	CHECKED BY:	J. Bianchin	BACKFILLED WITH:	Grout
END DATE:	7/21/2022	HAMMER TYPE:	140-lb Auto Trip Hammer		

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, moderate brown, moist, fine to medium grained.							
140						CL	: Sandy CLAY, moderate brown, moist, slightly plastic, fine to medium grained.							
5						GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
135														
10														
130														
15														
125														
20														
120														
25														

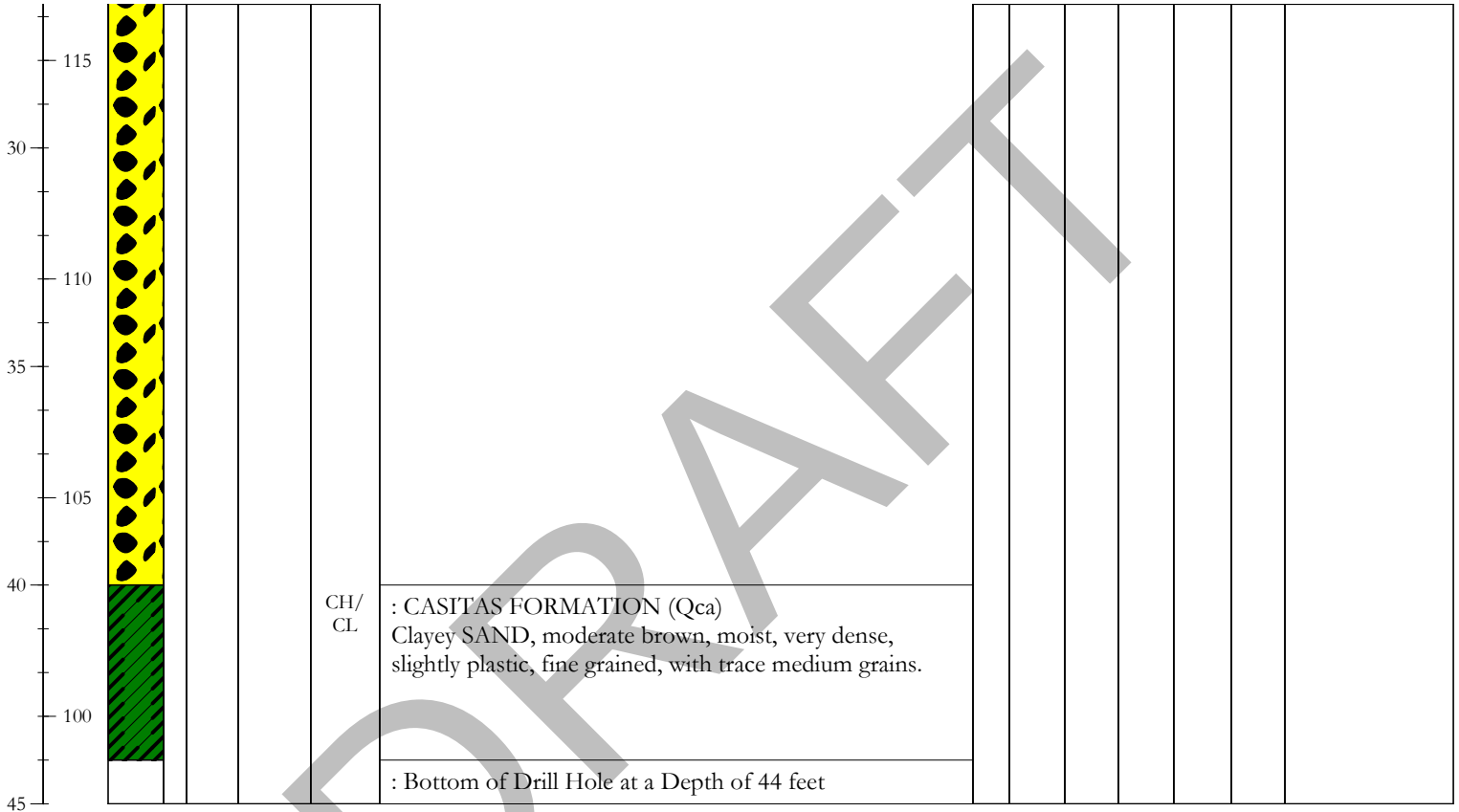
LOG OF EXPLORATION: DH-21

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 41+50
START DATE: 7/21/2022
END DATE: 7/21/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 4" SSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 143'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 44 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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LOG OF EXPLORATION: DH-22

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 42+90
START DATE: 7/21/2022
END DATE: 7/21/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 4" SSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 150'
DEPTH TO WATER: ~52 Feet
DEPTH OF HOLE: 55.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0	150					SM	: ALLUVIUM (Qal) Silty SAND, pale yellowish brown, moist, fine to medium grained.							
5	145					CL	: Sandy CLAY, moderate brown, moist, slightly plastic, fine to medium grained.							
10	140					GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
15	135					CL	: Sandy CLAY, moderate brown, moist, slightly plastic, fine to medium grained.							
20	130													
25	125													
30	120													

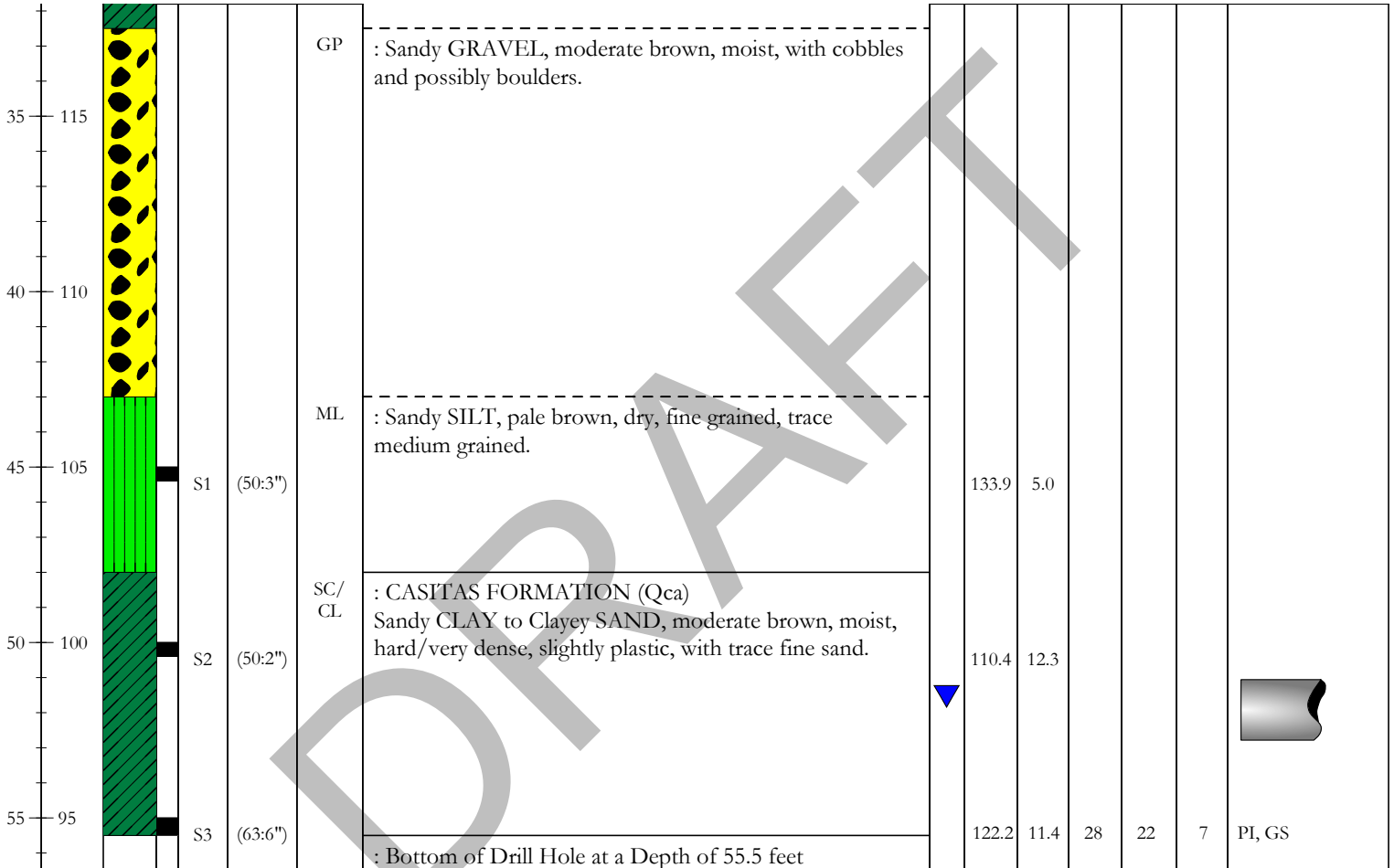
LOG OF EXPLORATION: DH-22

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 42+90
START DATE: 7/21/2022
END DATE: 7/21/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 4" SSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 150'
DEPTH TO WATER: ~52 Feet
DEPTH OF HOLE: 55.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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LOG OF EXPLORATION: DH-23

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 43+40
START DATE: 7/21/2022
END DATE: 7/21/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: Rotary Wash
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 152'
DEPTH TO WATER: ~52 Feet
DEPTH OF HOLE: 60.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0						SM	: ALLUVIUM (Qal) Silty SAND, pale yellowish brown, moist, fine to medium grained.							
150														
5														
145														
10														
140														
15						CL	: Sandy CLAY, moderate brown, moist, slightly plastic, fine to medium grained.							
135														
20														
130														
25														
125														
30														

LOG OF EXPLORATION: DH-23

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: Station: 43+40
START DATE: 7/21/2022
END DATE: 7/21/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: Rotary Wash
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 152'
DEPTH TO WATER: ~52 Feet
DEPTH OF HOLE: 60.5 feet
BACKFILLED WITH: Grout

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
120														
35						GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
115						CL	: Sandy CLAY, moderate brown, moist, slightly plastic, fine to medium grained.							
40						GP	: Sandy GRAVEL, moderate brown, moist, with cobbles and possibly boulders.							
110														
45														
105														
50														
100						CH/CL	: CASITAS FORMATION (Qca) CLAY, moderate brown, moist, hard, slightly plastic to plastic, with trace fine sand and thin interbeds of Silty SAND, dark gray, moist, fine to medium grained. : At 55 feet: hard.							
55				S1	50:4"					16.4				Soil Chem
95														
60				S2	50:4"					15.2	67			GS
							: Bottom of Drill Hole at a Depth of 60.5 feet							

LOG OF EXPLORATION: DH-24

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-A (Barnard)
START DATE: 7/19/2022
END DATE: 7/19/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 8.25" HSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 183'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 36 feet
BACKFILLED WITH: Grout/Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0				1		CL	: ALLUVIUM (Qal) Clayey SAND, light brownish tan, moist, slightly plastic, fine to medium grained, with trace organics.							Curve
180				2	(11)		: At 3 feet: loose.	97.1	8.7					
5				3	(32)		: At 5 feet: medium dense with fine subangular gravels.	99.0	8.5	31				GS
175														
10				4	(14)		: At 10 feet: slightly plastic, loose to medium dense, trace caliche.	88.6	20.1					DS
170														
15				5	(43)	SM	: Silty to Clayey SAND, moderate brown, moist, medium dense, fine to medium grained, with fine subangular gravel and trace calcium carbonate.	115.2	6.3	13				GS
165						SP	: SAND, moderate yellowish brown, moist, dense, fine to medium grained.	111.0	7.0	18		NP	PI, GS	
20				6	(32)	CL/SC	: Sandy CLAY to Clayey SAND, moderate brown, stiff/medium dense, slightly plastic, fine grained, with trace fine subrounded gravel.							
160														

LOG OF EXPLORATION: DH-24

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-A (Barnard)
START DATE: 7/19/2022
END DATE: 7/19/2022

EXPL. VENDOR: GeoEx Subsurface Expl.
EXPL. METHOD: 8.25" HSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 183'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 36 feet
BACKFILLED WITH: Grout/Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
25				7	(69)	SP	: Gravelly SAND to Sandy GRAVEL, light brown to brown, moist, very dense, fine to medium grained with fine to medium subrounded to subangular gravel.	115.0	6.0					
155				8	(72)									
30				9	(50:2)		: At 35 feet, with moderate caliche nodules and veining.							
150							: Bottom of Drill Hole at a Depth of 36 feet							
35														



LOG OF EXPLORATION: DH-25

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-A (Barnard)
START DATE: 7/19/2022
END DATE: 7/19/2022

EXPL. VENDOR: GeoEX Subsurface Expl.
EXPL. METHOD: 8.25" HSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 185'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 26.5 feet
BACKFILLED WITH: Grout/Cuttings

Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
0	185			1		GP	: ALLUVIUM (Qal) Clayey SAND, yellowish brown, moist, fine to coarse sand with fine to medium subrounded to subangular gravels.							
				2	(20)		: At 3 feet: medium dense.	91.0	11.7	22				GS, Soil Chem
5	180			3	(9)	SM	: Silty SAND to Sandy GRAVEL, moderate brown, moist, loose, fine to medium grained with fine to medium subangular to subrounded gravel.	85.8	12.6					
10	175			4	(7)	SC	: Sandy CLAY, brown, moist, soft to firm, slightly plastic, fine to medium grained.	90.3	15.5	66				GS
15	170			5	(25)	SM	: Silty SAND, moderate brown, moist, medium dense, fine to medium grained.	127.2	8.2					

LOG OF EXPLORATION: DH-25

PROJECT: VTA-SB Intertie Project
PROJECT NO.: 2101.0113
LOCATION: BPS-A (Barnard)
START DATE: 7/19/2022
END DATE: 7/19/2022

EXPL. VENDOR: GeoEX Subsurface Expl.
EXPL. METHOD: 8.25" HSA
LOGGED BY: G. Butler
CHECKED BY: J. Bianchin
HAMMER TYPE: 140-lb Auto Trip Hammer

ELEVATION: 185'
DEPTH TO WATER: Not Encountered
DEPTH OF HOLE: 26.5 feet
BACKFILLED WITH: Grout/Cuttings

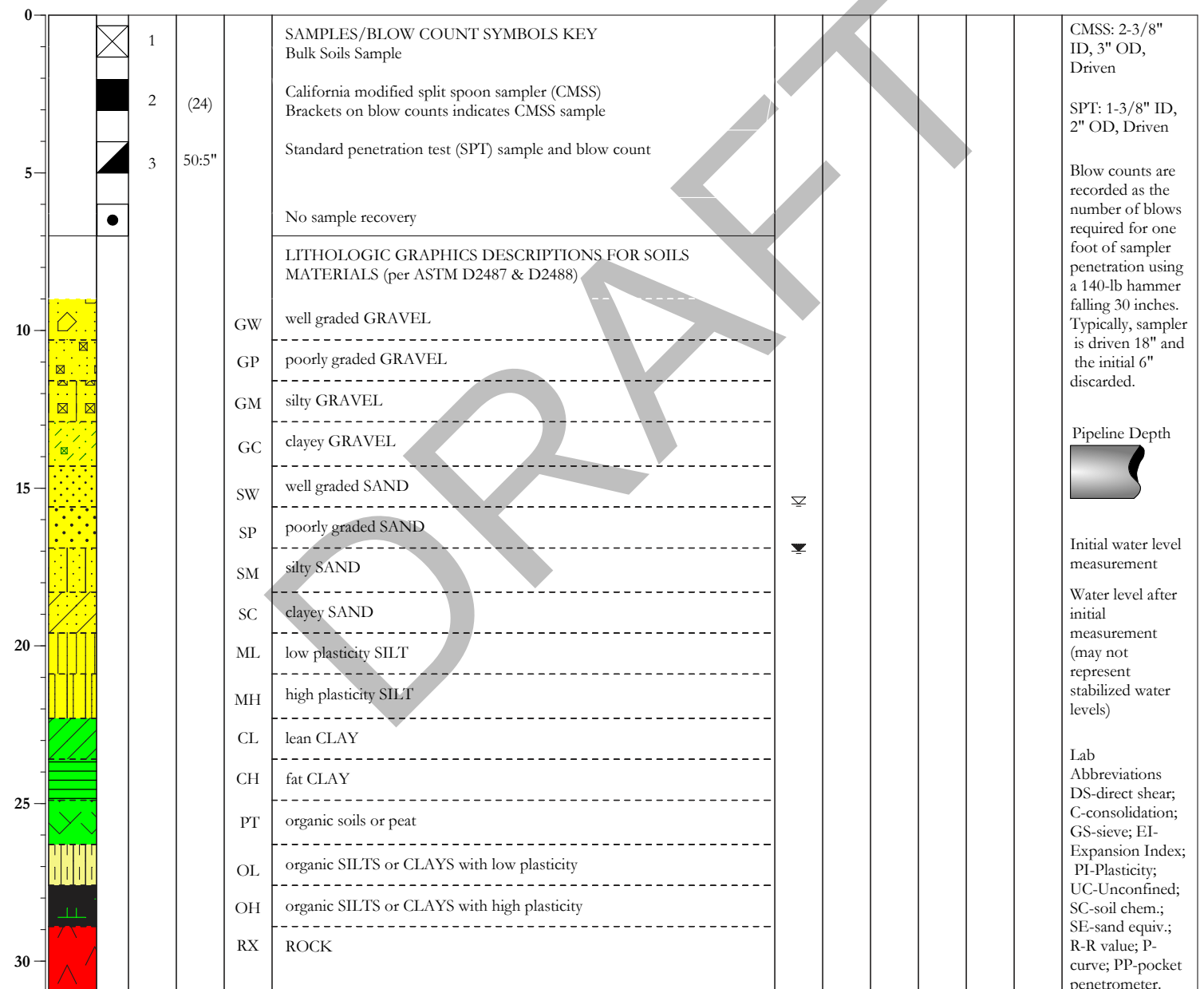
Depth	Elevation	Material Symbol	Sample Type	Sample No.	Blow Count (blows/ft)	USCS	MATERIAL DESCRIPTION	Depth to Water	Dry Unit Weight (pcf)	Moisture Content (%)	% Passing No. 200	Liquid Limit	Plastic Index	Comments
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20	165			6	(77)	SC	: Clayey SAND, moderate brown, moist, very dense, fine to medium grained with fine surrounded to subangular gravel.	104.4	15.5	33			GS
25	160			7	(34)	SM/SC	: Silty to Clayey SAND, dark brown, moist, medium dense, fine to medium grained, with trace to moderate caliche veining.	109.6	8.4	28			GS
							: Bottom of Drill Hole at a Depth of 26.5 feet						

LOG OF EXPLORATION: Expl. No.

PROJECT:	BGI's Project Name	EXPL. VENDOR:	Expl. Subcontractor	SURFACE ELEVATION:	Expl. Elevation
PROJECT NO.:	BGI's Project No.	EXPL. METHOD:	Method of Expl.	TOTAL DEPTH OF HOLE:	Total Depth of Expl.
LOCATION:	General Location	LOGGED BY:	BGI's Logger	DEPTH TO WATER:	Depth to Water
START DATE:	Date Started Date	CHECKED BY:	BGI's Reviewer	BACKFILLED WITH:	Backfill Materials
END DATE:	Finished	HAMMER TYPE:	Type of Sample Hammer		

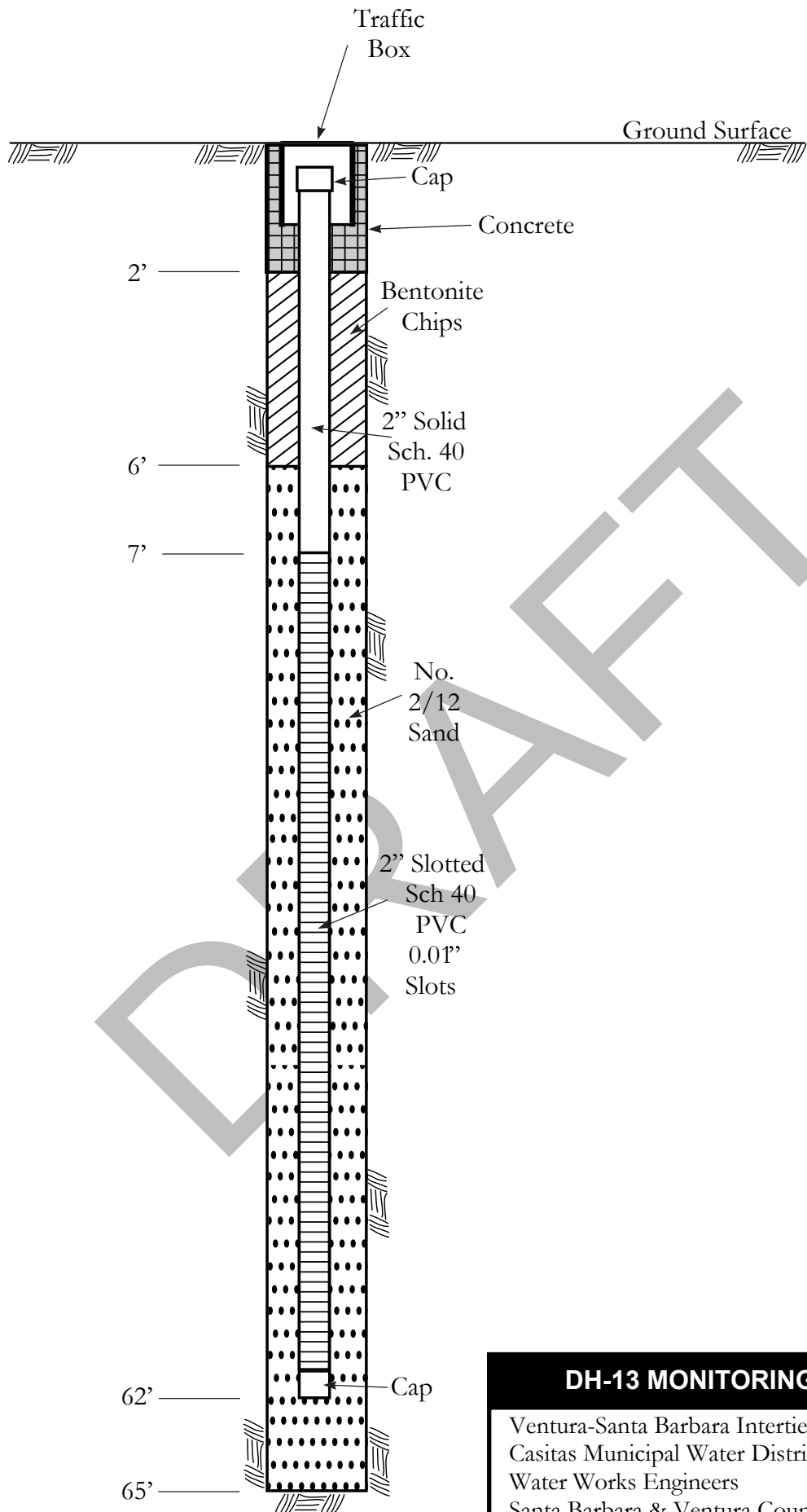
Depth (ft)	Material Description
Material Symbol	
Sample	
Sample No.	
Blow Count (blows/ft)	
USCS Symbol	Water Table Unit Dry Weight, pcf Water Content, % % Passing No. 200 Liquid Limit Plasticity Index Notes & Assigned Laboratory



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

BAJADA GEOSCIENCES, INC.

PLATE NO.: A-2.1



Not to Scale

DH-13 MONITORING WELL DETAILS

Ventura-Santa Barbara Intertie Project
Casitas Municipal Water District
Water Works Engineers
Santa Barbara & Ventura Counties, CA

Plate No.

A-3.1



BAJADA Geosciences, Inc.

Project no.

2101.0113