Pescadero High School

Final Engineering Report

Technical Assistance Work Plan No. 5912

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1. Introduction

1.1 Proposed Project

The Pescadero High School (school) water system (Water System CA4100513) provides treated potable water to approximately 199 students and staff. The school is located approximately one mile from the census-designated place of Pescadero, which is served by the County of San Mateo's (County) Service Area No. 11 (CSA 11). The school's potable water was historically provided from an on-site groundwater well with subsequent pH adjustment. The school's water storage and distribution system includes an above-grade 10,000-gallon horizontal cylindrical steel tank, an above-grade 1,000-gallon steel pressure tank, a separate domestic and fire booster pump system, and distribution piping.

The school's only water source (Well #1) has had four exceedances (between 2015 and 2017) of the nitrate and coliform maximum contaminant level (MCL) standards. A citation (Citation No. 02_17_17C_018) was issued by the State Water Resources Control Board (Water Board) on May 10, 2017, specifically based on a nitrate exceedance in April 2017, requiring the school to bring the water system up to regulatory drinking water standards. Since that time, in the absence of a safe drinking water source, students at the school have been supplied bottled water.

Technical assistance is required to gather supporting documentation and submit a Drinking Water State Revolving Fund (DWSRF) Construction Financing Application to implement a long-term solution to ensure safe water supply for the school. This work is funded under Technical Assistance Work Plan No. 5912, administered by Sacramento State University, Office of Water Programs (OWP) on behalf of the State Water Resources Control Board, Division of Financial Assistance (DFA). The County recently drilled a new drinking water well near the school attempting to address the school's drinking water demand. After analyzing the drilling results, the County determined the aquifer did not have an adequate well yield to supply the appropriate water volume for the proposed fire station, which reinforced the school's need to seek an alternative water source. There is a consensus, among the Santa Clara District office for the Water Board's Division of Drinking Water (DDW), the County, and the school officials, that the challenge of a viable water supply source for the school can be addressed by connecting the school to CSA 11 by constructing a water main extension. The current well could then serve non-potable water uses. The County also is planning to construct a replacement fire station adjacent to the school on La Honda-Pescadero Unified School District (District) on property leased from the school. Both the new fire station and the school would be connected to CSA 11 by this project.

Appendix A includes a map of CSA 11's current service area boundary. The current service area boundary of CSA 11 does not include the school so the service area will need to be expanded. However, to expand the service area boundary of CSA 11 to include the District property, the County needs to amend certain policies of the County's Local Coastal Program (LCP). Before submitting the LCP amendments to the California Coastal Commission for certification, the County's Planning Commission and Board of Supervisors must approve the proposed LCP amendments.

The expansion of the CSA 11 service area also requires the County to complete an environmental review pursuant to the California Environmental Quality Act (CEQA) prior to submitting the LCP

amendments for approval before the Planning Commission and Board of Supervisors. Following approval by the Planning Commission and Board of Supervisors, the County will submit the LCP amendments to the Coastal Commission for certification. Then the Local Agency Formation Commission (LAFCo) must review and approve annexation of the District property into the CSA 11 service area. Finally, entitlements, including LAFCo annexation, Coastal Development Permit (CDP), and building permits, must then be approved before construction can commence.

The LCP amendment application will be submitted with supporting materials to include, at minimum: conceptual alignment of the proposed water main extension, 30 percent design drawings, water budget analysis, biological assessment, Cultural Resources Report, and a completed CEQA review document. The County will require and prepare preliminary fire station drawings as well as the necessary Planning Commission and Board of Supervisors Staff Reports.

Upon completion of the LCP approval process, the 90 percent design plan and technical specifications will be developed for the DWSRF Construction Financing Application.

Therefore, the work will be conducted in two phases:

Phase 1: Information Packet for the LCP Amendment

This phase will consist of all work up to the preparation of the Engineering Report (Report), to provide the information necessary to support the LCP Amendment. Preparation of the project water main footprint and project cost estimate are the key elements.

Phase 2: The DWSRF Construction Financing Technical Package

If the LCP amendments are approved and LAFCo approves the expansion of the CSA 11 service area, a 90 percent design will be completed for the technical application. Appropriate environmental and financial application elements also will be provided.

1.2 Project Location

This project is located in Pescadero, California, within an unincorporated portion of the County, on the San Francisco Peninsula. The Pacific Ocean is about two miles to the west. Pescadero is flanked on the west by the Pacific Ocean and on the east by the Southern Coast Range. The area can be accessed by California State Route 1. **Sheet G-001** in **Appendix B** shows the location and vicinity maps.

2. Summary of Existing Data

2.1 Existing Conditions and Survey Data

Pescadero sits along Pescadero Creek and along the low-lying areas adjacent to the creek. The school and limited portions of the proposed water main alignment lie within an area of minimal flood risk. Other portions of the proposed water main alignment are within Special Flood Hazard Areas as defined by the Federal Emergency Management Agency (FEMA). The FEMA Flood Insurance Rate Maps (FIRMs) can be viewed in **Appendix C**.

The proposed water main alignment lies entirely within the public right-of-way (ROW). Pescadero Creek Road, Cloverdale Road, and Butano Cutoff are County maintained roads. Traffic along these three roads is generally light but includes vehicular, bicycle, and pedestrian traffic. Bike lanes are marked on both sides of Pescadero Creek Road and Cloverdale Road. The area around Pescadero is rural with multiple agricultural fields and ranching.

Aerial mapping services were provided by GeoTerra and GHD provided the ground survey data for this project. The survey was completed in August 2020. A georeferenced aerial photograph was captured for the length of the entire project and shows adjacent properties and features.

As part of this Report, utility research was performed for the full extents of the project. Where utility operators provided utility maps, the approximate location of those utilities were incorporated into the final survey maps and are shown on **Drawings C-101 thru C-114** provided in **Appendix B**. Existing utilities are described further in **Section 2.4.3**.

2.2 Geology

The site is located in the Coast Ranges geomorphic province. The geologic deposits underlying the site have been mapped as Holocene aged, stream-terrace deposits (Qyf) as indicated on the Offshore and Onshore Geology and Geomorphology, Offshore of San Gregorio Map Area, California, J. T. Watt, 2014. The stream-terrace deposits are comprised of smooth, undissected terraces above active channels as shown on **Figure 1**, Geologic Map attached to this Report.

Based on our review of the USGS Quaternary Fault and Fold Database, the San Gregorio fault zone crosses through the proposed project alignment and exits in an Alquist-Priolo Earthquake Fault Zone. The San Gregorio fault is a right lateral fault with a N23˚W strike and 70ºE-90˚ dip. The next nearest active fault is the San Andreas Fault Zone and the Monte Vista-Shannon Fault Zone located approximately 11.2 miles east and 12.4 miles east, respectfully. The proposed project is an underground utility and is not expected to contain standing structures. Therefore, according to the Alquist-Priolo Earthquake Fault Zoning Act, Section 2621.6 2(a) the project is exempt from the Special Studies Zones requirements.

2.3 Soil Conditions and Site Investigation

The proposed water main will connect to the existing CSA 11 distribution system near an existing fire hydrant, see **Drawing C-101**. The water main alignment is expected to be placed alongside and run parallel to existing public roadways. The project site is located in a generally semi-rural area that is comprised of typically flat terrain with nearby rolling hills. Soil conditions in the area are mainly derived from sedimental alluvial deposits and are expected to contain fine grained native sand, silt, and clay. Minor rock and stone may exist within the nearby hilly terrain. Also, it is expected that near surface engineer compacted fill may be encountered near the roadway, which was placed there during roadway construction. Groundwater levels are expected to be shallow, approximately 8.0 feet below the surface, according to the California Department of Water Resources, Water Data Library. During construction excessive moisture or groundwater may be encountered and shoring and dewatering methods may be required.

GHD performed a geotechnical field investigation to map the subsurface soil conditions by collecting samples for laboratory testing. Eight exploratory borings, one approximately every 800 feet, were

drilled along the proposed water main alignment. These borings extended 5-feet beyond the bottom of the trench. A draft geotechnical investigation report is provided as **Appendix F**. The draft geotechnical report provides conclusions, discusses site concerns, and summarizes constructability issues, such as the presence of groundwater and soil bearing capacity. The geotechnical report will be finalized during the detailed design phase.

2.4 Construction Considerations

2.4.1 Construction Access

Access to the site will be along Pescadero Creek Road, Cloverdale Road, and Butano Cutoff. These roads are two-lane County maintained rural roads and will need to remain open during construction. Disruptions to traffic will be managed by traffic control, in accordance with a County Encroachment Permit and the California Manual on Uniform Traffic Control Devices (CA MUTCD).

2.4.2 Construction Laydown and Staging Areas

A construction staging area is shown on **Drawing C-105** in **Appendix B**. The contractor will need to secure additional laydown and staging areas from the County, if such areas are available.

2.4.3 Existing Utilities

An existing topographic map and collected utility drawings provide the base map for the 30 percent design drawings. This section summarizes the utility information obtained as part of this Report.

Utility research was performed in general conformance to the American Society of Civil Engineers Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data (ASCE 38-02). For the purposes of this Report, GHD obtained a list of utilities that potentially owned facilities in the area. Those utilities were contacted, and utility maps were requested. A summary of the utilities contacted is shown in **Table 2-1**.

Table 2-1 Utility Coordination Summary

Utility	Clear[1]	Requested	Received
AT&T	No	Yes	Yes
Comcast	No	Yes	Yes
PG&E Electric	No	Yes	Yes
PG&E Gas	Yes	Yes	Yes
County of San Mateo, Sewer	Yes	Yes	Yes

Table 2-1 Notes:

1. The “Clear” column indicates whether a respective utility is within the Project limits. A “Yes” indicates the utility does not operate any infrastructure within the Project limits. A “No” indicates the utility does operate infrastructure within the Project limits. An “NR” indicates No Response from the utility owner.
2. If SamTrans or United States Postal Service (USPS) facilities will be disturbed during construction, replacement of such facilities will be in accordance with respective agency requirements.

The electrical and communication utilities are located installed to utility poles overhead along utility poles within the project area. Paint markings located in the field indicated the locations of There are several private water service pipes and storm drains that cross underneath the roadway. GHD's surveyor was able to identify the crossings locations and are shown on the 30% design drawings. GHD's surveyor was able to identify the crossing locations of the private water service pipes by surveying the paint markings spray painted by a recent utility scanner. The private water service pipe depths and pipe conditions are currently unknown.

The proposed water main runs through unincorporated county where residents use private septic systems and leech fields to treat their waste water. GHD is coordinating with the County to identify these existing septic treatment systems to ensure the proposed alignment maintains a minimum clearance of 25 horizontal feet of the nearest edge from them, pursuant to 22 CCR § 64572..

2.4.4 Traffic and Traffic Control

Traffic will be affected by the water main construction and contractor activities. The alignment is located in Pescadero Creek Road, Cloverdale Road, and Butano Cutoff. Several private driveways also cross the proposed water main alignment. Traffic control will be needed during various parts of construction. Contractor activities impacting traffic include material deliveries, off-haul of trench spoils, contractor personnel parking, and equipment staging and storage. Coordination with the County's Road Services Division and an encroachment permit will be required.

2.4.5 Public Access

The public roadway and bike lanes along Pescadero Creek Road and Cloverdale Road are expected to remain accessible for the majority of construction. The school will remain accessible to students and faculty throughout construction. Residents with private driveways connected to the roadways may be impacted by the water main construction but access will be coordinated. The construction's scope, schedule, and potential impacts will need to be communicated to these parties.

2.4.6 Noise and Vibration

Construction activities could lead to an increase in noise levels and local vibrations. Typical equipment used for the construction of a water main of this size usually includes backhoes, skip loaders, dump trucks, trench dewatering pumps, and soil compaction equipment. Work hours will be regulated by the County's Encroachment Permit and Noise Ordinance requirements.

2.4.7 Post Construction Impacts

The post construction impacts will be negligible. Surface features of the new water main include traffic rated valve boxes and meter vaults. These appurtenances will be located to minimize impacts to traffic. Drainage swales and slopes will be restored to pre-construction conditions.

2.4.8 Estimated Construction Schedule

The County has established an overall project schedule and construction is scheduled for Fall 2022, or Spring 2023. The overall construction duration is estimated to be six months.

2.4.9 Points of Connection between New and Existing Water Main

The new water main will connect to the existing distribution system of CSA 11 as shown on **Drawing C-101** in **Appendix B**. The point of connection (POC) will be installed at the end of the existing 6-inch Polyvinyl Chloride (PVC) water main, just before the water main reduces to 4-inches in diameter. The 4-inch water main service will be shut-off during installation of the new water main connection and then re-established. The point of connection location has been field surveyed.

2.5 Description of County Service Area 11 Water System

CSA 11 (Water System No. CA4100582) serves approximately 450 people in the unincorporated area of Pescadero, California. The system has 101 service connections; 80 residential and 21 commercial/institutions. The public water system was established in 1988 to replace a series of small domestic wells found to contain high concentrations of nitrates and other naturally occurring salts. A map of the CSA 11 service area boundary can be found in **Appendix A**. The system consists of three groundwater wells, two storage tanks, and a gravity operated distribution system. **Section 4** provides a discussion of the system hydraulics. CSA 11's source, storage, and distribution system is described in detail below.

Source Water:

The three groundwater wells pump groundwater from low- to moderately-yielding aquifers (Todd Groundwater, June 2019). DDW has designated Well No. 1 and Well No. 3 as active wells and Well No. 2 as a standby well. Information about the system's three wells are summarized in **Table 2-2**.

Table 2-2 CSA 11 Wells

	Well No. 1	Well No. 2	Well No. 3
Date Constructed	January 1993	April 1983	August 2018
Borehole Depth (ft bgs)	260	280	370
Final Well Depth (ft bgs)	260	247	360
Borehole Diameter (inches)	16	12	18
Casing Diameter (inches)	10	6	10
DDW Status	Active	Standby	Active

Table Notes:

1. Well characteristic data obtained from Todd Groundwater's Source Water Capacity Assessment (June 2019).
2. ft = feet (NAVD88)
3. bgs = below ground surface

Storage:

There are two storage tanks at the upper end of the system. Groundwater is pumped directly into the two storage tanks, which are hydraulically connected and operate at the same water elevation. Characteristics of the system's two tanks are summarized in **Table 2-3**.

Table 2-3 CSA 11 Storage Tanks

	Tank 1	Tank 2
Year Constructed	1993	2018
Volume (gallons)	140,000	160,600
Finish Floor Elevation (ft)	190	190
Overflow Elevation (ft)	206	206
Type	Welded Steel	Bolted Steel
Installation	Above Ground	Above Ground

Table Notes:

1. ft = feet (NAVD88)

Treatment:
The groundwater pumped from the well receives chlorine disinfection treatment. CSA 11 is required to chlorinate the groundwater due to recent exceedances.

Distribution System:

The distribution system as shown on **Figure 2** was designed in 1990 and construction was completed in 1993. Pipe sizes include 4-, 6-, and 8-inch PVC pipe, with ductile iron pipe (DIP) at a bridge crossing across Pescadero Creek.

2.6 Hazardous Materials

The presence of hazardous materials can impact the cost and schedule of a construction project if the planning and design phases do not adequately address the potential for contaminated soil and groundwater. The construction activities of potential concern include trench spoils and dewatering. Contaminated soil and groundwater require special handling and disposal.

A search of the Department of Toxic Substances Control's (DTSC) data management system, EnviroStor, indicated that there are no active cleanup sites or operating permitted sites within the Project limits.

A search of the State Water Resources Control Board's (SWRCB) data management system, Geotracker, indicated that there are no active cleanup sites or operating permitted sites within the Project limits.

3. Alternative Solutions

A thorough alternative analysis is not within the scope of this Report. However, the school did investigate alternatives prior to 30 percent design. The first alternative the school proceeded with was drilling a new well near the school. Unfortunately, the new well did not produce an adequate yield to supply the necessary drinking water volume to the school.

Another potential alternative considered was to use nearby surface water sources to meet the school's drinking water demand. This alternative was not pursued because of the inconsistent surface water supply in the surrounding bodies of water and the need for additional water treatment

and monitoring equipment to treat raw surface water. The school would need to purchase and maintain a chemical treatment system and hire an operator to run the system for this alternative.

The no action alternative would continue to supply the school with bottled water to meet the school's drinking water demand. This alternative is not a sustainable solution.

The alternative selected by the District, SWRCB, County, and the school officials, was to connect the school to the existing CSA 11. This is the focus and purpose of this Report. The school's current well will remain in operation for use as a non-potable water supply for irrigation.

4. Hydraulic Model

GHD created a hydraulic model to determine the size of the new water main and identify potential impacts the new potable water connection may have on the existing CSA 11 water system. The steady state hydraulic model was constructed in Innovyze's InfoWater.

4.1 Hydraulic Model Construction

Computer aided drafting (CAD) line work for the existing water system's infrastructure was provided by the County and imported into the hydraulic model. Pipe sizes were verified using record drawings. Elevation data from Google Earth, the County's available GIS, and United States Geological Survey (USGS) was analyzed and used to assign elevations to the nodes in the model.

4.2 Hydraulic Model Demands and Pressures

Customer billing data for the system's customers was provided by the County for the months of May 2019 through May 2020. Water consumption was provided in bi-monthly volumes. The data for certain collection periods did not include the specific date on which the data was collected. Assumptions were made for these collection periods based on the rest of the data that did include collection dates. An overall system average day demand (ADD) was calculated to be 24,882 gallons per day (gpd) or 17.3 gallons per minute (gpm). Individual user demands were then inputted into the hydraulic model using billing addresses. The customer billing data is included in **Appendix E**.

The County also provided readings from the flow meter on the incoming line to the system's storage tanks for the months of July 2019 through June 2020. The volume of water entering the tanks was compared to the volume of water demanded by the system based on the customer billing data. Although the collection dates for the two data sets did not always align, the incoming flow meter readings were found to have a maximum consistency difference of 25 percent when compared with the customer billing data, with the smallest percent difference being 7 percent.

Peaking factors (PF) used to calculate the system's maximum day demand (MDD) and peak hour demand (PHD) were obtained from Section 64554 from the California Code of Regulations (CCR). The ADD, MDD, and PHD for the system are summarized in **Table 4-1**.

Table 4-1 Demand Summary

ADD		MDD			PHD		
gpm	gpd	PF[1]	gpm	gpd	PF[1]	gpm	gpd
17.3	24,912	1.5	26	37,368	2.25	39	56,052

Table Notes:

1. Multiplied by ADD

System pressure in the model was calibrated using fire hydrant testing data. The County provided results from two historical fire hydrant tests. One fire hydrant test was performed in December 2007 and the other was performed in February 2018. The model was calibrated to the static and residual pressures that were measured during these fire hydrant tests. Hazen-Williams coefficients within the system were adjusted to reasonable values based on pipe material and age. Once the Hazen-Williams coefficients were adjusted, the model came within an average of 4 percent of the measured static pressures and 14 percent of the measured residual pressures. Typical industry practice is to calibrate the model within 10 percent of available data. Although the static pressures fell within 10 percent of the data, the residual pressures were slightly off. This may be due to the large gap in time between when the two tests were performed (roughly 11 years) and any changes in demand patterns within that timeframe. In addition, the water level in the tanks at the times the fire hydrant tests were performed was not provided and therefore, a level was assumed in the model. A discrepancy between the assumed tank level and the actual tank level could have impacted the calibration efforts.

4.3 Analysis and Results

The new water main was added to the model. The proposed water main's connection to the existing system and alignment are discussed in **Section 6**. The demands for the school and proposed fire station were also added to the model. The model was run to determine the size of the new water main. The following sections discuss how the demands for the school and proposed fire station were developed, and the results from the analysis.

4.3.1 School and Fire Station Demands

Per the school's facilities staff, the average day demand for the school is 1,500 gpd and its total population is 199 students and staff. In addition, based on information provided by the County, it is expected that the new fire station will have an average day unit demand of 100 gallons per day per capita (gpdpc). Assuming that 13 fire fighters will live at the new station 24 hours a day, 7 days a week, the station's proposed average day demand is 1,300 gpd. It should also be noted that the new water main will not provide fire flow demand to the school or the new fire station[1].

The provided school and fire station demands presented above were compared to calculated demands based on engineering judgement and published engineering literature. It was found that the calculated demands were more conservative for sizing the new water main. The unit demands and calculated ADDs are listed in **Table 4-2**. It should be noted that although the unit demand for the new fire station that was provided by the County (100 gpdpc) is appropriate to determine domestic

[1] State Water Resources Control Board, Division of Financial Assistance's Policy for Implementing the Drinking Water State Revolving Fund, Appendix H – Capacity Limitations

water use at the station, a higher unit demand of 200 gpdpc was used to size the new water main to account for any water that could be used for washing fire trucks.

Compared to the entire water system, higher peaking factors were used to calculate the MDD and PHD for the school and fire station. This was done as an additional conservative measure to account for the fact that the new water main will be the sole source of water to the facilities. The peaking factors were obtained from published engineering literature and are shown in **Table 4-2**. The calculated MDD and PHD are also listed in **Table 4-2**.

Table 4-2 School and Fire Station Demands

Facility	People	Unit Demand (gpdpc)	ADD		MDD			PHD		
			gpm	gpd	PF[1]	gpm	gpd	PF[1]	gpm	gpd
School	199	21	2.9	4,179	3	8.7	12,537	8	23.2	33,432
Fire Station	13	200	1.8	2,600	3	5.4	7,800	8	14.4	20,800

Table Notes:

1. Multiplied by ADD

4.3.2 Model Results

The demands from **Table 4-2** were applied to the model. The demand for the existing fire station was left in the model to account for a transition period where both fire stations may be online.

The model was then run using its peak hour demands. The velocity and headloss within the new water main, and the pressure available at the school and fire station for 4-inch, 6-inch and 8-inch water main sizes were obtained from the model. These results were obtained for two water level scenarios in the CSA 11 storage tanks:

- Minimum: Assumes a water level of 2'-2" in the tanks, which is the distance between the tanks' floor and the top of their outlet pipes.
- Maximum: Assumes a water level of 16' in the tanks, which is the level at which the wells stop filling the tanks.

These results are summarized in **Table 4-3**.

Table 4-3 Water Model Results

Tank Level	Size, in	Velocity, ft/s	Headloss, ft	Available Pressure, psi
Minimum	4	1.0	8.3	57
Minimum	6	0.4	1.2	60
Minimum	8	0.2	0.3	60
Maximum	4	1.0	8.3	62
Maximum	6	0.4	1.2	66
Maximum	8	0.2	0.3	66

Existing pressures within the system during a PHD scenario were compared to system pressures after the addition of the school and new fire station demands. The highest drop in system pressure was found to be less than 1 psi.

Figure 2 depicts the existing system and pressures prior to the addition of the new water main and demands. **Figure 3** depicts proposed system and pressures after the addition of the new water main and demands.

In addition, per coordination with the school's facilities staff, the desired water pressure at the school is 60 psi to match the existing condition. Per information provided by the County, the new fire station requires a minimum pressure of 60 psi. Per **Table 4-3**, a 6-inch or 8-inch water main can supply 60 psi or more at both water level scenarios.

4.3.3 Build-Out Analysis

The County's LCP indicates that the CSA 11 water system is required to serve build-out demands for the LCP Pescadero Land Use Plan. These build-out demands are shown in **Table 4-4**.

Table 4-4 Estimate of Water Consumption Demand[2]

	Existing	Proposed	Total	Average Consumption Per Connection, gpd	Build-Out Demand, gpd
Dwelling Units	125	125	250	388	97,000
Commercial Outlets	20	20	40	388	15,520
Fire Station	1	1	1	1,000[1]	1,000

Table Notes:

1. The demand shown here is from the LCP. The demand used in the model, which was used to size the new water main, was 2,600 gpd. See Section 4.3.1 and Table 4-2.

It should be noted that based on customer billing data, the actual average consumption per connection for residential and commercial connections were found to be 143 gpd and 233 gpd, respectively, which are less than the values listed in the LCP. Since the LCP was prepared in 2013, the reduction in average consumption per connection may be due to an increase in water conservation practices in the area.

A build-out scenario was incorporated into the model to determine the impacts on the available pressure to the proposed fire station and school. As a conservative measure, 1the higher demands listed in the LCP were applied to the model. The increase in the existing demands were allocated within the model based on residential and commercial zoning areas.

Information on where future development will occur was not provided so the build-out demand total was applied to a node located at the end of the water line in North Street. This node was selected since its location in the system is the furthest from the storage tanks. Therefore, water has to flow

[2] Water consumption demand data as obtained from the County of San Mateo's Local Coastal Program Policies (dated June 2013, Table 2.16: Estimate of Water Consumption Demand at Land Use Plan Buildout for the Town of Pescadero.

through the entire system to reach this location, thus simulating a high headloss scenario and producing conservative results.

The same peaking factors used for the water system in the MDD and PHD scenarios were applied to the build-out scenario. The model was then run using the peak hour build-out demands plus the proposed fire station and school demands. The velocity and headloss within the new water main, and the pressure available at the school and fire station for 4-inch, 6-inch and 8-inch water main sizes were obtained from the model. These results were obtained for two water level scenarios in the CSA 11 storage tanks:

- Minimum: Assumes a water level of 2'-2" in the tanks, which is the distance between the tanks' floor and the top of their outlet pipes.
- Maximum: Assumes a water level of 16' in the tanks, which is the level at which the wells stop filling the tanks.

These results are summarized in **Table 4-5**.

Table 4-5 Water Model Results for Build-Out Scenario

Tank Level	Size, in	Velocity, ft/s	Headloss, ft	Available Pressure, psi
Minimum	4	1.0	8.3	55
Minimum	6	0.4	1.2	58
Minimum	8	0.2	0.3	58
Maximum	4	1.0	8.3	60
Maximum	6	0.4	1.2	63
Maximum	8	0.2	0.3	64

The largest drop in pressure between the build-out results from **Table 4-5** and the base results from **Table 4-3** is 3 psi. Since the CSA 11 system consists of mostly 6-inch and 8-inch piping, the velocities through these pipes at the higher build-out demands are low, thus limiting headlosses in the system. Based on these results, it is clear that demands under the higher build-out scenario would not significantly impact the system.

In addition, all water main sizes provide 60 psi or more at a maximum water level in the tank. Although pressures for all sizes fall 2 psi or more below the 60 psi requirement during a minimum tank level, it is highly unlikely that the tanks will be operated at this minimum level for long periods of time.

4.3.4 Fire Flow Analysis

A MDD + fire flow scenario was run to determine how much fire flow is available at the school and new fire station based on different water main sizes. It was found that the available fire flow that the existing system can provide while still meeting a minimum pressure of 20 psi in the entire system falls below the fire flow requirements defined by the International Fire Code.

During a team meeting on July 13, 2020, the County acknowledged that the existing system cannot meet required fire flow requirements at the school and new fire station. The team agreed that the

scope of this project is to provide a new water main designed only to meet domestic demands. The County is exploring potential improvements, such as the addition of fire storage tanks, to meet fire flow requirements. These improvements are outside of this project's scope.

4.3.4.1 Fire Storage Tank Water Source

The County requested GHD to confirm whether the CSA 11 water system could fill a future fire storage tank via the new water main, if ever required, without compromising pressures in the system. Per Section 4.2.1.4 from the National Fire Protection Association (NFPA) Standard 22, a fire storage tank shall be capable of being filled in a maximum of 8 hours. The County indicated that they expect a future fire storage tank volume of 120,000 gallons. Therefore, a flow of 250 gpm would be required to fill the tank in 8 hours.

This flow was applied to the model. The peak hour and build-out scenarios were then run assuming a new 6-inch water main. Although the CSA-11 water system experiences a maximum pressure drop of 13 between both scenarios, pressures never drop below 48 psi and therefore fall well within the typical acceptable pressure range for a water system. Acceptable system pressures are typically between 40-psi and 70-psi. It should be noted that available pressure at the school and proposed fire station fall as low as 26 psi between both scenarios. This pressure is acceptable for an emergency fire flow scenario.

5. Project Design Criteria

5.1 Safety and Operations

The final water main alignment will be designed to maximize operational safety and access for the County staff and contractors. The existing water main along Pescadero Creek Road lies in the unpaved shoulder of the northern west bound lane. In general, the new water main will be installed in the unpaved shoulder. In addition to keeping pavement restoration costs low, installing the water main in this location allows for the best opportunity to provide safer traffic control during water main maintenance activities. This also keeps water main appurtenances (i.e., vaults and buried valves) out of the travelled way creating a safer environment for cyclists and keeping vehicle loads off water main appurtenances.

There are some portions of the alignment along Pescadero Road and Cloverdale Road where it is not feasible to install the water main in the unpaved portion of the roadway shoulder. In these cases, the water main will be installed near the center of one lane or along the fog line.

5.2 Project Datum

Elevations provided in this Report and on the Drawings reference the datum shown below.

Basis of Bearings:	North American Datum of 1983, California Coordinate System, Zone III (NAD83)

Benchmark:	North American Vertical Datum of 1988 (NAVD88)

5.3 Pipe

Material	C900 PVC DR 18 (Pressure Class 235 psi)
Joint Types:	Restrained
Fittings:	Ductile Iron Mechanical-Joint
Size:	6-inch
Operating Pressure:	70 psi
Design Life:	50 years
Standards:	AWWA C900, ASTM F477, ASTM D3139, AWWA C115

5.4 Valves and Appurtenances

Valves and appurtenances will conform to County and industry standards. The following subsections further describe the design criteria.

5.4.1 Isolation Valves

Type:	Gate Valve
Body:	Ductile Iron
Coating:	Epoxy
Options:	EPDM Disc and O-rings
Standard:	AWWA C509, AWWA C550

5.4.2 Air Valves

Type:	Combination
Size:	1-inch (for 6-inch pipe)

Pressure Rating:	300 psi
Materials:	Body and Cover: Cast Iron Parts: Stainless Steel
Standards:	AWWA C512, AWWA C550, NSF 61, ASTM A126

5.4.3 Blow Offs

Size:	4-inch
Standards:	NSF 372

5.5 Water Main Separation Requirements

Minimum water main separation requirements are governed by California Code of Regulations (CCR) § 64572.

5.5.1 Horizontal Separation from Crossing Utility

Storm Drain, Raw Water:	4-feet
Sanitary Sewer:	10-feet

5.5.2 Vertical Separation from Crossing Utility

Storm Drain, Sanitary Sewer:	1-feet (above)

5.6 Trench Design

Depth of Cover:	2.5-feet
Pipe Bedding:	Sand Backfill
Backfill:	Structural Backfill
Pavement Section	2” AC over 6” AB
Standards	County Standard Detail W-10

5.7 Design Loads

Design	AASHTO Standard Specifications for Highway Bridges (16th Edition) and per Geotechnical Report
Dead Loads	Concrete: 150 PCF Soil: 125 PCF or per Geotechnical Report
Live Loads	AASHTO HS20-44: 32,000 lbs (rear axle loading)

5.8 Acceptance Testing

Pressure and Leakage Test	Per AWWA C605
Disinfection:	Per AWWA C651

6. Proposed Water Main

6.1 Existing Utility Considerations

A general overview of the existing utilities and field conditions is discussed in **Sections 2.4.3** and shown on **Appendix B drawings C-101 through C-115**. This section presents features and locations of existing utilities specific to the improvements along Pescadero Creek Road, Cloverdale Road, and Butano Cutoff.

Sanitary Sewer: There is no sanitary sewer collection system in this area. The local businesses and homes rely on local septic treatment systems for sewage treatment.

Storm Drain: There are four storm drains which cross underneath Pescadero Creek Road and three storm drains which cross underneath Cloverdale Road. These storm drains collect storm water flows from the southern side of Pescadero Creek Road and the western side of Cloverdale Road and direct them into Pescadero Creek. A storm drain culvert runs under Butano Cutoff near the intersection of Butano Cutoff and Cloverdale Road, allowing the storm water drainage ditch paralleling Cloverdale Road to flow underneath Butano Cutoff. The portion of Butano Cutoff with the new water main does not contain any buried storm drains.

Water: CSA 11 has an existing 6-inch PVC water main running along the northern edge of Pescadero Creek Road that will remain in service. At the furthest east fire hydrant on Pescadero Creek Road, the 6-inch PVC water main turns into a 4-in PVC pipe and terminates at a buried gate valve. There are no existing municipal water mains found to be running along Cloverdale Road or Butano Cutoff.

Several private water lines were identified during the GHD survey. There are three private water lines which cross underneath Pescadero Creek Road and one private water line which crosses

underneath Cloverdale Road. No private water lines were identified crossing underneath Butano Cutoff.

Gas: There are no gas pipe lines within the Project limits.

Electric: The electrical lines run overhead on utility poles along Pescadero Creek Road, Cloverdale Road, or Butano Cutoff.

Communication: Communication lines run overhead on utility poles along Pescadero Creek Road, Cloverdale Road, and Butano Cutoff. There is an underground AT&T feed that runs from the school to the nearest utility pole, but this does not cross the proposed water main alignment.

6.1.1 Existing Utility Information and Locations

The vertical and horizontal alignment of the new 6-inch water main will be optimized during the design phase to minimize utility crossings and meet separation requirements, where possible. Based on survey data and record drawing information, we expect that the new water main will meet all water main separation criteria.

The California Waterworks Standards (CCR, Title 22, Division 4, Chapter 16, § 64572) establish criteria for the separation of new water mains from non-potable pipelines and septic systems. Public water systems should ensure that these distances are met, whenever feasible, for all new construction. The DDW recognizes that certain conditions may call for the installation of water mains with less separation distance than what is required by the regulations. In these situations, the County may propose an alternative pursuant to CCR, Title 22, § 64551.100.

According to CCR, Title 22, § 64551.100, a water system that proposes an alternative to a requirement must show that the proposed alternative would provide at least the same level of protection to public health; and obtain written approval from the DDW prior to implementation of the alternative.

6.2 Water Main Alignment

The proposed water main alignment is shown on the drawings provided in **Appendix B**. The new water main is approximately 1.3-miles long and parallels portions of Pescadero Creek Road, Cloverdale Road, and Butano Cutoff.

The existing 4-inch water main between the existing fire hydrant and the service for 2131 Pescadero Creek Road will be replaced with a new 6-inch water main. The new 6-inch water main extension will be connected to this pipe before crossing Pescadero Creek Road and then along the road to the east, see **Drawing C-101** in **Appendix B**.

The new water main will be installed in the shoulder of the roadway to the extent possible to avoid disturbance of existing pavement. Keeping the new water main in the shoulder, or to one side of the road, will serve two functions: 1) reserve space for future utilities, and 2) safe access. Future repair work will be kept out of the roadway and minimize traffic interruptions. There are some areas where the pipeline will need to be installed in a bike lane or one traffic lane due to topography or sensitive habitats. The pipeline will be installed outside the limits of pavement except in the following areas:

- Between STA 35+00 and STA 40+00: Water main installed in the southbound lane of Cloverdale Road to avoid steep topography on the west side of the road (see **Drawing C-106** in **Appendix B**)
- Between STA 56+00 and STA 66+50: Water main installed in the northbound lane of Cloverdale Road to avoid sensitive habitat on the east side of the road (see **Drawing C-110 thru C-112** in **Appendix B**)

The vertical and horizontal alignment of the new 6-inch water main will be optimized during the design phase to minimize utility crossings and meet separation requirements where possible. Based on survey and existing utility information, we expect the new water main to meet horizontal separation requirements (see **Section 5.5**) because there are no parallel utilities. However, there are crossing utilities and it may not be possible to meet the vertical separation requirements. The crossing utilities consist of raw water and storm drain pipelines. Depending on the depth of cover for these existing utilities, it may be necessary to apply for a separation variance waiver from the DDW.

6.3 Service Connections

There are no other water service connections along the proposed alignment paralleling Pescadero Creek Road, Cloverdale Road, and Butano Cutoff, as the properties along the alignment are not within the service boundary of CSA 11. Water service connections are intended for only the school and the future Fire Station.

6.3.1 Illegal Connection Monitoring

A water meter will be installed at the upstream end of the new water pipe line, near the the existing fire hydrant and connection of the new water main. The data collected from this water meter will be compared with the water meters at the school and Fire Station. Any reduction in water flows between the water main meter and the school and Fire Station water meters will indicate there is either a pipe leak or illegal connection to the water main.

7. Project Implementation

This section discusses the environmental documentation, permitting, and restoration requirements for the project.

7.1 Environmental Documentation

The expansion of the CSA 11 service area requires the County to complete an environmental review pursuant to the California Environmental Quality Act (CEQA) prior to submitting the LCP amendments for approval before the Planning Commission and Board of Supervisors.

7.2 Permitting and Coordination

The purpose of this section is to discuss permitting and coordination for the project during the design and construction. The permitting agencies with jurisdiction over this project include:

- County of San Mateo

- Regional Water Quality Control Board (storm water)
- Division of Drinking Water

7.2.1 County of San Mateo

There are multiple County departments involved in the development of this report and the completion of this project, including:

- County Manager's Office
- County Counsel
- Public Works
- Planning and Building

The contractor will be working in the public ROW and will be required to obtain an Encroachment Permit from the County.

7.2.2 San Mateo Local Agency Formation Commission

San Mateo Local Agency Formation Commission (LAFCo) is an independent commission with jurisdiction over the boundaries of the twenty cities, twenty-two independent special districts, and many of the 33 active county-governed special districts serving the County. The County of San Mateo will be required to apply to LAFCo for sphere of influence amendment and annexation of the project site to CSA 11. The Commission will review the application at a noticed public hearing.

7.2.3 Regional Water Quality Control Board

Less than one acre of land will be disturbed, thus the project is exempt from the Construction General Permit (Order 2009-0009-DWQ) but is covered by the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP). San Mateo County is a large urban area and discharges storm water into the San Francisco Bay and the Pacific Ocean and is thereby required to have a National Pollutant Discharge Elimination System (NPDES) permit. The SMCWPPP helps to ensure that harmful pollutants are not discharged into local waterbodies by providing guidance and best management practices (BMPs) for discharges to the Bay.

This project is a Linear Underground/Overhead Project (LUP) involving the replacement and extension of an existing water main. The total area disturbed by this project is shown in **Table 7-1**. The Project will not require a SWPPP but the contractor will be required to submit a water pollution control plan before construction. This control plan will include storm water BMPs per the SMCWPPP.

Table 7-1 Disturbed Area by Street

Location	Width (ft)	Length (feet)	Disturbed Area	
			Square Feet	Acres
Pescadero Creek Road	4	2,494.3	9,977.0	0.2
Cloverdale Road	4	3,027.0	12,108.1	0.3
Butano Cutoff	4	1,137.0	4,548.0	0.1
		Totals	**26,633.1**	**0.6**

7.2.4 Division of Drinking Water

Due to the existence of several crossing utilities, the new pipeline may encroach on the minimum separation requirements presented in Section 5.5. There are twelve utility crossing locations. There are no parallel utilities. The crossing utilities include storm drain and raw water lines. Some of these lines are shallow. Minimum water main separation requirements are governed by California Code of Regulations (CCR) § 64572 which requires water mains to be installed at least 4-feet horizontally from, and 1-foot vertically above any raw water supply lines and storm drain lines.

These crossing utilities have been potholed and the point of connection at the school has been both potholed and surveyed by ground penetrating radar. The pothole depth report is included as Appendix G. The GPR utility scan report is included as Appendix H. Based on the data included in both of these reports, it is evident that the new water main will likely need to be installed below some of the crossing utilities. In these cases, the County will need to apply for written approval from the DDW for a water main separation alternative where minimum separation requirements cannot be met. GHD will propose and design alternatives pursuant to CCR § 64551.100.

8. Preliminary Design

8.1 Recommendations

GHD recommends a 6-inch PVC water main based on the hydraulic analysis. The headlosses in pipe diameters smaller than 6-inches created significant headlosses, see **Table 4-3**. Conversely, pipe diameters above 6-inches had little impact on headloss. Therefore, a 6-inch diameter pipe is optimal for minimizing headloss and construction cost.

8.2 Drawings

Table 8-1 lists the plan sheets anticipated for the Project. The plan sheets that will be included in the 30 percent design are bold in the table.

Table 8-1 Plan Sheets

Sheet No.	Drawing	Title
General		
1	**G-001**	**Title Sheet, Vicinity Map, and Location Map**
2	**G-002**	**List of Drawings**
3	**G-003**	**Construction Best Management Practices**
4	**G-101**	**Key Map and Survey Control Diagram**
5	G-102	Pothole Schedule and Geotechnical Borings
Civil and Pipeline		
6	**C-101**	**Pescadero Creek Road – Plan and Profile 1**
7	**C-102**	**Pescadero Creek Road – Plan and Profile 2**
8	**C-103**	**Pescadero Creek Road – Plan and Profile 3**
9	**C-104**	**Pescadero Creek Road – Plan and Profile 4**
10	**C-105**	**Pescadero Creek Road – Plan and Profile 5**
11	**C-106**	**Cloverdale Road – Plan and Profile 6**
12	**C-107**	**Cloverdale Road – Plan and Profile 7**
13	**C-108**	**Cloverdale Road – Plan and Profile 8**
14	**C-109**	**Cloverdale Road – Plan and Profile 9**
15	**C-110**	**Cloverdale Road – Plan and Profile 10**
16	**C-111**	**Cloverdale Road – Plan and Profile 11**
17	**C-112**	**Butano Cutoff – Plan and Profile 12**
18	**C-113**	**Butano Cutoff – Plan and Profile 13**
19	**C-114**	**Butano Cutoff – Plan and Profile 14**
20	**C-115**	**HS Service Connection Plan**
20	C-501	Civil Details 1
21	C-502	Civil Details 2
22	C-503	San Mateo County Standard Drawings

Table Notes:

1. **Bold** = Drawings included on the 30 percent design and in Appendix B
2. Profiles are not included on the 30 percent design drawings.

8.3 Specifications

The front-end and technical specifications will be based on the County's standards. The technical specifications will be based on Caltrans and other published standards. **Table 8-2** presents a preliminary list of technical specifications anticipated for this project. Technical specifications will be submitted during the detailed design phase.

Table 8-2 Preliminary Specification List

Section	Title
00 01 01	Title Page
00 01 10	Table of Contents
00 11 16	Invitation to Bid
00 21 13	Instructions to Bidders
00 31 19	Information Available to Bidders
00 41 43	Bid
00 43 13	Bid Security Form
00 45 16	Bidder's Statement of Qualifications
00 45 19	Non-Collusion Affidavit
00 54 22	Bid Schedule
00 61 00	Bid Bond
00 61 13.13	Performance Bond
01 00 00	General Provisions
01 11 00	Summary of Work
01 29 00	Definition of Bid Items
01 33 00	Submittals
01 43 00	Quality Control
01 50 00	Temporary Facilities and Controls
01 55 26	Traffic Control Plan
01 57 23	Temporary Storm Water Pollution Control
01 77 00	Closeout Procedures
01 78 23	Operation and Maintenance Data
01 78 33	Product Warranties and Bonds
01 78 39	Project Record Documents
01 91 00	General Commission Requirements
02 21 13	Site Survey
02 41 13	Demolition and Site Preparation
03 30 00	Cast-In-Place Sitework Concrete
03 60 00	Grout
22 11 16	Piping
31 23 00	Excavation and Fill
31 23 19	Dewatering
31 41 00	Shoring
32 12 16	Asphalt Paving

Section	Title
32 19 00	Pavement, Surface Restoration and Cleanup
33 05 00	Valves and Appurtenances

8.4 Engineer's Opinion of Probable Construction Costs

The accuracy of cost estimates at each stage of design is reflective of, and dependent on, the level of detail known about the project at each stage. Vendor quotes were obtained for the PVC pipe. Piping costs reflect the County's standards. Other costs were obtained from RS Means or based on professional opinion.

The conceptual construction cost for the 30 percent design is based on current understanding of the project scope. The engineer's opinion of probable construction costs (estimate) for the project is presented in **Table 8-3**. This estimate has an accuracy of -20 percent to +30 percent. The total cost includes the following:

Division 1 – General Requirements: 10 percent

Taxes on Materials: 8.75 percent

Contractor Overhead and Profit: 15 percent

Contingency: 20 percent

Escalation: 5 percent

The estimate includes both eligible costs and ineligible costs. Ineligible costs are those costs associated with the fire station and will be paid by the County. The following item is considered an ineligible cost:

1. 4-inch Service Connection to the fire station

All other costs are eligible costs funded by DWSRF. A summary of the engineer's opinion of probable construction cost is shown below. A detailed breakdown of the costs is included as **Appendix D**.

Table 8-3 Opinion of Probable Construction Cost Summary

Item Description	Conceptual Cost
Funded by DWSRF	
Mobilization	$104,540
Temporary Traffic Control	$30,000
Water Pollution Prevention	$40,000
Trenching	$409,444
Trench Backfill	$215,062
Piping	$261,133
Water Meter – Illegal Connection Monitoring	$33,744
Point of Connection	$6,600

Item Description	Conceptual Cost
4” Service Connection – Pescadero High School	$30,000
Subtotal (Eligible Costs)	$1,130,523
Not Funded by DWSRF	
4” Service Connection – Fire Station	$15,000
Subtotal (Ineligible Costs)	$15,000
Division 1 Costs (10%)	$114,552
Taxes (8.75%)	$21,817
Contractor OH&P (15%)	$120,603
Contingency (20%)	$280,499
Escalation (5%)	$172,507
Total (rounded)	$1,856,000
Estimated Range of Probable Cost (-20% to +30%)	**$1,484,800 to $2,784,000**

8.5 Operation and Maintenance Cost

The project includes 1.27 miles of new water main, four (4) new gate valves, and two (2) new service meters. A third meter is included for leak and illegal water connection monitoring. We assume the following operation and maintenance (O&M) activities will be needed:

Monthly

- Collect water quality samples
- Read mainline meter
- Read service meters

Bi-Annually (twice per year)

- Exercise gate valves

Annually

- Flush water main
- Leak detection survey

These tasks are assumed to require 132 hours annually at an average hourly rate of $50, plus an additional $2,500 for an annual leak detection study. The total number of hours include travel time to and from the site. The total cost for operating this mainline on an annual basis is approximately $9,100, although this may vary depending on the County’s operations and operator rates.

Respectfully Submitted,

GHD

02/09/2021

Dillion Mora, PE, QSD

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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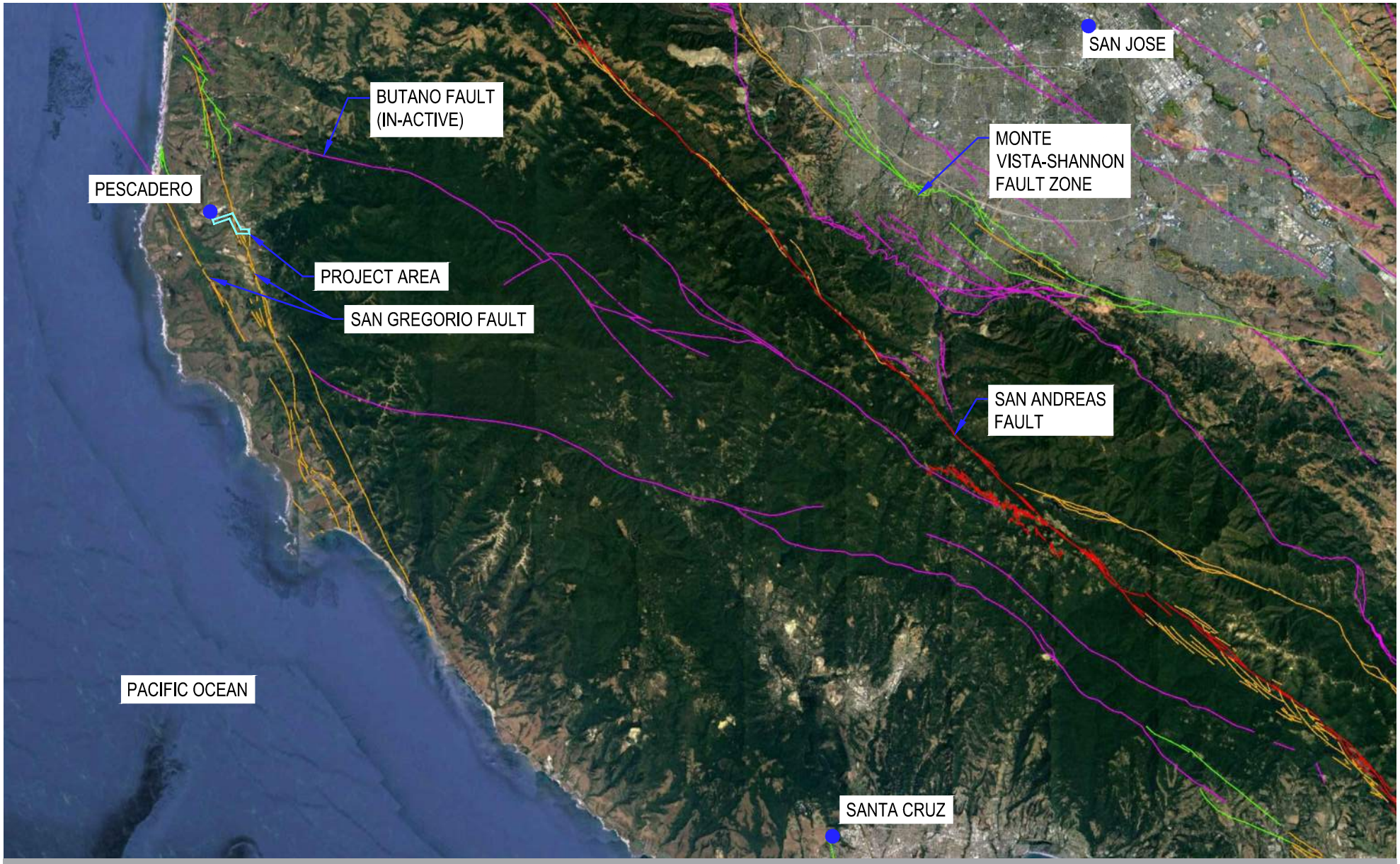
Figures

Figure 1a
Vicinity Fault Map



Legend	Period	(age)
	Historical	(< 150 years)
	Latest Quaternary	(< 15,000 years)
	Late Quaternary	(< 130,000 years)
	Undifferentiated Quaternary	(< 1.6 million years)

N

SCALE: NTS

Pescadero High School
Water Main Extension
Pescadero, CA

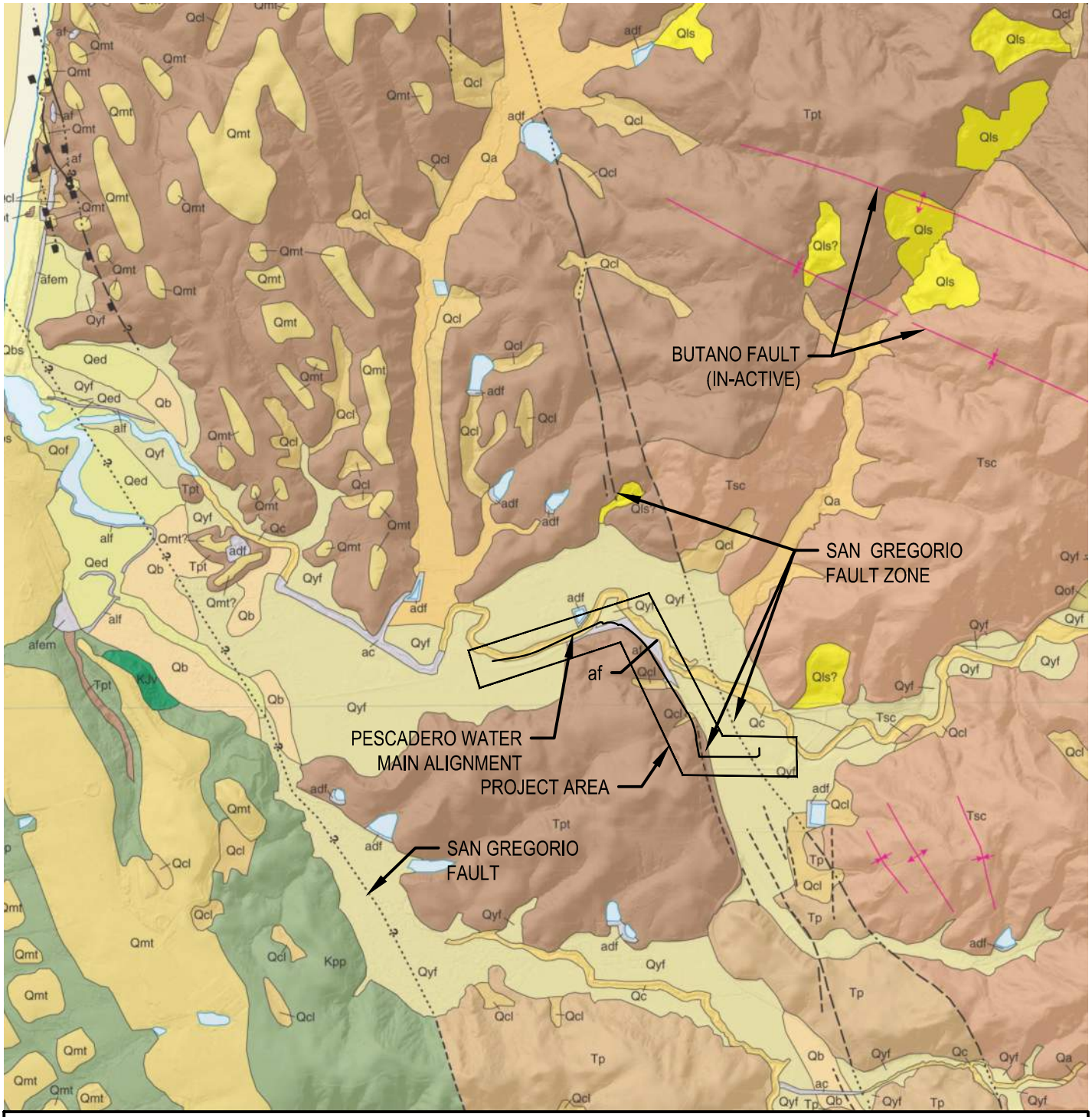
Vicinity Fault Map

Project No. 11213964
Report No.
Date 12/11/2020

Figure 1a

Filename: N:\US\Emeryville\Projects\561\11213964\Tech\Geotech\CAD\Figures\x11213964-Fig 1a Vicinity Fault Map.dwg
Plot Date: 11 December 2020 - 8:26 AM

Figure 1b
Geologic Map



Legend

af	Artificial fill (late Holocene) - Rock, sand, and mud, deposited by humans
Qc	Stream-channel deposits (late Holocene) - Fluvial deposits within active, natural stream channels
Qyf	Alluvial fan deposits (late Holocene) - Alluvial fan deposits; judged to be late Holocene (<1,000 years) in age, on basis of records of historical inundation or presence of youthful braid bars and distributary channels. Internal contacts delineate individual alluvial fans
Qcl	Colluvium (Holocene) - Loose to firm, unsorted sand, silt, clay, gravel, rock debris, and organic material, in varying proportions
Tpt	Tahana Member (Pliocene and late Micocene) - Medium-grained to very fine-grained lithic sandstone and silstone, with some silty mudstone, tuffaceous sandstone, and pebble conglomerate

N

SCALE: NTS

GHD

Pescadero High School
Water Main Extension
Pescadero, CA

Geologic Map

Project No. 11213964
Report No.
Date 12/11/2020

Figure 1b

Filename: N:\US\Emeryville\Projects\561\11213964\Tech\Geotech\CAD\Figures\x11213964-Fig 1b Geologic Map.dwg
Plot Date: 11 December 2020 - 8:11 AM

Figure 2
Hydraulic Model – Existing System

Paper Size ANSI B

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

N

LEGEND

Junction Pressure (psi)

- less than 20.00
- 20.00 ~ 40.00
- 40.00 ~ 70.00
- 70.00 ~ 120.00

Pipe Diameter (in)

- 4.00
- 6.00
- 8.00

University Enterprises, Inc.
Pescadero High School

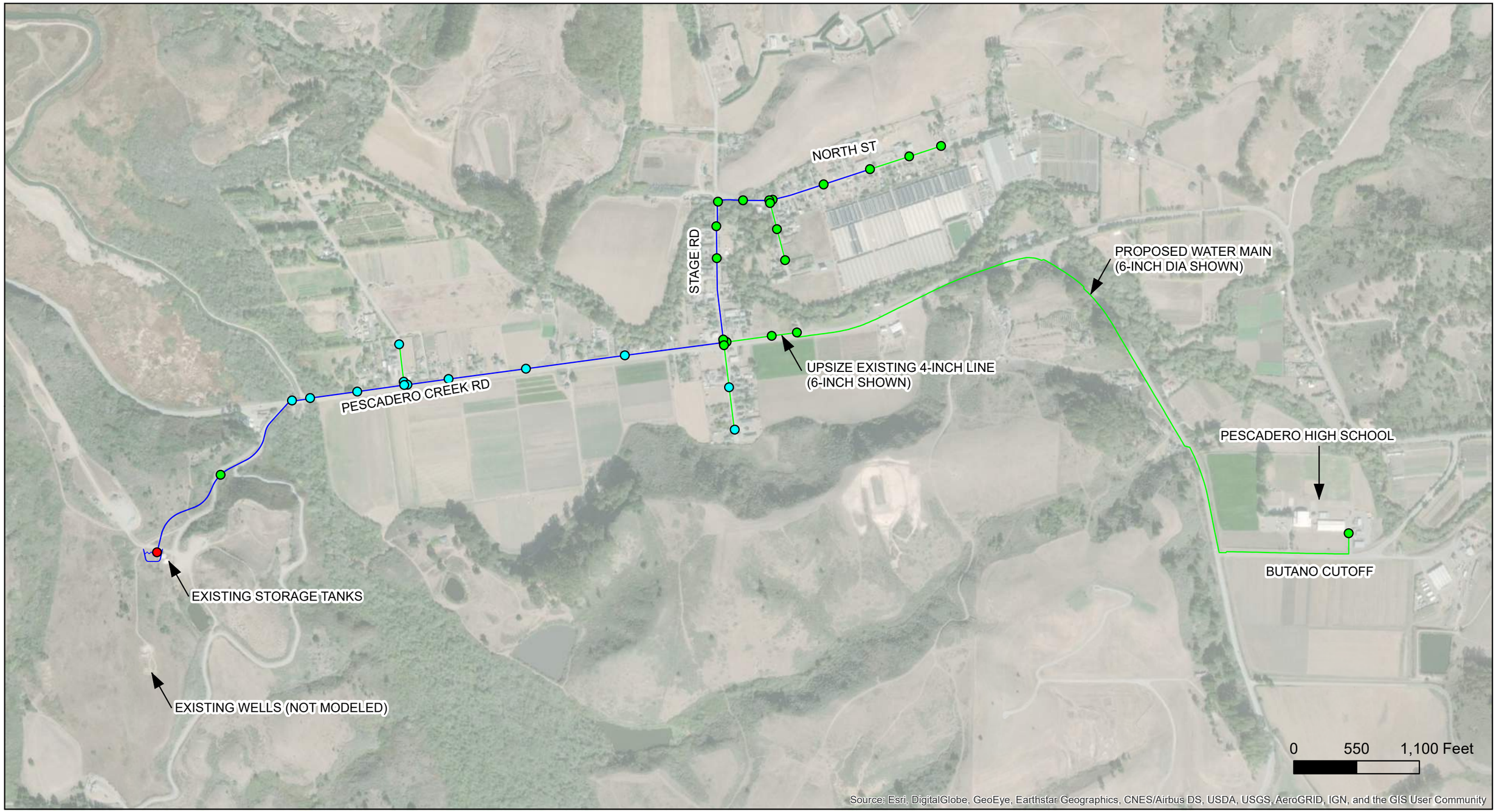
Job Number 11213964
Revision A
Date 14 Dec 2020

CSA-11 Existing Water System Peak Hour Pressure Results

Figure 2

6001 Shellmound Street, Suite 850, Emeryville, CA 94608, USA T 510 420 3303 F 510 420 3303 W www.ghd.com

Figure 3
Hydraulic Model – Proposed System



Paper Size ANSI B

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

N

LEGEND

Junction Pressure (psi)

- less than 20.00
- 20.00 ~ 40.00
- 40.00 ~ 70.00
- 70.00 ~ 120.00

Pipe Diameter (in)

- 4.00
- 6.00
- 8.00

University Enterprises, Inc.
Pescadero High School

Job Number 11213964
Revision A
Date 11 Dec 2020

CSA-11 Proposed Water System Peak Hour Pressure Results

Figure 3

C:\Users\smorales\Desktop\CSA 11 - Figure 2.mxd

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by:smorales

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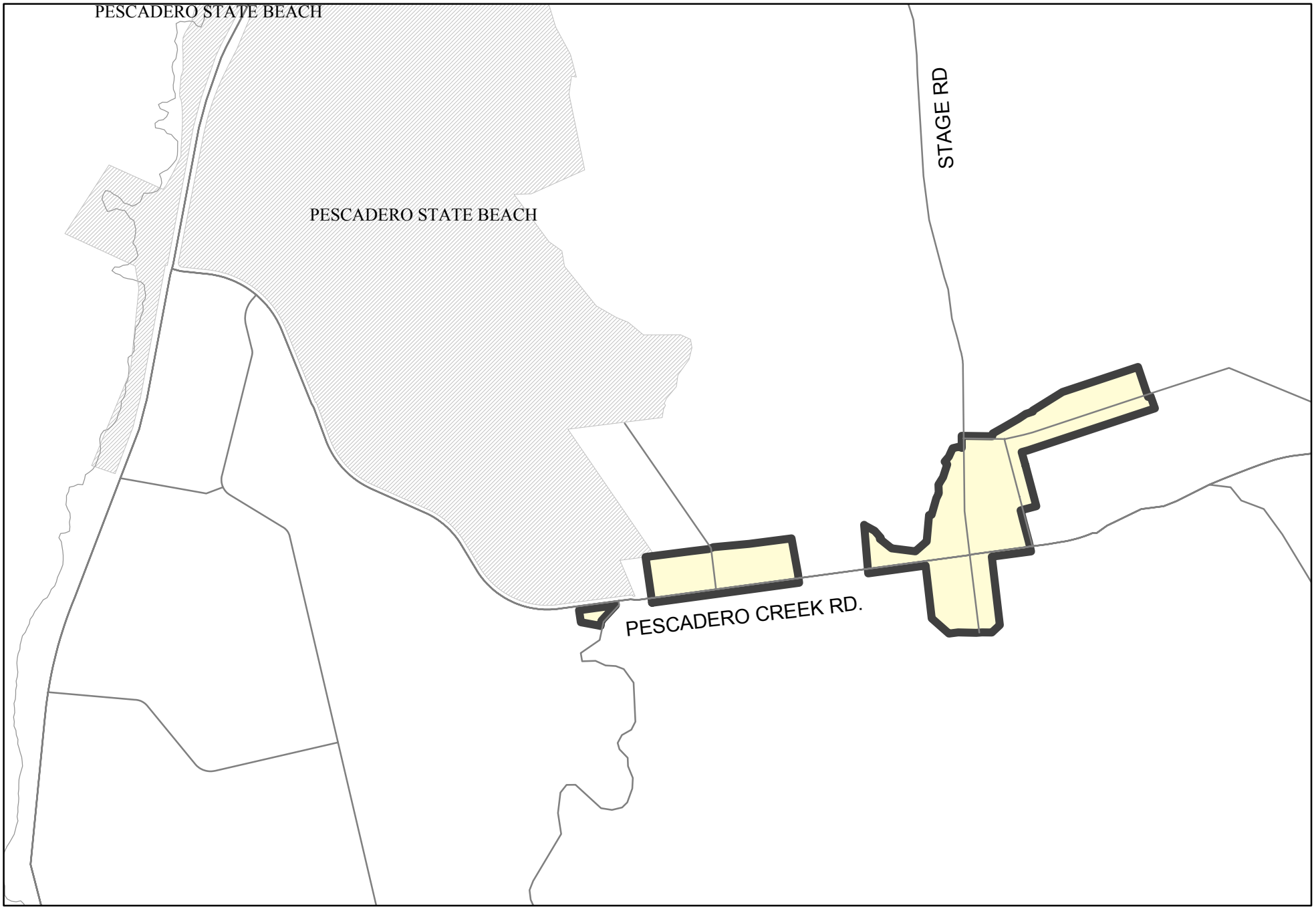
Appendices

Appendix A
County Service Area 11 Service Area Boundary Map



COUNTY SERVICE AREA NUMBER 11

Appendix B
30 Percent Design Drawings

COUNTY OF SAN MATEO
CALIFORNIA

PESCADERO HIGH SCHOOL
CSA 11 WATER LINE EXTENSION
TOTAL PROJECT LENGTH APPROXIMATELY 1.27 MILES

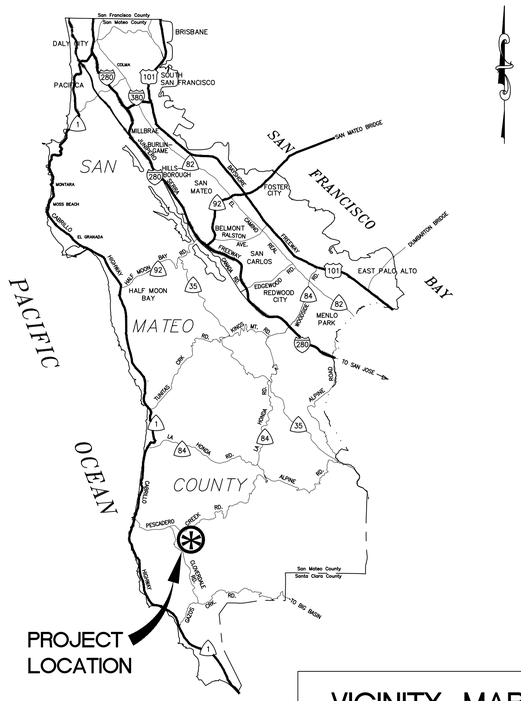
TO BE SUPPLEMENTED BY STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD PLANS DATED MAY 2018 AND ADOPTED BY SAN MATEO COUNTY, FEBRUARY 11, 2020, BY RESOLUTION NO. 077277

REGISTERED PROFESSIONAL ENGINEER JAMES C. PORTER C 48056 EXPIRES 12/31/21 CIVIL STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019



VICINITY MAP
NO SCALE

LOCATION MAP
NO SCALE

ABBREVIATIONS:

AB (CL.2)	AGGREGATE BASE (CLASS 2)
Abn	ABANDON
AC	ASPHALT CONCRETE
AC (TYPE B)	ASPHALT CONCRETE (TYPE B)
ACP	ASBESTOS CONCRETE PIPE
AGG	AGGREGATE
AV	AVENUE
BC	BACK OF CURB
BLB BOX	BUBBLE-UP BOX
BW	BACK OF WALK
CATV	CABLE TV
CONC	CONCRETE
C & G	CURB AND GUTTER
CL	CENTERLINE
CTN	CEMENT TREATED NATIVE
D	AVERAGE WIDTH OF DRIVEWAY RAMP
DI	DRAINAGE INLET, DROP INLET
DIP	DUCTILE IRON PIPE
D/W	DRIVEWAY
ELE	ELEVATION
ETW	EDGE OF TRAVEL WAY
EP	EDGE OF PAVEMENT
EX, EXIST	EXISTING
FD	FOUND
FG	FINISHED GROUND
FH	FIRE HYDRANT
FL	FLOW LINE
G	GAS LINE
GB	GRADE BREAK
GV	GAS VALVE
ID	INSIDE DIAMETER
INV	INVERT
JP	JOINT UTILITY POLE
LG, LIP	LIP OF GUTTER
LT, L	LEFT
LH	SANITARY SEWER LAMPHOLE
MAX	MAXIMUM
MB	MAILBOX
MB (#)	MAILBOXES (QUANTITY)
MIN	MINIMUM
MPH	MILES PER HOUR
N\S	NAIL & SHINER
O.G.	ORIGINAL GROUND, ON GRADE
PBMH	SBC/PAC BELL MANHOLE
PCC	PORTLAND CONCRETE CEMENT
PK	PARKER-KALON NAIL
PNT	POINT
PR	PROPOSED
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INFLECTION
RCP	REINFORCED CONCRETE PIPE
RT, R	RIGHT
R/W, ROW	RIGHT OF WAY
S	SLOPE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SHT	SHEET
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
SSFI	SANITARY SEWER FLUSHING INLET
SSMH	SANITARY SEWER MANHOLE
ST	STREET
STA	STATION
T	TELEPHONE
TB	TOP OF BANK
TC	TOP OF CURB
TD	TOP OF DIKE
TG	TOP OF GRATE
TS	TOP OF SIDEWALK
TYP	TYPICAL
UD	UNDER DRAIN
UND	UNDERGROUND
UNK	UNKNOWN
VCP	VITRIFIED CLAY PIPE
VG	VALLEY GUTTER
WM	WATER METER
WM (#)	WATER METERS (QUANTITY)
WV	WATER VALVE
WV (#)	WATER VALVES (QUANTITY)
WW	WALKWAY
ø	DIAMETER

LEGEND:

- SD — STORM DRAIN LINE (EX)
- STORM DRAIN LINE (EX) PROFILE
- SS — SANITARY SEWER LINE "ACTIVE"
- SANITARY SEWER LINE "ACTIVE" PROFILE
- W — WATER LINE "ACTIVE"
- WATER LINE "ACTIVE" PROFILE
- \W\ — ACP WATER LINE (Abn)
- ACP WATER LINE (Abn) PROFILE
- \G\ — GAS LINE (Abn)
- GAS LINE (Abn) PROFILE
- G — GAS LINE "ACTIVE"
- GAS LINE "ACTIVE" PROFILE
- JT — JOINT COMMUNICATION LINE (EX)
- JOINT COMMUNICATION LINE (EX) PROFILE
- OHE — JOINT COMMUNICATION LINE (EX)
- RIGHT OF WAY
- CONTRACTOR STAGING AREA
- PROPOSED PIPE
- NATIVE BACKFILL
- CLASS 2 AGGREGATE BASE – AB (CL. 2) (GRAVEL)
- CLASS 3 CONCRETE
- MISCELLANEOUS ASPHALT CONCRETE
- DEEP LIFT AREAS (0.50' DEEP ASPHALT CONCRETE)
- ROCK SWALE AND FRENCH DRAIN

LEGEND:

- FH — FIRE HYDRANT
- FH — FIRE HYDRANT MARKERS
- MB — MAILBOX
- SIGN
- MONUMENT
- BM — BENCHMARK
- 101 — SURVEY CONTROL POINT
- 1 — DRIVEWAY NUMBER
- 000 — HOUSE NUMBER ADDRESS
- A/D — DETAIL NUMBER AND SHEET
- EXISTING TREE
- FENCE / WALL
- N/W — NAIL AND WASHER
- (XXX.XX) = EXISTING ELEVATION
- XXX.XX = PROPOSED ELEVATION
- +0.00 / (00.00) 00.00 = STATION / (EXIST ELE) PR ELE AT LIP OF GUTTER
- WM — WATER METER
- WV — WATER VALVE
- (N) BLOWOFF VALVE
- GV — GAS VALVE
- JOINT UTILITY POLE
- TELEPHONE POLE
- GUY WIRE ANCHOR
- SSMH — SANITARY SEWER MANHOLE
- SSCO — SANITARY SEWER CLEANOUT
- SSFI — SANITARY SEWER FLUSHING INLET
- SDMH — STORM DRAIN MANHOLE
- UD — UNDERDRAIN
- BBLBX — BUBBLE-UP BOX
- MH — UNKNOWN MANHOLE

NOTES:

1. CONTRACTOR SHALL CONFINE HIS OPERATIONS AND ACTIVITIES WITHIN THE PROJECT LIMITS, CONSISTING OF ROAD RIGHT-OF-WAY, RIGHTS OF ENTRY AND/OR PROJECT CONFORMS, AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.
2. CONTINUOUS DUST CONTROL SHALL BE PROVIDED AS REQUIRED BY SECTION 17 OF THE SPECIAL PROVISIONS AND AS DIRECTED BY THE ENGINEER.
3. LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE UTILITIES TO DETERMINE EXACT LOCATIONS AND DEPTHS. CONTRACTOR SHALL CALL USA NORTH 811 (USA) UNDERGROUND SERVICE ALERT A MINIMUM OF FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY EXCAVATION OR TRENCHING WORK. USA MAY BE CONTACTED EITHER ON-LINE AT USANORTH811.ORG OR BY PHONE BY DIALING (800) 227-2600 OR 811. WHEN CALLING, BE PREPARED TO GIVE LOCATION AND NATURE OF WORK, START DATE, COMPANY NAME, ADDRESS AND TELEPHONE NUMBER.
4. PLANS MAY NOT SHOW ALL EXISTING WATER, GAS OR SANITARY SEWER LATERALS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION AND PRESERVATION OF ALL SUCH FACILITIES WHICH ARE NOT TO BE RELOCATED.
5. CONTRACTOR IS ADVISED THAT EXCAVATION MAY CONFLICT WITH SANITARY SEWER LATERALS, GAS LINES, WATER LINES AND OTHER UNDERGROUND UTILITIES. ANY DAMAGE TO EXISTING FACILITIES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. DRIVEWAY OPENINGS AND CONFORM LOCATIONS SHOWN ARE APPROXIMATE ONLY. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER. SURFACED SHOULDER CONFORM LIMITS ARE AS INDICATED AT 3 FEET FROM OUTSIDE EDGE OF THE GUTTER, UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR OTHERWISE NOTED ON THE PLANS.
7. NO TREES, VEGETATION OR IMPROVEMENTS (INCLUDING FENCES) SHALL BE REMOVED WITHOUT THE PRIOR WRITTEN CONSENT AND APPROVAL OF THE ENGINEER. VEGETATION AND IMPROVEMENTS WHICH ARE DESIGNATED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. REFER TO PROJECT SPECIAL PROVISIONS SECTION 16 REGARDING REQUIREMENTS FOR ADVANCE NOTIFICATION OF PROPERTY OWNERS.
8. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 5-1.07 OF THE STANDARD SPECIFICATIONS. THE SURVEY AND ASSOCIATED STAKING SHALL BE IN CONFORMANCE WITH SECTION 100, CONSTRUCTION STAKING AND LAYOUT OF THE SPECIAL PROVISIONS.
9. WHEN DIRECTED BY THE ENGINEER, CUT AND FILL SLOPE RATIOS SHALL BE VARIED TO AVOID TREES OR OTHER EXISTING IMPROVEMENTS.
10. CONTRACTOR SHALL EXERCISE CARE WHEN EXCAVATING NEAR TREES AND ROOTS OF TREES TO REMAIN. SEE SECTION 19 OF THE SPECIAL PROVISIONS.
11. ANY DAMAGE, AS A RESULT OF THE CONTRACTOR'S OPERATION, TO PAVEMENT AND BASE MATERIAL THAT IS TO REMAIN SHALL BE REPAIRED, OR REMOVED AND REPLACED WITH SAME TYPE OF MATERIAL OR APPROVED EQUAL, AS DIRECTED BY THE ENGINEER, AND AT THE SOLE EXPENSE OF THE CONTRACTOR. THE ENGINEER SHALL BE THE SOLE JUDGE OF THE ADEQUACY OF THE COMPLETED REMEDIAL WORK.

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-0001.DWG (G-001)

NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER DILLON J. MORRA No. C 79186 Exp. 3-31-21 CIVIL STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL TITLE SHEET, VICINITY MAP AND LOCATION MAP
		CHECKED BY: DM	
		DRAWN BY: CB	
REVISION	DATE	JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN	
DATE: 12-17-2020	
FILE NO.: 1/49##	

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

G-001
SHEET 1 OF 23

LIST OF DRAWINGS

#	DRAWING	FILE	TITLE	30%	90%
GENERAL					
1	G–001	1/49##	TITLE SHEET, VICINITY MAP, AND LOCATION MAP	X	X
2	G–002	1/49##	LIST OF DRAWINGS	X	X
3	G–003	1/49##	CONSTRUCTION BEST MANAGEMENT PRACTICES	X	X
4	G–101	1/49##	KEY MAP & SURVEY CONTROL DIAGRAM	X	X
5	G–102	1/49##	POTHOLE SCHEDULE & GEOTECHNICAL BORINGS		X
CIVIL & PIPELINE					
6	C–101	1/49##	PESCADERO CREEK ROAD – PLAN AND PROFILE 1	X	X
7	C–102	1/49##	PESCADERO CREEK ROAD – PLAN AND PROFILE 2	X	X
8	C–103	1/49##	PESCADERO CREEK ROAD – PLAN AND PROFILE 3	X	X
9	C–104	1/49##	PESCADERO CREEK ROAD – PLAN AND PROFILE 4	X	X
10	C–105	1/49##	PESCADERO CREEK ROAD – PLAN AND PROFILE 5	X	X
11	C–106	1/49##	CLOVERDALE ROAD – PLAN AND PROFILE 6	X	X
12	C–107	1/49##	CLOVERDALE ROAD – PLAN AND PROFILE 7	X	X
13	C–108	1/49##	CLOVERDALE ROAD – PLAN AND PROFILE 8	X	X
14	C–109	1/49##	CLOVERDALE ROAD – PLAN AND PROFILE 9	X	X
15	C–110	1/49##	CLOVERDALE ROAD – PLAN AND PROFILE 10	X	X
16	C–111	1/49##	CLOVERDALE ROAD – PLAN AND PROFILE 11	X	X
17	C–112	1/49##	BUTANO CUTOFF – PLAN AND PROFILE 12	X	X
18	C–113	1/49##	BUTANO CUTOFF – PLAN AND PROFILE 13	X	X
19	C–114	1/49##	BUTANO CUTOFF – PLAN AND PROFILE 14	X	X
20	C–115	1/49##	HS SERVICE CONNECTION PLAN	X	X
21	C–501	1/49##	CIVIL DETAILS 1		X
22	C–502	1/49##	CIVIL DETAILS 2		X
23	C–503	1/49##	SAN MATEO COUNTY STANDARD DRAWINGS		

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12–31–2019

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964–G002.DWG (G–002)

NOT FOR CONSTRUCTION

APPROVED DATE:	
	REGISTERED PROFESSIONAL ENGINEER DILLON J. MORRA No. C 79186 Exp. 3-31-21 Civil STATE OF CALIFORNIA
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03–31–2021	

COUNTY OF SAN MATEO PUBLIC WORKS

		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL **LIST OF DRAWINGS**	SCALE: AS SHOWN
		CHECKED BY: DM		DATE: 12–17–2020
		DRAWN BY: CB		FILE NO.: 1/49##
		JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY		555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063
REVISION	DATE			

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

G-002
SHEET 2 OF 23

REGISTERED PROFESSIONAL ENGINEER JAMES C. PORTER C 48056 EXPIRES 12/31/21 CIVIL STATE OF CALIFORNIA

APPROVED:

DATE: _____

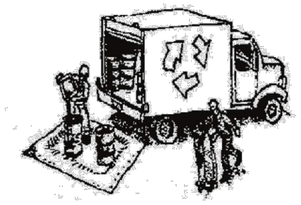
JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management



Non-Hazardous Materials

- ❑ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- ❑ Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials

- ❑ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ❑ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ❑ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ❑ Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- ❑ Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- ❑ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- ❑ Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- ❑ Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- ❑ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

Construction Entrances and Perimeter

- ❑ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ❑ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control

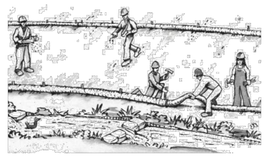
Maintenance and Parking

- ❑ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ❑ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ❑ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ❑ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment.

Spill Prevention and Control

- ❑ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ❑ Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- ❑ Clean up spills or leaks immediately and dispose of cleanup materials properly.
- ❑ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- ❑ Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

Earthmoving



- ❑ Schedule grading and excavation work during dry weather.
- ❑ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ❑ Remove existing vegetation only when absolutely necessary, and seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.
- ❑ Prevent sediment from migrating offsite and protect storm drain inlets, gutters, ditches, and drainage courses by installing and maintaining appropriate BMPs, such as fiber rolls, silt fences, sediment basins, gravel bags, berms, etc.
- ❑ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- ❑ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells
  - Buried barrels, debris, or trash.

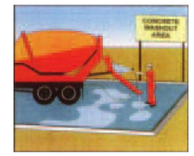
Paving/Asphalt Work

- ❑ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ❑ Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- ❑ Do not use water to wash down fresh asphalt concrete pavement.

Sawcutting & Asphalt/Concrete Removal

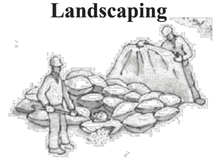
- ❑ Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- ❑ Shovel, abosorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- ❑ If sawcut slurry enters a catch basin, clean it up immediately.

Concrete, Grout & Mortar Application



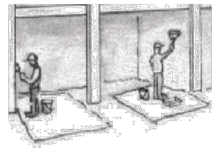
- ❑ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- ❑ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- ❑ When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

Landscaping



- ❑ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ❑ Stack bagged material on pallets and under cover.
- ❑ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

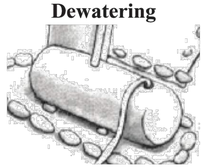
Painting & Paint Removal



Painting Cleanup and Removal

- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ❑ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.

Dewatering



- ❑ Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer call your local wastewater treatment plant.
- ❑ Divert run-on water from offsite away from all disturbed areas.
- ❑ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- ❑ In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal.

Storm drain polluters may be liable for fines of up to $10,000 per day!

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APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER DILLON J. MORRA No. C 79186 Exp. 3-31-21 CIVIL STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL **CONSTRUCTION BEST MANAGEMENT PRACTICES**
		CHECKED BY: DM	
		DRAWN BY: CB	
REVISION	DATE	JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

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G-003
SHEET 3 OF 23

APPROVED:

DATE: _____

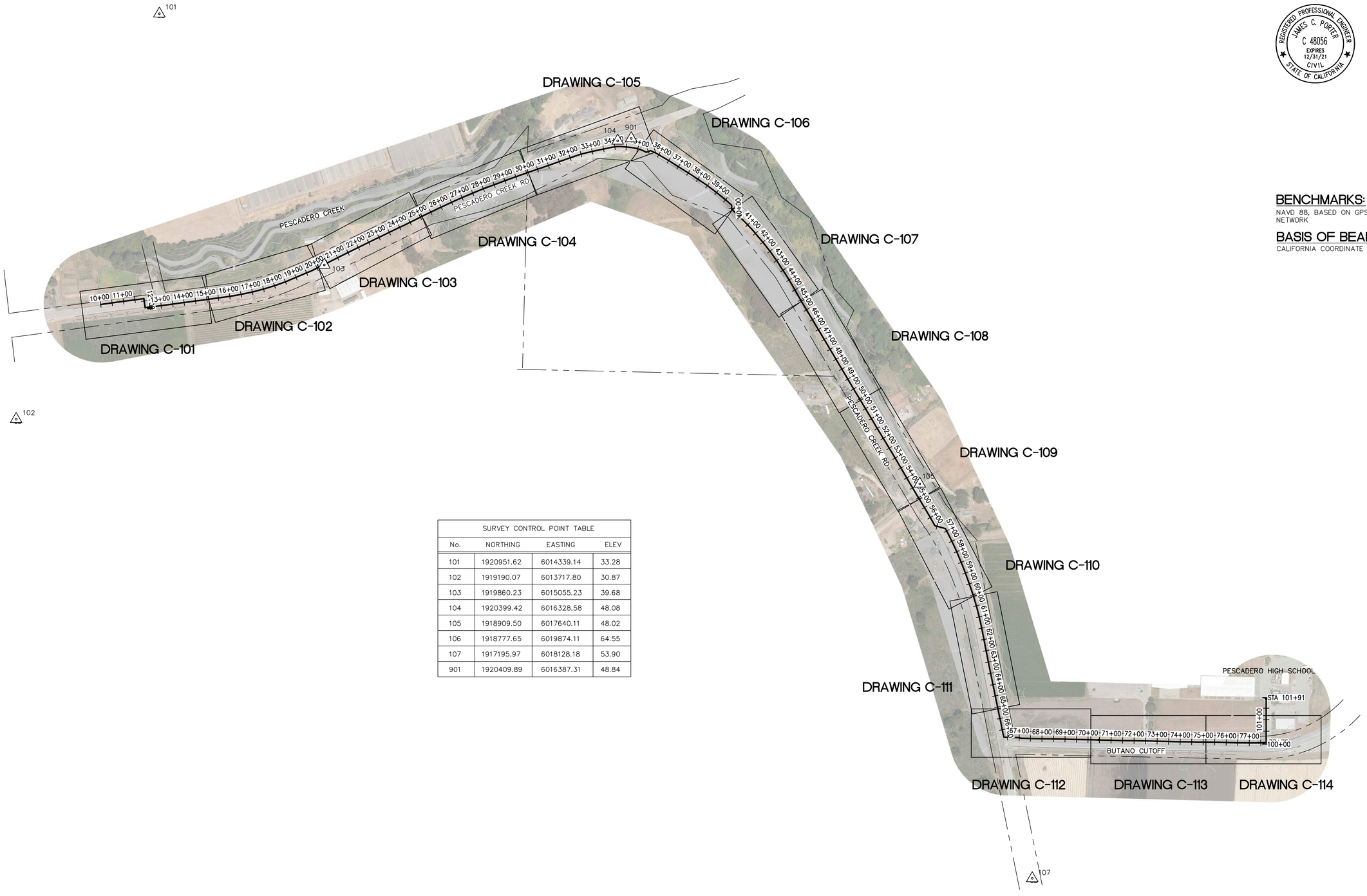
JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

BENCHMARKS:

NAVD 88, BASED ON GPS OBSERVATIONS USING THE CSDS VSN NETWORK

BASIS OF BEARINGS:

CALIFORNIA COORDINATE SYSTEM NAD83, ZONE 3



SURVEY CONTROL POINT TABLE			
No.	NORTHING	EASTING	ELEV
101	1920951.62	6014339.14	33.28
102	1919190.07	6013717.80	30.87
103	1919860.23	6015055.23	39.68
104	1920399.42	6016328.58	48.08
105	1918909.50	6017640.11	48.02
106	1918777.65	6019874.11	64.55
107	1917195.97	6018128.18	53.90
901	1920409.89	6016387.31	48.84

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-G101.DWG (G-101)

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APPROVED DATE:

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

REGISTERED PROFESSIONAL ENGINEER DILLON J. MORRA No. C 79186 Exp. 3-31-21 CIVIL STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
KEY MAP AND SURVEY CONTROL DIAGRAM

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
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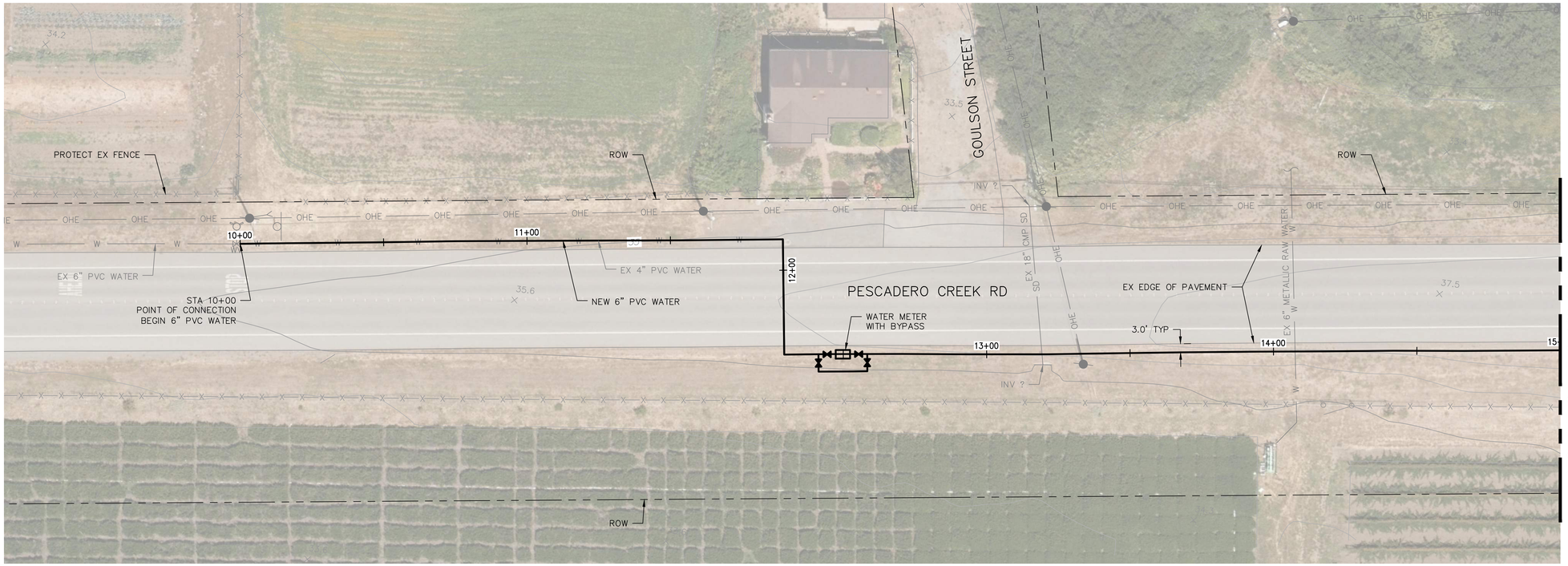
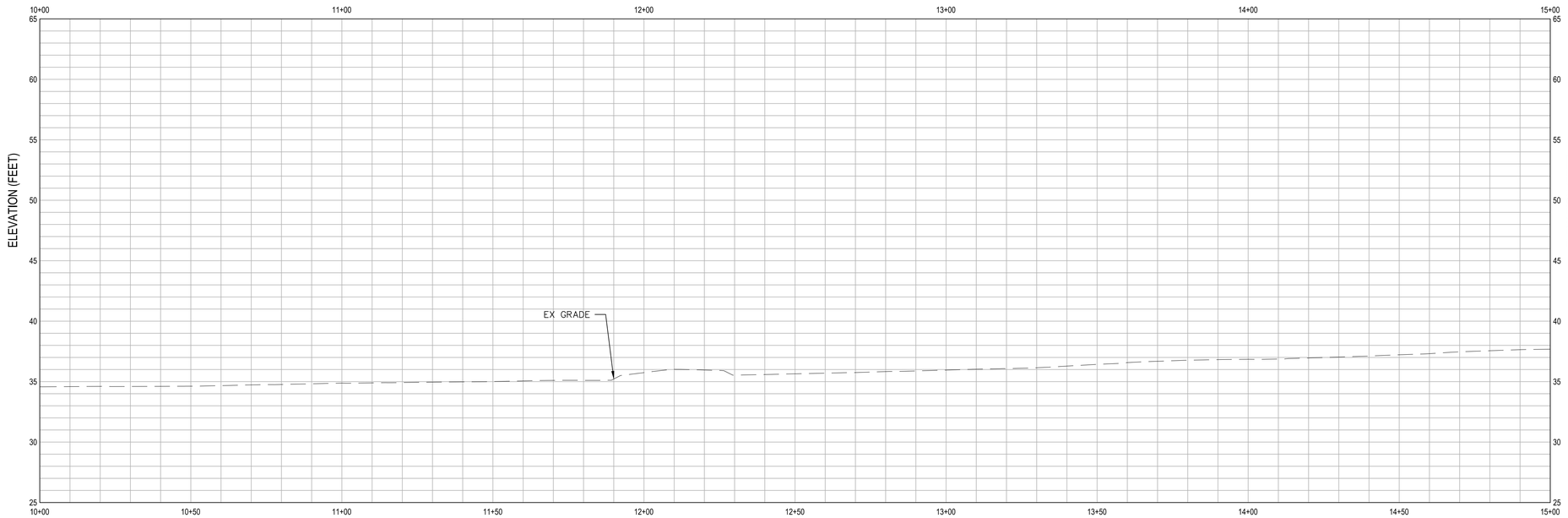
G-101
SHEET 4 OF 23



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

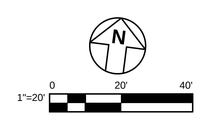
JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.



NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

COUNTY OF SAN MATEO
PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
PESCADERO CREEK RD - PLAN AND PROFILE 1

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

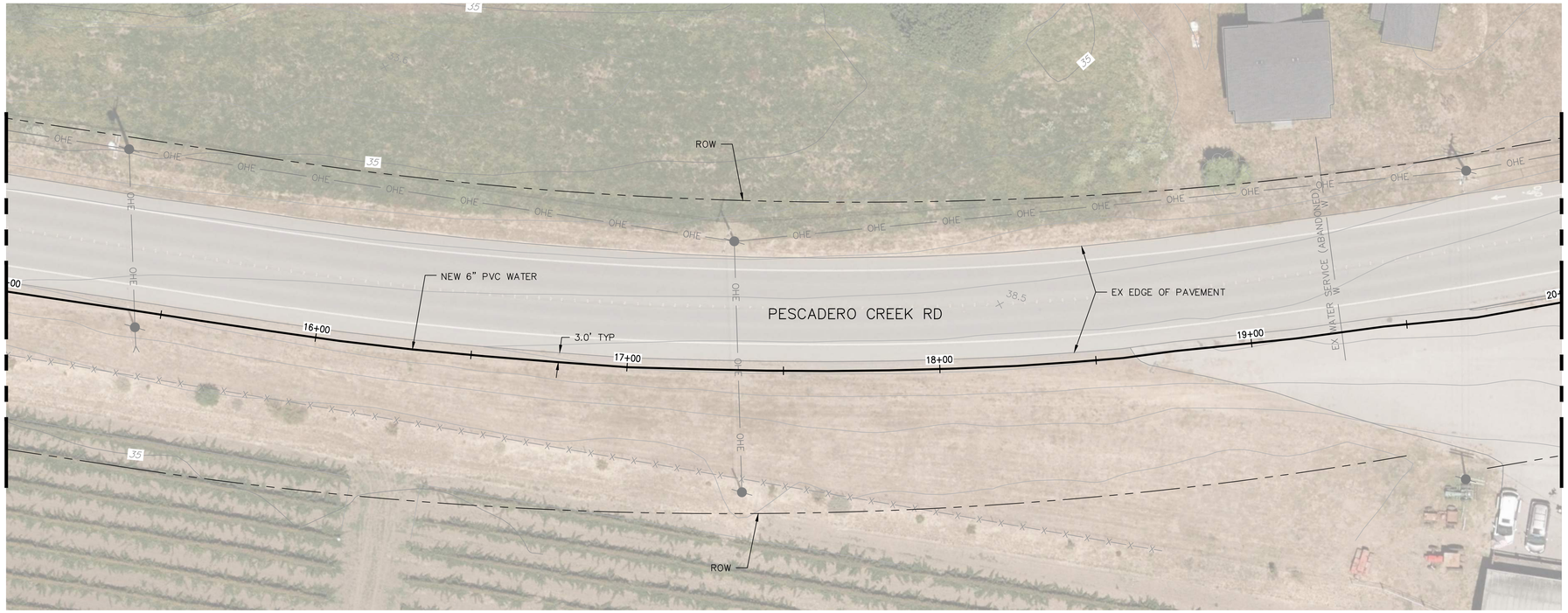
555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

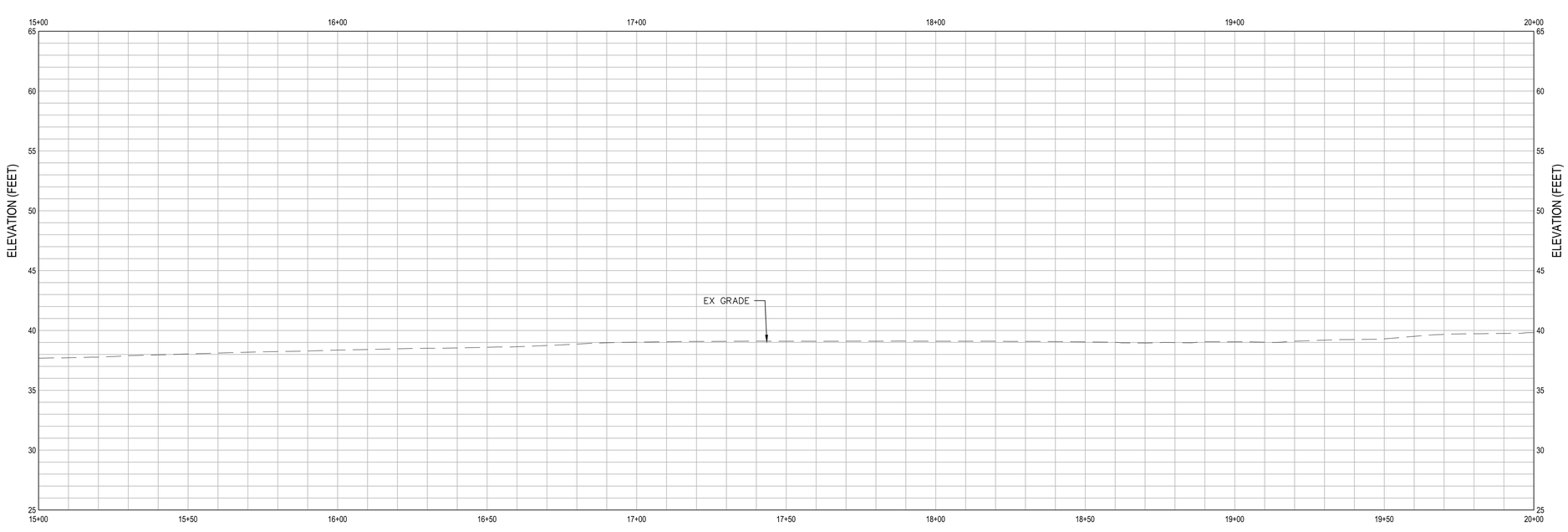
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3 4

C-101
SHEET 6 OF 23

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C101.DWG (C-101)



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

0 20' 40'
1"=20'

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\61\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C102.DWG (C-102)

NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER — DILLON J. MORRA — No. C 79186 Exp. 3-31-21 — CIVIL — STATE OF CALIFORNIA

COUNTY OF SAN MATEO — PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
PESCADERO CREEK RD - PLAN AND PROFILE 2

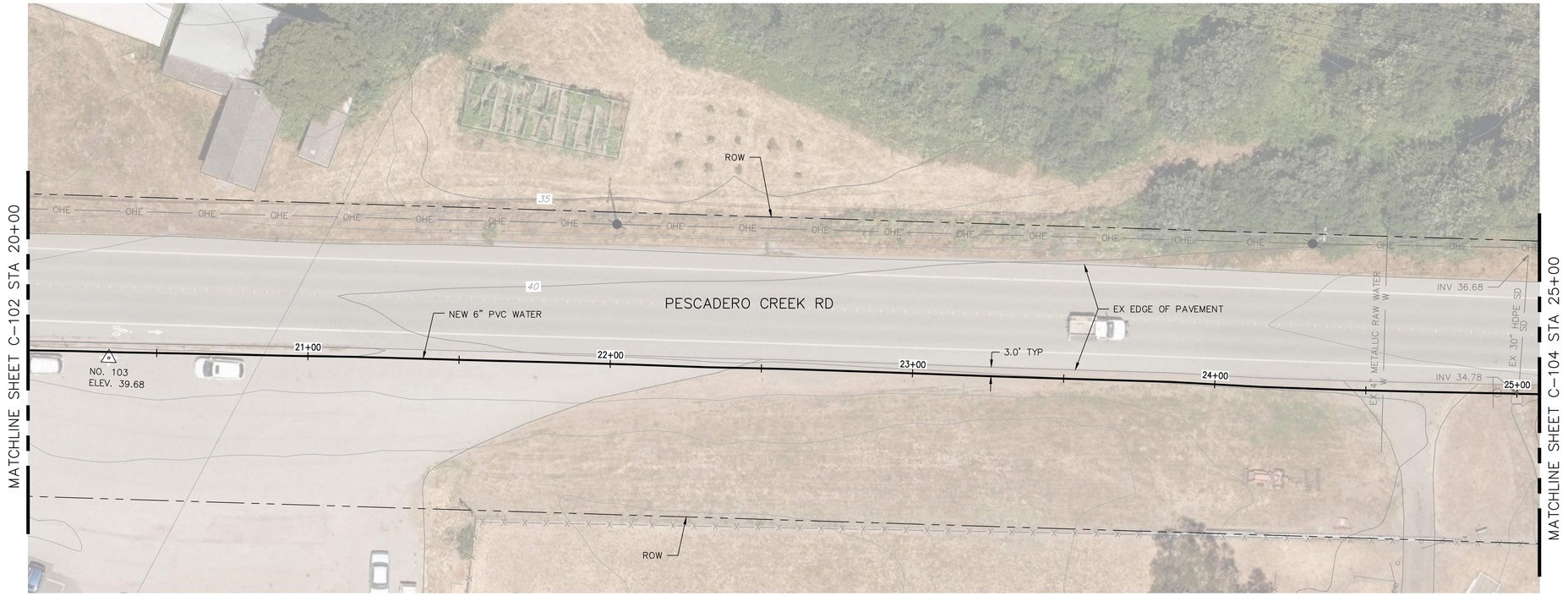
JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

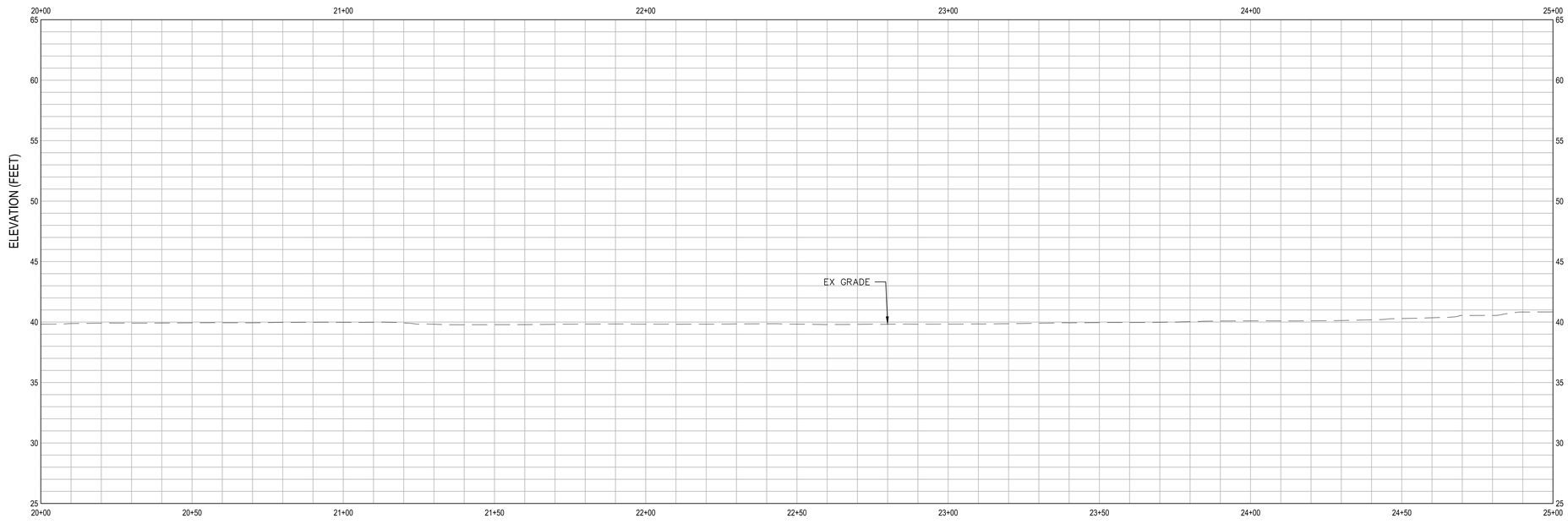
SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-102
SHEET 7 OF 23



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

APPROVED DATE:

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
PESCADERO CREEK RD - PLAN AND PROFILE 3

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

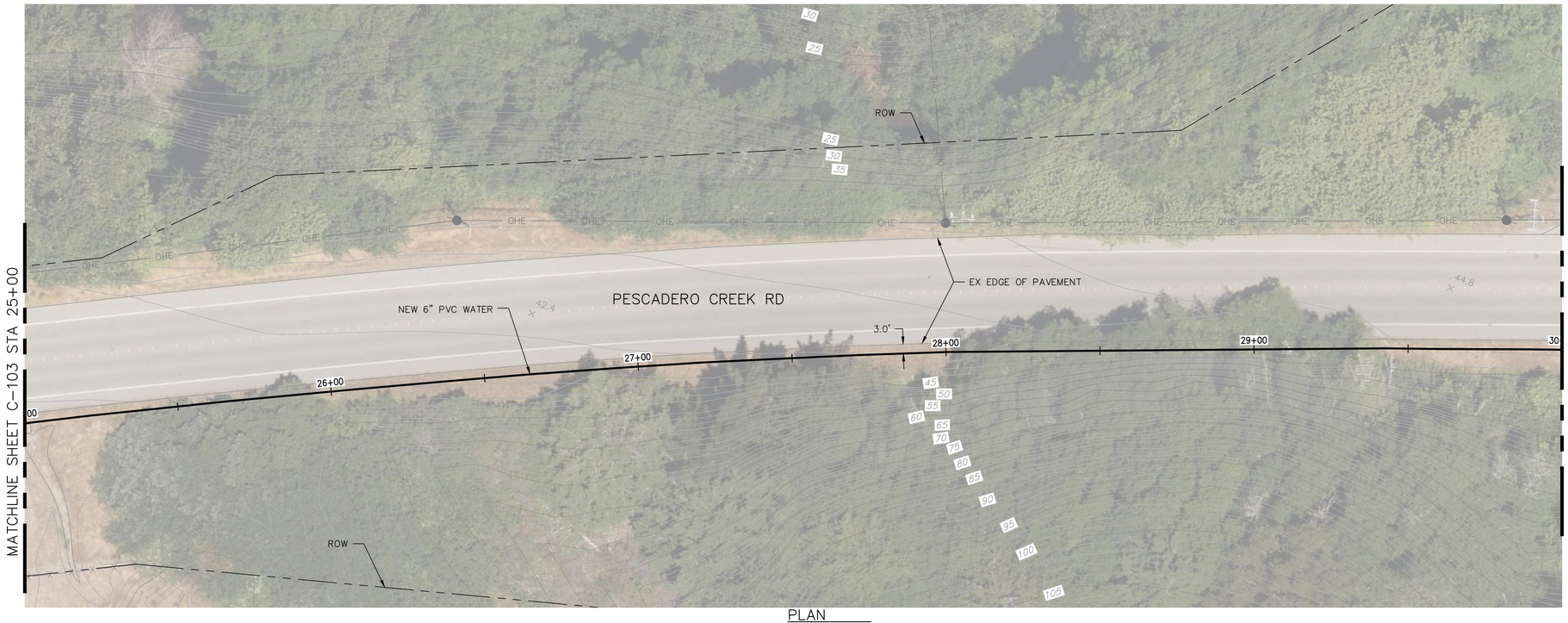
555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

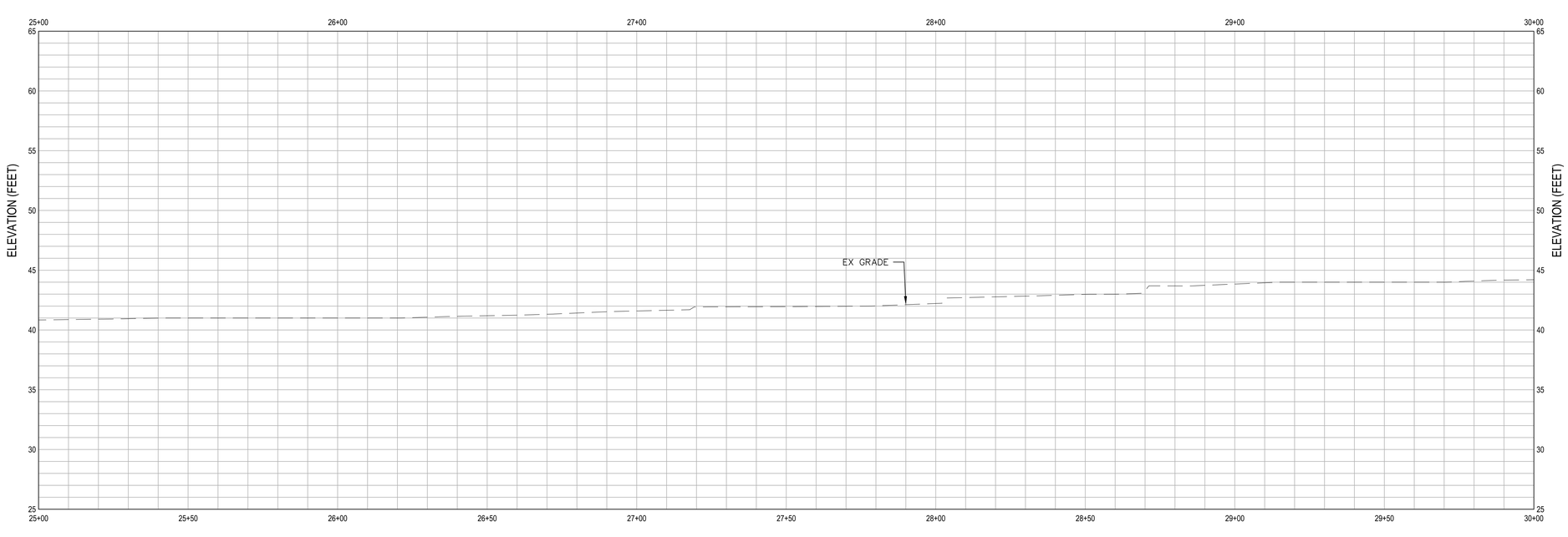
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-103
SHEET 8 OF 23

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C103.DWG (C-103)



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C104.DWG (C-104)

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

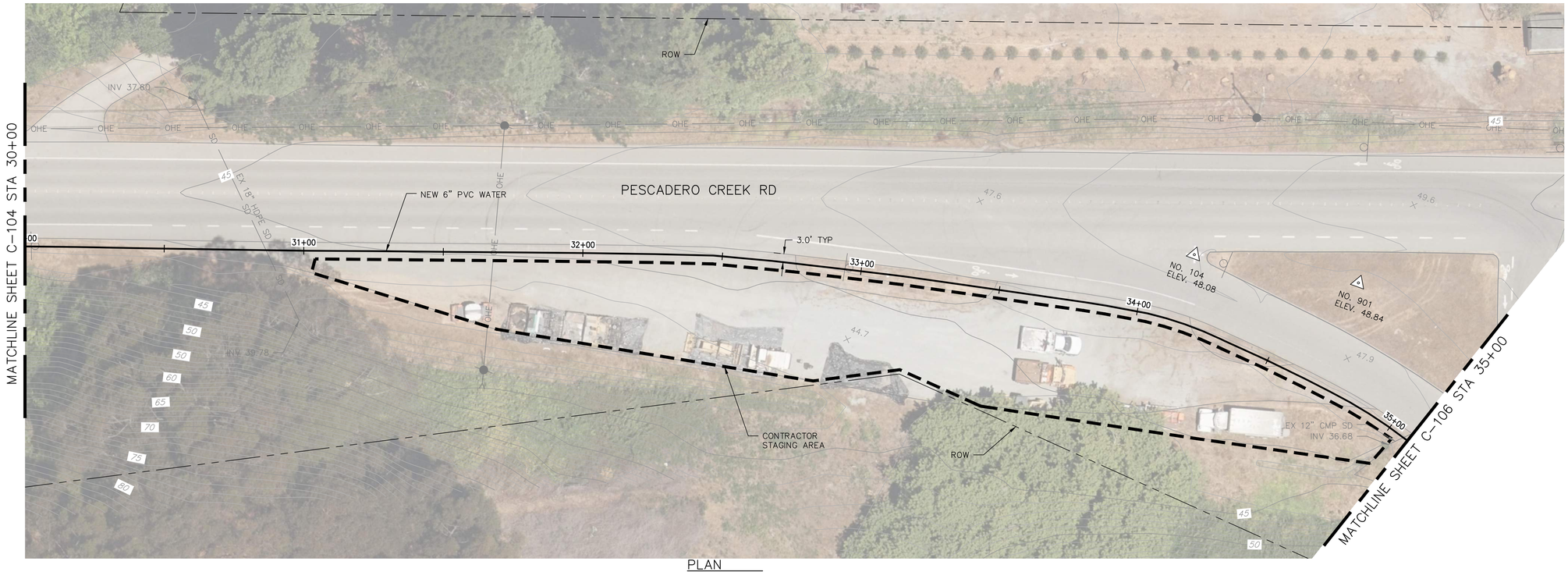
COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE		
		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL
		CHECKED BY: DM	
		DRAWN BY: CB	**PESCADERO CREEK RD - PLAN AND PROFILE 4**
		JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063

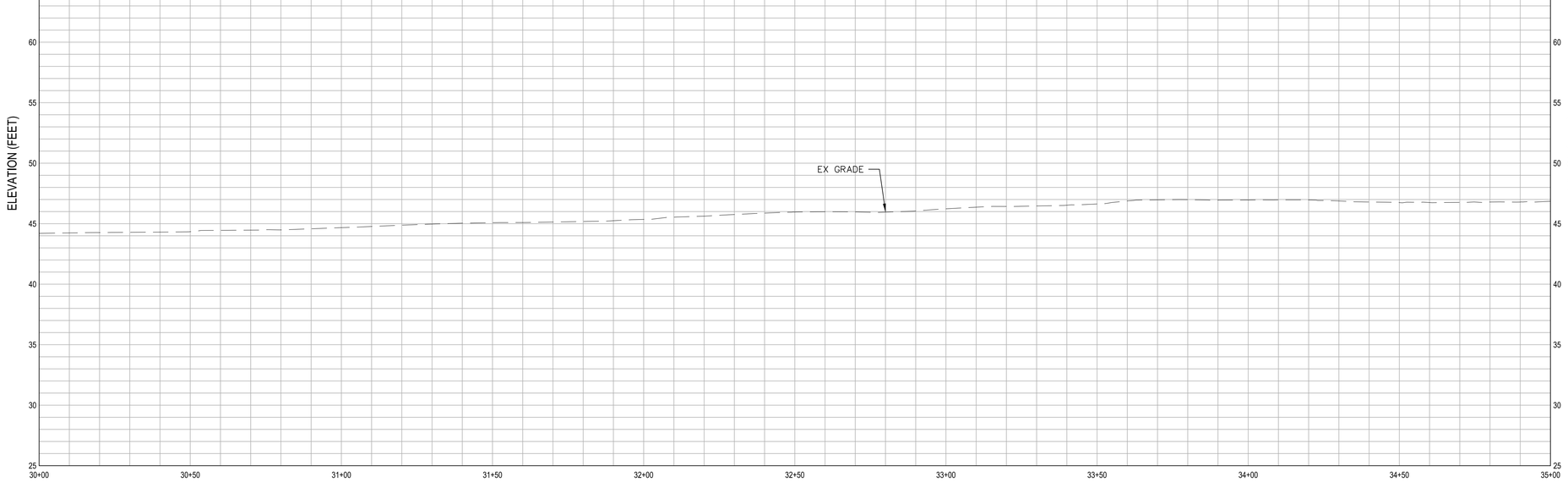
SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-104
SHEET 9 OF 23



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

APPROVED DATE:

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

COUNTY OF SAN MATEO
PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
PESCADERO CREEK RD - PLAN AND PROFILE 5

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

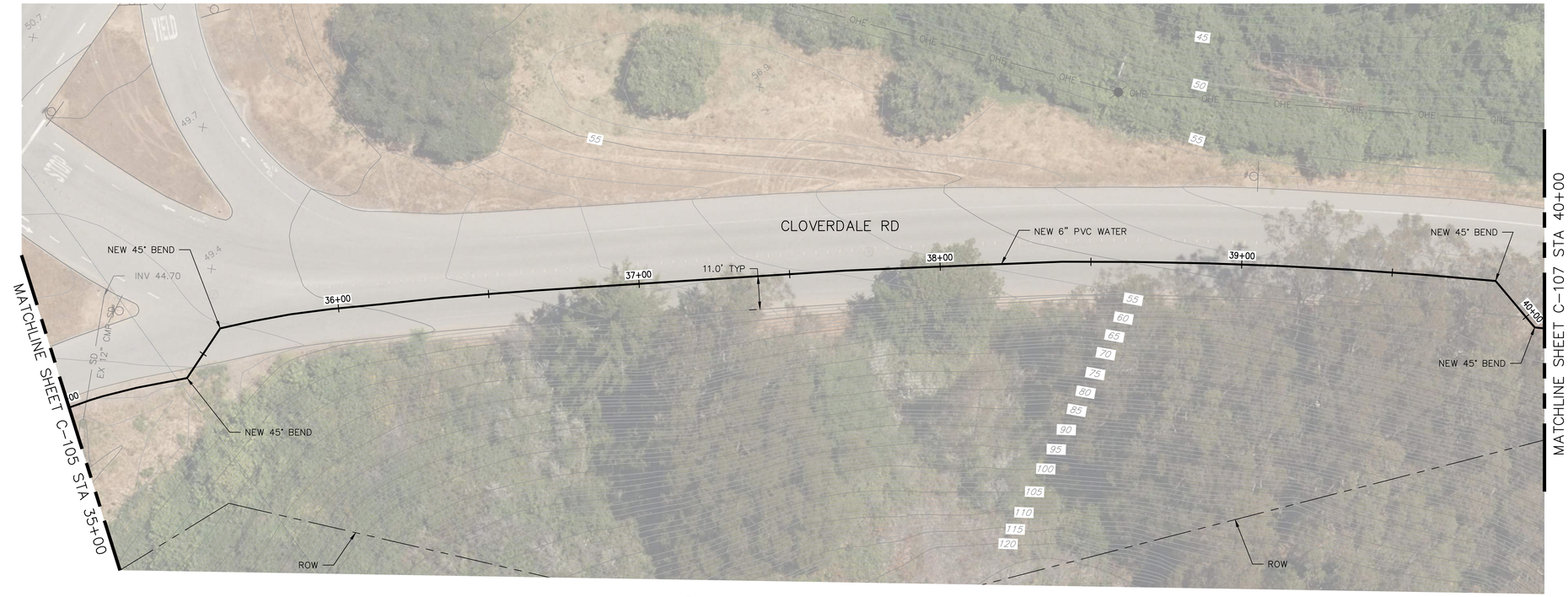
555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

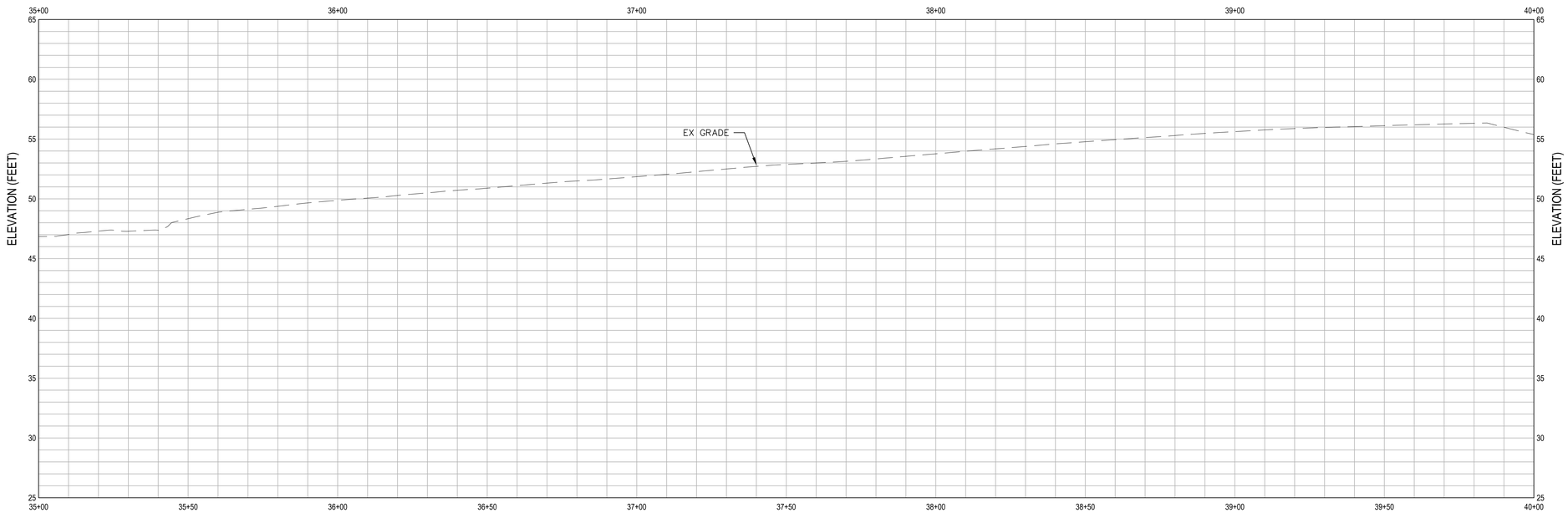
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-105
SHEET 10 OF 23

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C105.DWG (C-105)



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

REGISTERED PROFESSIONAL ENGINEER JAMES C. PORTER C 48056 EXPIRES 12/31/21 CIVIL STATE OF CALIFORNIA

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C106.DWG (C-106)

NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER DILLON J. MORRA No. C 79186 Exp. 3-31-21 CIVIL STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

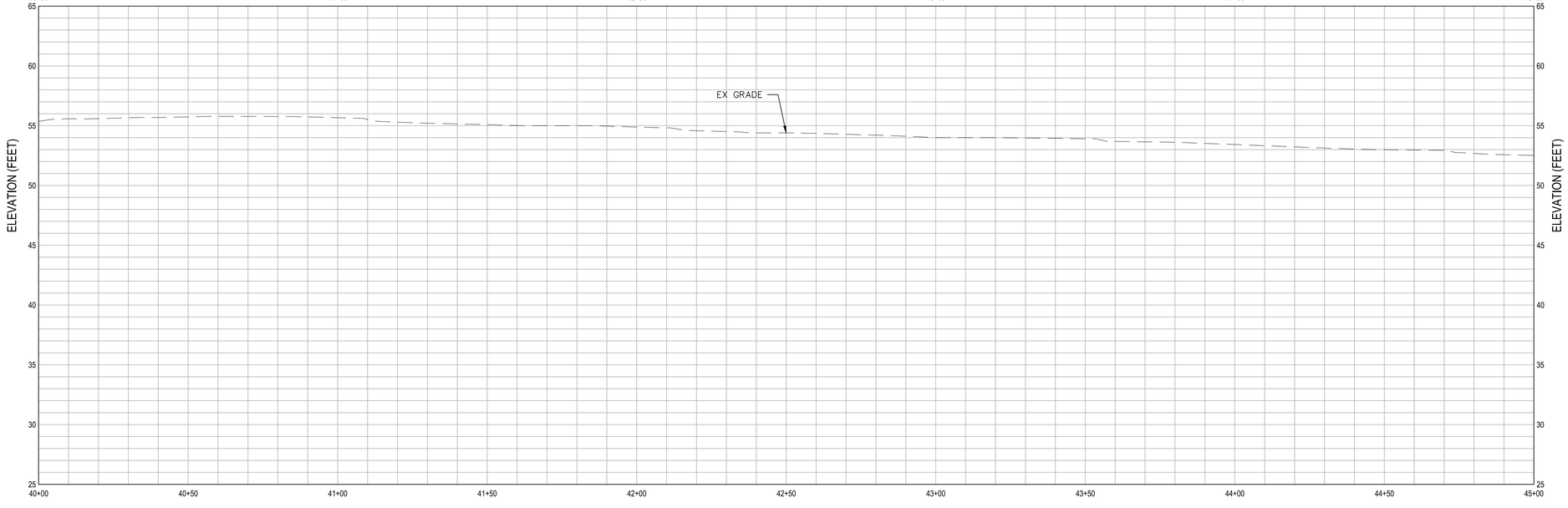
REVISION	DATE		
		DESIGNED BY: DM	COUNTY OF SAN MATEO
		CHECKED BY: DM	PESCADERO HIGH SCHOOL
		DRAWN BY: CB	CLOVERDALE RD - PLAN AND PROFILE 6
		JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-106
SHEET 11 OF 23

PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C107.DWG (C-107)

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
CLOVERDALE RD - PLAN AND PROFILE 7

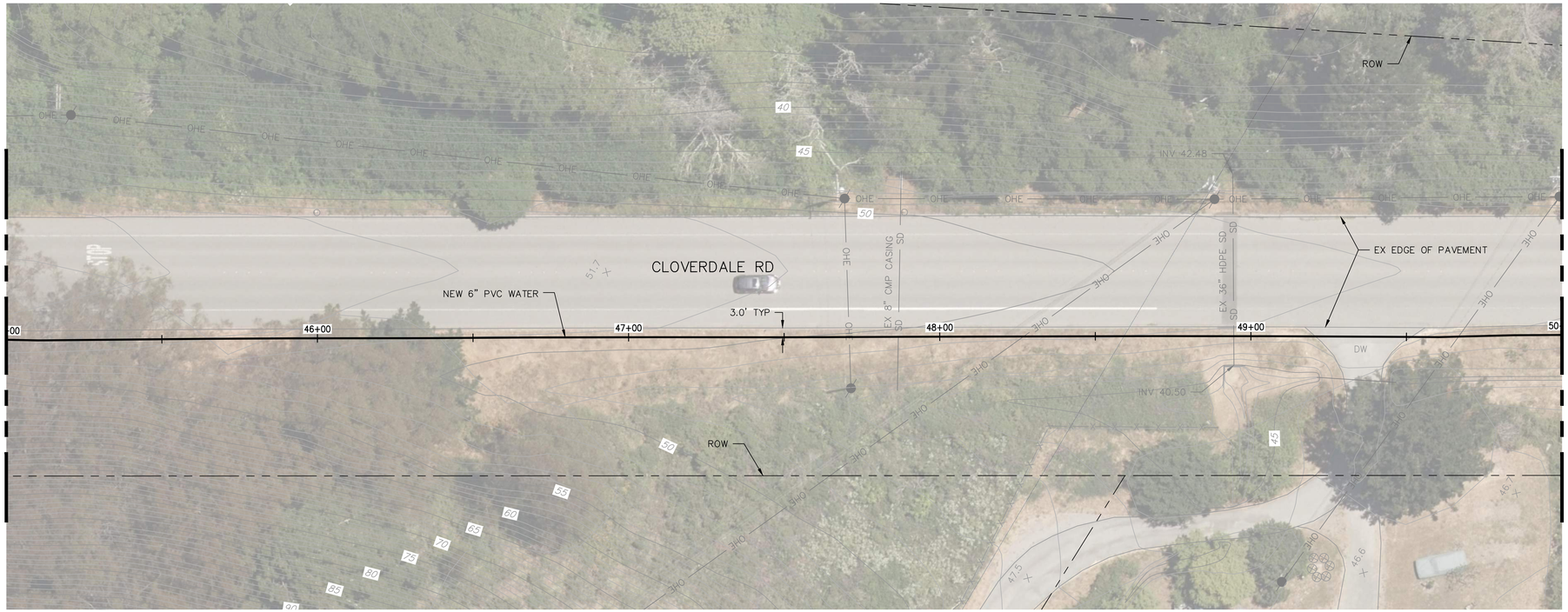
JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

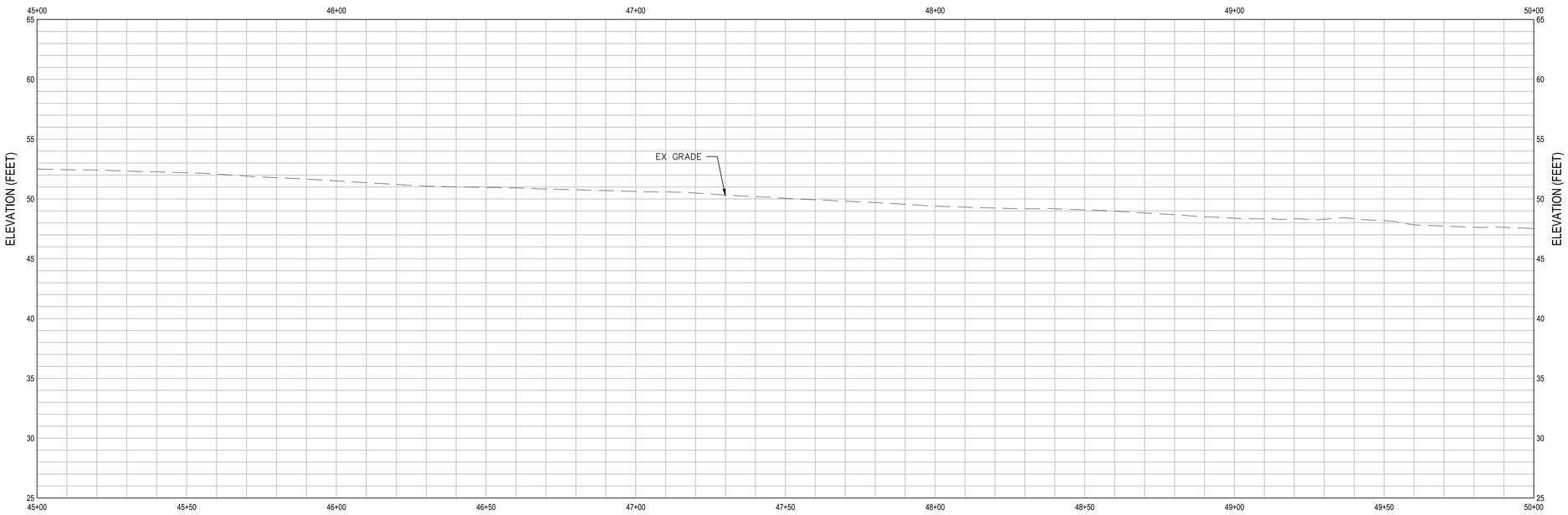
SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-107
SHEET 12 OF 23



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

APPROVED DATE:

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

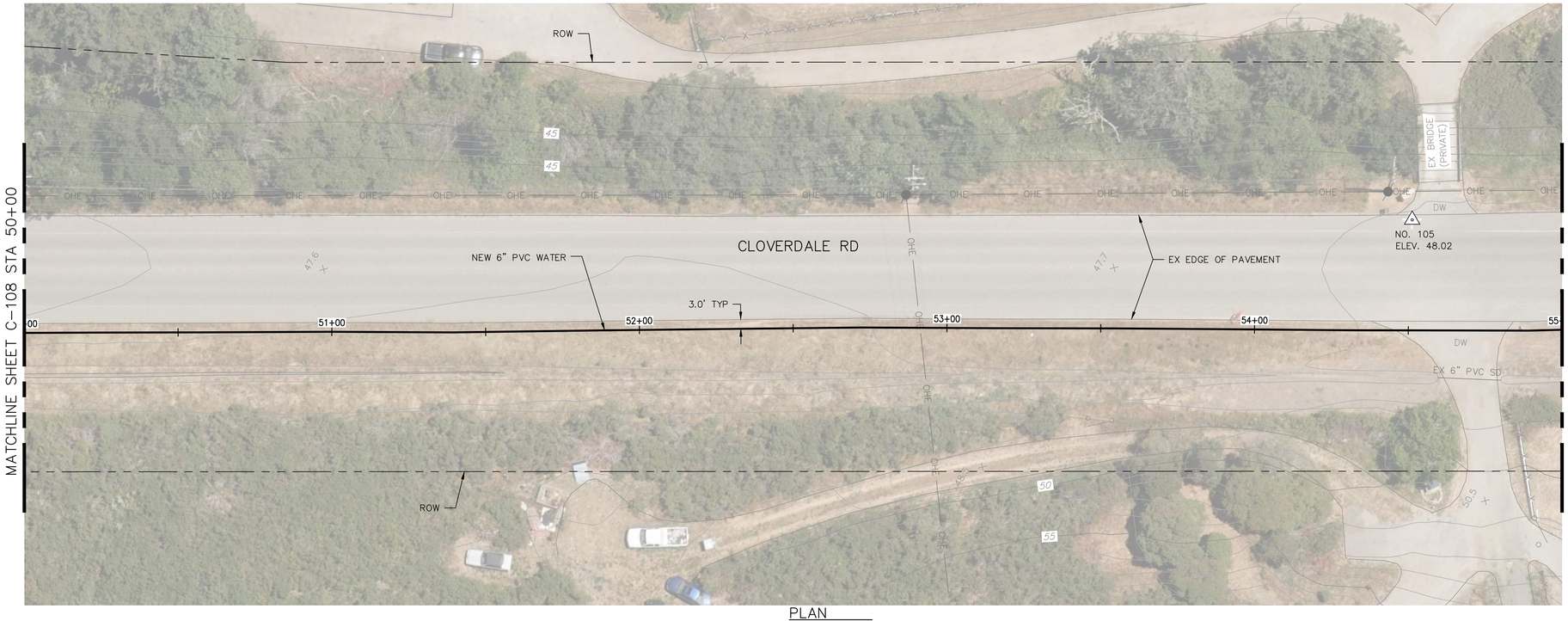
REVISION	DATE		
		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL **CLOVERDALE RD - PLAN AND PROFILE 8**
		CHECKED BY: DM	
		DRAWN BY: CB	
		JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

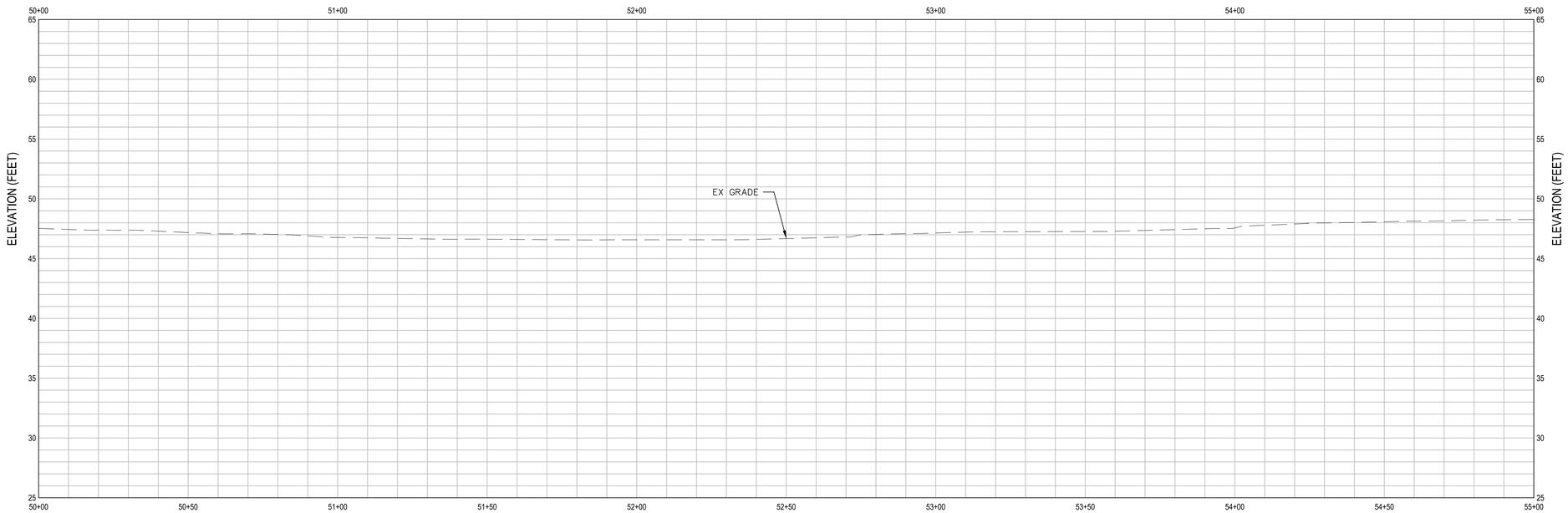
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-108
SHEET 13 OF 23

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C108.DWG (C-108)



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

1"=20' 0 20' 40'

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C109.DWG (C-109)

NOT FOR CONSTRUCTION

APPROVED DATE:

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
CLOVERDALE RD - PLAN AND PROFILE 9

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

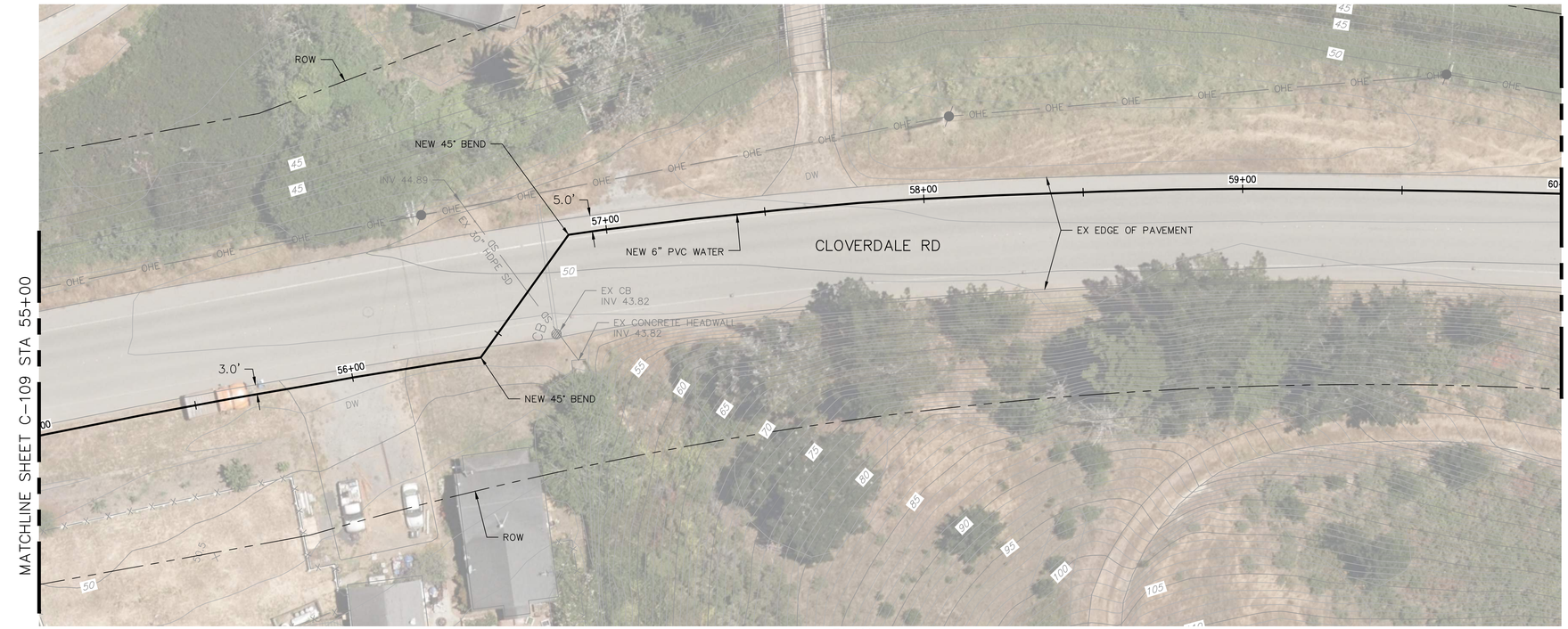
REVISION | DATE

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

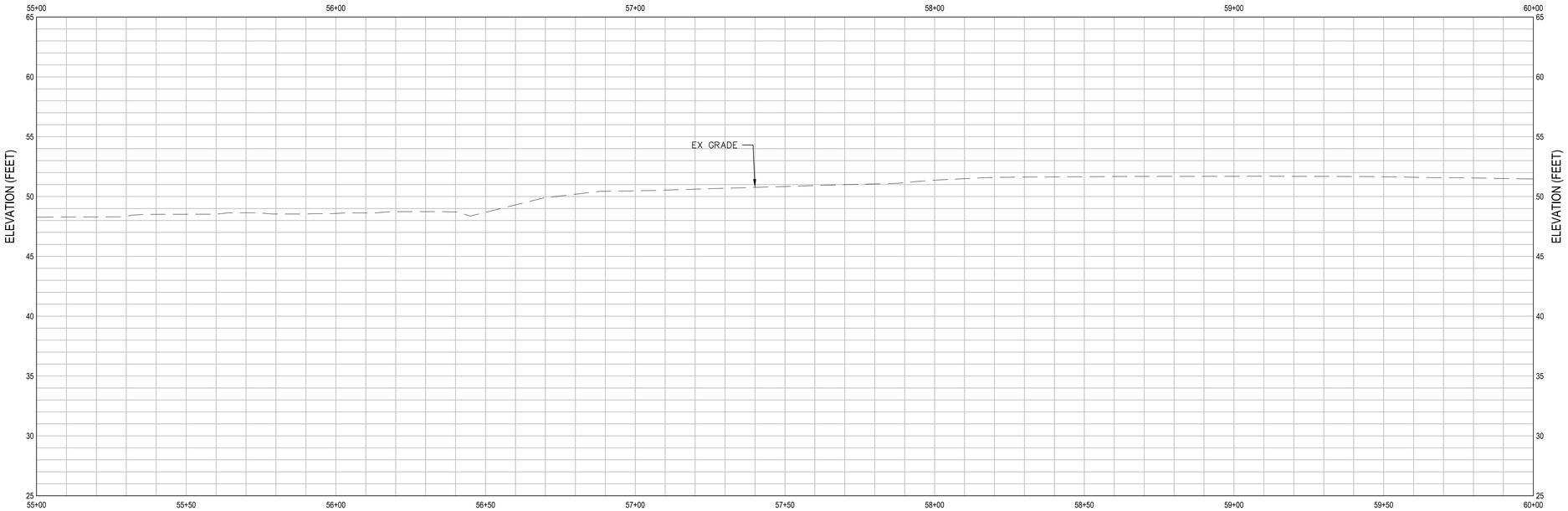
555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-109
SHEET 14 OF 23



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

0 20' 40'
1"=20'

NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
CLOVERDALE RD - PLAN AND PROFILE 10

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

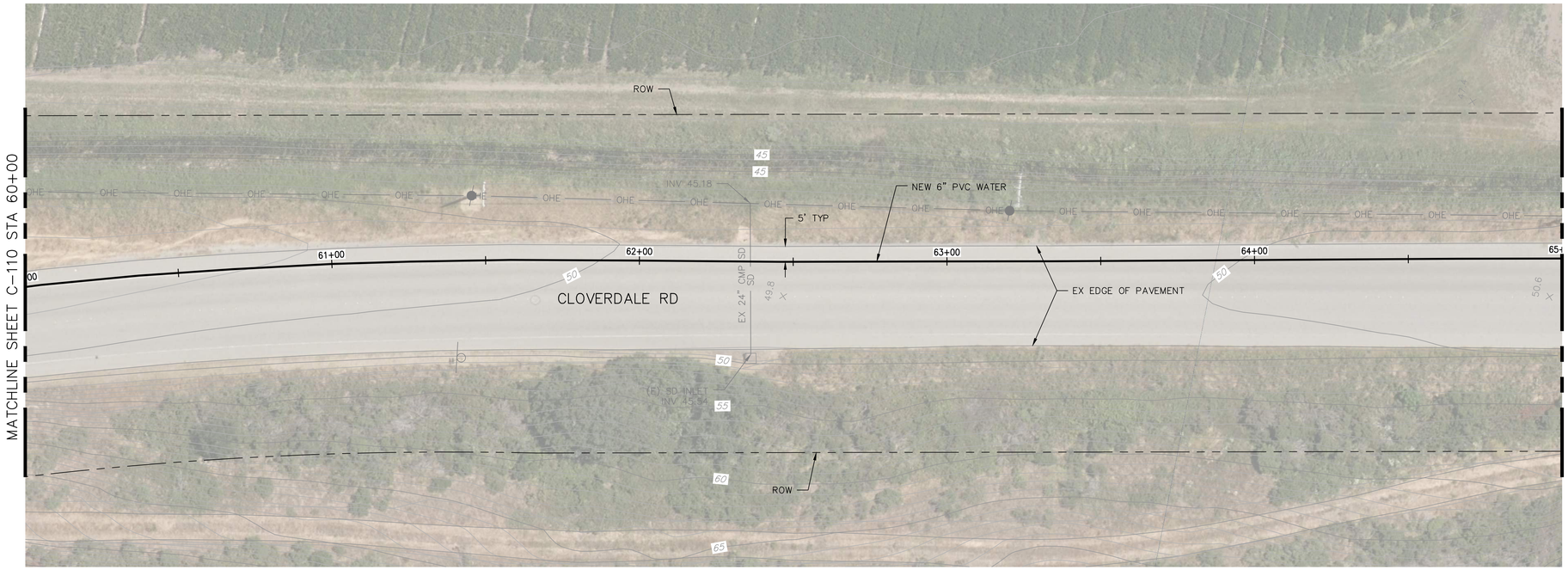
555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

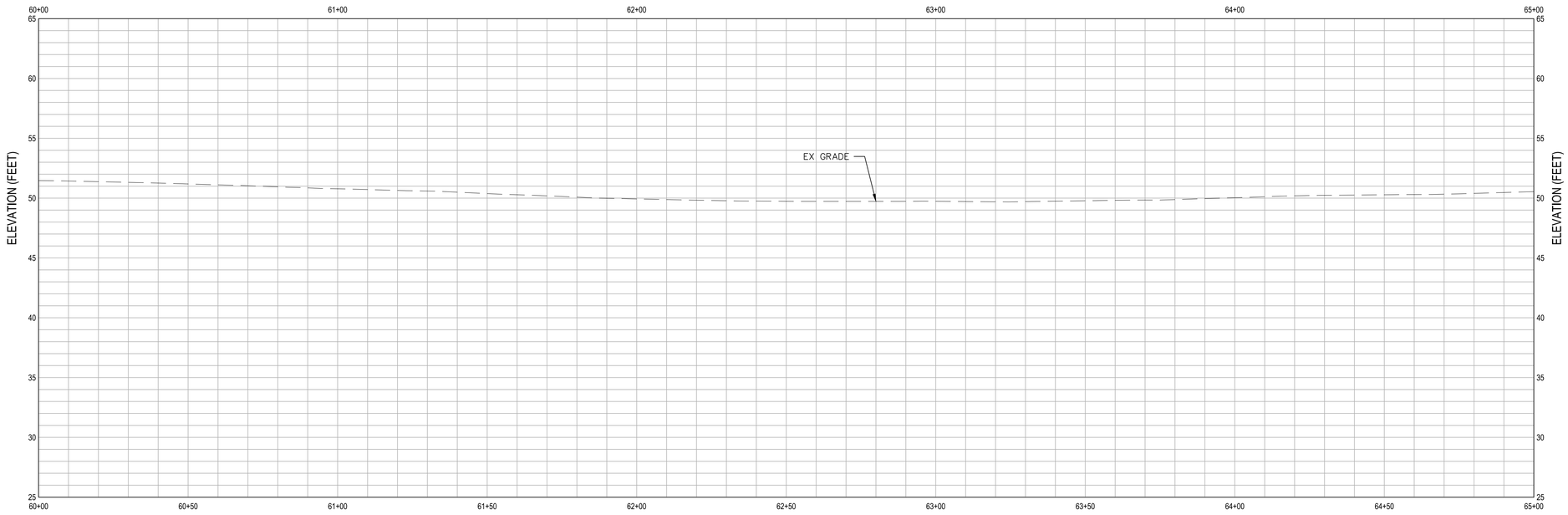
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3 4

C-110
SHEET 15 OF 23

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\61\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C110.DWG (C-110)



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

APPROVED DATE:

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

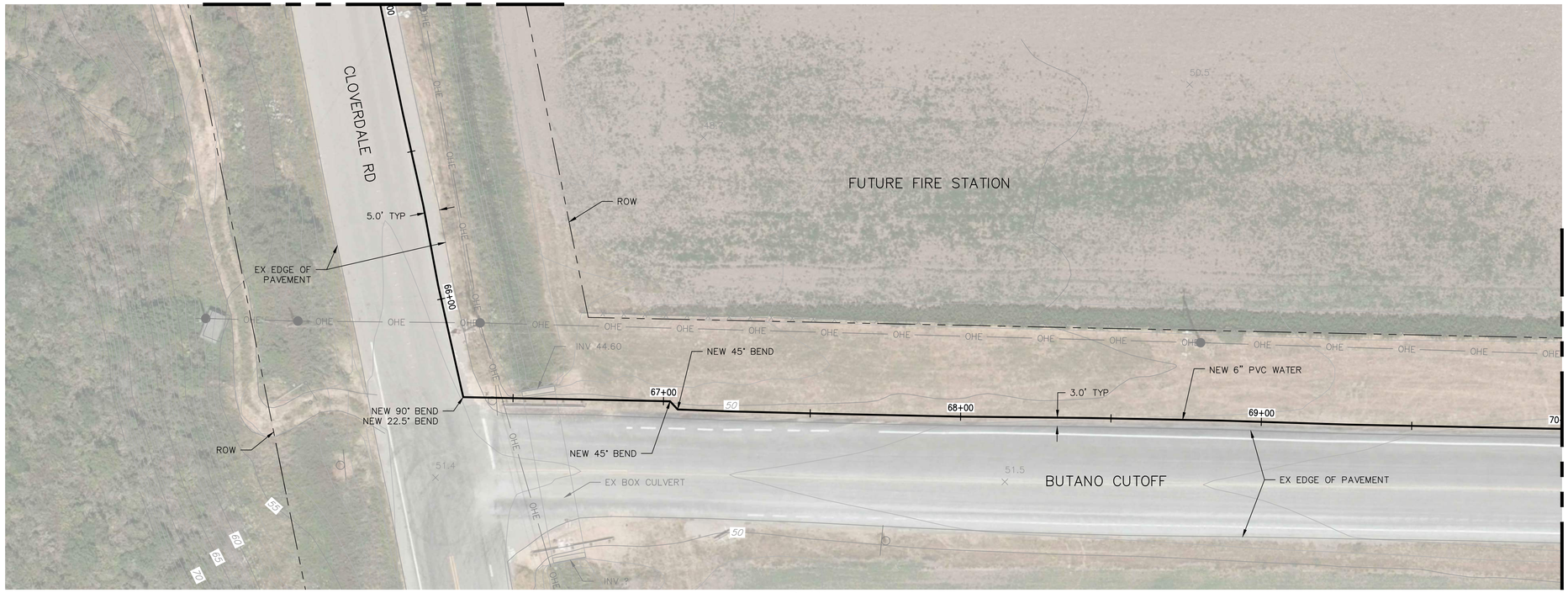
		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL **CLOVERDALE RD - PLAN AND PROFILE 11**
		CHECKED BY: DM	
		DRAWN BY: CB	
REVISION	DATE	JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

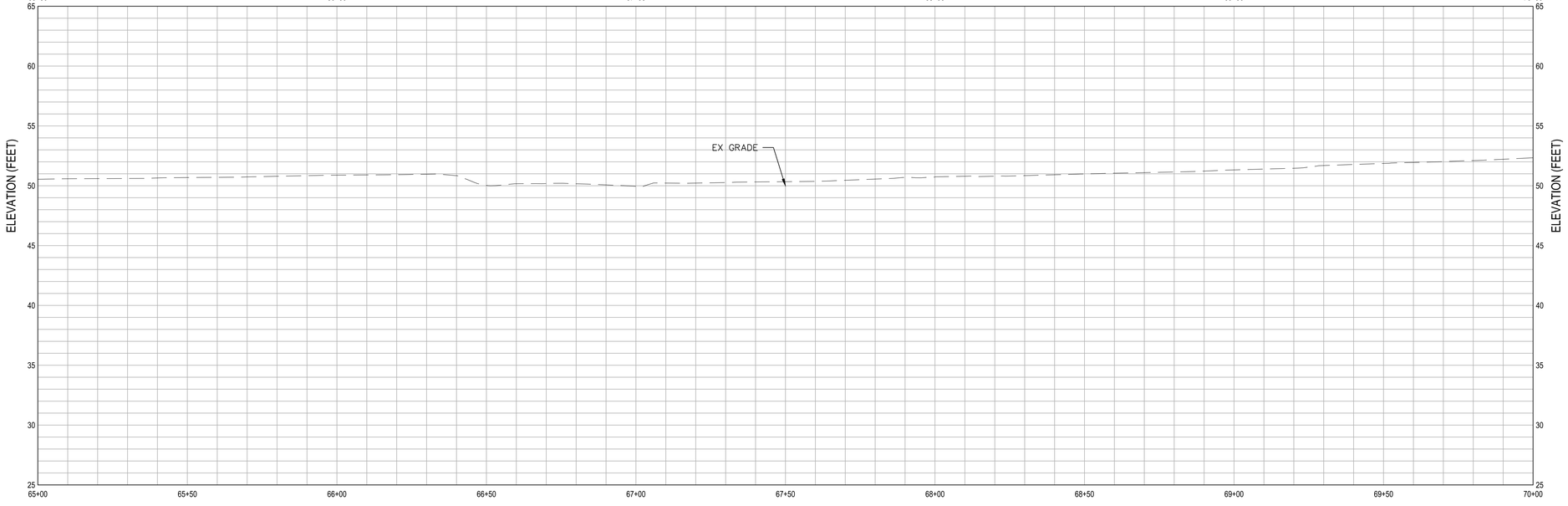
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-111
SHEET 16 OF 23

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C111.DWG (C-111)



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

REGISTERED PROFESSIONAL ENGINEER JAMES C. PORTER C 48056 EXPIRES 12/31/21 CIVIL STATE OF CALIFORNIA

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER DILLON J. MORRA No. C 79186 Exp. 3-31-21 CIVIL STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
BUTANO CUTOFF - PLAN AND PROFILE 12

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

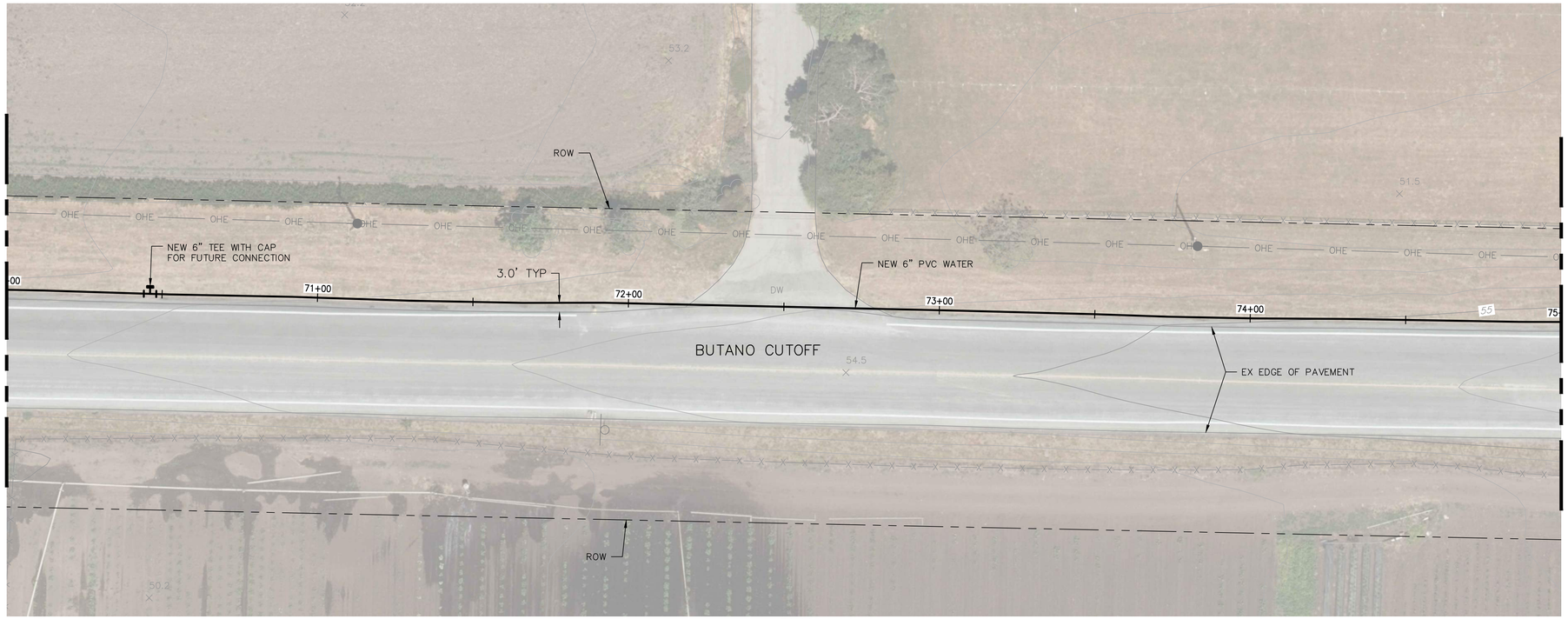
555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

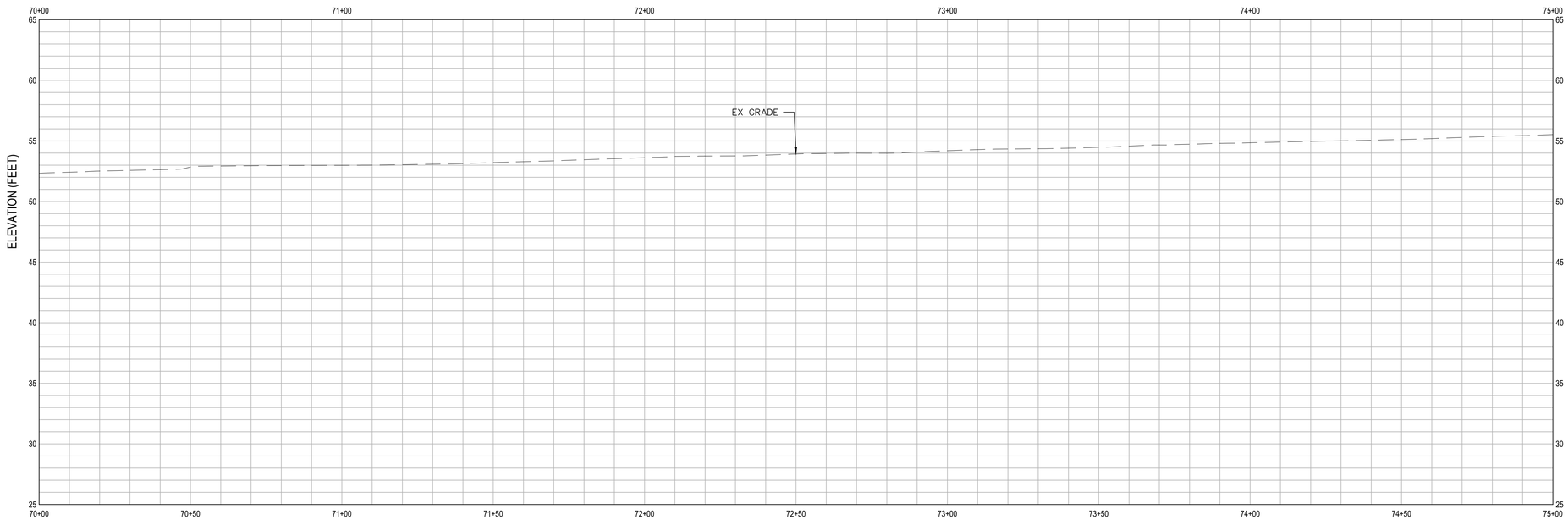
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-112
SHEET 17 OF 23

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C112.DWG (C-112)



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C113.DWG (C-113)

NOT FOR CONSTRUCTION

APPROVED DATE:

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
BUTANO CUTOFF - PLAN AND PROFILE 13

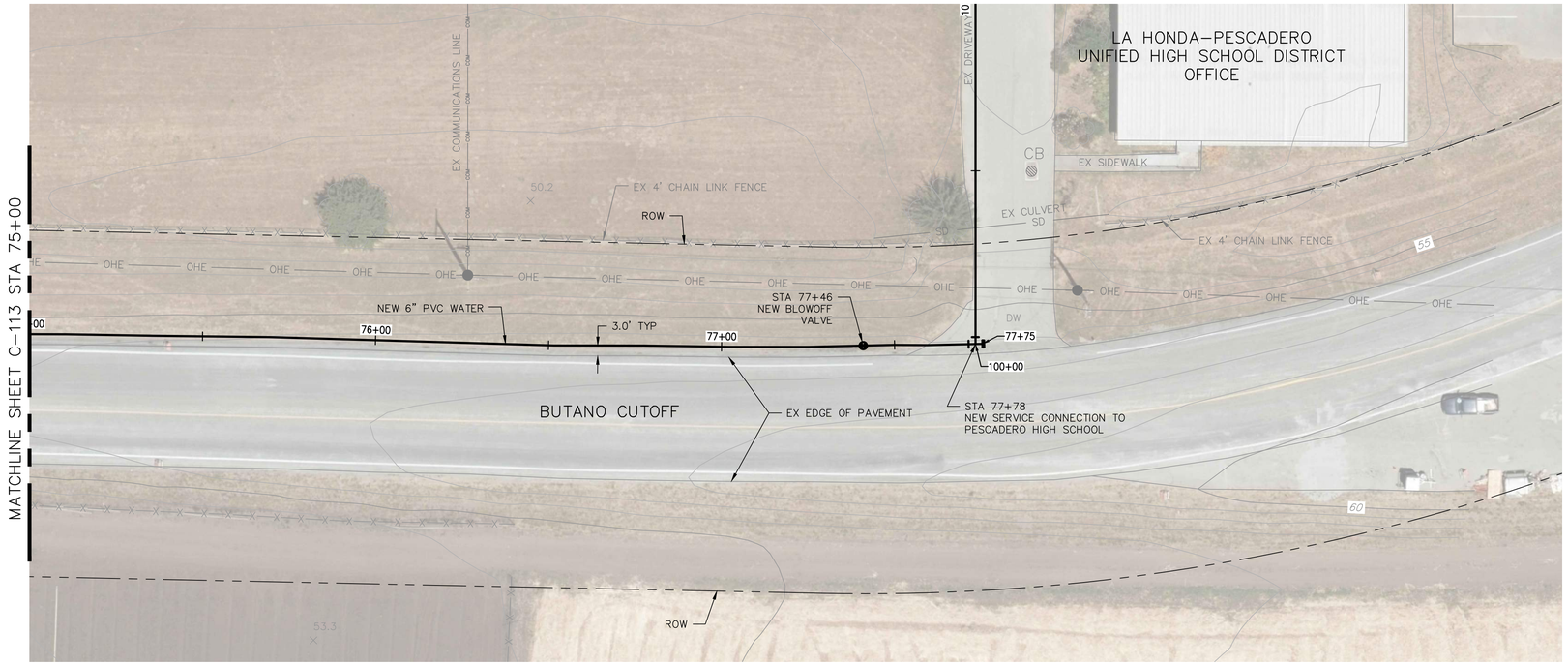
JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

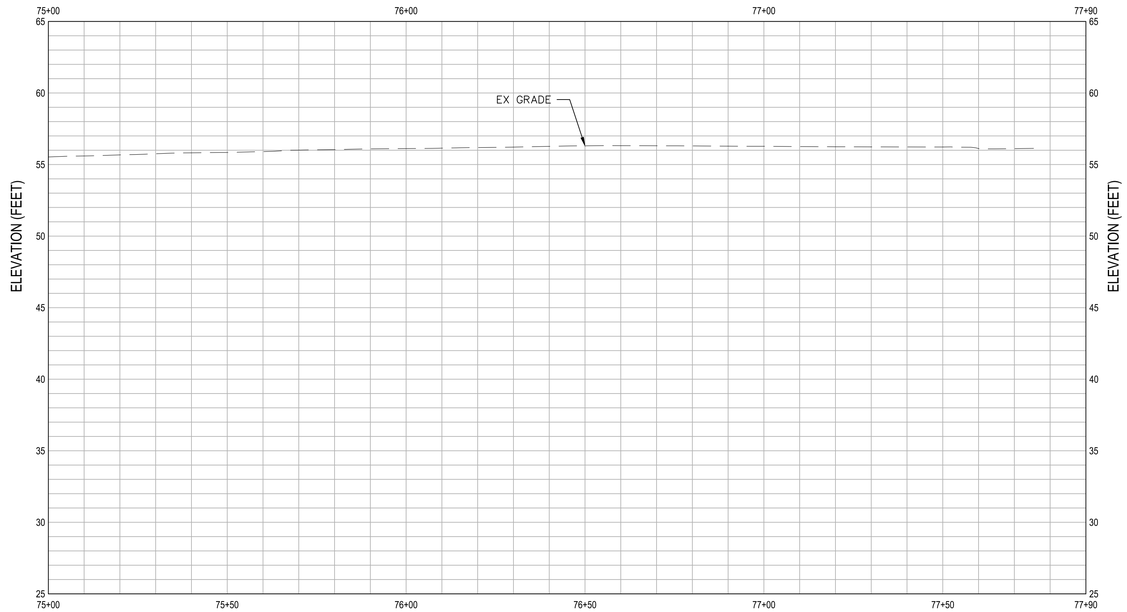
SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-113
SHEET 18 OF 23



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\61\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C114.DWG (C-114)

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE	DESIGNED BY: DM	CHECKED BY: DM	DRAWN BY: CB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
BUTANO CUTOFF - PLAN AND PROFILE 14

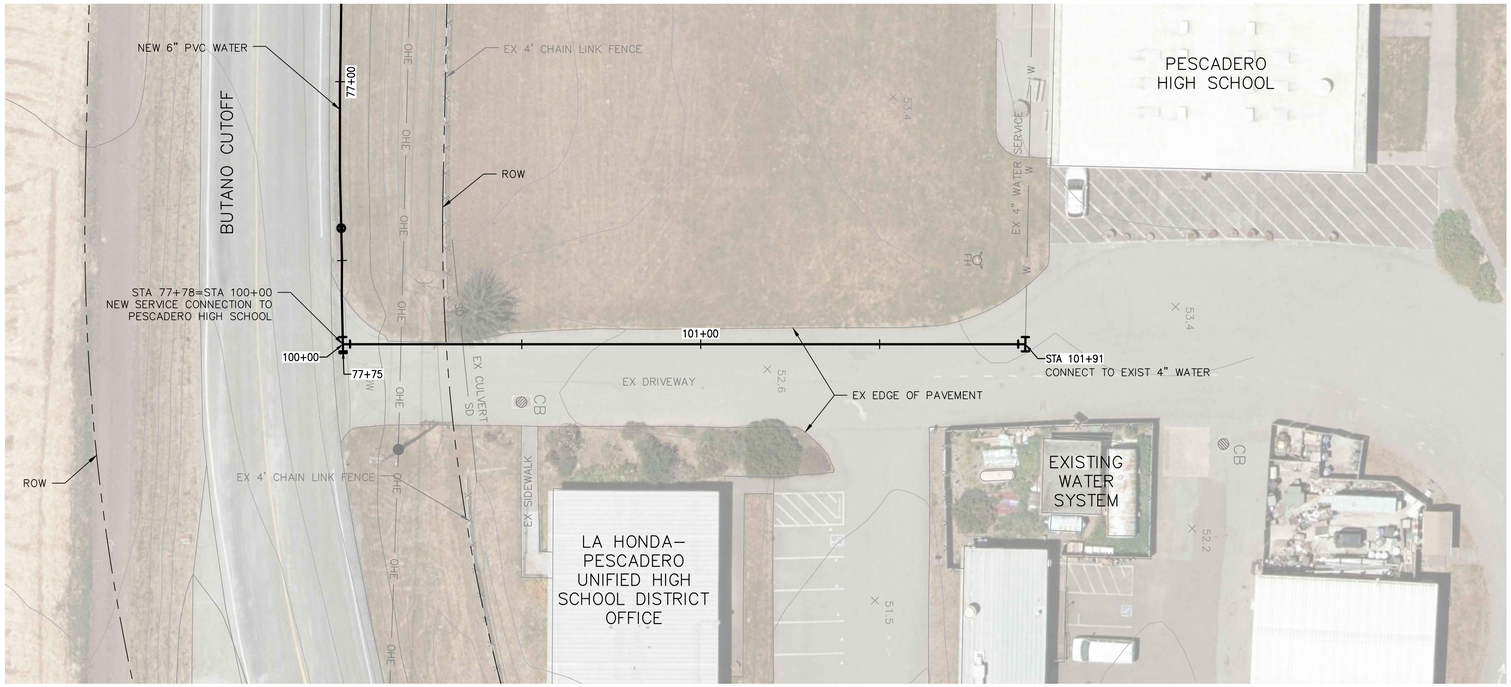
JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12-17-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-114
SHEET 19 OF 23



PLAN
SCALE 1"=20'

REGISTERED PROFESSIONAL ENGINEER
JAMES C. PORTER
C 48056
EXPIRES 12/31/21
CIVIL
STATE OF CALIFORNIA

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12–31–2019

SHEET GENERAL NOTES

1. POINT OF CONNECTION TO SCHOOL TO BE CONFIRMED BY POTHOLING DURING FINAL DESIGN.

SHEET KEYNOTES

1.

N

0 20' 40'
1"=20'

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\11213964\DIGITAL_DESIGN\ACAD 2018\SHEETS\11213964-C115.DWG (C-115)

NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03–31–2021	

REGISTERED PROFESSIONAL ENGINEER
DILLON J. MORRA
No. C 79186
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

COUNTY OF SAN MATEO PUBLIC WORKS

REVISION	DATE		
		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL **HS SERVICE CONNECTION PLAN**
		CHECKED BY: DM	
		DRAWN BY: CB	
		JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063

SCALE: AS SHOWN
DATE: 12–17–2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES
0 1 2 3 4

C-115
SHEET 20 OF 23

Appendix C
Flood Insurance Rate Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10N. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the USDA National Agriculture Imagery Program (NAIP). This information was photogrammetrically compiled at a scale of 1:24,000 from aerial photography dated 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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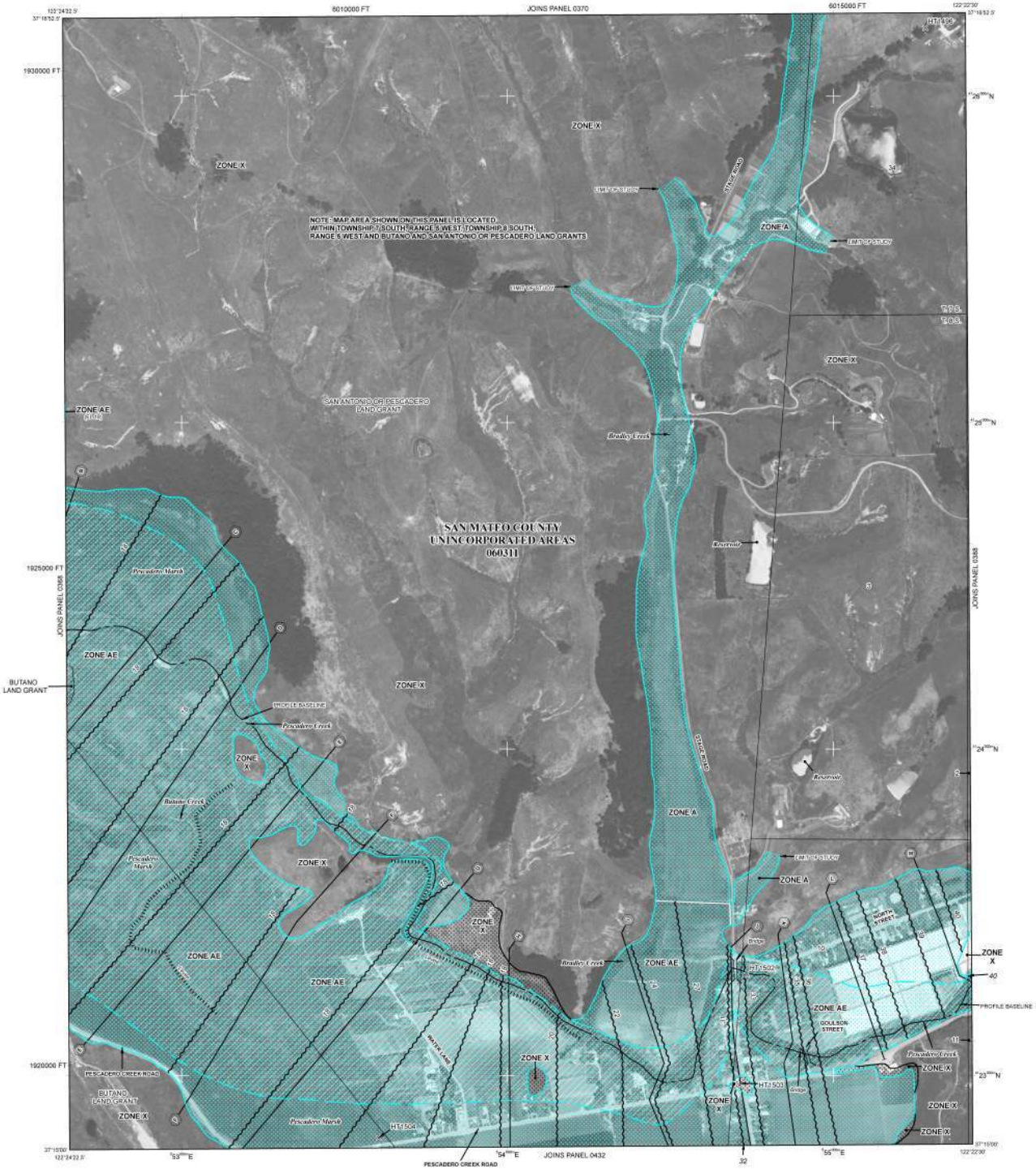
If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- Culvert, Flume, Penstock or Aqueduct
- Road or Railroad Bridge
- Footbridge
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4978000 mE — 1000-meter Universal Transverse Mercator grid values, Zone 10
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, Zone III (FIPSZONE 0403), Lambert Conformal Conic Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
OCTOBER 16, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

350 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0369E

FIRM

FLOOD INSURANCE RATE MAP

SAN MATEO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 369 OF 510

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN MATEO COUNTY	060311	0369	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06081C0369E

EFFECTIVE DATE
OCTOBER 16, 2012

Federal Emergency Management Agency

NOTES TO USERS

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0.2% annual chance floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA Boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*
*Referenced to the North American Vertical Datum of 1988
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23 - - - 23 Transect line
Culvert, Flume, Penstock or Aqueduct
Road or Railroad Bridge
Footbridge
97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{42}76^{30m}$E — 1000-meter Universal Transverse Mercator grid values, Zone 10
600000 FT — 5000-foot grid ticks: California State Plane coordinate system, Zone II (FIPSZONE 0402), Lambert Conformal Conic Projection
DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
OCTOBER 16, 2012

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250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0388E

FIRM
FLOOD INSURANCE RATE MAP
SAN MATEO COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 388 OF 510

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN MATEO COUNTY	060311	0388	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06081C0388E

EFFECTIVE DATE
OCTOBER 16, 2012

Federal Emergency Management Agency

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1315 East-West Highway
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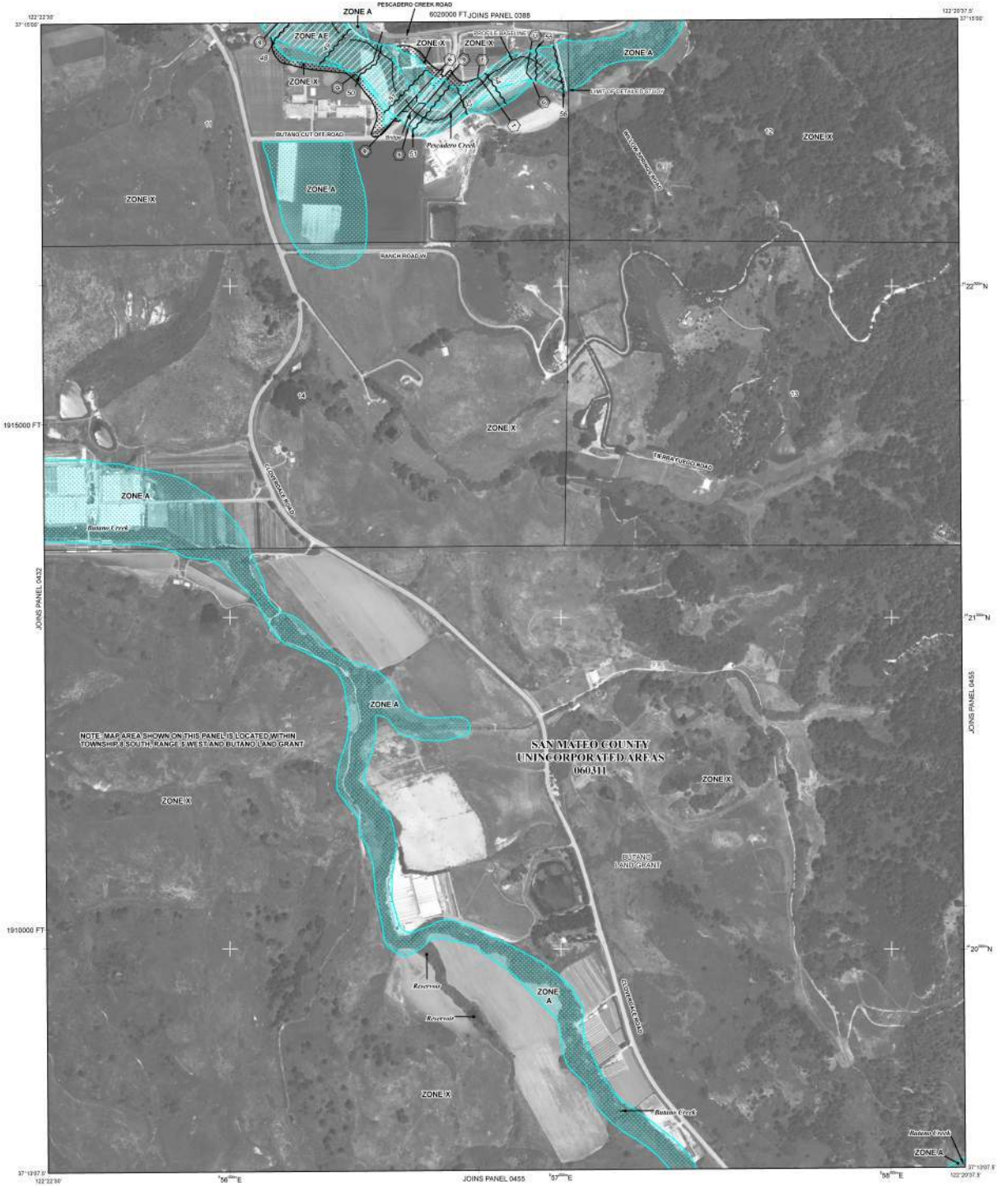
For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X / ZONE D** — Areas determined to be outside the 0.2% annual chance floodplain. Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
- OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- Culvert, Flume, Penstock or Aqueduct
- Road or Railroad Bridge
- Footbridge
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000mE — 1000-meter Universal Transverse Mercator grid values, Zone 10
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, Zone III (FIPSZONE 0403), Lambert Conformal Conic Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
OCTOBER 16, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0451E

FIRM

FLOOD INSURANCE RATE MAP

SAN MATEO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 451 OF 510

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN MATEO COUNTY	060311	0451	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06081C0451E

EFFECTIVE DATE
OCTOBER 16, 2012

Federal Emergency Management Agency

Appendix D
Preliminary Engineer's Opinion of Probable Construction Cost

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST **GHD, Inc.**

Project: Pescadero High School
Building, Area: Water Main Extension
Estimate Type: Preliminary

Prepared By: VRF
Date: 1/7/2021
GHD Proj. No.: 11213964

Current at ENR:
Escalated to ENR:
Months to Midpoint of Construction: 24

Item No.	Description	Qty	Units	Materials $/Unit	Materials Total	Installation $/Unit	Installation Total	Sub-Contractor $/Unit	Sub-Contractor Total	Total
1	*Mobilization*				*$5,000.00*		*$73,540.00*		*$26,000.00*	*$ 104,540*
	Mobilization	1	LS	$0.00	$0.00	$35,000.00	$35,000.00	$0.00	$0.00	$ 35,000
	Demobilization	1	LS	$0.00	$0.00	$35,000.00	$35,000.00	$0.00	$0.00	$ 35,000
	Construction Layout Survey	6500	LF	$0.00	$0.00	$0.00	$0.00	$4.00	$26,000.00	$ 26,000
	Fencing	1000	LF	$5.00	$5,000.00	$3.54	$3,540.00	$0.00	$0.00	$ 8,540
2	*Temporary Traffic Control*				*$0.00*		*$30,000.00*		*$0.00*	*$ 30,000*
	Temporary Traffic Control	1	LS	$0.00	$0.00	$30,000.00	$30,000.00	$0.00	$0.00	$ 30,000
3	*Water Pollution Prevention*				*$10,000.00*		*$30,000.00*		*$0.00*	*$ 40,000*
	Water Pollution Prevention	1	LS	$10,000.00	$10,000.00	$30,000.00	$30,000.00	$0.00	$0.00	$ 40,000
4	*Trenching*				*$53,508.26*		*$134,075.87*		*$221,860.00*	*$ 409,444*
	Sawcut	1610	LF	$0.00	$0.00	$0.00	$0.00	$26.00	$41,860.00	$ 41,860
	Excavation	1700	BCY	$1.40	$2,380.00	$12.00	$20,400.00	$0.00	$0.00	$ 22,780
	Shoring	2462	SF	$20.77	$51,128.26	$4.22	$10,388.12	$0.00	$0.00	$ 61,516
	Disposal (Asphalt)	102	LCY	$0.00	$0.00	$75.00	$7,677.31	$0.00	$0.00	$ 7,677
	Disposal (Native Soil)	1275	LCY	$0.00	$0.00	$75.00	$95,610.43	$0.00	$0.00	$ 95,610
	Dewatering	120	DAY	$0.00	$0.00	$0.00	$0.00	$1,500.00	$180,000.00	$ 180,000
5	*Trench Backfill*				*$11,133.96*		*$17,357.67*		*$186,570.00*	*$ 215,062*
	Hauling Backfill Material to Site	1082	LCY	$9.35	$10,113.53	$12.00	$12,979.93	$0.00	$0.00	$ 23,093
	Sand Bedding	934	LCY	$0.37	$345.59	$0.60	$560.42	$0.00	$0.00	$ 906
	Sand Structure Backfill	148	LCY	$0.37	$54.62	$0.60	$88.58	$0.00	$0.00	$ 143
	Native Soil Backfill	901	LCY	$0.37	$333.46	$0.60	$540.75	$0.00	$0.00	$ 874
	Sand Bedding Compaction	834	BCY	$0.17	$141.77	$1.89	$1,576.18	$0.00	$0.00	$ 1,718
	Sand Structure Backfill Compaction	132	BCY	$0.17	$22.41	$1.89	$249.13	$0.00	$0.00	$ 272
	Native Soil Backfill Compaction	721	BCY	$0.17	$122.57	$1.89	$1,362.69	$0.00	$0.00	$ 1,485
	Road Patching/Repaving	4146	SF	$0.00	$0.00	$0.00	$0.00	$33.00	$136,818.00	$ 136,818
	Pavement Markings	4146	SF	$0.00	$0.00	$0.00	$0.00	$12.00	$49,752.00	$ 49,752
6	*Piping*				*$97,694.11*		*$163,439.14*		*$0.00*	*$ 261,133*
	6" PVC, DR 18, AWWA C900	7790	LF	$5.30	$41,287.00	$12.00	$93,480.00	$0.00	$0.00	$ 134,767
	6" PVC, Joint Restraint	400	EA	$61.48	$24,592.00	$100.74	$40,296.00	$0.00	$0.00	$ 64,888
	6" PVC, 90 Deg. Bend	1	EA	$75.26	$75.26	$107.93	$107.93	$0.00	$0.00	$ 183
	6" PVC, 45 Deg. Bend	10	EA	$80.56	$805.60	$107.93	$1,079.30	$0.00	$0.00	$ 1,885
	6" PVC, 11.25 Deg. Bend	1	EA	$80.56	$80.56	$107.93	$107.93	$0.00	$0.00	$ 188
	6" PVC, Tee	6	EA	$115.54	$693.24	$174.29	$1,045.74	$0.00	$0.00	$ 1,739
	6" Gate Valves w/boxes	6	EA	$1,500.00	$9,000.00	$1,500.00	$9,000.00	$0.00	$0.00	$ 18,000
	6" Backflow Preventer	1	EA	$4,740.45	$4,740.45	$822.24	$822.24	$0.00	$0.00	$ 5,563
	Air Relief Valve and Meter Box	2	EA	$ 5,885.00	$11,770.00	$2,500.00	$5,000.00	$0.00	$0.00	$ 16,770
	6" Blowoff Valve	1	EA	$ 4,650.00	$4,650.00	$2,500.00	$2,500.00	$0.00	$0.00	$ 7,150
	Pipe Testing	1	EA	$0.00	$0.00	$10,000.00	$10,000.00	$0.00	$0.00	$ 10,000
7	*Water Meter*				*$25,231.60*		*$8,512.72*		*$0.00*	*$ 33,744*
	6" Water Supply Meter and Vault	1	EA	$12,472.00	$12,472.00	$950.72	$950.72	$0.00	$0.00	$ 13,423
	6'x6'x8' Precast Concrete Meter Vault	1	EA	$6,670.00	$6,670.00	$1,146.00	$1,146.00	$0.00	$0.00	$ 7,816
	Vault Excavation and Fill	32	BCY	$2.80	$89.60	$13.00	$416.00	$0.00	$0.00	$ 506
	6" Gate Valves w/ Boxes	4	EA	$1,500.00	$6,000.00	$1,500.00	$6,000.00	$0.00	$0.00	$ 12,000
8	*Point of Connection*				*$ 1,600.28*		*$5,000.00*		*$0.00*	*$ 6,600*
	Water Main Connection	1	EA	$1,600.28	$ 1,600.28	$5,000.00	$5,000.00	$0.00	$0.00	$ 6,600
										$ -
9	*4" Service Conection - High School*	*1*	*EA*	*$15,000.00*	*$ 15,000.00*	*$15,000.00*	*$15,000.00*	*$0.00*	*$0.00*	*$ 30,000*
10	*4" Service Connection - Fire Station*	*1*	*EA*	*$7,500.00*	*$ 7,500.00*	*$7,500.00*	*$7,500.00*	*$0.00*	*$0.00*	*$ 15,000*
	Subtotals				$226,668		$484,425		$434,430	$1,145,524
	Division1 Costs	@	10%		$22,667		$48,443		$43,443	$114,552
	Subtotals				$249,335		$532,868		$477,873	$1,260,076
	Taxes - Material Costs	@	8.75%		$21,816.82					$21,817
	Subtotals				$271,152		$532,868		$477,873	$1,281,893
	Taxes - Labor Costs	@	0%				$0			$0
	Subtotals				$271,152		$532,868		$477,873	$1,281,893
	Contractor Markup for Sub	@	0%						$0	$0

Subtotals			$271,152	$532,868	$477,873	$1,281,893
Contractor OH&P	@	15%	$40,672.78	$79,930		$120,603
Subtotals			$311,825	$612,798	$477,873	$1,402,496
Estimate Contingency	@	20%				$280,499
Subtotals						$1,682,995
Escalate to Midpoint of Construction	@	5%				$172,507
Estimated Bid Cost						$1,855,502
Total Estimate						$1,856,000

Estimate Accuracy	
30%	-20%

Estimated Range of Probable Cost		
30%	Total Estimate	-20%
$2,784,000	$1,856,000	$1,484,800

Appendix E
Customer Billing Data

CSA-11 Customer Billing Data

May 2019

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
1200 PESCADERO ROAD	3582	3610	05/29/2019	28	20,945	58	361	0.25
1419 PESCADERO CREEK ROAD	1525	1533	05/29/2019	8	5,984	58	103	0.07
1431 PESCADERO ROAD	7733	7740	05/29/2019	7	5,236	58	90	0.06
1441 PESCADERO ROAD	1213	1221	05/29/2019	8	5,984	58	103	0.07
31 WATER LANE	1070	1081	05/29/2019	11	8,229	58	142	0.10
43 Water Lane	1448	1478	05/29/2019	30	22,442	58	387	0.27
51 WATER LANE	5608	5608	05/29/2019	0	0	58	0	0.00
1481 PESCADERO ROAD	1995	2003	05/29/2019	8	5,984	58	103	0.07
1503 PESCADERO ROAD	3571	3589	05/29/2019	18	13,465	58	232	0.16
1541 PESCADERO ROAD	1697	1704	05/29/2019	7	5,236	58	90	0.06
1601 PESCADERO ROAD	1950	1961	05/29/2019	11	8,229	58	142	0.10
1613 PESCADERO ROAD	2457	2466	05/29/2019	9	6,732	58	116	0.08
1805 PESCADERO ROAD	1668	1680	05/29/2019	12	8,977	58	155	0.11
1831 PESCADERO ROAD	5007	5030	05/29/2019	23	17,205	58	297	0.21
1877 PESCADERO ROAD	5996	6027	05/29/2019	31	23,190	58	400	0.28
1899 PESCADERO ROAD	937	942	05/29/2019	5	3,740	58	64	0.04
1913 PESCADERO ROAD	1196	1202	05/29/2019	6	4,488	58	77	0.05
1923 PESCADERO ROAD	1836	1836	05/29/2019	0	0	58	0	0.00
1926 PESCADERO ROAD	1950	1964	05/29/2019	14	10,473	58	181	0.13
1946 PESCADERO ROAD	5040	5065	05/29/2019	25	18,701	58	322	0.22
1956 PESCADERO ROAD	1164	1177	05/29/2019	13	9,725	58	168	0.12
1999 PESCADERO ROAD	7931	8008	05/29/2019	77	57,600	58	993	0.69
2020 PESCADERO ROAD	1005	1006	05/29/2019	1	748	58	13	0.01
112 STAGE ROAD	351	353	05/29/2019	2	1,496	58	26	0.02
94 STAGE ROAD	1066	1072	05/29/2019	6	4,488	58	77	0.05
94 STAGE ROAD	1465400	1465400	05/29/2019	0	0	58	0	0.00
80 STAGE ROAD	511	513	05/29/2019	2	1,496	58	26	0.02
70 STAGE ROAD	2131	2147	05/29/2019	16	11,969	58	206	0.14
14 STAGE ROAD	1042	1050	05/29/2019	8	5,984	58	103	0.07
22 STAGE ROAD	1694	1694	05/29/2019	0	0	58	0	0.00
17 STAGE ROAD	1484	1492	05/29/2019	8	5,984	58	103	0.07
51 STAGE ROAD	586	590	05/29/2019	4	2,992	58	52	0.04
115 STAGE ROAD	1772	1796	05/29/2019	24	17,953	58	310	0.21
117 STAGE ROAD	2200	2228	05/29/2019	28	20,945	58	361	0.25
2131 PESCADERO ROAD	670	672	05/29/2019	2	1,496	58	26	0.02
2041 PESCADERO ROAD	2228	2233	05/29/2019	5	3,740	58	64	0.04
202 STAGE ROAD	18590	18761	05/29/2019	171	127,917	58	2,205	1.53
216 STAGE ROAD	298	301	05/29/2019	3	2,244	58	39	0.03
250 STAGE ROAD	16	22	05/29/2019	6	4,488	58	77	0.05
270 Stage Road	43	43	05/29/2019	0	0	58	0	0.00
290 STAGE ROAD, APT 1	3625	3648	05/29/2019	23	17,205	58	297	0.21
290 STAGE ROAD, APT 2	2928	2942	05/29/2019	14	10,473	58	181	0.13
290 STAGE ROAD, APT 3	1076	1087	05/29/2019	11	8,229	58	142	0.10
290 STAGE ROAD, APT 4	1309	1312	05/29/2019	3	2,244	58	39	0.03
358 STAGE ROAD	1306	1334	05/29/2019	28	20,945	58	361	0.25
363 STAGE ROAD	746	750	05/29/2019	4	2,992	58	52	0.04
351 STAGE ROAD	943	953	05/29/2019	10	7,481	58	129	0.09
339 STAGE ROAD	1843	1852	05/29/2019	9	6,732	58	116	0.08
323 STAGE ROAD, APT# 7	2914	2930	05/29/2019	16	11,969	58	206	0.14
323 STAGE ROAD #8	2457	2458	05/29/2019	1	748	58	13	0.01
323 Stage Rd APT 9								
323 STAGE ROAD 4	1536	1545	05/29/2019	9	6,732	58	116	0.08
323 STAGE ROAD 5	2276	2289	05/29/2019	13	9,725	58	168	0.12
323 STAGE ROAD 6	2303	2309	05/29/2019	6	4,488	58	77	0.05
309 STAGE ROAD	2613	2628	05/29/2019	15	11,221	58	193	0.13
299 STAGE ROAD	1760	1790	05/29/2019	30	22,442	58	387	0.27
287 STAGE ROAD	4149	4174	05/29/2019	25	18,701	58	322	0.22
251 STAGE ROAD	3935	3938	05/29/2019	3	2,244	58	39	0.03

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

May 2019

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
245-247 STAGE ROAD	3442	3483	05/29/2019	41	30,670	58	529	0.37
239 STAGE ROAD	430	434	05/29/2019	4	2,992	58	52	0.04
227 STAGE ROAD	4935	4955	05/29/2019	20	14,961	58	258	0.18
213 STAGE ROAD	5509	5537	05/29/2019	28	20,945	58	361	0.25
861 NORTH STREET	5797	5836	05/29/2019	39	29,174	58	503	0.35
104 GOULSON STREET	1822	1828	05/29/2019	6	4,488	58	77	0.05
150 GOULSON STREET	22	23	05/29/2019	1	748	58	13	0.01
172 GOULSON STREET	844	852	05/29/2019	8	5,984	58	103	0.07
184 GOULSON STREET	996	1000	05/29/2019	4	2,992	58	52	0.04
194 GOULSON STREET	2460	2476	05/29/2019	16	11,969	58	206	0.14
827 NORTH STREET	1921	1922	05/29/2019	1	748	58	13	0.01
807 NORTH STREET	490	491	05/29/2019	1	748	58	13	0.01
787 NORTH STREET	1885	1892	05/29/2019	7	5,236	58	90	0.06
785 NORTH STREET	958	960	05/29/2019	2	1,496	58	26	0.02
773 NORTH STREET	464	472	05/29/2019	8	5,984	58	103	0.07
757 NORTH STREET	4160	4164	05/29/2019	4	2,992	58	52	0.04
737 NORTH STREET	1544	1551	05/29/2019	7	5,236	58	90	0.06
719 NORTH STREET	3141	3173	05/29/2019	32	23,938	58	413	0.29
687 North Street	691	705	05/29/2019	14	10,473	58	181	0.13
675 NORTH STREET	1592	1606	05/29/2019	14	10,473	58	181	0.13
665 NORTH STREET	459	462	05/29/2019	3	2,244	58	39	0.03
655 NORTH STREET	2470	2486	05/29/2019	16	11,969	58	206	0.14
645 NORTH STREET	5129	5132	05/29/2019	3	2,244	58	39	0.03
625 NORTH STREET	4142	4163	05/29/2019	21	15,709	58	271	0.19
615 NORTH STREET	2694	2707	05/29/2019	13	9,725	58	168	0.12
597 NORTH STREET	2125	2140	05/29/2019	15	11,221	58	193	0.13
581 NORTH STREET	2675	2682	05/29/2019	7	5,236	58	90	0.06
547 NORTH STREET	512	513	05/29/2019	1	748	58	13	0.01
527 North Street	2786	2798	05/29/2019	12	8,977	58	155	0.11
528 NORTH STREET	4272	4285	05/29/2019	13	9,725	58	168	0.12
620 NORTH STREET	5129	5182	05/29/2019	53	39,647	58	684	0.47
620 North Street	1	1	05/29/2019	0	0	58	0	0.00
696 NORTH STREET	1084	1087	05/29/2019	3	2,244	58	39	0.03
703 NORTH STREET	125	129	05/29/2019	4	2,992	58	52	0.04
706 NORTH STREET	3341	3355	05/29/2019	14	10,473	58	181	0.13
714 NORTH STREET	1860	1881	05/29/2019	21	15,709	58	271	0.19
730 NORTH STREET	2417	2441	05/29/2019	24	17,953	58	310	0.21
738 NORTH STREET	630	630	05/29/2019	0	0	58	0	0.00
752 NORTH STREET	9603	9638	05/29/2019	35	26,182	58	451	0.31
772 NORTH STREET	5625	5641	05/29/2019	16	11,969	58	206	0.14
766 NORTH STREET	40	49	05/29/2019	9	6,732	58	116	0.08
804 NORTH STREET	3575	3577	05/29/2019	2	1,496	58	26	0.02
826 NORTH STREET	4551	4557	05/29/2019	6	4,488	58	77	0.05
860 NORTH STREET	1889	1892	05/29/2019	3	2,244	58	39	0.03
				Total =	**1,053,257**		**18,160**	**12.6**

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

July 2019

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
1200 PESCADERO ROAD	3610	3637	07/22/2019	27	20,197	54	374	0.26
1419 PESCADERO CREEK ROAD	1533	1539	07/22/2019	6	4,488	54	83	0.06
1431 PESCADERO ROAD	7740	7748	07/22/2019	8	5,984	54	111	0.08
1441 PESCADERO ROAD	1221	1227	07/22/2019	6	4,488	54	83	0.06
31 WATER LANE	1081	1090	07/22/2019	9	6,732	54	125	0.09
43 Water Lane	1478	1507	07/22/2019	29	21,694	54	402	0.28
51 WATER LANE	5608	5609	07/22/2019	1	748	54	14	0.01
1481 PESCADERO ROAD	2003	2008	07/22/2019	5	3,740	54	69	0.05
1503 PESCADERO ROAD	3589	3604	07/22/2019	15	11,221	54	208	0.14
1541 PESCADERO ROAD	1704	1709	07/22/2019	5	3,740	54	69	0.05
1601 PESCADERO ROAD	1963	1972	07/22/2019	9	6,732	54	125	0.09
1613 PESCADERO ROAD	2466	2474	07/22/2019	8	5,984	54	111	0.08
1805 PESCADERO ROAD	1680	1696	07/22/2019	16	11,969	54	222	0.15
1831 PESCADERO ROAD	5030	5052	07/22/2019	22	16,457	54	305	0.21
1877 PESCADERO ROAD	6027	6052	07/22/2019	25	18,701	54	346	0.24
1899 PESCADERO ROAD	942	946	07/22/2019	4	2,992	54	55	0.04
1913 PESCADERO ROAD	1202	1210	07/22/2019	8	5,984	54	111	0.08
1923 PESCADERO ROAD	1836	1836	07/22/2019	0	0	54	0	0.00
1926 PESCADERO ROAD	1964	1988	07/22/2019	24	17,953	54	332	0.23
1946 PESCADERO ROAD	5065	5099	07/22/2019	34	25,434	54	471	0.33
1956 PESCADERO ROAD	1177	1187	07/22/2019	10	7,481	54	139	0.10
1999 PESCADERO ROAD	8008	8111	07/22/2019	103	77,049	54	1,427	0.99
2020 PESCADERO ROAD	1006	1009	07/22/2019	3	2,244	54	42	0.03
112 STAGE ROAD	353	354	07/22/2019	1	748	54	14	0.01
94 STAGE ROAD	1072	1078	07/22/2019	6	4,488	54	83	0.06
94 STAGE ROAD	1465400	1465410	07/22/2019	10	7,481	54	139	0.10
80 STAGE ROAD	513	517	07/22/2019	4	2,992	54	55	0.04
70 STAGE ROAD	2147	2160	07/22/2019	13	9,725	54	180	0.13
14 STAGE ROAD	1050	1057	07/22/2019	7	5,236	54	97	0.07
22 STAGE ROAD	1694	1697	07/22/2019	3	2,244	54	42	0.03
17 STAGE ROAD	1492	1498	07/22/2019	6	4,488	54	83	0.06
51 STAGE ROAD	590	594	07/22/2019	4	2,992	54	55	0.04
115 STAGE ROAD	1796	1816	07/22/2019	20	14,961	54	277	0.19
117 STAGE ROAD	2228	2253	07/22/2019	25	18,701	54	346	0.24
2131 PESCADERO ROAD	672	679	07/22/2019	7	5,236	54	97	0.07
2041 PESCADERO ROAD	2233	2238	07/22/2019	5	3,740	54	69	0.05
202 STAGE ROAD	18761	18927	07/22/2019	166	124,177	54	2,300	1.60
216 STAGE ROAD	301	302	07/22/2019	1	748	54	14	0.01
250 STAGE ROAD	22	25	07/22/2019	3	2,244	54	42	0.03
270 Stage Road	43	44	07/22/2019	1	748	54	14	0.01
290 STAGE ROAD, APT 1	3648	3678	07/22/2019	30	22,442	54	416	0.29
290 STAGE ROAD, APT 2	2942	2955	07/22/2019	13	9,725	54	180	0.13
290 STAGE ROAD, APT 3	1087	1096	07/22/2019	9	6,732	54	125	0.09
290 STAGE ROAD, APT 4	1312	1316	07/22/2019	4	2,992	54	55	0.04
358 STAGE ROAD	1334	1352	07/22/2019	18	13,465	54	249	0.17
363 STAGE ROAD	750	755	07/22/2019	5	3,740	54	69	0.05
351 STAGE ROAD	953	962	07/22/2019	9	6,732	54	125	0.09
339 STAGE ROAD	1852	1864	07/22/2019	12	8,977	54	166	0.12
323 STAGE ROAD, APT# 7	2930	2945	07/22/2019	15	11,221	54	208	0.14
323 STAGE ROAD #8	2458	2460	07/22/2019	2	1,496	54	28	0.02
323 Stage Rd APT 9								
323 STAGE ROAD 4	1545	1553	07/22/2019	8	5,984	54	111	0.08
323 STAGE ROAD 5	2289	2298	07/22/2019	9	6,732	54	125	0.09
323 STAGE ROAD 6	2309	2313	07/22/2019	4	2,992	54	55	0.04
309 STAGE ROAD	2628	2639	07/22/2019	11	8,229	54	152	0.11
299 STAGE ROAD	1790	1814	07/22/2019	24	17,953	54	332	0.23
287 STAGE ROAD	4174	4200	07/22/2019	26	19,449	54	360	0.25
251 STAGE ROAD	3938	3939	07/22/2019	1	748	54	14	0.01

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

July 2019

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
245-247 STAGE ROAD	3483	3516	07/22/2019	33	24,686	54	457	0.32
239 STAGE ROAD	434	436	07/22/2019	2	1,496	54	28	0.02
227 STAGE ROAD	4955	4989	07/22/2019	34	25,434	54	471	0.33
213 STAGE ROAD	5537	5569	07/22/2019	32	23,938	54	443	0.31
861 NORTH STREET	5836	5867	07/22/2019	31	23,190	54	429	0.30
104 GOULSON STREET	1828	1833	07/22/2019	5	3,740	54	69	0.05
150 GOULSON STREET	23	25	07/22/2019	2	1,496	54	28	0.02
172 GOULSON STREET	852	858	07/22/2019	6	4,488	54	83	0.06
184 GOULSON STREET	1000	1002	07/22/2019	2	1,496	54	28	0.02
194 GOULSON STREET	2476	2493	07/22/2019	17	12,717	54	235	0.16
827 NORTH STREET	1922	1954	07/22/2019	32	23,938	54	443	0.31
807 NORTH STREET	491	494	07/22/2019	3	2,244	54	42	0.03
787 NORTH STREET	1892	1899	07/22/2019	7	5,236	54	97	0.07
785 NORTH STREET	960	964	07/22/2019	4	2,992	54	55	0.04
773 NORTH STREET	472	481	07/22/2019	9	6,732	54	125	0.09
757 NORTH STREET	4164	4170	07/22/2019	6	4,488	54	83	0.06
737 NORTH STREET	1551	1554	07/22/2019	3	2,244	54	42	0.03
719 NORTH STREET	3173	3193	07/22/2019	20	14,961	54	277	0.19
687 North Street	705	718	07/22/2019	13	9,725	54	180	0.13
675 NORTH STREET	1606	1616	07/22/2019	10	7,481	54	139	0.10
665 NORTH STREET	462	466	07/22/2019	4	2,992	54	55	0.04
655 NORTH STREET	2486	2501	07/22/2019	15	11,221	54	208	0.14
645 NORTH STREET	5132	5136	07/22/2019	4	2,992	54	55	0.04
625 NORTH STREET	4163	4182	07/22/2019	19	14,213	54	263	0.18
615 NORTH STREET	2707	2726	07/22/2019	19	14,213	54	263	0.18
597 NORTH STREET	2140	2155	07/22/2019	15	11,221	54	208	0.14
581 NORTH STREET	2682	2694	07/22/2019	12	8,977	54	166	0.12
547 NORTH STREET	513	517	07/22/2019	4	2,992	54	55	0.04
527 North Street	2798	2812	07/22/2019	14	10,473	54	194	0.13
528 NORTH STREET	4285	4299	07/22/2019	14	10,473	54	194	0.13
620 NORTH STREET	5182	5226	07/22/2019	44	32,914	54	610	0.42
620 North Street	1	2	07/22/2019	1	748	54	14	0.01
696 NORTH STREET	1087	1093	07/22/2019	6	4,488	54	83	0.06
703 NORTH STREET	129	130	07/22/2019	1	748	54	14	0.01
706 NORTH STREET	3355	3378	07/22/2019	23	17,205	54	319	0.22
714 NORTH STREET	1881	1898	07/22/2019	17	12,717	54	235	0.16
730 NORTH STREET	2441	2463	07/22/2019	22	16,457	54	305	0.21
738 NORTH STREET	630	633	07/22/2019	3	2,244	54	42	0.03
752 NORTH STREET	9638	9717	07/22/2019	79	59,096	54	1,094	0.76
772 NORTH STREET	5641	5659	07/22/2019	18	13,465	54	249	0.17
766 NORTH STREET	49	57	07/22/2019	8	5,984	54	111	0.08
804 NORTH STREET	3577	3578	07/22/2019	1	748	54	14	0.01
826 NORTH STREET	4557	4567	07/22/2019	10	7,481	54	139	0.10
860 NORTH STREET	1892	1895	07/22/2019	3	2,244	54	42	0.03
				Total =	**1,111,605**		**20,585**	**14.3**

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

September 2019

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
1200 PESCADERO ROAD	3637	3664	9/23/2019	27	20,197	63	321	0.22
1419 PESCADERO CREEK ROAD	1539	1545	9/23/2019	6	4,488	63	71	0.05
1431 PESCADERO ROAD	7748	7754	9/23/2019	6	4,488	63	71	0.05
1441 PESCADERO ROAD	1227	1228	9/23/2019	1	748	63	12	0.01
31 WATER LANE	1090	1101	9/23/2019	11	8,229	63	131	0.09
43 Water Lane	1507	1537	9/23/2019	30	22,442	63	356	0.25
51 WATER LANE	5609	5625	9/23/2019	16	11,969	63	190	0.13
1481 PESCADERO ROAD	2008	2012	9/23/2019	4	2,992	63	47	0.03
1503 PESCADERO ROAD	3604	3621	9/23/2019	17	12,717	63	202	0.14
1541 PESCADERO ROAD	1709	1717	9/23/2019	8	5,984	63	95	0.07
1601 PESCADERO ROAD	1972	1986	9/23/2019	14	10,473	63	166	0.12
1613 PESCADERO ROAD	2474	2488	9/23/2019	14	10,473	63	166	0.12
1805 PESCADERO ROAD	1696	1707	9/23/2019	11	8,229	63	131	0.09
1831 PESCADERO ROAD	5052	5081	9/23/2019	29	21,694	63	344	0.24
1877 PESCADERO ROAD	6052	6086	9/23/2019	34	25,434	63	404	0.28
1899 PESCADERO ROAD	946	951	9/23/2019	5	3,740	63	59	0.04
1913 PESCADERO ROAD	1210	1215	9/23/2019	5	3,740	63	59	0.04
1923 PESCADERO ROAD	1836	1837	9/23/2019	1	748	63	12	0.01
1926 PESCADERO ROAD	1988	2006	9/23/2019	18	13,465	63	214	0.15
1946 PESCADERO ROAD	5099	5132	9/23/2019	33	24,686	63	392	0.27
1956 PESCADERO ROAD	1187	1200	9/23/2019	13	9,725	63	154	0.11
1999 PESCADERO ROAD	8111	8205	9/23/2019	94	70,317	63	1,116	0.78
2020 PESCADERO ROAD	1009	1012	9/23/2019	3	2,244	63	36	0.02
112 STAGE ROAD	354	355	9/23/2019	1	748	63	12	0.01
94 STAGE ROAD	1078	1084	9/23/2019	6	4,488	63	71	0.05
94 STAGE ROAD	1465400	1465400	9/23/2019	0	0	63	0	0.00
80 STAGE ROAD	517	522	9/23/2019	5	3,740	63	59	0.04
70 STAGE ROAD	2160	2175	9/23/2019	15	11,221	63	178	0.12
14 STAGE ROAD	1057	1065	9/23/2019	8	5,984	63	95	0.07
22 STAGE ROAD	1697	1700	9/23/2019	3	2,244	63	36	0.02
17 STAGE ROAD	1498	1505	9/23/2019	7	5,236	63	83	0.06
51 STAGE ROAD	594	596	9/23/2019	2	1,496	63	24	0.02
115 STAGE ROAD	1816	1837	9/23/2019	21	15,709	63	249	0.17
117 STAGE ROAD	2253	2279	9/23/2019	26	19,449	63	309	0.21
2131 PESCADERO ROAD	679	685	9/23/2019	6	4,488	63	71	0.05
2041 PESCADERO ROAD	2238	2245	9/23/2019	7	5,236	63	83	0.06
202 STAGE ROAD	18927	19104	9/23/2019	177	132,405	63	2,102	1.46
216 STAGE ROAD	302	303	9/23/2019	1	748	63	12	0.01
250 STAGE ROAD	25	29	9/23/2019	4	2,992	63	47	0.03
270 Stage Road	44	44	9/23/2019	0	0	63	0	0.00
290 STAGE ROAD, APT 1	3678	3703	9/23/2019	25	18,701	63	297	0.21
290 STAGE ROAD, APT 2	2955	2968	9/23/2019	13	9,725	63	154	0.11
290 STAGE ROAD, APT 3	1096	1107	9/23/2019	11	8,229	63	131	0.09
290 STAGE ROAD, APT 4	1316	1320	9/23/2019	4	2,992	63	47	0.03
358 STAGE ROAD	1352	1383	9/23/2019	31	23,190	63	368	0.26
363 STAGE ROAD	755	761	9/23/2019	6	4,488	63	71	0.05
351 STAGE ROAD	962	972	9/23/2019	10	7,481	63	119	0.08
339 STAGE ROAD	1864	1873	9/23/2019	9	6,732	63	107	0.07
323 STAGE ROAD, APT# 7	2945	2957	9/23/2019	12	8,977	63	142	0.10
323 STAGE ROAD #8	2460	2462	9/23/2019	2	1,496	63	24	0.02
323 Stage Rd APT 9	1440	1447	9/23/2019	7	5,236	63	83	0.06
323 STAGE ROAD 4	1553	1561	9/23/2019	8	5,984	63	95	0.07
323 STAGE ROAD 5	2298	2306	9/23/2019	8	5,984	63	95	0.07
323 STAGE ROAD 6	2313	2317	9/23/2019	4	2,992	63	47	0.03
309 STAGE ROAD	2639	2652	9/23/2019	13	9,725	63	154	0.11
299 STAGE ROAD	1814	1839	9/23/2019	25	18,701	63	297	0.21
287 STAGE ROAD	4200	4232	9/23/2019	32	23,938	63	380	0.26
251 STAGE ROAD	3939	3940	9/23/2019	1	748	63	12	0.01

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

September 2019

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
245-247 STAGE ROAD	3516	3555	9/23/2019	39	29,174	63	463	0.32
239 STAGE ROAD	436	440	9/23/2019	4	2,992	63	47	0.03
227 STAGE ROAD	4989	5035	9/23/2019	46	34,410	63	546	0.38
213 STAGE ROAD	5569	5606	9/23/2019	37	27,678	63	439	0.31
861 NORTH STREET	5867	5909	9/23/2019	42	31,418	63	499	0.35
104 GOULSON STREET	1833	1839	9/23/2019	6	4,488	63	71	0.05
150 GOULSON STREET	25	26	9/23/2019	1	748	63	12	0.01
172 GOULSON STREET	858	865	9/23/2019	7	5,236	63	83	0.06
184 GOULSON STREET	1002	1005	9/23/2019	3	2,244	63	36	0.02
194 GOULSON STREET	2493	2511	9/23/2019	18	13,465	63	214	0.15
827 NORTH STREET	1954	2013	9/23/2019	59	44,135	63	701	0.49
807 NORTH STREET	494	509	9/23/2019	15	11,221	63	178	0.12
787 NORTH STREET	1899	1907	9/23/2019	8	5,984	63	95	0.07
785 NORTH STREET	964	965	9/23/2019	1	748	63	12	0.01
773 NORTH STREET	481	496	9/23/2019	15	11,221	63	178	0.12
757 NORTH STREET	4170	4176	9/23/2019	6	4,488	63	71	0.05
737 NORTH STREET	1554	1559	9/23/2019	5	3,740	63	59	0.04
719 NORTH STREET	3193	3218	9/23/2019	25	18,701	63	297	0.21
687 North Street	718	732	9/23/2019	14	10,473	63	166	0.12
675 NORTH STREET	1616	1626	9/23/2019	10	7,481	63	119	0.08
665 NORTH STREET	466	468	9/23/2019	2	1,496	63	24	0.02
655 NORTH STREET	2501	2519	9/23/2019	18	13,465	63	214	0.15
645 NORTH STREET	5136	5148	9/23/2019	12	8,977	63	142	0.10
625 NORTH STREET	4182	4205	9/23/2019	23	17,205	63	273	0.19
615 NORTH STREET	2726	2744	9/23/2019	18	13,465	63	214	0.15
597 NORTH STREET	2155	2172	9/23/2019	17	12,717	63	202	0.14
581 NORTH STREET	2694	2709	9/23/2019	15	11,221	63	178	0.12
547 NORTH STREET	517	521	9/23/2019	4	2,992	63	47	0.03
527 North Street	2812	2826	9/23/2019	14	10,473	63	166	0.12
528 NORTH STREET	4299	4311	9/23/2019	12	8,977	63	142	0.10
620 NORTH STREET	5226	5265	9/23/2019	39	29,174	63	463	0.32
620 North Street	2	3	9/23/2019	1	748	63	12	0.01
696 NORTH STREET	1093	1097	9/23/2019	4	2,992	63	47	0.03
703 NORTH STREET	130	130	9/23/2019	0	0	63	0	0.00
706 NORTH STREET	3378	3393	9/23/2019	15	11,221	63	178	0.12
714 NORTH STREET	1898	1919	9/23/2019	21	15,709	63	249	0.17
730 NORTH STREET	2463	2471	9/23/2019	8	5,984	63	95	0.07
738 NORTH STREET	633	635	9/23/2019	2	1,496	63	24	0.02
752 NORTH STREET	9717	9824	9/23/2019	107	80,042	63	1,271	0.88
772 NORTH STREET	5659	5678	9/23/2019	19	14,213	63	226	0.16
766 NORTH STREET	57	66	9/23/2019	9	6,732	63	107	0.07
804 NORTH STREET	3578	3581	9/23/2019	3	2,244	63	36	0.02
826 NORTH STREET	4567	4585	9/23/2019	18	13,465	63	214	0.15
860 NORTH STREET	1895	1899	9/23/2019	4	2,992	63	47	0.03
		1,721,599				**Total =**	**19,663**	**13.7**

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

January 2020

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
1200 PESCADERO ROAD	3694	3713	01/23/2020	49	36,655	122	300	0.21
1419 PESCADERO CREEK ROAD								
1431 PESCADERO ROAD	7762	7764	01/23/2020	10	7,481	122	61	0.04
1441 PESCADERO ROAD	1230	1231	01/23/2020	3	2,244	122	18	0.01
31 WATER LANE	1114	1125	01/23/2020	24	17,953	122	147	0.10
43 Water Lane	1563	1584	01/23/2020	47	35,158	122	288	0.20
51 WATER LANE	5626	5634	01/23/2020	9	6,732	122	55	0.04
1481 PESCADERO ROAD	2015	2018	01/23/2020	6	4,488	122	37	0.03
1503 PESCADERO ROAD	3636	3650	01/23/2020	29	21,694	122	178	0.12
1541 PESCADERO ROAD	1726	1735	01/23/2020	18	13,465	122	110	0.08
1601 PESCADERO ROAD	2004	2023	01/23/2020	37	27,678	122	227	0.16
1613 PESCADERO ROAD	2501	2511	01/23/2020	23	17,205	122	141	0.10
1805 PESCADERO ROAD	1720	1729	01/23/2020	22	16,457	122	135	0.09
1831 PESCADERO ROAD	5101	5116	01/23/2020	35	26,182	122	215	0.15
1877 PESCADERO ROAD	6119	6152	01/23/2020	66	49,371	122	405	0.28
1899 PESCADERO ROAD	957	963	01/23/2020	12	8,977	122	74	0.05
1913 PESCADERO ROAD	1219	1224	01/23/2020	9	6,732	122	55	0.04
1923 PESCADERO ROAD	1837	1838	01/23/2020	1	748	122	6	0.00
1926 PESCADERO ROAD	2025	2034	01/23/2020	28	20,945	122	172	0.12
1946 PESCADERO ROAD	5160	5175	01/23/2020	43	32,166	122	264	0.18
1956 PESCADERO ROAD	1211	1222	01/23/2020	22	16,457	122	135	0.09
1999 PESCADERO ROAD	8314	8397	01/23/2020	192	143,626	122	1,177	0.82
2020 PESCADERO ROAD	1021	1035	01/23/2020	23	17,205	122	141	0.10
112 STAGE ROAD	356	356	01/23/2020	1	748	122	6	0.00
94 STAGE ROAD	1090	1096	01/23/2020	12	8,977	122	74	0.05
94 STAGE ROAD	1465400	1465400	01/23/2020	0	0	122	0	0.00
80 STAGE ROAD	527	530	01/23/2020	8	5,984	122	49	0.03
70 STAGE ROAD	2193	2205	01/23/2020	30	22,442	122	184	0.13
14 STAGE ROAD	1075	1080	01/23/2020	15	11,221	122	92	0.06
22 STAGE ROAD	1702	1704	01/23/2020	4	2,992	122	25	0.02
17 STAGE ROAD	1511	1517	01/23/2020	12	8,977	122	74	0.05
51 STAGE ROAD	600	603	01/23/2020	7	5,236	122	43	0.03
115 STAGE ROAD	1858	1880	01/23/2020	43	32,166	122	264	0.18
117 STAGE ROAD	2306	2330	01/23/2020	51	38,151	122	313	0.22
2131 PESCADERO ROAD	690	694	01/23/2020	9	6,732	122	55	0.04
2041 PESCADERO ROAD	2250	2255	01/23/2020	10	7,481	122	61	0.04
202 STAGE ROAD	19268	19406	01/23/2020	302	225,912	122	1,852	1.29
216 STAGE ROAD	304	306	01/23/2020	3	2,244	122	18	0.01
250 STAGE ROAD	29	30	01/23/2020	1	748	122	6	0.00
270 Stage Road	45	45	01/23/2020	1	748	122	6	0.00
290 STAGE ROAD, APT 1	3721	3739	01/23/2020	36	26,930	122	221	0.15
290 STAGE ROAD, APT 2	2983	2999	01/23/2020	31	23,190	122	190	0.13
290 STAGE ROAD, APT 3	1120	1128	01/23/2020	21	15,709	122	129	0.09
290 STAGE ROAD, APT 4	1329	1337	01/23/2020	17	12,717	122	104	0.07
358 STAGE ROAD	1405	1412	01/23/2020	29	21,694	122	178	0.12
363 STAGE ROAD	766	770	01/23/2020	9	6,732	122	55	0.04
351 STAGE ROAD	981	990	01/23/2020	18	13,465	122	110	0.08
339 STAGE ROAD	1879	1882	01/23/2020	9	6,732	122	55	0.04
323 STAGE ROAD, APT# 7	2968	2982	01/23/2020	25	18,701	122	153	0.11
323 STAGE ROAD #8	2464	2465	01/23/2020	3	2,244	122	18	0.01
323 Stage Rd APT 9	1455	1463	01/23/2020	16	11,969	122	98	0.07
323 STAGE ROAD 4	1568	1575	01/23/2020	14	10,473	122	86	0.06
323 STAGE ROAD 5	2312	2319	01/23/2020	13	9,725	122	80	0.06
323 STAGE ROAD 6	2321	2325	01/23/2020	8	5,984	122	49	0.03
309 STAGE ROAD	2672	2682	01/23/2020	30	22,442	122	184	0.13
299 STAGE ROAD	1863	1887	01/23/2020	48	35,906	122	294	0.20
287 STAGE ROAD	4256	4276	01/23/2020	44	32,914	122	270	0.19
251 STAGE ROAD	3942	3942	01/23/2020	2	1,496	122	12	0.01

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

January 2020

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
245-247 STAGE ROAD	3592	3631	01/23/2020	76	56,852	122	466	0.32
239 STAGE ROAD	442	445	01/23/2020	5	3,740	122	31	0.02
227 STAGE ROAD	5085	5091	01/23/2020	56	41,891	122	343	0.24
213 STAGE ROAD	5636	5665	01/23/2020	59	44,135	122	362	0.25
861 NORTH STREET	5940	5967	01/23/2020	58	43,387	122	356	0.25
104 GOULSON STREET	1844	1849	01/23/2020	10	7,481	122	61	0.04
150 GOULSON STREET	27	27	01/23/2020	1	748	122	6	0.00
172 GOULSON STREET	871	879	01/23/2020	14	10,473	122	86	0.06
184 GOULSON STREET	1008	1011	01/23/2020	6	4,488	122	37	0.03
194 GOULSON STREET	2525	2536	01/23/2020	25	18,701	122	153	0.11
827 NORTH STREET	2037	2039	01/23/2020	26	19,449	122	159	0.11
807 NORTH STREET	516	518	01/23/2020	9	6,732	122	55	0.04
787 NORTH STREET	1916	1924	01/23/2020	17	12,717	122	104	0.07
785 NORTH STREET	969	970	01/23/2020	5	3,740	122	31	0.02
773 NORTH STREET	506	518	01/23/2020	22	16,457	122	135	0.09
757 NORTH STREET	4180	4184	01/23/2020	8	5,984	122	49	0.03
737 NORTH STREET	1564	1568	01/23/2020	9	6,732	122	55	0.04
719 NORTH STREET	3237	3252	01/23/2020	34	25,434	122	208	0.14
687 North Street	748	766	01/23/2020	34	25,434	122	208	0.14
675 NORTH STREET	1638	1650	01/23/2020	24	17,953	122	147	0.10
665 NORTH STREET	471	474	01/23/2020	6	4,488	122	37	0.03
655 NORTH STREET	2537	2553	01/23/2020	34	25,434	122	208	0.14
645 NORTH STREET	5159	5160	01/23/2020	12	8,977	122	74	0.05
625 NORTH STREET	4227	4247	01/23/2020	42	31,418	122	258	0.18
615 NORTH STREET	2760	2773	01/23/2020	29	21,694	122	178	0.12
597 NORTH STREET	2188	2201	01/23/2020	29	21,694	122	178	0.12
581 NORTH STREET	2727	2743	01/23/2020	34	25,434	122	208	0.14
547 NORTH STREET	522	524	01/23/2020	3	2,244	122	18	0.01
527 North Street	2845	2859	01/23/2020	33	24,686	122	202	0.14
528 NORTH STREET	4324	4337	01/23/2020	26	19,449	122	159	0.11
620 NORTH STREET	5310	5335	01/23/2020	70	52,364	122	429	0.30
620 North Street	3	3	01/23/2020	0	0	122	0	0.00
696 NORTH STREET	1100	1101	01/23/2020	4	2,992	122	25	0.02
703 NORTH STREET	131	132	01/23/2020	2	1,496	122	12	0.01
706 NORTH STREET	3408	3419	01/23/2020	26	19,449	122	159	0.11
714 NORTH STREET	1934	1950	01/23/2020	31	23,190	122	190	0.13
730 NORTH STREET	2478	2489	01/23/2020	18	13,465	122	110	0.08
738 NORTH STREET	636	636	01/23/2020	1	748	122	6	0.00
752 NORTH STREET	9870	9887	01/23/2020	63	47,127	122	386	0.27
772 NORTH STREET	5694	5707	01/23/2020	29	21,694	122	178	0.12
766 NORTH STREET	76	84	01/23/2020	18	13,465	122	110	0.08
804 NORTH STREET	3585	3591	01/23/2020	10	7,481	122	61	0.04
826 NORTH STREET	4593	4599	01/23/2020	14	10,473	122	86	0.06
860 NORTH STREET	1903	1906	01/23/2020	7	5,236	122	43	0.03
				Total =	**1,966,629**		**16,120**	**11.2**

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

March 2020

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
1200 PESCADERO ROAD	3713	3729	03/19/2020	16	11,969	56	214	0.15
1419 PESCADERO CREEK ROAD								
1431 PESCADERO ROAD	7764	7772	03/19/2020	8	5,984	56	107	0.07
1441 PESCADERO ROAD	1231	1239	03/19/2020	8	5,984	56	107	0.07
31 WATER LANE	1125	1137	03/19/2020	12	8,977	56	160	0.11
43 Water Lane	1584	1604	03/19/2020	20	14,961	56	267	0.19
51 WATER LANE	5634	5643	03/19/2020	9	6,732	56	120	0.08
1481 PESCADERO ROAD	2018	2021	03/19/2020	3	2,244	56	40	0.03
1503 PESCADERO ROAD	3650	3662	03/19/2020	12	8,977	56	160	0.11
1541 PESCADERO ROAD	1735	1742	03/19/2020	7	5,236	56	94	0.06
1601 PESCADERO ROAD	2023	2042	03/19/2020	19	14,213	56	254	0.18
1613 PESCADERO ROAD	2511	2518	03/19/2020	7	5,236	56	94	0.06
1805 PESCADERO ROAD	1729	1737	03/19/2020	8	5,984	56	107	0.07
1831 PESCADERO ROAD	5116	5123	03/19/2020	7	5,236	56	94	0.06
1877 PESCADERO ROAD	6152	6182	03/19/2020	30	22,442	56	401	0.28
1899 PESCADERO ROAD	963	969	03/19/2020	6	4,488	56	80	0.06
1913 PESCADERO ROAD	1224	1229	03/19/2020	5	3,740	56	67	0.05
1923 PESCADERO ROAD	1838	1838	03/19/2020	0	0	56	0	0.00
1926 PESCADERO ROAD	2034	2047	03/19/2020	13	9,725	56	174	0.12
1946 PESCADERO ROAD	5175	5190	03/19/2020	15	11,221	56	200	0.14
1956 PESCADERO ROAD	1222	1231	03/19/2020	9	6,732	56	120	0.08
1999 PESCADERO ROAD	8397	8484	03/19/2020	87	65,081	56	1,162	0.81
2020 PESCADERO ROAD	1035	1046	03/19/2020	11	8,229	56	147	0.10
112 STAGE ROAD	356	357	03/19/2020	1	748	56	13	0.01
94 STAGE ROAD	1096	1101	03/19/2020	5	3,740	56	67	0.05
94 STAGE ROAD	1465400	1465400	03/19/2020	0	0	56	0	0.00
80 STAGE ROAD	530	532	03/19/2020	2	1,496	56	27	0.02
70 STAGE ROAD	2205	2220	03/19/2020	15	11,221	56	200	0.14
14 STAGE ROAD	1080	1090	03/19/2020	10	7,481	56	134	0.09
22 STAGE ROAD	1704	1707	03/19/2020	3	2,244	56	40	0.03
17 STAGE ROAD	1517	1522	03/19/2020	5	3,740	56	67	0.05
51 STAGE ROAD	603	604	03/19/2020	1	748	56	13	0.01
115 STAGE ROAD	1880	1900	03/19/2020	20	14,961	56	267	0.19
117 STAGE ROAD	2330	2350	03/19/2020	20	14,961	56	267	0.19
2131 PESCADERO ROAD	694	695	03/19/2020	1	748	56	13	0.01
2041 PESCADERO ROAD	2255	2259	03/19/2020	4	2,992	56	53	0.04
202 STAGE ROAD	19406	19543	03/19/2020	137	102,483	56	1,830	1.27
216 STAGE ROAD	306	308	03/19/2020	2	1,496	56	27	0.02
250 STAGE ROAD	0	13	03/19/2020	13	9,725	56	174	0.12
270 Stage Road	45	45	03/19/2020	0	0	56	0	0.00
290 STAGE ROAD, APT 1	3739	3756	03/19/2020	17	12,717	56	227	0.16
290 STAGE ROAD, APT 2	2999	3012	03/19/2020	13	9,725	56	174	0.12
290 STAGE ROAD, APT 3	1128	1136	03/19/2020	8	5,984	56	107	0.07
290 STAGE ROAD, APT 4	1337	1344	03/19/2020	7	5,236	56	94	0.06
358 STAGE ROAD	1412	1418	03/19/2020	6	4,488	56	80	0.06
363 STAGE ROAD	770	774	03/19/2020	4	2,992	56	53	0.04
351 STAGE ROAD	990	1000	03/19/2020	10	7,481	56	134	0.09
339 STAGE ROAD	1882	1886	03/19/2020	4	2,992	56	53	0.04
323 STAGE ROAD, APT# 7	2982	2994	03/19/2020	12	8,977	56	160	0.11
323 STAGE ROAD #8	2467	2467	03/19/2020	0	0	56	0	0.00
323 Stage Rd APT 9	1463	1472	03/19/2020	9	6,732	56	120	0.08
323 STAGE ROAD 4	1575	1582	03/19/2020	7	5,236	56	94	0.06
323 STAGE ROAD 5	2319	2325	03/19/2020	6	4,488	56	80	0.06
323 STAGE ROAD 6	2325	2329	03/19/2020	4	2,992	56	53	0.04
309 STAGE ROAD	2682	2690	03/19/2020	8	5,984	56	107	0.07
299 STAGE ROAD	1887	1909	03/19/2020	22	16,457	56	294	0.20
287 STAGE ROAD	4276	4295	03/19/2020	19	14,213	56	254	0.18
251 STAGE ROAD	3942	3944	03/19/2020	2	1,496	56	27	0.02

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

March 2020

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
245-247 STAGE ROAD	3631	3668	03/19/2020	37	27,678	56	494	0.34
239 STAGE ROAD	445	448	03/19/2020	3	2,244	56	40	0.03
227 STAGE ROAD	5091	5112	03/19/2020	21	15,709	56	281	0.19
213 STAGE ROAD	5665	5693	03/19/2020	28	20,945	56	374	0.26
861 NORTH STREET	5967	6001	03/19/2020	34	25,434	56	454	0.32
104 GOULSON STREET	1849	1854	03/19/2020	5	3,740	56	67	0.05
150 GOULSON STREET	27	27	03/19/2020	0	0	56	0	0.00
172 GOULSON STREET	879	885	03/19/2020	6	4,488	56	80	0.06
184 GOULSON STREET	1011	1014	03/19/2020	3	2,244	56	40	0.03
194 GOULSON STREET	2536	2548	03/19/2020	12	8,977	56	160	0.11
827 NORTH STREET	2039	2042	03/19/2020	3	2,244	56	40	0.03
807 NORTH STREET	518	519	03/19/2020	1	748	56	13	0.01
787 NORTH STREET	1924	1931	03/19/2020	7	5,236	56	94	0.06
785 NORTH STREET	970	971	03/19/2020	1	748	56	13	0.01
773 NORTH STREET	518	530	03/19/2020	12	8,977	56	160	0.11
757 NORTH STREET	4184	4187	03/19/2020	3	2,244	56	40	0.03
737 NORTH STREET	1568	1572	03/19/2020	4	2,992	56	53	0.04
719 NORTH STREET	3252	3264	03/19/2020	12	8,977	56	160	0.11
687 North Street	766	778	03/19/2020	12	8,977	56	160	0.11
675 NORTH STREET	1650	1661	03/19/2020	11	8,229	56	147	0.10
665 NORTH STREET	474	476	03/19/2020	2	1,496	56	27	0.02
655 NORTH STREET	2553	2572	03/19/2020	19	14,213	56	254	0.18
645 NORTH STREET	5160	5174	03/19/2020	14	10,473	56	187	0.13
625 NORTH STREET	4247	4264	03/19/2020	17	12,717	56	227	0.16
615 NORTH STREET	2773	2784	03/19/2020	11	8,229	56	147	0.10
597 NORTH STREET	2201	2215	03/19/2020	14	10,473	56	187	0.13
581 NORTH STREET	2743	2756	03/19/2020	13	9,725	56	174	0.12
547 NORTH STREET	524	525	03/19/2020	1	748	56	13	0.01
527 North Street	2859	2867	03/19/2020	8	5,984	56	107	0.07
528 NORTH STREET	4337	4347	03/19/2020	10	7,481	56	134	0.09
620 NORTH STREET	5335	5399	03/19/2020	64	47,875	56	855	0.59
620 North Street	0	0	03/19/2020	0	0	56	0	0.00
696 NORTH STREET	1101	1101	03/19/2020	0	0	56	0	0.00
703 NORTH STREET	132	133	03/19/2020	1	748	56	13	0.01
706 NORTH STREET	3419	3437	03/19/2020	18	13,465	56	240	0.17
714 NORTH STREET	1950	1961	03/19/2020	11	8,229	56	147	0.10
730 NORTH STREET	2489	2500	03/19/2020	11	8,229	56	147	0.10
738 NORTH STREET	636	636	03/19/2020	0	0	56	0	0.00
752 NORTH STREET	9887	9911	03/19/2020	24	17,953	56	321	0.22
772 NORTH STREET	5707	5721	03/19/2020	14	10,473	56	187	0.13
766 NORTH STREET	84	91	03/19/2020	7	5,236	56	94	0.06
804 NORTH STREET	3591	3602	03/19/2020	11	8,229	56	147	0.10
826 NORTH STREET	4599	4603	03/19/2020	4	2,992	56	53	0.04
860 NORTH STREET	1906	1909	03/19/2020	3	2,244	56	40	0.03
				Total =	**898,410**		**16,043**	**11.1**

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

May 2020

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
1200 PESCADERO ROAD	3729	3755	05/21/2020	26	19,449	63	309	0.21
1419 PESCADERO CREEK ROAD								
1431 PESCADERO ROAD	7772	7781	05/21/2020	9	6,732	63	107	0.07
1441 PESCADERO ROAD	1239	1249	05/21/2020	10	7,481	63	119	0.08
31 WATER LANE	1137	1152	05/21/2020	15	11,221	63	178	0.12
43 Water Lane	1604	1635	05/21/2020	31	23,190	63	368	0.26
51 WATER LANE	5643	5656	05/21/2020	13	9,725	63	154	0.11
1481 PESCADERO ROAD	2021	2024	05/21/2020	3	2,244	63	36	0.02
1503 PESCADERO ROAD	3662	3677	05/21/2020	15	11,221	63	178	0.12
1541 PESCADERO ROAD	1742	1751	05/21/2020	9	6,732	63	107	0.07
1601 PESCADERO ROAD	2042	2065	05/21/2020	23	17,205	63	273	0.19
1613 PESCADERO ROAD	2518	2526	05/21/2020	8	5,984	63	95	0.07
1805 PESCADERO ROAD	1737	1750	05/21/2020	13	9,725	63	154	0.11
1831 PESCADERO ROAD	5123	5146	05/21/2020	23	17,205	63	273	0.19
1877 PESCADERO ROAD	6182	6219	05/21/2020	37	27,678	63	439	0.31
1899 PESCADERO ROAD	969	978	05/21/2020	9	6,732	63	107	0.07
1913 PESCADERO ROAD	1229	1233	05/21/2020	4	2,992	63	47	0.03
1923 PESCADERO ROAD	1838	1838	05/21/2020	0	0	63	0	0.00
1926 PESCADERO ROAD	2047	2063	05/21/2020	16	11,969	63	190	0.13
1946 PESCADERO ROAD	5190	5214	05/21/2020	24	17,953	63	285	0.20
1956 PESCADERO ROAD	1231	1244	05/21/2020	13	9,725	63	154	0.11
1999 PESCADERO ROAD	8484	8557	05/21/2020	73	54,608	63	867	0.60
2020 PESCADERO ROAD	1046	1060	05/21/2020	14	10,473	63	166	0.12
112 STAGE ROAD	357	357	05/21/2020	0	0	63	0	0.00
94 STAGE ROAD	1101	1108	05/21/2020	7	5,236	63	83	0.06
94 STAGE ROAD	1465400	1465400	05/21/2020	0	0	63	0	0.00
80 STAGE ROAD	532	535	05/21/2020	3	2,244	63	36	0.02
70 STAGE ROAD	2220	2239	05/21/2020	19	14,213	63	226	0.16
14 STAGE ROAD	1090	1097	05/21/2020	7	5,236	63	83	0.06
22 STAGE ROAD	1707	1707	05/21/2020	0	0	63	0	0.00
17 STAGE ROAD	1522	1530	05/21/2020	8	5,984	63	95	0.07
51 STAGE ROAD	604	604	05/21/2020	0	0	63	0	0.00
115 STAGE ROAD	1900	1921	05/21/2020	21	15,709	63	249	0.17
117 STAGE ROAD	2350	2372	05/21/2020	22	16,457	63	261	0.18
2131 PESCADERO ROAD	695	702	05/21/2020	7	5,236	63	83	0.06
2041 PESCADERO ROAD	2259	2263	05/21/2020	4	2,992	63	47	0.03
202 STAGE ROAD	19543	19597	05/21/2020	54	40,395	63	641	0.45
216 STAGE ROAD	308	308	05/21/2020	0	0	63	0	0.00
250 STAGE ROAD	1	7	05/21/2020	6	4,488	63	71	0.05
270 Stage Road	45	45	05/21/2020	0	0	63	0	0.00
290 STAGE ROAD, APT 1	3756	3779	05/21/2020	23	17,205	63	273	0.19
290 STAGE ROAD, APT 2	3012	3026	05/21/2020	14	10,473	63	166	0.12
290 STAGE ROAD, APT 3	1136	1144	05/21/2020	8	5,984	63	95	0.07
290 STAGE ROAD, APT 4	1344	1354	05/21/2020	10	7,481	63	119	0.08
358 STAGE ROAD	1418	1430	05/21/2020	12	8,977	63	142	0.10
363 STAGE ROAD	774	774	05/21/2020	0	0	63	0	0.00
351 STAGE ROAD	1000	1011	05/21/2020	11	8,229	63	131	0.09
339 STAGE ROAD	1886	1894	05/21/2020	8	5,984	63	95	0.07
323 STAGE ROAD, APT# 7	2994	3012	05/21/2020	18	13,465	63	214	0.15
323 STAGE ROAD #8	2467	2468	05/21/2020	1	748	63	12	0.01
323 Stage Rd APT 9	1472	1483	05/21/2020	11	8,229	63	131	0.09
323 STAGE ROAD 4	1582	1590	05/21/2020	8	5,984	63	95	0.07
323 STAGE ROAD 5	2325	2334	05/21/2020	9	6,732	63	107	0.07
323 STAGE ROAD 6	2329	2335	05/21/2020	6	4,488	63	71	0.05
309 STAGE ROAD	2690	2700	05/21/2020	10	7,481	63	119	0.08
299 STAGE ROAD	1909	1936	05/21/2020	27	20,197	63	321	0.22
287 STAGE ROAD	4295	4314	05/21/2020	19	14,213	63	226	0.16
251 STAGE ROAD	3944	3946	05/21/2020	2	1,496	63	24	0.02

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

May 2020

Service Address	Prev Reading, ft^3 x 100	Current Reading, ft^3 x 100	Read Date	Difference, ft^3 x 100	Volume, gal	Number of Days	Flow, gal/day	Flow, gal/min
245-247 STAGE ROAD	3668	3719	05/21/2020	51	38,151	63	606	0.42
239 STAGE ROAD	448	451	05/21/2020	3	2,244	63	36	0.02
227 STAGE ROAD	5112	5127	05/21/2020	15	11,221	63	178	0.12
213 STAGE ROAD	5693	5712	05/21/2020	19	14,213	63	226	0.16
861 NORTH STREET	6001	6043	05/21/2020	42	31,418	63	499	0.35
104 GOULSON STREET	1854	1859	05/21/2020	5	3,740	63	59	0.04
150 GOULSON STREET	27	27	05/21/2020	0	0	63	0	0.00
172 GOULSON STREET	885	894	05/21/2020	9	6,732	63	107	0.07
184 GOULSON STREET	1014	1017	05/21/2020	3	2,244	63	36	0.02
194 GOULSON STREET	2548	2561	05/21/2020	13	9,725	63	154	0.11
827 NORTH STREET	2042	2049	05/21/2020	7	5,236	63	83	0.06
807 NORTH STREET	519	521	05/21/2020	2	1,496	63	24	0.02
787 NORTH STREET	1931	1940	05/21/2020	9	6,732	63	107	0.07
785 NORTH STREET	971	977	05/21/2020	6	4,488	63	71	0.05
773 NORTH STREET	530	545	05/21/2020	15	11,221	63	178	0.12
757 NORTH STREET	4187	4192	05/21/2020	5	3,740	63	59	0.04
737 NORTH STREET	1572	1577	05/21/2020	5	3,740	63	59	0.04
719 NORTH STREET	3264	3284	05/21/2020	20	14,961	63	237	0.16
687 North Street	778	795	05/21/2020	17	12,717	63	202	0.14
675 NORTH STREET	1661	1676	05/21/2020	15	11,221	63	178	0.12
665 NORTH STREET	476	479	05/21/2020	3	2,244	63	36	0.02
655 NORTH STREET	2572	2597	05/21/2020	25	18,701	63	297	0.21
645 NORTH STREET	5160	5169	05/21/2020	9	6,732	63	107	0.07
625 NORTH STREET	4264	4285	05/21/2020	21	15,709	63	249	0.17
615 NORTH STREET	2784	2797	05/21/2020	13	9,725	63	154	0.11
597 NORTH STREET	2215	2230	05/21/2020	15	11,221	63	178	0.12
581 NORTH STREET	2756	2773	05/21/2020	17	12,717	63	202	0.14
547 NORTH STREET	525	527	05/21/2020	2	1,496	63	24	0.02
527 North Street	2867	2876	05/21/2020	9	6,732	63	107	0.07
528 NORTH STREET	4347	4362	05/21/2020	15	11,221	63	178	0.12
620 NORTH STREET	5399	5424	05/21/2020	25	18,701	63	297	0.21
620 North Street	0	0	05/21/2020	0	0	63	0	0.00
696 NORTH STREET	1101	1103	05/21/2020	2	1,496	63	24	0.02
703 NORTH STREET	133	133	05/21/2020	0	0	63	0	0.00
706 NORTH STREET	3437	3438	05/21/2020	1	748	63	12	0.01
714 NORTH STREET	1961	1996	05/21/2020	35	26,182	63	416	0.29
730 NORTH STREET	2500	2508	05/21/2020	8	5,984	63	95	0.07
738 NORTH STREET	636	650	05/21/2020	14	10,473	63	166	0.12
752 NORTH STREET	9911	9957	05/21/2020	46	34,410	63	546	0.38
772 NORTH STREET	5721	5744	05/21/2020	23	17,205	63	273	0.19
766 NORTH STREET	91	102	05/21/2020	11	8,229	63	131	0.09
804 NORTH STREET	3602	3618	05/21/2020	16	11,969	63	190	0.13
826 NORTH STREET	4603	4610	05/21/2020	7	5,236	63	83	0.06
860 NORTH STREET	1909	1913	05/21/2020	4	2,992	63	47	0.03
				Total =	**991,169**		**15,733**	**10.9**

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

Summary

Service Address	Average Day Demand (Average), gpm	Average Day Demand (Maximum), gpm	Average Day Demand (Minimum), gpm
1200 PESCADERO ROAD	0.22	0.26	0.15
1419 PESCADERO CREEK ROAD	0.06	0.07	0.05
1431 PESCADERO ROAD	0.06	0.08	0.04
1441 PESCADERO ROAD	0.05	0.08	0.01
31 WATER LANE	0.10	0.12	0.09
43 Water Lane	0.24	0.28	0.19
51 WATER LANE	0.06	0.13	0.00
1481 PESCADERO ROAD	0.04	0.07	0.02
1503 PESCADERO ROAD	0.13	0.16	0.11
1541 PESCADERO ROAD	0.07	0.08	0.05
1601 PESCADERO ROAD	0.14	0.19	0.09
1613 PESCADERO ROAD	0.08	0.12	0.06
1805 PESCADERO ROAD	0.10	0.15	0.07
1831 PESCADERO ROAD	0.18	0.24	0.06
1877 PESCADERO ROAD	0.28	0.31	0.24
1899 PESCADERO ROAD	0.05	0.07	0.04
1913 PESCADERO ROAD	0.05	0.08	0.03
1923 PESCADERO ROAD	0.00	0.01	0.00
1926 PESCADERO ROAD	0.15	0.23	0.12
1946 PESCADERO ROAD	0.22	0.33	0.14
1956 PESCADERO ROAD	0.10	0.12	0.08
1999 PESCADERO ROAD	0.78	0.99	0.60
2020 PESCADERO ROAD	0.06	0.12	0.01
112 STAGE ROAD	0.01	0.02	0.00
94 STAGE ROAD	0.05	0.06	0.05
94 STAGE ROAD	0.02	0.10	0.00
80 STAGE ROAD	0.03	0.04	0.02
70 STAGE ROAD	0.14	0.16	0.12
14 STAGE ROAD	0.07	0.09	0.06
22 STAGE ROAD	0.02	0.03	0.00
17 STAGE ROAD	0.06	0.07	0.05
51 STAGE ROAD	0.02	0.04	0.00
115 STAGE ROAD	0.19	0.21	0.17
117 STAGE ROAD	0.21	0.25	0.18
2131 PESCADERO ROAD	0.04	0.07	0.01
2041 PESCADERO ROAD	0.04	0.06	0.03
202 STAGE ROAD	1.27	1.60	0.45
216 STAGE ROAD	0.01	0.03	0.00
250 STAGE ROAD	0.05	0.12	0.00
270 Stage Road	0.00	0.01	0.00
290 STAGE ROAD, APT 1	0.20	0.29	0.15
290 STAGE ROAD, APT 2	0.12	0.13	0.11
290 STAGE ROAD, APT 3	0.08	0.10	0.07
290 STAGE ROAD, APT 4	0.05	0.08	0.03
358 STAGE ROAD	0.16	0.26	0.06
363 STAGE ROAD	0.03	0.05	0.00
351 STAGE ROAD	0.09	0.09	0.08
339 STAGE ROAD	0.07	0.12	0.04
323 STAGE ROAD, APT# 7	0.13	0.15	0.10
323 STAGE ROAD #8	0.01	0.02	0.00
323 Stage Rd APT 9	0.08	0.09	0.06
323 STAGE ROAD 4	0.07	0.08	0.06
323 STAGE ROAD 5	0.08	0.12	0.06
323 STAGE ROAD 6	0.04	0.05	0.03
309 STAGE ROAD	0.11	0.13	0.07
299 STAGE ROAD	0.22	0.27	0.20
287 STAGE ROAD	0.21	0.26	0.16
251 STAGE ROAD	0.01	0.03	0.01

*Note: Values in red are assumed values.

CSA-11 Customer Billing Data

		Summary	
	Average Day Demand	Average Day Demand	Average Day Demand
Service Address	**(Average), gpm**	**(Maximum), gpm**	**(Minimum), gpm**
245-247 STAGE ROAD	0.35	0.42	0.32
239 STAGE ROAD	0.03	0.04	0.02
227 STAGE ROAD	0.24	0.38	0.12
213 STAGE ROAD	0.26	0.31	0.16
861 NORTH STREET	0.32	0.35	0.25
104 GOULSON STREET	0.05	0.05	0.04
150 GOULSON STREET	0.01	0.02	0.00
172 GOULSON STREET	0.06	0.07	0.06
184 GOULSON STREET	0.03	0.04	0.02
194 GOULSON STREET	0.13	0.16	0.11
827 NORTH STREET	0.17	0.49	0.01
807 NORTH STREET	0.04	0.12	0.01
787 NORTH STREET	0.07	0.07	0.06
785 NORTH STREET	0.02	0.05	0.01
773 NORTH STREET	0.10	0.12	0.07
757 NORTH STREET	0.04	0.06	0.03
737 NORTH STREET	0.04	0.06	0.03
719 NORTH STREET	0.18	0.29	0.11
687 North Street	0.13	0.14	0.11
675 NORTH STREET	0.11	0.13	0.08
665 NORTH STREET	0.03	0.04	0.02
655 NORTH STREET	0.16	0.21	0.14
645 NORTH STREET	0.07	0.13	0.03
625 NORTH STREET	0.18	0.19	0.16
615 NORTH STREET	0.13	0.18	0.10
597 NORTH STREET	0.13	0.14	0.12
581 NORTH STREET	0.12	0.14	0.06
547 NORTH STREET	0.02	0.04	0.01
527 North Street	0.11	0.14	0.07
528 NORTH STREET	0.11	0.13	0.09
620 NORTH STREET	0.39	0.59	0.21
620 North Street	0.00	0.01	0.00
696 NORTH STREET	0.03	0.06	0.00
703 NORTH STREET	0.01	0.04	0.00
706 NORTH STREET	0.13	0.22	0.01
714 NORTH STREET	0.17	0.29	0.10
730 NORTH STREET	0.12	0.21	0.07
738 NORTH STREET	0.03	0.12	0.00
752 NORTH STREET	0.47	0.88	0.22
772 NORTH STREET	0.15	0.19	0.12
766 NORTH STREET	0.08	0.09	0.06
804 NORTH STREET	0.05	0.13	0.01
826 NORTH STREET	0.08	0.15	0.04
860 NORTH STREET	0.03	0.03	0.03
	12.4	**17.3**	**8.0**

*Note: Values in red are assumed values.

Appendix F
DRAFT Geotechnical Investigation

Geotechnical Investigation

Pescadero High School Water System Improvement
Pescadero, California

University Enterprises, Inc.

Draft for Review

This document is in draft form. A final version of this document may differ from this draft. As such, the contents of this draft document shall not be relied upon. GHD disclaims any responsibility or liability arising from decisions made based on this draft document.

11213964 | January 2021

January 21, 2021

Monica Kauppinen
Director, Sponsored Programs
University Enterprises, Inc.
6000 J Street, Suite 3400
Sacramento, CA 95819

RE: Geotechnical Investigation Report
Pescadero High School Water System Improvement Project

Dear Mrs. Kauppinen,

GHD is pleased to present the attached report containing the results of our geotechnical investigation for the proposed Water Main Extension project in Pescadero, California. It is our understanding that the proposed project consists of installing a new underground pipeline in the right-of-way of several county roadways.

The accompanying report presents our findings, conclusions, and recommendations developed from our geotechnical investigation. Contained in the report are geotechnical design criteria and recommendations for design and construction of the proposed improvements. The results of the subsurface exploration and laboratory testing programs, which form the basis of our recommendations, are also included in the report. Based on our investigation, the site is suitable, from a geotechnical perspective, to receive the planned improvements provided the recommendations presented in the report are incorporated into the design and construction of the project.

If you have any questions regarding the information contained in this report, or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
GHD Inc.

Anthony Quintrall, P.E.
Senior Hydro Engineer

Eric S. Smith P.E.
Project Engineer

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Distribution

To: University Enterprises Inc.

Monica Kauppinen

6000 J Street, Suite 3400

Sacramento, CA 95819

From: GHD

Eric Smith, P.E.

Anthony Quintrall, P.E.

4080 Plaza Goldorado Circle, Suite B

Cameron Park, CA 95682

1. Introduction

This report presents the findings, conclusions, and recommendations developed from the geotechnical investigation. The investigation was conducted in accordance with a signed agreement between University Enterprises Inc. (UEI) and GHD, Inc. (GHD) for the Pescadero High School Water Improvement Project.

1.1 Project Description

The objective of the water system expansion project is to construct a new water main extension on the southeast side of the Town of Pescadero, as shown on Figure A-1, “Vicinity Map” presented in Appendix A. It is our understanding that a new 6-inch PVC pipeline will tie into the existing water main at the furthest east fire hydrant from Stage Road along Pescadero Creek Road and connect to the existing Pescadero High School system. The new water main alignment is approximately 1.2 miles in length and will parallel Pescadero Creek Road, Cloverdale Road, and Butano Cutoff before connecting to the school. It is anticipated that most of the pipeline will be installed by an excavated open trench, but a portion of the pipeline maybe installed by a trenchless method. The depth of the new pipeline will vary but is expected to be an average of 3 to 4 feet below the surface.

1.2 Purpose and Scope of Work

The purpose of this study was to evaluate the suitability of the project site, from a geotechnical perspective, for the proposed improvements. The main objectives of the investigation were to characterize the subsurface materials, perform engineering analyses, develop geotechnical recommendations and criteria, and document the findings, conclusions, and recommendations in this report. The scope of the investigation included the following tasks:

- A review of our previous investigation report and published geologic and geotechnical material pertaining to the site vicinity
- A field exploration program consisting of 8 exploratory borings drilled to a maximum depth of approximately 19.5 feet within the improvement area to characterize the subsurface conditions
- Geotechnical laboratory testing on select soil samples collected from the borings
- Engineering analyses to develop geotechnical design criteria and recommendations for the proposed project
- Preparation of this report

2. Field Exploration and Laboratory Testing

2.1 Field Exploration

The field exploration was performed on December 1 and 2, 2020 and included the drilling of 8 exploratory borings at the approximate locations as shown on Figure A-2, “Exploration Map”

presented in Appendix A. A representative of GHD was present to observe the drilling and sampling and to log the borings.

The borings were located along the proposed pipeline alignment and spaced approximately 800 feet apart. The borings were drilled to a maximum depth of approximately 19.5 feet below ground surface (bgs) utilizing a track-mounted drill rig equipped with 8-inch-diameter hollow stem augers. As drilling proceeded, relatively undisturbed samples were obtained by driving a 3-inch O.D., Modified California split-spoon sampler into the boring bottom in accordance with ASTM D3550. Disturbed samples were also obtained by driving a 2-inch O.D., split-barrel Standard Penetration Test (SPT) sampler into the boring bottom in accordance with ASTM D1586. The sampler was driven into the in-situ soils under the impact of an automatic hammer with a weight of 140 pounds and a drop of 30 inches. The number of blows required for each 6-inch increment of drive was recorded and the cumulative blow count for the 12 inches of drive (following the first 6 inches of "seating" drive), or fraction thereof where resistance was encountered, is presented in the logs of borings. The blow counts presented in the logs are uncorrected and shown as they were recorded in the field. Both the samples and drill cuttings were visually classified in the field based on the Unified Soil Classification System (USCS) in general accordance with ASTM D2488.

The standardized N_{60} value is also presented and is calculated based on field blow counts and hammer energy correction coefficients to normalize the automatic hammer blow count to the energy of the original SPT rope and cathead hammer (approximately 60%). Also, correction factors were used relating to borehole diameter to normalize the blow count for the diameter of the borehole, sampler type to account for the type of sampler and the presence of liners, and rod length to normalize the blow count to a standard length.

Subsurface conditions encountered are summarized in Section 3.3. Logs of the borings were prepared based on the field logging, visual examination of the soil samples, and the results of laboratory testing. The soil boring key and the logs of borings are presented in Appendix B.

2.2 Geotechnical Laboratory Testing

Laboratory testing was conducted on soil samples recovered during the site investigation and the samples were classified in general accordance with ASTM D2487. Tests conducted include the following:

- Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing (ASTM D1140)
- Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216)
- Standard Test Methods for Laboratory Determination of Density (Unit Weight) of Soil Specimens (ASTM D7263)
- Standard Test Method for Measurement of Oxidation-Reduction Potential (ORP) of Soil (ASTM G200)
- Method of Testing Soils and Waters for Sulfate Content (CTM 417)
- Method of Testing Soils and Waters for Chloride Content (CTM 422)

- Method for Determining Field and Laboratory Resistivity and pH Measurements for Soil and Water (CTM 643)

Geotechnical laboratory test results are presented in Appendix C.

3. Geologic and Subsurface Conditions

3.1 Site Conditions

Construction of the planned improvements will take place in the vicinity of a small-town community surrounded by semi-rural private properties comprised of sparsely distanced single-family residences and farmland. The proposed pipeline will extend along three semi-rural 2-lane asphalt paved roadways. Pescadero Creek Road travels in an east-west direction with Pescadero Creek located directly to the north and flat farmland on the south that transitions to adjacent hillside terrain to the southeast. Cloverdale Road travels in a north-south direction with Pescadero Creek located along the east and hillside terrain on the west. Butano Cutoff travels in an east-west direction with flat fields and farmland on the north and south. A small bridge is located on Butano Cutoff at the intersection with Cloverdale Road that crosses Pescadero Creek. The roadways generally consist of flat level grades with straightaways and a few long gradual turns. Portions of the roadways were constructed from a combination of cut and fill.

3.2 General Geology and Faulting

The site is in the Coast Ranges geomorphic province. The geologic materials underlying the site are mapped as Holocene aged stream-terrace deposits as shown on the Geologic Map Data Base. (Watt 2014). The stream-terrace deposits are comprised of smooth, undissected terraces above active channels. The subsurface deposits encountered during our exploration resemble the mapped deposits.

Based on our review of the USGS Quaternary Fault and Fold Database, the San Gregorio fault zone crosses through the proposed project alignment and exits in an Alquist-Priolo Earthquake Fault Zone. The San Gregorio fault is a right lateral fault with a N23ºW strike and 70ºE-90º dip. The next nearest active faults are the San Andreas Fault Zone and the Monte Vista-Shannon Fault Zone located approximately 11.2 miles east and 12.4 miles east, respectfully. The proposed project is an underground utility and is not expected to contain standing structures. Therefore, according to the Alquist-Priolo Earthquake Fault Zoning Act Section 2621.6 2(a), the project is exempt from the Special Studies Zones requirements.

3.3 Subsurface Conditions

Based on our current field exploration and laboratory analysis, the subsurface materials generally consist of varying layers of medium dense to very dense sand and medium stiff to hard clay. Typically, the near surficial soils consist of low to medium plastic material with fine-grained gravel particles, underlain by medium to highly plastic clay. In Boring B-2, a highly plastic, medium stiff to stiff clay was encountered at 4.5 bgs and extends until boring termination at 19.5 bgs. In Boring B-4, a highly plastic, very stiff to hard sandy clay was encountered at the surface and extends until

boring termination at 11.5 feet bgs. In Boring B-6, a surficial material of stiff sandy clay exists at the upper 1.5 feet, underlain by claystone bedrock, highly weathered, friable until boring termination at 8.5 bgs.

4. Conclusions

Based on this investigation, the site is suitable, from a geotechnical perspective, to receive the planned pipeline improvements provided the recommendations presented in the report are incorporated into the design and construction of the project.

4.1 Groundwater Conditions

Groundwater was not encountered at the time of drilling. Fluctuations in groundwater depths can vary due to seasonal rainfalls, subsurface stratifications, and site drainage and may be near the ground surface during the winter and springtime or after periods of heavy rain. The historical peak groundwater level of approximately 8.0 feet bgs was recorded according to the California Department of Water Resources' Water Data Library. During construction, excessive moisture or groundwater may be encountered, and shoring and dewatering methods may be required.

4.2 Corrosion

A soils corrosivity analysis was performed to assist in estimating the deterioration of buried ferrous metals and concrete. Corrosion testing was performed on samples from Borings B-1 and B-8 at a depth of approximately 2 feet bgs, and the results are summarized in the table below. Detailed laboratory test results are presented in Appendix C. Paragraph text.

Table 4.1 Soil Corrosion Results

Sample No.	Resistivity (ohm-cm)	pH	Redox Potential (mV)	Sulfides	Sulfates (ppm)	Chlorides (ppm)	Points
1-1B	2,800	7.13	(+) 450	Negative	18.0	9.9	2
8-1B	2,000	6.88	(+) 430	Negative	18.0	9.5	6

4.2.1 Corrosion Potential for Ferrous Metals

To evaluate the potential for external corrosion potential on ferrous metals from soil, the 10-point system in C105/A21.5 (ANSI/AWWA 1999) was used, which resulted in 2 and 6 points for the samples analyzed, largely due to the soil resistivity. The long life of historical unprotected pipe in soil with less than 10 points indicates a noncorrosive environment (Bonds 2005).

4.2.2 Corrosion Potential for Reinforced Concrete

According to ACI 318, a sulfate concentration less than 1,000 parts per million is considered "not applicable." Reinforced concrete exposed to elevated levels of water-soluble chlorides should be designed to minimize potential intrusion of chloride ions to the reinforcing steel per ACI 318; this is not anticipated to be an issue for the current project.

4.2.3 Summary of Results

The provided corrosion test results are only an indicator of potential soil corrosivity for the sample tested at the selected depth interval. It is possible that corrosion potential can vary by sample location and depth. Based on the results of the tested sample, the soil may be generally characterized as noncorrosive toward ferrous metals and concrete. A detailed analysis of the corrosion test results was not included in the scope of services and is, therefore, not included in this report. If a detailed analysis of the corrosion test results is needed, a corrosion engineer should be consulted.

5. Recommendations

5.1 Earthwork

5.1.1 Site Preparation

Where new improvements are planned, general site preparation should include removal of any existing pavement and aggregate base layer or the stripping of surface vegetation, including the root zone. Any fill material found in areas where work is to be performed should be removed and replaced with engineered fill, placed and compacted as recommended below. Voids or depressions created by the removal of buried objects should be cleaned of all loose soil and debris and backfilled with engineered fill, placed and compacted as described below.

5.1.2 Earthwork

5.1.2.1 General Subgrade Preparation

Where placement of compacted fill is planned, the subgrade should be scarified to a depth of at least 8 inches, moisture conditioned as necessary, and compacted as engineered fill. If unstable materials are encountered during construction, GHD geotechnical staff should be contacted to evaluate the conditions and confirm the stabilization method is appropriate given the conditions and provide alternative recommendations, as needed. Upon completion of subgrade preparation, engineered fill should be placed as described below.

5.1.2.2 Engineered Fill

Engineered fill should consist of a homogenous mixture of soil and rock free of vegetation, organic material, rubbish, and/or rubble. Highly plastic or organic soils should not be used for engineered fill but may be placed in landscape areas. It is anticipated that most of the soil generated from onsite excavations should be suitable for use as engineered fill.

Imported materials to be used as engineered fill should meet the specifications listed in the table below. GHD should be provided test results and observe and approve import fill submittal in writing prior to the material being brought on site.

Table 5.1 Import Fill Specifications

R-Value (CTM 301)	Atterberg Limits (ASTM D4318)	Particle Size (ASTM C136 or D422)
>20	PI < 20 LL < 40	100% passing the 2-inch sieve minimum of 85% passing the 2½-inch sieve maximum of 30% passing the #200 sieve

5.1.2.3 Compaction

Engineered fill should be moisture conditioned as necessary, placed in horizontal loose lifts not exceeding 8 inches in thickness, and compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D1557 for fills less than 5 feet in thickness. For fills thicker than 5 feet, fill should be compacted to 95 percent of the maximum dry density as determined by ASTM D1557. Placement of fill material should be verified by a GHD representative on a continuous basis. Nuclear density testing should be performed at a frequency of one per 5,000 cubic yards for mass fill and one per every 300 feet for linear backfill.

5.1.2.4 Trench Bedding and Backfill

Trench backfill should meet the engineered fill specifications detailed in Table 5.1 above. Trench backfill should be placed in lifts not exceeding 12 inches in thickness and compacted to 95 percent of ASTM D1557 by mechanical means only (no jetting). Pipe bedding should conform to the pipe manufacturer's or Civil Engineer's recommendations. Trench backfill should be compaction tested every lift at a frequency of 300 linear feet per lift.

5.2 Temporary Excavation

Where trenches or other excavations are extended deeper than 5 feet, experience saturated conditions or the presence of loose, clean sand, the sidewalls of the excavation may become unstable. Additionally, clays can appear to be stable when first exposed, but may lose strength overtime and may fail unpredictably if left unsupported. Shoring or sloping of trench walls may be necessary to provide stability and protect personnel. Shored excavations should be constructed from the top down in cuts and excavation of subsequent cuts should not be performed until shoring of the adjacent upper cut has been completed. Protection of workers and adjacent structures, shoring design, and the stability of all temporary slopes and open cut excavations should be contractually established as solely the responsibility of the contractor. It is the contractor's responsibility to follow OSHA temporary excavation guidelines and grade the slopes with adequate layback.

5.3 Shallow Foundations

5.3.1 Bearing Capacity

The proposed pipeline may be constructed aboveground to cross over Pescadero Creek near the existing bridge on Butano Cutoff. It is unknown if the pipeline will be connected to the existing bridge structure or cross over the creek independently. If an independent standalone configuration

is planned, we recommend supports for the pipeline should be on a shallow foundation system. We recommend the footings be founded on native or compacted fill at a minimum depth of 12 inches below grade. The foundation should be designed using allowable bearing capacities of 2,000 pounds per square foot (psf) for dead loads and 3,500 psf for dead plus live loads. The allowable bearing capacity can be increased by one-third for all loads including wind and seismic. Foundation design in accordance with the above criteria are expected to experience a total settlement up to ½ inch.

5.3.2 Passive Resistance

Passive earth resistance or passive earth pressure is the amount of resistance provided by the soil in response to a movement of a structure resulting in a compressive force upon the soil. A passive earth pressure of 350 pounds per cubic foot (pcf) should be used if the upper foot of soils is ignored. A friction coefficient of 0.32 is recommended.

5.4 Pavement

R-Value testing was performed on a bulk sample collected from Boring B-2. From the performed test, an R-Value was reported as < 5 due to soil extruded from the mold. Due to expected variations and for a more complete representation of the soil material in the area, an R-value of 20 should be used for design. Analyses were completed for TIs of 6, 7, and 8 and a pavement section consisting of Caltrans Class 2 Aggregate Base (AB) and Hot Mix Asphalt (HMA). Recommendations are presented in Table 5.2.

Table 5.2 Flexible Pavement Section Recommendations

Traffic Index	HMA Thickness (in)	Class 2 AB Thickness (in)
6	3½	9½
7	4	12
8	4½	14

5.5 Thrust Resistance

To determine thrust resistance, an equivalent passive fluid pressure of 300 pounds pcf should be used, assuming a minimum cover of 3 feet. The maximum pressure to be used is 3,000 psf.

5.6 Pipe Design

5.6.1 Unit Weights

Laboratory testing indicates that the moist unit weight of undisturbed native soil in this area ranges from approximately 105 to 115 pounds pcf. We recommend a unit weight of 110 pcf be used for pipeline design.

5.6.2 Load Coefficients

If Marston's formula is used in designing pipe to resist external loads, the value of the product "kμ'" may be taken as 0.165.

5.6.3 Modulus of Soil Reaction for Pipe Deflection Analysis

The Modulus of Soil Reaction values (E') have been estimated for initial backfill (embedment material) and for the anticipated native trench wall soils at the pipe springline (horizontal plane through the pipe center). Values of E' for native soils (E'_n) and initial backfill materials (E'_b) are used in combination to calculate flexible pipe deflections based on “Pipeline Installation” (Howard 2009). An E'_n value of 3,000 psi is estimated for stiff cohesive soils and an E'_b value of 1,500 psi may be used for native or imported sand backfill material compacted to at least 95 percent compaction, per ASTM D1557. Assuming the trench width is at least twice the pipe diameter, a composite E’ of 2,100 psi is recommended. If these values result in excessive calculated lateral deflection in flexible pipes, consideration should be given to widening the trench to provide more higher modulus backfill along the side of the pipe.

5.7 Seismic Design

The seismic design criteria for the site listed in the table below were developed in accordance with ASCE 7-16 based on the subsurface information obtained from the geotechnical investigation and the SEAOC/OSHPD website.

Table 5.3 Seismic Design Criteria

Parameter	Recommended Value	Reference (ASCE 7-16)
Site Class	D	Table 20.3-1
Mapped MCE spectral response at short period (S_S)	1.943 g	Figure 22-1
Mapped MCE spectral response at 1 sec period (S_1)	0.777 g	Figure 22-2
Site coefficient (F_a)	1.2	Table 11.4-1
Site coefficient (F_v)	NA	Table 11.4-2
MCE spectral response acceleration for short period (S_{MS})	2.331 g	Equation 11.4-1
MCE spectral response acceleration for 1 sec period (S_{M1})	NA	Equation 11.4-2
Design Spectral Acceleration for short period (S_{DS})	1.554 g	Equation 11.4-3
Design Spectral Acceleration for 1 sec period (S_{D1})	NA	Equation 11.4-4

5.8 Plan Review and Construction Observation

GHD geotechnical staff should review the project plans and specifications during the construction document phase to evaluate if they are consistent with the recommendations presented herein. Our conclusions and recommendations are contingent upon GHD being retained to provide intermittent observation and appropriate field and laboratory testing during site preparation to evaluate if the subsurface conditions are as anticipated. If the subsurface conditions are observed to be different from those described in this report, we should be notified immediately so that the changed conditions can be evaluated and our recommendations revised, if appropriate. The recommendations in this report are contingent upon our notification and review of changed conditions.

6. References

American Concrete Institute. 2014. “ACI 318-14 Building Code Requirements for Structural Concrete and Commentary.”

American Concrete Pavement Association. 2006. “Design of Concrete Pavement for Streets and Roads.”

American Society of Civil Engineers. 2017. “ASCE Standard 7-16, Minimum Design Loads for Buildings and Other Structures.”

ANSI/AWWA. 1999. “C105/A21.5, American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.”

Bonds et al. 2005. “Corrosion and Corrosion Control of Iron Pipe,” AWWA Journal 97.6.

California Department of Transportation (Caltrans). 2008. “Highway Design Manual.”

California Department of Water Resources’ Water Data Library (WDL) website. Accessed January 20, 2021. https://wdl.water.ca.gov

Howard, A.K. 2009. “Composite E′ (Modulus of Soil Reaction).”

Structural Engineers Association of California (SEAOC). OSHPD Seismic Design Maps, accessed January 13, 2021. https://seismicmaps.org

Watt, J.T. 2014. “Offshore and Onshore Geology and Geomorphology, Offshore of San Gregorio Map Area, California.”

7. Limitations

This Geotechnical Investigation (“Report”):

- Has been prepared by GHD for University Enterprises, Inc. (UEI) on behalf of the Town of Pescadero and San Mateo County under the professional supervision of those senior partners and/or senior staff whose seals and signatures appear herein
- May only be used and relied on by UEI, which is responsible to ensure that all relevant parties to the project, including designers, contractors, subcontractors, etc., are made aware of this report in its entirety
- Must not be copied to, used by, or relied on by any person other than UEI without the prior written consent of GHD
- May only be used for the purpose of engineering design of the proposed storm drain improvements at the project site described in this report (and must not be used for any other purpose)

GHD and its servants, employees and officers otherwise expressly disclaim responsibility to any person other than UEI arising from or in connection with this Report.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the Report are excluded unless they are expressly stated to apply in this Report.

The services undertaken by GHD in connection with preparing this Report:

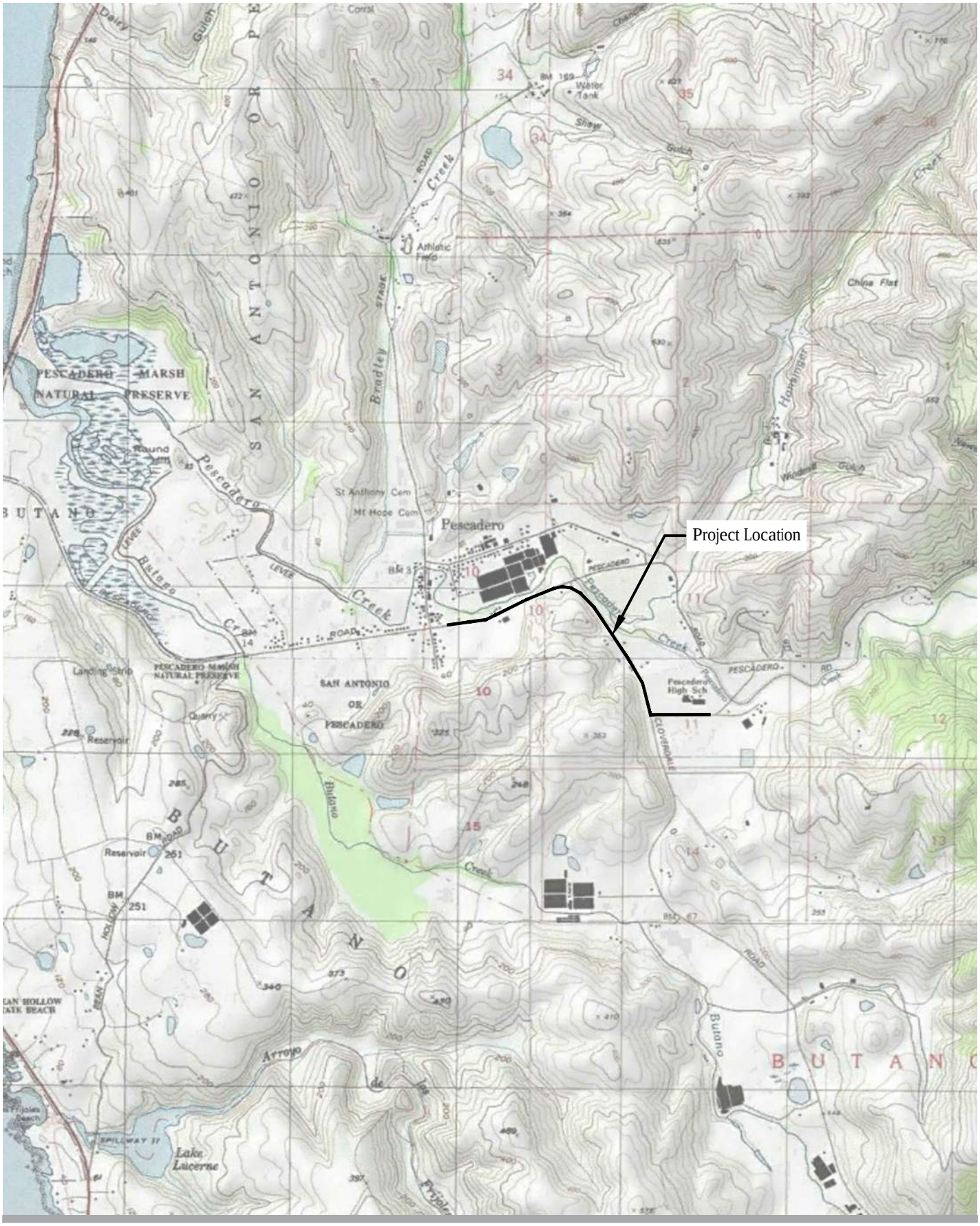
- In regard to site exploration and testing:
  - Site exploration and testing characterizes subsurface conditions only at the locations where the explorations or tests are performed; actual subsurface conditions between explorations may be different than those described in this report. Variations of subsurface conditions from those analyzed or characterized in this report are not uncommon and may become evident during construction. In addition, changes in the condition of the site can occur over time as a result of either natural processes (such as earthquakes, flooding, or changes in ground water levels) or human activity (such as construction adjacent to the site, dumping of fill, or excavating). If changes to the site's surface or subsurface conditions occur since the performance of the field work described in this report, or if differing subsurface conditions are encountered, we should be contacted immediately to evaluate the differing conditions to assess if the opinions, conclusions, and recommendations provided in this report are still applicable or should be amended.
- In regard to limitations:
  - Our scope of services was limited to the proposed work described in this report and did not address other items or areas.
  - The geotechnical investigation upon which this report is based was conducted for the proposed improvements at the project site described in this report. The conclusions and recommendations contained in this report are not valid for other improvements and/or project sites. If the proposed project is modified or relocated, or if the subsurface conditions found during construction differ from those described in this report, GHD should be provided the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations need revision.
- Did not include evaluation or investigation of the presence or absence of wetlands
- Did not include a landslide evaluation
- Did not include a fault investigation
- Did not include a hazardous material investigation

GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with any of the Assumptions being incorrect. There is no warranty, either expressed or implied. GHD accepts no liability regarding completeness or accuracy of the information presented and/or provided to us, or any conclusions and decisions which may be made by the client or others regarding the subject site/project. Verification of our conclusions and recommendations is subject to our review of the project plans and specifications, and our observations of construction.

Subject to the paragraphs in this section of the Report, the interpretations of data, findings, conclusions, recommendations, and professional opinions in this Report are based on the information reviewed, site conditions encountered, and samples collected during our field

exploration and were developed in accordance with generally accepted geotechnical engineering principles and practices and as prescribed by the client. This Report is considered valid for the proposed project for a period of two years from the report date provided that the site conditions and development plans remain unchanged. With the passage of time, changes in the conditions of a property can occur due to natural processes or the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Depending on the magnitude of any changes, GHD may require that additional studies (at additional cost) be performed and that an updated report be issued. Additional studies may disclose information which may significantly modify the findings of this report. GHD will retain untested samples collected during our field investigation for a period not to exceed 60 days unless other arrangements are made with the client. After a period of two years from the report date, GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with those opinions, conclusions, and any recommendations.

Appendix A
Figures



1 in = 0.5 mile

0 0.25 0.5

Miles

Map Projection: Universal Transverse Mercator
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 2011 State Plane California III

N

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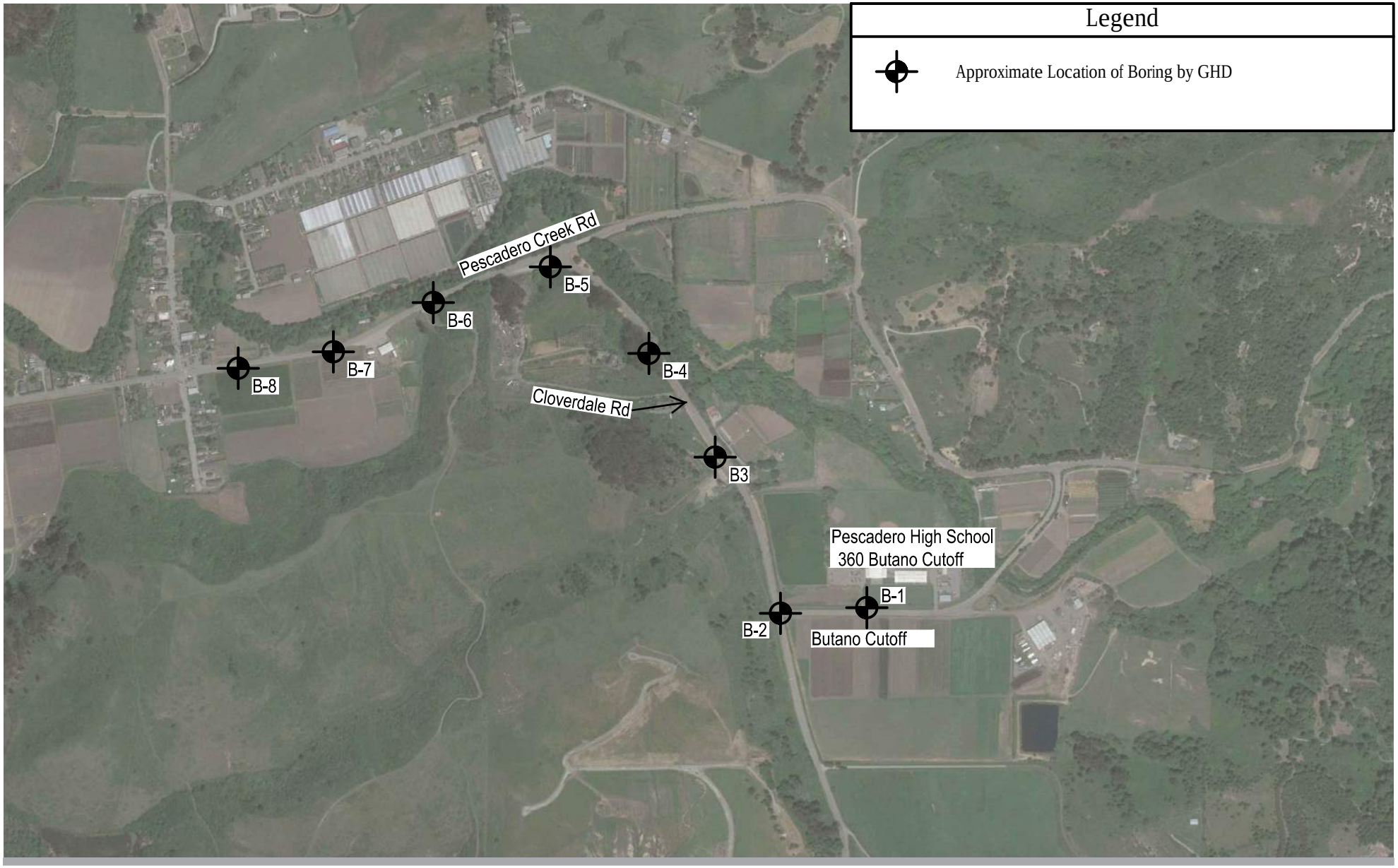
Pescadero High School Water
System Improvement
Pescadero, CA

Vicinity Map

Project No. 11213964
Report No.
Date 01/13/2021

Figure A-1

Filename: N:\US\Emeryville\Projects\561\11213964\Tech\Geotech\CAD\Figures\x11213964-Fig A-1 Vicinity Map.dwg
Plot Date: 13 January 2021 - 1:31 PM



N

0 1000' 2000'

Scale: 1" = 1000'

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Pescadero High School
Water System Improvement
Pescadero, CA

Exploration Map

Project No. 11213964
Report No.
Date 01/13/2021

Figure A-2

Filename: N:\US\Emeryville\Projects\561\11213964\Tech\Geotech\CAD\Figures\x11213964-Fig A-2 Exploration Map.dwg
Plot Date: 13 January 2021 - 1:33 PM

Appendix B
Logs of Borings

EMPIRICAL CORRELATIONS WITH STANDARD PENETRATION RESISTANCE N VALUES*

FINE GRAINED SOIL	N_{60}* (Blows/ft)	Consistency	Unconfined Compressive Strength (tons/sq ft)
	0 - 2	Very Soft	<0.25
	3 - 4	Soft	0.25 - 0.50
	5 - 8	Medium Stiff	0.50 - 1.00
	9 - 15	Stiff	1.00 - 2.00
	16 - 30	Very Stiff	2.00 - 4.00
	>30	Hard	>4.00

COARSE GRAINED SOIL	N_{60}* (Blows/ft)	Relative Density
	0 - 4	Very Loose
	5 - 10	Loose
	11 - 30	Medium Dense
	31 - 50	Dense
	>50	Very Dense

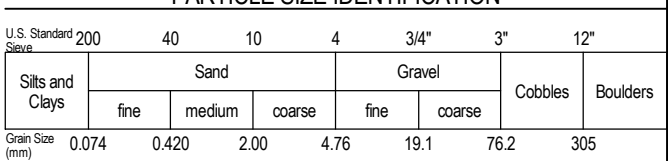
*ASTM D 1586; number of blows of 140 pound hammer falling 30 inches to drive a 2-inch-O.D., 1.4-inch-I.D. sampler one foot.

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

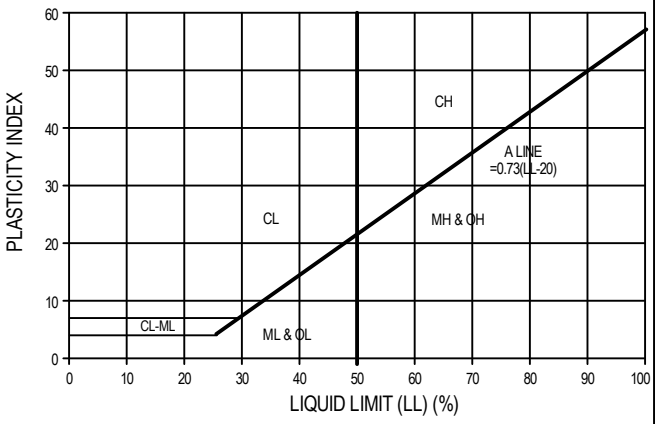
MAJOR DIVISIONS			SYMBOLS	DESCRIPTIONS
COARSE-GRAINED SOIL	GRAVELS	CLEAN GRAVELS	GW	Well-graded Gravels, Gravel - Sand Mixtures, Little Or No Fines
		<5% Fines	GP	Poorly-Graded Gravels, Gravel - Sand Mixtures, Little Or No Fines
	More Than 50% Of Coarse Fraction Retained On No. 4 Sieve	GRAVELS WITH FINES	GM	Silty Gravels, Gravel - Sand - Silt Mixtures
		>12% Fines	GC	Clayey Gravels, Gravel - Sand - Clay Mixtures
More Than 50% Of Material Is Retained On No. 200 Sieve	SANDS	CLEAN SANDS	SW	Well-Graded Sands, Gravelly Sands, Little Or No Fines
		<5% Fines	SP	Poorly-Graded Sands, Gravelly Sand, Little Or No Fines
	More Than 50% Of Coarse Fraction Passing No. 4 Sieve	SANDS WITH FINES	SM	Silty Sands, Sand - Silt Mixtures
		>12% Fines	SC	Clayey Sands, Sand - Clay Mixtures
FINE-GRAINED SOIL	SILTS AND CLAYS	LL < 50	ML	Inorganic Silts And Very Fine Sands, Rock Flour, Silty Or Clayey Fine Sands Or Clayey Silts With Slight Plasticity
			CL	Inorganic Clays Of Low To Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays
			OL	Organic Silts And Organic Silty Clays Of Low Plasticity
50% Or More Of Material Passes No. 200 Sieve		LL > 50	MH	Inorganic Silts, Micaceous Or Diatomaceous Fine Sand Or Silty Soils
			CH	Inorganic Clays Of High Plasticity
			OH	Organic Clays Of Medium To High Plasticity, Organic Silts
HIGHLY ORGANIC SOIL			PT	Peat, Humus, Swamp Soils With High Organic Contents

Note: Dual Symbols Are Used To Indicate Borderline Soil Classifications

PARTICLE SIZE IDENTIFICATION



PLASTICITY CHART



MOISTURE DESCRIPTION

Saturated
Wet
Moist
Damp
Dry

SOIL DESCRIPTION FORMAT

Color, Secondary Component, PRIMARY COMPONENT (USCS), gradation plasticity, with component, trace component, consistency/relative density, moisture, source.

SAMPLE SYMBOLS

- SPT (1.375 I.D.)
- California (2.0-inch I.D.)
- Modified California (2.5-inch I.D.)
- Direct Push
- Shelby Tube
- Rock Core

WELL SYMBOLS

- Cement Grout
- Bentonite
- Filter Sand
- Screen in filter sand
- Slough

WATER LEVEL SYMBOLS

- Water level at time of drilling.
- Water level measured at a specified time after drilling and sampling or well completion.

GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual. Field descriptions may have been modified to reflect results of laboratory tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations.

ABBREVIATIONS

CD = TX-CD	NR = No Recovery
CN = Consolidation	PR = Permeability
CR = Corrosivity	RV = R-Value
CU = TX-CU	TC = Cyclic Triaxial
DS = Direct Shear	UC = Unconfined Compression
EI = Expansion Index	UU = TX-UU (quick)
MDD = Maximum Density	ATD = At Time of Drilling

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Soil Boring Key

Project No. 11213964
Revision No.
Date 1/21/2021

Start Date:	**12/01/20**			Total Depth Drilled (ft bgs):	**12.5**
Drilling Method:	**8-inch Hollow Stem Auger**		Drilling Contractor: **Clear Heart Drilling**	Arbitrary Ground Surface Elevation (ft MSL):	
Drill Rig:	**DR7K**		Hammer Type/ Efficiency: **Automatic Trip/ 90%**	Hammer Weight / Drop:	**140# / 30"**
Logged By:	**Eric Smith**	Reviewed By: **T. Quintrall**	Borehole Backfill: **Bentonite**	Groundwater Depth (ft):	**Not Encountered ATD**
Remarks:					

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N_{60}	Recovery (in)	Water Content (%)	Dry Density (pcf)	% Passing No. 200 Sieve
	0	Dark Brown Lean CLAY (CL), low to medium plasticity, with fine-grained sand, medium stiff, damp to moist									
	1				1-1A	3					
	2				1-1B	3 4	7	18	26	75	
	3										
	4	low plasticity, very stiff			1-2A	6					
	5				1-2B	11 13	23	18			77
	6										
	7										
	8				1-3A	3					
	9	medium stiff			1-3B	4 4	8	18	35	83	
	10										
	11										
	12				1-4A	3					
	13	Boring Terminated @ 12.5 feet bgs			1-4B	3 3	6	6			
	14										
	15										
	16										
	17										
	18										
	19										

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Log of Boring

Project No. 11213964
Revision No.
Date 1/21/2021

B-1

Start Date:	**12/01/20**			Total Depth Drilled (ft bgs):	**19.5**
Drilling Method:	**8-inch Hollow Stem Auger**		Drilling Contractor: **Clear Heart Drilling**	Arbitrary Ground Surface Elevation (ft MSL):	
Drill Rig:	**DR7K**		Hammer Type/ Efficiency: **Automatic Trip/ 90%**	Hammer Weight / Drop:	**140# / 30"**
Logged By:	**Eric Smith**	Reviewed By: **T. Quintrall**	Borehole Backfill: **Bentonite**	Groundwater Depth (ft):	**Not Encountered ATD**
Remarks:					

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N_{60}	Recovery (in)	Water Content (%)	Dry Density (pcf)	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	Other Tests
		2-inches AC and 6-inches AB												
	1	Grayish Brown Gravely SAND (SW), fine- to coarse-grained, with clay, low plasticity, very dense, moist			2-1A	19								
	2				2-1B	34 34	66	18						
	3	Dark Brown Lean CLAY (CL), medium plasticity, medium stiff, moist												
	4				2-2A	3 3	7	18				42	18	
	5	Gray Brown CLAY (CH) high plasticity, medium stiff, moist			2-2B	4								DS
	6													
	7													
	8	stiff			2-3A 2-3B	3 5 7	12	18	42	76				
	9													
	10													
	11													
	12				2-4A 2-4B	4 4 6	10	18	46	76	89			
	13													
	14													
	15													
	16													
	17													
	18													
	19	medium stiff			2-5A 2-5B	2 2 3	6	18	58	64	95			
		Boring Termination @ 19.5 feet bgs												

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Pescadero High School Water System Improvement
Pescadero, CA

Log of Boring

Project No. **11213964**
Revision No.
Date **1/21/2021**

B-2

Start Date:	**12/01/20**			Total Depth Drilled (ft bgs):	**13.0**
Drilling Method:	**8-inch Hollow Stem Auger**		Drilling Contractor: **Clear Heart Drilling**	Arbitrary Ground Surface Elevation (ft MSL):	
Drill Rig:	**DR7K**		Hammer Type/ Efficiency: **Automatic Trip/ 90%**	Hammer Weight / Drop:	**140# / 30"**
Logged By:	**Eric Smith**	Reviewed By: **T. Quintrall**	Borehole Backfill: **Bentonite**	Groundwater Depth (ft):	**Not Encountered ATD**
Remarks:					

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N_{60}	Recovery (in)	Water Content (%)	Dry Density (pcf)	% Passing No. 200 Sieve
	0	Dark Brown Clayey SAND (SC), fine-grained, low plasticity, with gravel, dense, moist									
	1										
	2					25					
	3				3-1A	25	38	16			35
	4				3-1B	14					
	5	Dark Brown Sandy CLAY (CL), low to medium plasticity, hard, moist									
	6										
	7					9					
	8				3-2A	14	32	16	21	96	
	9				3-2B	19					
	10	Light Brown Lean Clay (CL), low to medium plasticity, with fine-grained sand, hard, moist				8					
	11				3-3A	12	26	16			
	12				3-3B	13					
	13	Boring Terminated @ 13.0 feet bgs				5					
	14				3-4	9	35	18			
	15					12					
	16										
	17										
	18										
	19										

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Log of Boring

Project No. 11213964
Revision No.
Date 1/21/2021

B-3

Start Date:	12/01/20			Total Depth Drilled (ft bgs):	11.5
Drilling Method:	8-inch Hollow Stem Auger		Drilling Contractor:	Clear Heart Drilling	Arbitrary Ground Surface Elevation (ft MSL):
Drill Rig:	DR7K		Hammer Type/ Efficiency:	Automatic Trip/ 90%	Hammer Weight / Drop: 140# / 30"
Logged By:	Eric Smith	Reviewed By: T. Quintrall	Borehole Backfill:	Bentonite	Groundwater Depth (ft): Not Encountered ATD
Remarks:					

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N_{60}	Recovery (in)	Water Content (%)	Dry Density (pcf)	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index
	0	Dark Brown Sandy CLAY (CH), fine-grained, high plasticity, hard, moist											
	1												
	2				4-1A	11							
	3				4-1B	20 19	38	18	14	102	69		
	4												
	5												
	6												
	7				4-2A	8							
	8	very stiff			4-2B	13 17	29	18				54	29
	9												
	10												
	11	hard			4-3A	8 16	37	16					
					4-3B	20							
	12	Boring Terminated @ 11.5 feet bgs											
	13												
	14												
	15												
	16												
	17												
	18												
	19												

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University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Log of Boring

Project No. 11213964
Revision No.
Date 1/21/2021

B-4

Start Date:	**12/01/20**			Total Depth Drilled (ft bgs):	**10.0**
Drilling Method:	**8-inch Hollow Stem Auger**		Drilling Contractor: **Clear Heart Drilling**	Arbitrary Ground Surface Elevation (ft MSL):	
Drill Rig:	**DR7K**		Hammer Type/ Efficiency: **Automatic Trip/ 90%**	Hammer Weight / Drop:	**140# / 30"**
Logged By:	**Eric Smith**	Reviewed By: **T. Quintrall**	Borehole Backfill: **Bentonite**	Groundwater Depth (ft):	**Not Encountered ATD**

Remarks:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N_{60}	Recovery (in)	Water Content (%)	Dry Density (pcf)	% Passing No. 200 Sieve
	0	Brown Gravely SAND (SW), fine- to coarse-grained, with clay, medium dense, damp to moist									
	1										
	2				5-1A	16					
	3				5-1B	7 6	13	8			
	4	Dark Brown Lean CLAY (CL), low to medium plasticity, with fine-grained sand, very stiff, moist									
	5					7					
	6				5-2A	10 14	23	8			77
	7										
	8										
	9				5-3A	8 12	26	10			
	10	Boring Terminated @ 10.0 feet bgs			5-3B	15			28	95	
	11										
	12										
	13										
	14										
	15										
	16										
	17										
	18										
	19										

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Log of Boring

Project No. **11213964**
Revision No.
Date **1/21/2021**

B-5

Start Date:	**12/02/20**			Total Depth Drilled (ft bgs):	**8.5**
Drilling Method:	**8-inch Hollow Stem Auger**		Drilling Contractor: **Clear Heart Drilling**	Arbitrary Ground Surface Elevation (ft MSL):	
Drill Rig:	**DR7K**		Hammer Type/ Efficiency: **Automatic Trip/ 90%**	Hammer Weight / Drop:	**140# / 30"**
Logged By:	**Eric Smith**	Reviewed By: **T. Quintrall**	Borehole Backfill: **Bentonite**	Groundwater Depth (ft):	**Not Encountered ATD**
Remarks:					

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N_{60}	Recovery (in)	Water Content (%)	Dry Density (pcf)
	0	Dark Brown Sandy Clay (CL), fine-grained, low plasticity, moist								
	1									
	2	Tan Claystone Bedrock (BR) highly weathered, friable, moist			6-1A 6-1B	15 30 50-6"		18		
	3									
	4				6-2A 6-2B	21 42 50-6"		18	22	101
	5									
	6									
	7				6-3A 6-3B	22 35 50-6"		18		
	8									
	9	Boring Terminated @ 8.5 feet bgs								
	10									
	11									
	12									
	13									
	14									
	15									
	16									
	17									
	18									
	19									

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Log of Boring

Project No. 11213964
Revision No.
Date 1/21/2021

B-6

Start Date:	**12/02/20**			Total Depth Drilled (ft bgs):	**11.5**
Drilling Method:	**8-inch Hollow Stem Auger**		Drilling Contractor: **Clear Heart Drilling**	Arbitrary Ground Surface Elevation (ft MSL):	
Drill Rig:	**DR7K**		Hammer Type/ Efficiency: **Automatic Trip/ 90%**	Hammer Weight / Drop:	**140# / 30"**
Logged By:	**Eric Smith**	Reviewed By: **T. Quintrall**	Borehole Backfill: **Bentonite**	Groundwater Depth (ft):	**Not Encountered ATD**
Remarks:					

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N_{60}	Recovery (in)	Water Content (%)	Dry Density (pcf)
	0	Light Brown Sandy CLAY (CL), fine-grained, low plasticity, with gravel, very stiff, damp (Fill)								
	1				7-1A	15				
	2				7-1B	11 13	23	8	9	
	3									
	4	Brown Sandy CLAY (CL), fine-grained, low plasticity, very stiff, moist			7-2A	13 11	20	6		
	5				7-2B	10				
	6									
	7									
	8									
	9				7-3A	11 14	30	12		
	10	hard			7-3B	17			19	93
	11	very stiff			7-4	4 5 5	17	16		
	12	Boring Terminated @ 11.5 feet bgs								
	13									
	14									
	15									
	16									
	17									
	18									
	19									

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Log of Boring

Project No. 11213964
Revision No.
Date 1/21/2021

B-7

Start Date:	**12/02/20**			Total Depth Drilled (ft bgs):	**10.0**
Drilling Method:	**8-inch Hollow Stem Auger**		Drilling Contractor: **Clear Heart Drilling**	Arbitrary Ground Surface Elevation (ft MSL):	
Drill Rig:	**DR7K**		Hammer Type/ Efficiency: **Automatic Trip/ 90%**	Hammer Weight / Drop:	**140# / 30"**
Logged By:	**Eric Smith**	Reviewed By: **T. Quintrall**	Borehole Backfill: **Bentonite**	Groundwater Depth (ft):	**Not Encountered ATD**
Remarks:					

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N_{60}	Recovery (in)	Water Content (%)	Dry Density (pcf)	% Passing No. 200 Sieve
	0	Dark Brown Sandy CLAY (CL), fine-grained, low plasticity, medium stiff, moist									
	1				8-1A	3					
	2				8-1B	3 4	7	10	25	95	60
	3										
	4				8-2A	6					
	5	very stiff			8-2B	10 13	22	10			
	6										
	7										
	8										
	9				8-3A	6					
	10				8-3B	9 9	18	8			
	11										
	12										
	13	Boring Terminated @ 12.5 feet bgs									
	14										
	15										
	16										
	17										
	18										
	19										

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Log of Boring

Project No. 11213964
Revision No.
Date 1/21/2021

B-8

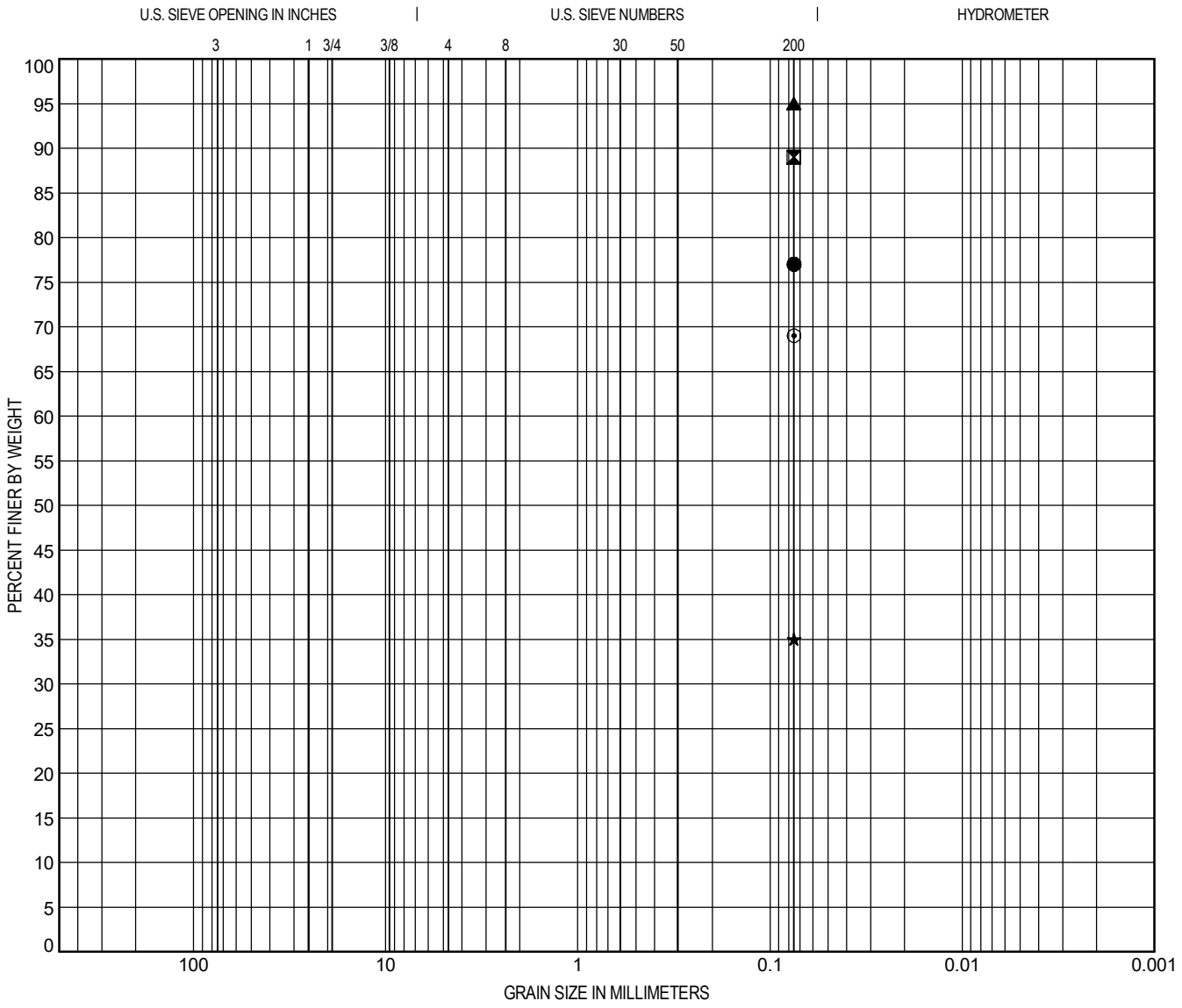
Appendix C
Geotechnical Laboratory Test Results

Boring ID	Depth (ft)	Description	Water Content (%)	Dry Density (pcf)	Maximum Size (mm)	%<#200 Sieve	Liquid Limit	Plastic Limit	Plasticity Index	Other Tests
B-1	1.5	Dark Brown Lean CLAY (CL) with sand	25.5	75.3						
B-1	4.5	Dark Brown Lean CLAY (CL) with sand			0.075	77				
B-1	8.5	Dark Brown Lean CLAY (CL) with sand	34.9	82.8						
B-2	4.0	Dark Brown Lean CLAY (CL)					42	24	18	
B-2	4.5	Gray Brown CLAY (CH)								DS
B-2	7.5	Gray Brown CLAY (CH)	41.8	76.4						
B-2	11.5	Gray Brown CLAY (CH)	46.1	75.9						
B-2	12.0	Gray Brown CLAY (CH)			0.075	89				
B-2	18.5	Gray Brown CLAY (CH)			0.075	95				
B-2	19.0	Gray Brown CLAY (CH)	58.2	64.4						
B-3	3.0	Brown Clayey SAND (SC) with gravel			0.075	35				
B-3	7.5	Dark Brown Sandy CLAY (CL)	20.9	96.1						
B-4	2.5	Dark Brown Sandy CLAY (CH)			0.075	69				
B-4	3.0	Dark Brown Sandy CLAY (CH)	14.2	101.9						
B-4	7.5	Dark Brown Sandy CLAY (CH)					54	25	29	
B-5	6.0	Dark Brown Lean CLAY (CL) with sand			0.075	77				
B-5	9.5	Dark Brown Lean CLAY (CL) with sand	27.5	95.0						
B-6	4.0	Tan Claystone Bedrock (BR)	21.8	101.4						
B-7	1.5	Light Brown Sandy CLAY (CL) with gravel	9.0							
B-7	9.5	Brown Sandy CLAY (CL)	19.2	93.2						
B-8	1.5	Dark Brown Sandy CLAY (CL)			0.075	60				
B-8	2.0	Dark Brown Sandy CLAY (CL)	25.1	95.0						

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Summary of Laboratory Results

Project No. 11213964
Revision No.
Date 1/21/2021



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

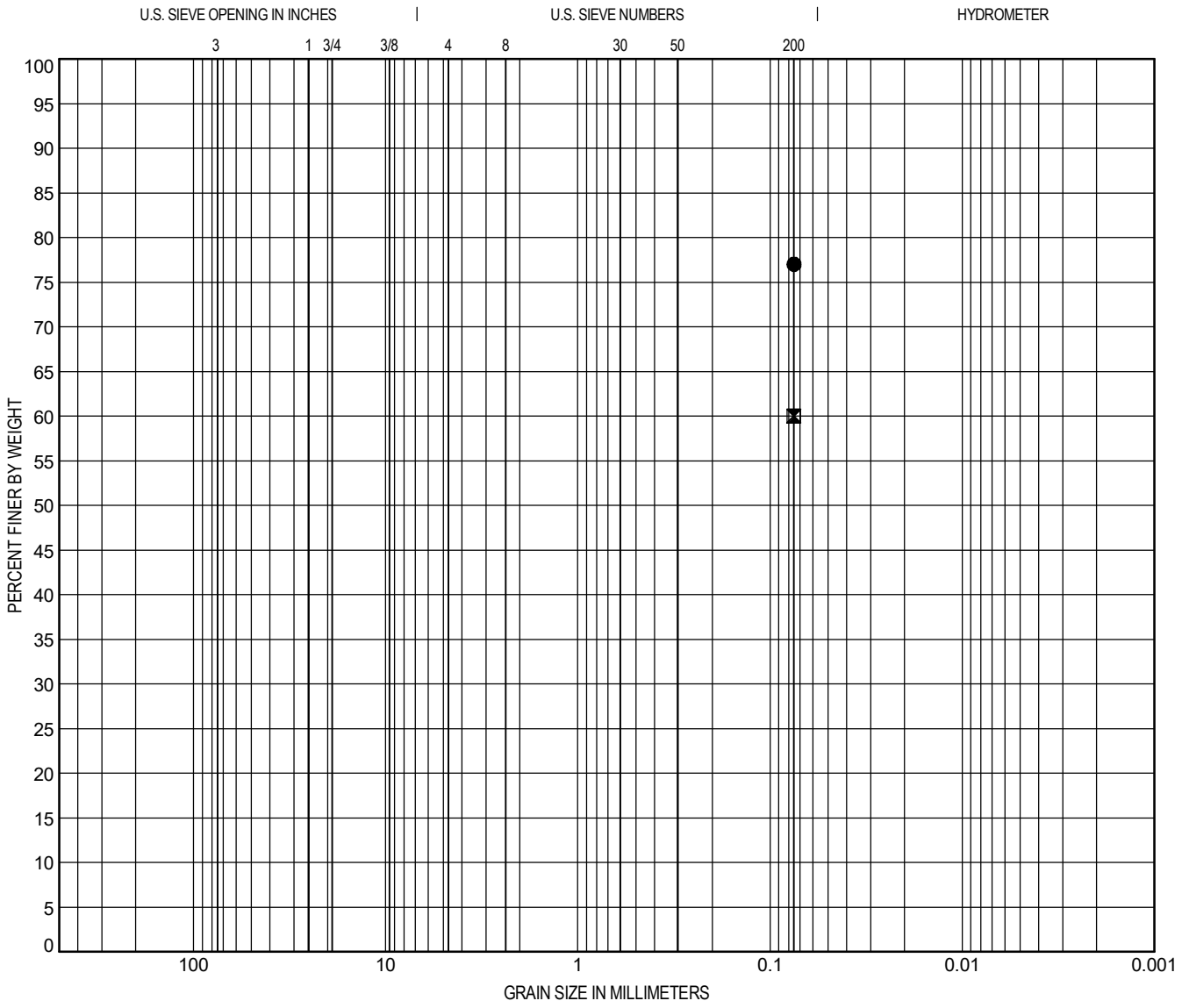
	Specimen Identification		Classification	LL	PL	PI	C_c	C_u
●	B-1	4.5	Dark Brown Lean CLAY (CL) with sand					
⊠	B-2	12.0	Gray Brown CLAY (CH)					
▲	B-2	18.5	Gray Brown CLAY (CH)					
★	B-3	3.0	Brown Clayey SAND (SC) with gravel					
⊙	B-4	2.5	Dark Brown Sandy CLAY (CH)					

	Specimen Identification		D_{100}	D_{90}	D_{85}	D_{50}	D_{15}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-1	4.5	0.075						0.0	0.0	77.0	
⊠	B-2	12.0	0.075						0.0	0.0	89.0	
▲	B-2	18.5	0.075						0.0	0.0	95.0	
★	B-3	3.0	0.075						0.0	0.0	35.0	
⊙	B-4	2.5	0.075						0.0	0.0	69.0	

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Sieve Analysis

Project No. 11213964
Revision No.
Date 1/21/2021



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

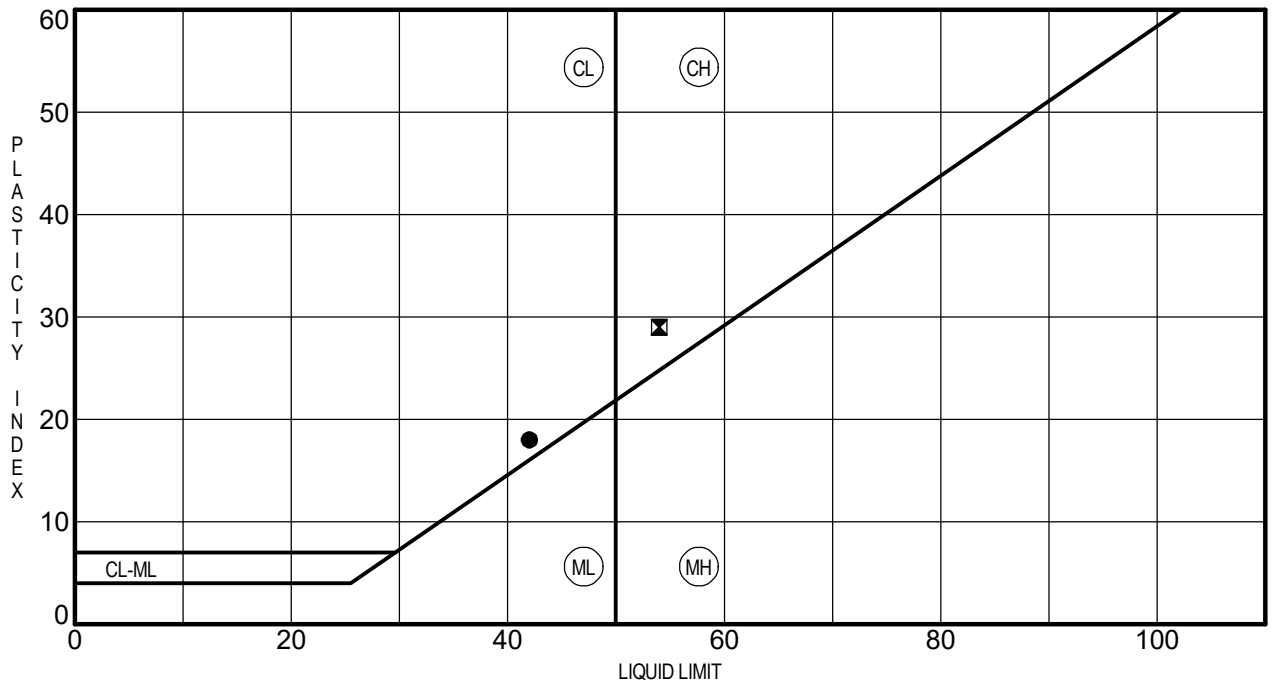
	Specimen Identification		Classification	LL	PL	PI	C_c	C_u
●	B-5	6.0	Dark Brown Lean CLAY (CL) with sand					
⊠	B-8	1.5	Dark Brown Sandy CLAY (CL)					

	Specimen Identification		D_{100}	D_{90}	D_{85}	D_{50}	D_{15}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-5	6.0	0.075						0.0	0.0	77.0	
⊠	B-8	1.5	0.075						0.0	0.0	60.0	

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

Sieve Analysis

Project No. 11213964
Revision No.
Date 1/21/2021



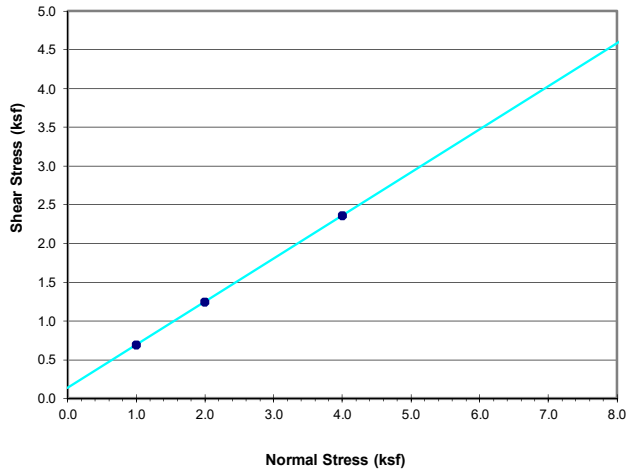
	Specimen Identification		LL	PL	PI	Fines	Classification
●	B-2	**4.0'**	42	24	18		Dark Brown Lean CLAY (CL)
⊠	B-4	**7.5'**	54	25	29		Dark Brown Sandy CLAY (CH)

University Enterprises, Inc.
Pescadero High School Water System Improvement
Pescadero, CA

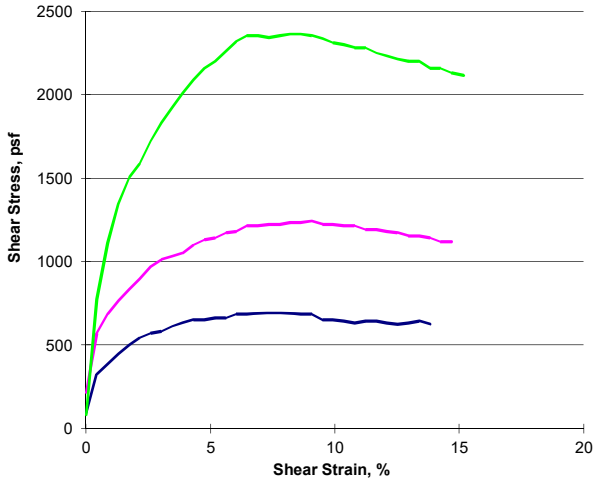
Atterberg Limits' Results

Project No. 11213964
Revision No.
Date 1/21/2021

SHEAR STRENGTH



STRESS-STRAIN

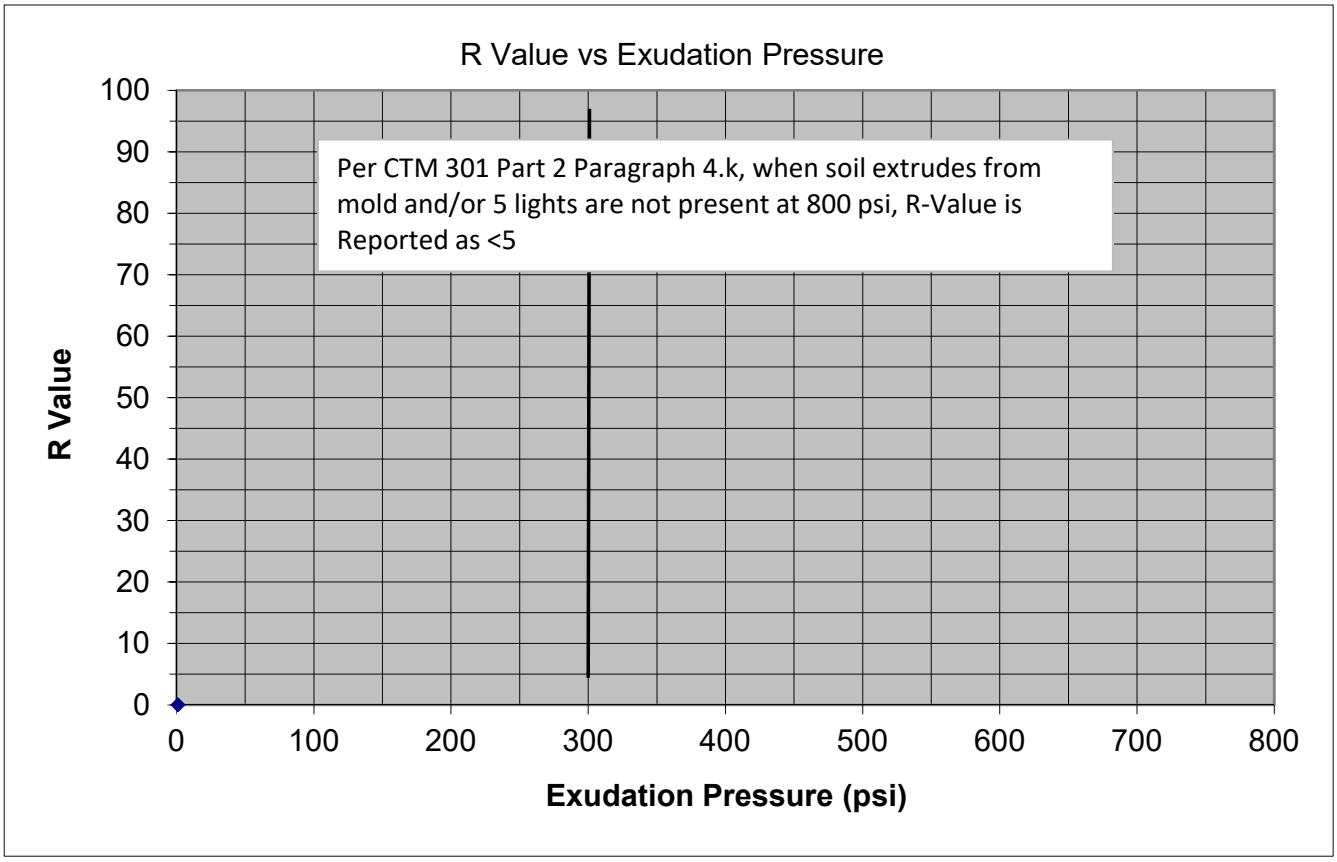


Sample Description			
Boring Number	2-2b		
Sample Depth (feet)			
Material Description	Black Fat CLAY/Organic lean CLAY		
Initial Conditions at Start of Test			
Sample ID (psf)	**1000**	**2000**	**4000**
Height (inch)	1.00	1.00	1.00
Diameter (inch)	2.363	2.363	2.363
Moisture Content (%)	41.6	47.9	50.0
Wet Density (pcf)	105.4	104.0	101.4
Dry Density (pcf)	74.5	70.3	67.6
Estimated Specific Gravity	2.75	2.75	2.75
Saturation (%)	87.7	91.4	89.3
Shear Test Conditions			
Strain Rate (%/min)	0.036	0.045	0.035
Major Principal Stress at Failure (psf)	692	1242	2362
Strain at Failure (%)	6.91	9.07	8.21
Test Results			
ϕ, degrees	**29.1**		
c, psf	**140**		

GEOCON CONSULTANTS, INC.
Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova, California 95742
Telephone: (916) 852-9118
Fax: (916) 852-9132

Direct Shear Strength Test (ASTM D3080)

Project: Pescadero Water
Location: Pescadero, CA
Number: S1515-05-45
Figure:



Sample ID & Description		
Boring Number	Composite Bulk Sample	
Sample Depth (feet)	NA	
Material Description	Brown Lean/Fat CLAY	
Test Data		
Specimen	7	
Exudation Pressure (psi)	extrude	
Expansion Dial (.0001")	9	
Expansion Pressure (psf)	39.0	
Resistance 'R' Value	<5	
Moisture at test (%)	18.9	
Dry density at test (pcf)	107.4	
R Value at 300 psi exudation pressure		**<5**
R Value by expansion pressure (TI=5.0)		**--**
R Value by Equillibrium		**<5**

Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova, California 95742
Telephone: (916) 852-9118
Fax: (916) 852-9132

Resistance "R" Value, ASTM D2844, CTM 301

Project:	Pescadero Water
Location:	Pescadero, CA
Number:	S1739-05-01
Figure:	

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

December 21, 2020

CLS Work Order #: 20L0721
COC #:

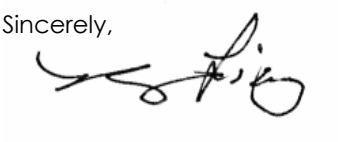
Eric Smith
GHD Inc.
4080 Plaza Goldorado Circle, Suite B
Cameron Park, CA 95682

Project Name: Pescadero WtR. Improv.

Enclosed are the results of analyses for samples received by the laboratory on 12/14/20 11:30. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

GHD Inc.	Project:	Pescadero WtR. Improv.	
4080 Plaza Goldorado Circle, Suite B	Project Number:	11213964	**CLS Work Order #: 20L0721**
Cameron Park, CA 95682	Project Manager:	Eric Smith	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1-1B (20L0721-01) Soil Sampled: 12/14/20 11:30 Received: 12/14/20 11:30									
Chloride	**9.9**	5.0	mg/kg	1	2010224	12/16/20	12/16/20	EPA 300.0	
Oxidation/Reduction Potential	**450**		mV	"	2010266	12/17/20	12/17/20	SM 2580	
pH	**7.13**	0.01	pH Units	"	2010190	12/15/20	12/15/20	EPA 9045C	
Specific Conductance (EC)	**28**	1.0	µmhos/cm	"	2010280	12/17/20	12/17/20	EPA 120.1	
Sulfate as SO4	**18**	5.0	mg/kg	"	2010224	12/16/20	12/16/20	EPA 300.0	
Sulfide	ND	10	"	"	2010236	12/16/20	12/16/20	EPA 9030B	
8-1B (20L0721-02) Soil Sampled: 12/14/20 11:30 Received: 12/14/20 11:30									
Chloride	**9.5**	5.0	mg/kg	1	2010224	12/16/20	12/16/20	EPA 300.0	
Oxidation/Reduction Potential	**430**		mV	"	2010266	12/17/20	12/17/20	SM 2580	
pH	**6.88**	0.01	pH Units	"	2010190	12/15/20	12/15/20	EPA 9045C	
Specific Conductance (EC)	**20**	1.0	µmhos/cm	"	2010280	12/17/20	12/17/20	EPA 120.1	
Sulfate as SO4	**18**	5.0	mg/kg	"	2010224	12/16/20	12/16/20	EPA 300.0	
Sulfide	ND	10	"	"	2010236	12/16/20	12/16/20	EPA 9030B	

GHD Inc.	Project:	Pescadero WtR. Improv.
4080 Plaza Goldorado Circle, Suite B	Project Number:	11213964
Cameron Park, CA 95682	Project Manager:	Eric Smith

CLS Work Order #: 20L0721
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2010224 - General Preparation										
Blank (2010224-BLK1)				Prepared & Analyzed: 12/16/20						
Sulfate as SO4	ND	5.0	mg/kg							
Chloride	ND	5.0	"							
LCS (2010224-BS1)				Prepared & Analyzed: 12/16/20						
Sulfate as SO4	49.0	5.0	mg/kg	50.0		98	75-125			
Chloride	48.6	5.0	"	50.0		97	75-125			
LCS Dup (2010224-BSD1)				Prepared & Analyzed: 12/16/20						
Sulfate as SO4	50.5	5.0	mg/kg	50.0		101	75-125	3	25	
Chloride	49.8	5.0	"	50.0		100	75-125	2	25	
Matrix Spike (2010224-MS1)	**Source: 20L0721-01**			Prepared & Analyzed: 12/16/20						
Sulfate as SO4	64.3	5.0	mg/kg	50.0	17.7	93	75-125			
Chloride	57.1	5.0	"	50.0	9.87	95	75-125			
Matrix Spike Dup (2010224-MSD1)	**Source: 20L0721-01**			Prepared & Analyzed: 12/16/20						
Sulfate as SO4	65.0	5.0	mg/kg	50.0	17.7	95	75-125	1	30	
Chloride	57.9	5.0	"	50.0	9.87	96	75-125	1	30	
Batch 2010236 - General Prep										
Blank (2010236-BLK1)				Prepared & Analyzed: 12/16/20						
Sulfide	ND	10	mg/kg							
LCS (2010236-BS1)				Prepared & Analyzed: 12/16/20						
Sulfide	120	10	mg/kg	133		90	50-120			

GHD Inc.	Project:	Pescadero WtR. Improv.	
4080 Plaza Goldorado Circle, Suite B	Project Number:	11213964	**CLS Work Order #: 20L0721**
Cameron Park, CA 95682	Project Manager:	Eric Smith	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2010236 - General Prep										
LCS Dup (2010236-BSD1)				Prepared & Analyzed: 12/16/20						
Sulfide	120	10	mg/kg	133		90	50-120	0	25	
Batch 2010280 - General Prep										
Blank (2010280-BLK1)				Prepared & Analyzed: 12/17/20						
Specific Conductance (EC)	ND	1.0	µmhos/cm							

GHD Inc.	Project:	Pescadero WtR. Improv.	
4080 Plaza Goldorado Circle, Suite B	Project Number:	11213964	**CLS Work Order #: 20L0721**
Cameron Park, CA 95682	Project Manager:	Eric Smith	COC #:

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Anthony Quintrall
Anthony.Quantrall@ghd.com
530.313.8234

Eric S. Smith
Eric.Smith@ghd.com
530.387.5710

www.ghd.com

Appendix G
Utility Locating – Pothole Depth Report

UTILITY LOCATING
POTHOLE DEPTH REPORT
BTL P50-0-2186

SPECIALLY PREPARED FOR:

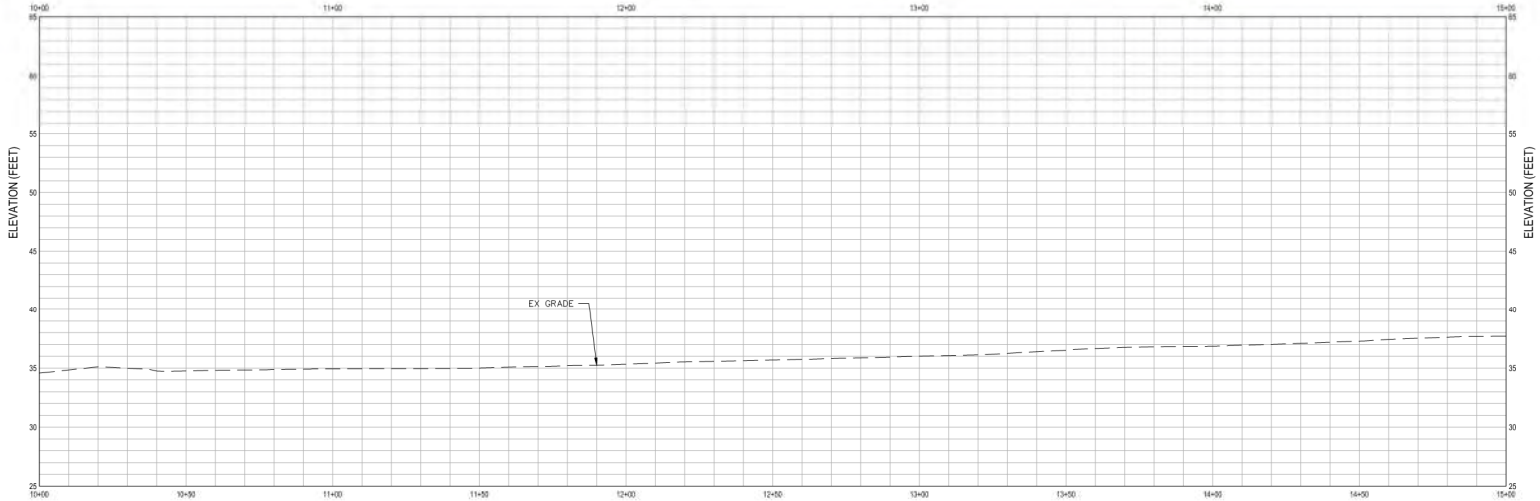
PROJECT SITE:

Pescadero, California

TABLE OF CONTENTS

Bess Testlab Inc.
2463 Tripaldi Way
Hayward, CA 94545
Submitted By: Michael Bohorquez
Office: (408) 988-0101
Email: Michael@besstestlab.com

PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE:

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL **PESCADERO CREEK RD - PLAN AND PROFILE 1**
		CHECKED BY: DM	
		DRAWN BY: CB	
REVISION	DATE	JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063

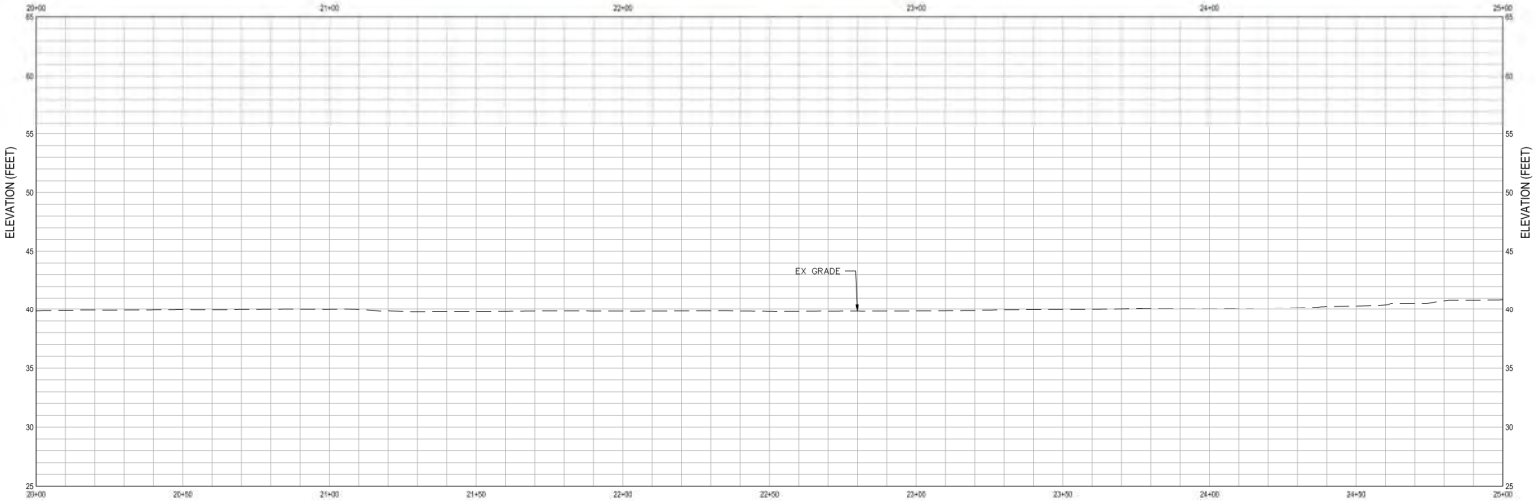
SCALE: AS SHOWN
DATE: 10-12-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-101
SHEET 6 OF 23

FILENAME: \\GHDNET\GHD\US\EMERYVILLE\PROJECTS\561\12139\DIGITAL_DESIGN\ACAD 2018\SHEETS\12139-C-101.dwg (C-101)

PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE:

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

APPROVED DATE:

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

REVISION	DATE

DESIGNED BY: DM
CHECKED BY: DM
DRAWN BY: GB

COUNTY OF SAN MATEO
PESCADERO HIGH SCHOOL
PESCADERO CREEK RD - PLAN AND PROFILE 3

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
SAN MATEO COUNTY

555 COUNTY CENTER, 5th FLOOR
REDWOOD CITY, CALIFORNIA 94063

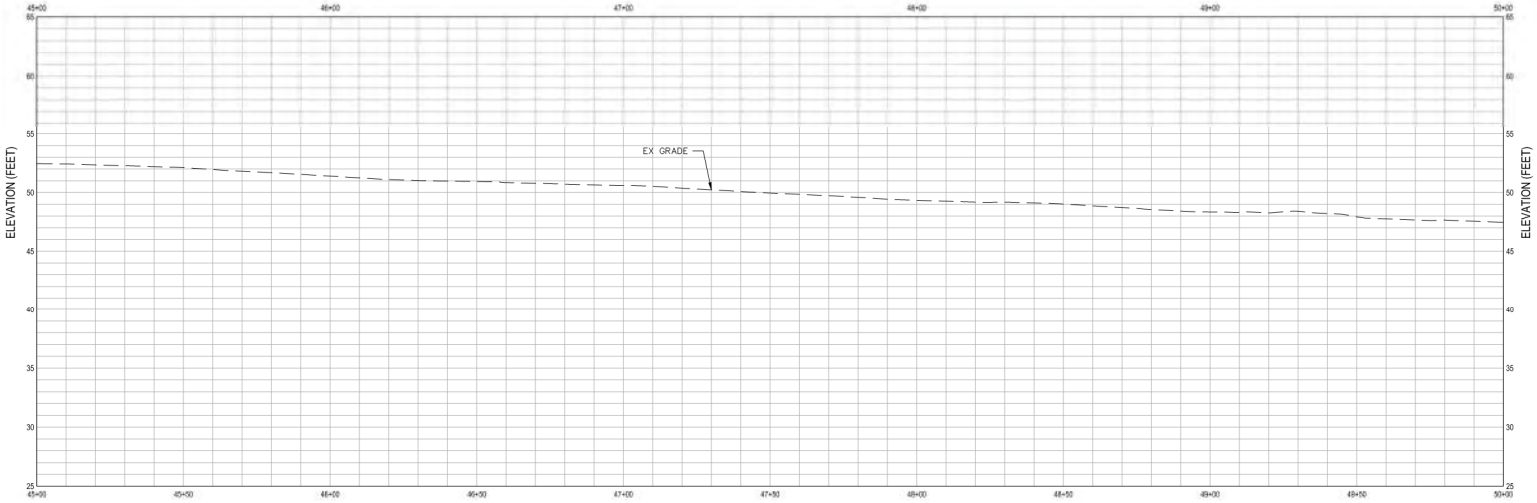
SCALE: AS SHOWN
DATE: 10-12-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-103
SHEET 8 OF 23

FILENAME: \\GHINET\GHD\US\EMERYVILLE\PROJECTS\561\12139\DIGITAL_DESIGN\ACAD 2018\SHEETS\12139-C103.DWG (C-103)

PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE:

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

APPROVED DATE:

Dillon J. Morra
GHD, Inc.
R.C.E. # 79186 / EXPIRES 03-31-2021

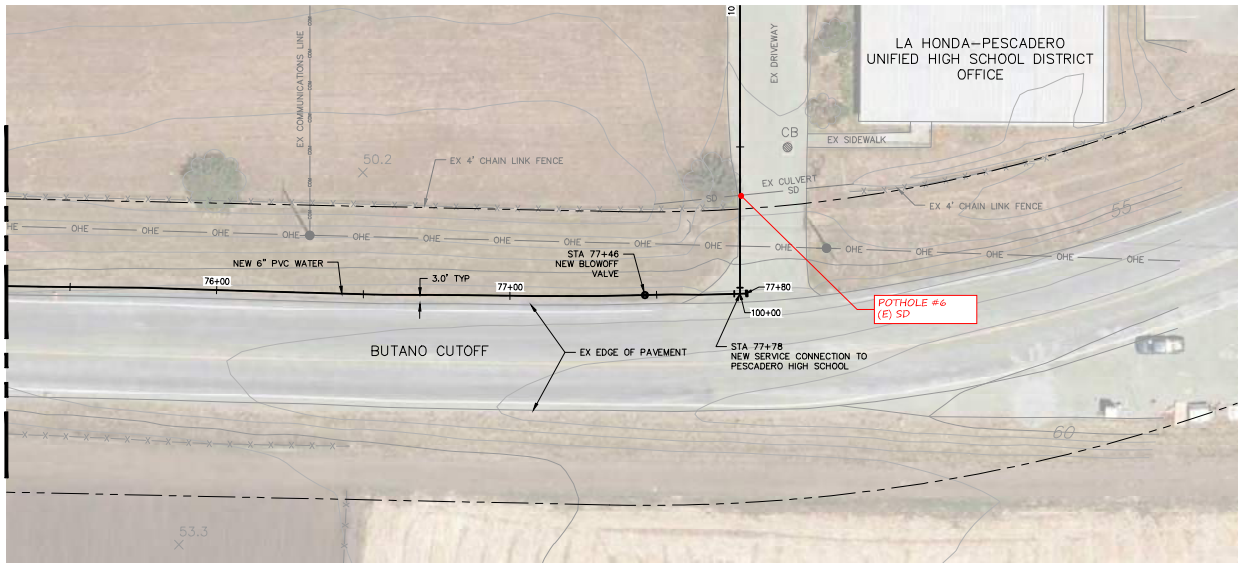
		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL CLOVERDALE RD - PLAN AND PROFILE 8
		CHECKED BY: DM	
		DRAWN BY: CB	
		JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063
REVISION	DATE		

SCALE: AS SHOWN
DATE: 10-12-2020
FILE NO.: 1/49##

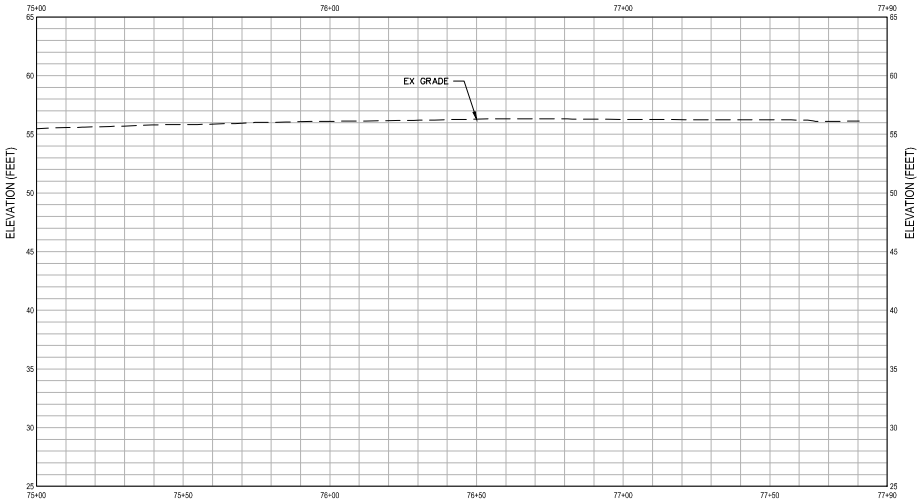
FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-108
SHEET 13 OF 23

FILENAME: \\GHINET\GHD\US\EMERYVILLE\PROJECTS\61\12139\DIGITAL_DESIGN\ACAD 2018\SHEETS\12139-C108.DWG (C-108)



PLAN
SCALE 1"=20'



PROFILE
SCALE 1"=20' HZ, 1"=5' VT

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

NOT FOR CONSTRUCTION

FILENAME: \\GHNET\GHD\US\EMERYVILLE\PROJECTS\561\12139864\DIGITAL_DESIGN\CAD 2018\SHEETS\12139864-C114.DWG (C-114)

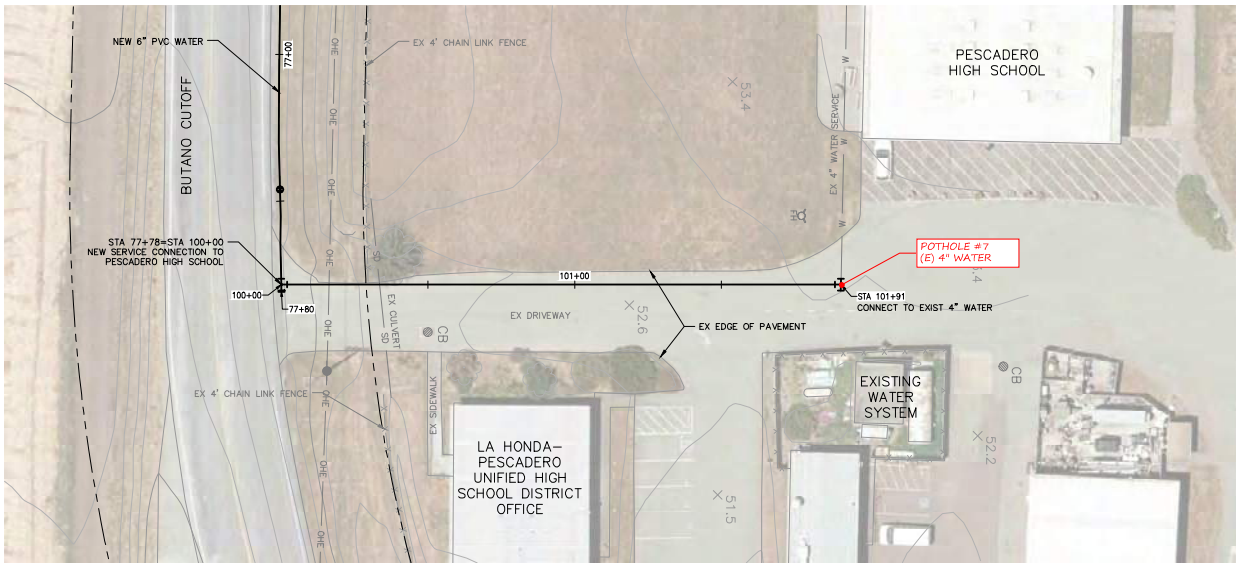
APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL **BUTANO CUTOFF - PLAN AND PROFILE 14**
		CHECKED BY: DM	
		DRAWN BY: CB	
		JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063
REVISION	DATE		

SCALE: AS SHOWN
DATE: 10-12-2020
FILE NO.: 1/49##

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3 4

C-114
SHEET 19 OF 23



PLAN
SCALE 1"=20'

APPROVED:

DATE: _____

JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS
R. C. E. # 48056 / EXPIRES 12-31-2019

SHEET GENERAL NOTES

1. POINT OF CONNECTION TO SCHOOL TO BE CONFIRMED BY POTHOLING DURING FINAL DESIGN.

SHEET KEYNOTES

1.

N

1"=20' 0 20' 40'

FILENAME: \\GHGNET\GHD\US\EMERYVILLE\PROJECTS\561\1213964\DIGITAL_DESIGN\CAD 2018\SHEETS\1213964-C115.DWG (C-115)

NOT FOR CONSTRUCTION

APPROVED DATE:	
Dillon J. Morra	
GHD, Inc.	
R.C.E. # 79186 / EXPIRES 03-31-2021	

		DESIGNED BY: DM	COUNTY OF SAN MATEO PESCADERO HIGH SCHOOL **HS SERVICE CONNECTION PLAN**
		CHECKED BY: DM	
		DRAWN BY: CB	
		JAMES C. PORTER, DIRECTOR OF PUBLIC WORKS SAN MATEO COUNTY	555 COUNTY CENTER, 5th FLOOR REDWOOD CITY, CALIFORNIA 94063
REVISION	DATE		

SCALE: AS SHOWN	
DATE: 10-12-2020	
FILE NO.: 1/49##	
FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3 4	**C-115** SHEET 20 OF 23

BESS
UTILITY SOLUTIONS

Date: 01/14/2021
BTL Job No.: P50-0-2186
Customer: GHD

Pothole Tabulation Sheet for GHD - Pescadero

Locating Methods: (PH - Pothole); (GPR - Ground Penetrating Radar); (EP - Electronic Probing via Radio/ RF Detection, Magnetic Detection, PCM and others)

Pothole No.	Locating Method	Utility Type	Utility Material	Utility Diameter (in)	Soil Type	Paving Type	Paving Thickness (in)	Utility Depth (in)	Notes
1	PH	Water	PVC	8"	Native	Dirt	On Dirt	49"	Pipe runs from east to west
2	PH	Storm Drain	Steel	18"	Native	Dirt	On Dirt	19"	Pipe runs north to south
3	PH	Water	PVC Casing	8"	Native	Dirt	On Dirt	34"	Pipe going from west to east
4	PH	Water	Steel	8"	Native	Dirt	On Dirt	22"	
5	PH	Water Casing	Steel Casing	8" Casing	Native	Dirt	On Dirt	32” to top of curve	Pipe running northeast to southwest
6	PH	Storm/D	RCP	18"	Native	Dirt	On Dirt	4"	Storm drain runs east to west
7	PH	Water	PVC	8"	Native	Asphalt	7"	37"	Pipe is running north to south. Unknown 1” PVC at 35”.
7A	PH	Water	PVC	4"	Native	Asphalt	7"	23"	Pipe running west to east

Form	Bess Utility Solutions -Test Hole Data
Version	12
Project	50-0-2186- GHD-Pescadero
Site	12/17/20 tb
Creator	Felix Alvarez
Latitude	37.251927
Longitude	-122.381408
Date	12/18/20 12:10 AM

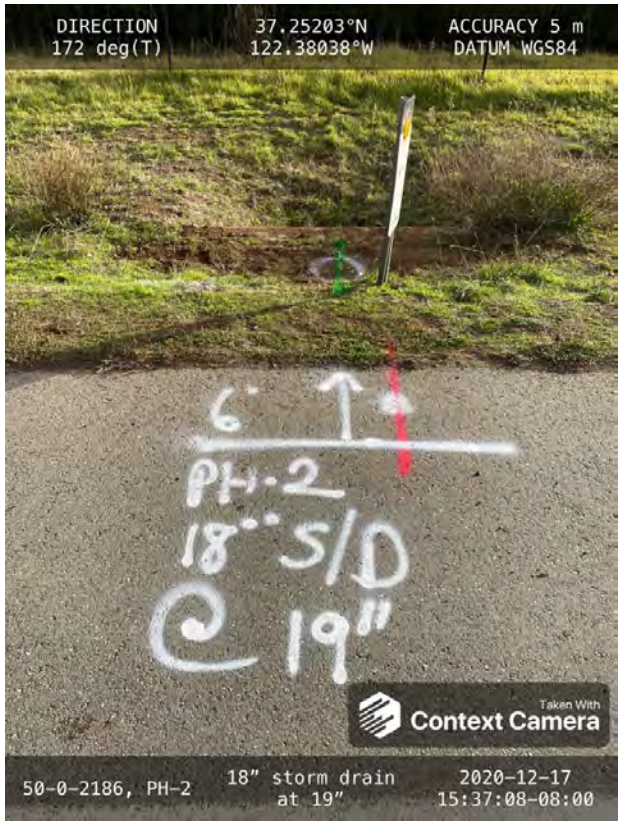
Utility Data
Test hole No.
PH-1
Utility Type/Owner
Water
Material
PVC
Soil
Native
Pavement Thickness
Dirt
Diameter
8”
Ground to top of Utility
49”
Swing Tie 1
90” from fog line north
Swing Tie 2
182” from telephone pole southeast
Swing Tie 3
Notes
Pipe runs from east to w est

BESS
UTILITY SOLUTIONS

Form	Bess Utility Solutions -Test Hole Data
Version	12
Project	50-0-2186- GHD-Pescadero
Site	12/17/20 tb
Creator	Felix Alvarez
Latitude	37.251936
Longitude	-122.380436
Date	12/17/20 11:31 PM

Utility Data
Test hole No.
PH-2
Utility Type/Owner
Storm drain
Material
Steel
Soil
Native
Pavement Thickness
Dirt
Diameter
18”
Ground to top of Utility
19”
Swing Tie 1
121” from fog line south
Swing Tie 2
185” from fence north
Swing Tie 3
Notes
Pipe runs north to south

BESS
UTILITY SOLUTIONS



Form	Bess Utility Solutions -Test Hole Data
Version	12
Project	50-0-2186- GHD-Pescadero
Site	12/17/20 tb
Creator	Felix Alvarez
Latitude	37.267380
Longitude	-122.373886
Date	12/17/20 11:04 PM

Utility Data
Test hole No.
PH-3
Utility Type/Owner
Water
Material
PVC casing
Soil
Native
Pavement Thickness
Dirt
Diameter
8”
Ground to top of Utility
34”
Swing Tie 1
132” from edge of pavement south
Swing Tie 2
120” from the fence north
Swing Tie 3
Notes
Pipe going from w est to east

BESS
UTILITY SOLUTIONS

Form	Bess Utility Solutions -Test Hole Data
Version	12
Project	50-0-2186- GHD-Pescadero
Site	12/17/20 tb
Creator	Felix Alvarez
Latitude	37.253013
Longitude	-122.376885
Date	12/17/20 09:08 PM

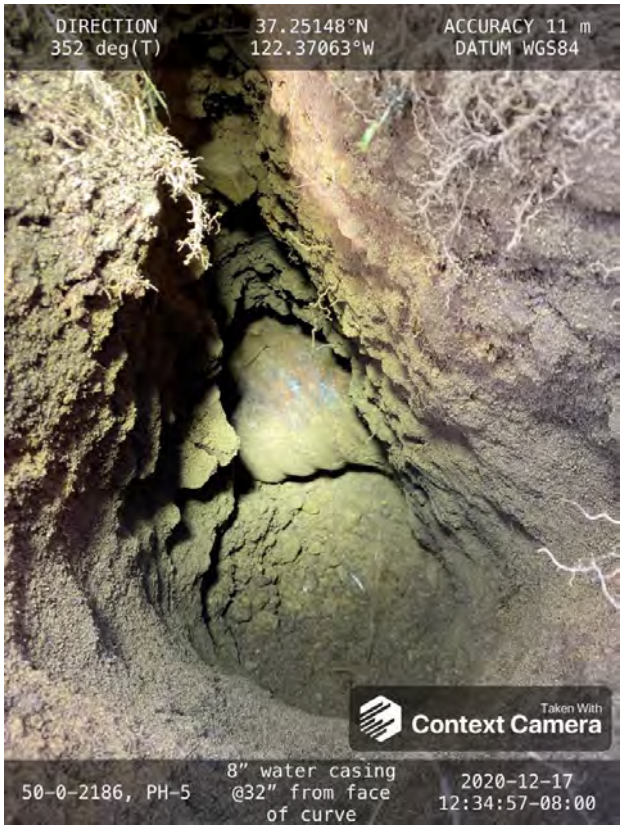
Utility Data
Test hole No.
PH-4
Utility Type/Owner
Water
Material
Steel
Soil
Native
Pavement Thickness
Dirt
Diameter
8”
Ground to top of Utility
22”
Swing Tie 1
384” from Storm/D inlet w est
Swing Tie 2
76” from fog line south
Swing Tie 3
Pipe runs north to south
Notes

BESS
UTILITY SOLUTIONS

Form	Bess Utility Solutions -Test Hole Data
Version	12
Project	50-0-2186- GHD-Pescadero
Site	12/17/20 tb
Creator	Felix Alvarez
Latitude	37.251418
Longitude	-122.370512
Date	12/17/20 08:27 PM

Utility Data
Test hole No.
PH-5
Utility Type/Owner
8” w ater casing
Material
Steel casing
Soil
Native
Pavement Thickness
Dirt
Diameter
8” casing
Ground to top of Utility
32” to top of curve
Swing Tie 1
27” from face to curve southw est
Swing Tie 2
293” from telephone pole southeast
Swing Tie 3
Notes
Pipe running northeast to southw est

BESS
UTILITY SOLUTIONS



Form	Bess Utility Solutions -Test Hole Data
Version	12
Project	50-0-2186- GHD-Pescadero
Site	12/17/20 tb
Creator	Felix Alvarez
Latitude	37.267380
Longitude	-122.373886
Date	12/17/20 07:55 PM

Utility Data
Test hole No.
PH- 6
Utility Type/Owner
Storm/D
Material
RCP
Soil
Native
Pavement Thickness
Dirt
Diameter
18”
Ground to top of Utility
4”
Swing Tie 1
377” from telephone pole west
Swing Tie 2
378” electrical volt southwest
Swing Tie 3
Notes
Storm drain runs east to west

BESS
UTILITY SOLUTIONS

Form	Bess Utility Solutions -Test Hole Data
Version	12
Project	50-0-2186- GHD-Pescadero
Site	12/17/20 tb
Creator	Felix Alvarez
Latitude	37.247380
Longitude	-122.363579
Date	12/17/20 06:41 PM

Utility Data
Test hole No.
Ph-7
Utility Type/Owner
Water
Material
Pvc
Soil
Native
Pavement Thickness
7”
Diameter
8”
Ground to top of Utility
37”
Swing Tie 1
128” from water to the north
Swing Tie 2
72” from s/s clean out to the north west
Swing Tie 3
Notes
Pipe is running north to south. Unknown 1” PVC at 35”.

BESS
UTILITY SOLUTIONS

Form	Bess Utility Solutions -Test Hole Data
Version	12
Project	50-0-2186- GHD-Pescadero
Site	12/17/20 tb
Creator	Felix Alvarez
Latitude	37.267380
Longitude	-122.373886
Date	12/17/20 07:24 PM

Utility Data
Test hole No.
PH-7A
Utility Type/Owner
4” Water
Material
PVC
Soil
Native
Pavement Thickness
7”
Diameter
4”
Ground to top of Utility
23”
Swing Tie 1
91” from water valve, west
Swing Tie 2
163” from sewer clean-out, northwest
Swing Tie 3
Notes
Pipe running west to east

BESS
UTILITY SOLUTIONS

Appendix H
Ground Penetrating Radar Utility Scan

BESS UTILITY SOLUTIONS 2463 Tripaldi Way, Hayward, CA 94545 Tel (408) 988-0101 - Fax (408) 988-0103 www.besstestlab.com
GPR Concrete Scanning - Utility Locating - Potholing - Mobile LiDar 3D Scanning - 3D GPR Imaging

Utility Locating & GPR Utility Scanning

Report For

GHD

Project Site:
360 Butano Cutoff
Pescadero, CA

December 18, 2020

BESS
UTILITY SOLUTIONS
2463 Tripaldi Way, Hayward, CA 94545 Tel (408) 988-0101 - Fax (408) 988-0103 www.besstestlab.com
GPR Concrete Scanning - Utility Locating - Potholing - Mobile LiDar 3D Scanning - 3D GPR Imaging

Attention: Dillon Morra DECEMBER 18, 2020

Reference BTL# 50-0-2186

Scope of Work
BTL was contracted to provide utility locating and GPR utility scanning services on site in Pescadero, CA. All utilities were requested to be marked by their appropriate designated utility color. Any unknown utilities are to be marked in pink and marked as "unknown".

RF Utility Locating and GPR Utility Scanning Approach

BTL Crew
SUE Foreman: Jesse Cardenas

Equipment
BTL Locating Crews use RF (Radio Frequency) utility locators combined with GPR (Ground Penetrating Radar) to locate known and unknown underground utilities.

Marking Materials
Markings are done with water based pink paint, pink metal wire flags (bio degradable flags available upon request) and/or wooded laths.

Technical Approach
BTL crews uses the direct connect method when locating underground utilities. Horizontal accuracy of our locators are 6"on each side of markings, although industry standards by law in California allows for 2 feet on each side of markings. Vertical accuracy "Electronic depths" are strictly an estimate. Our Equipment standards suggest our locators are fall with-in 5% of actual depths. Our GPR equipment for utility scanning consist of a 400 MHz and 200MHz antennas.

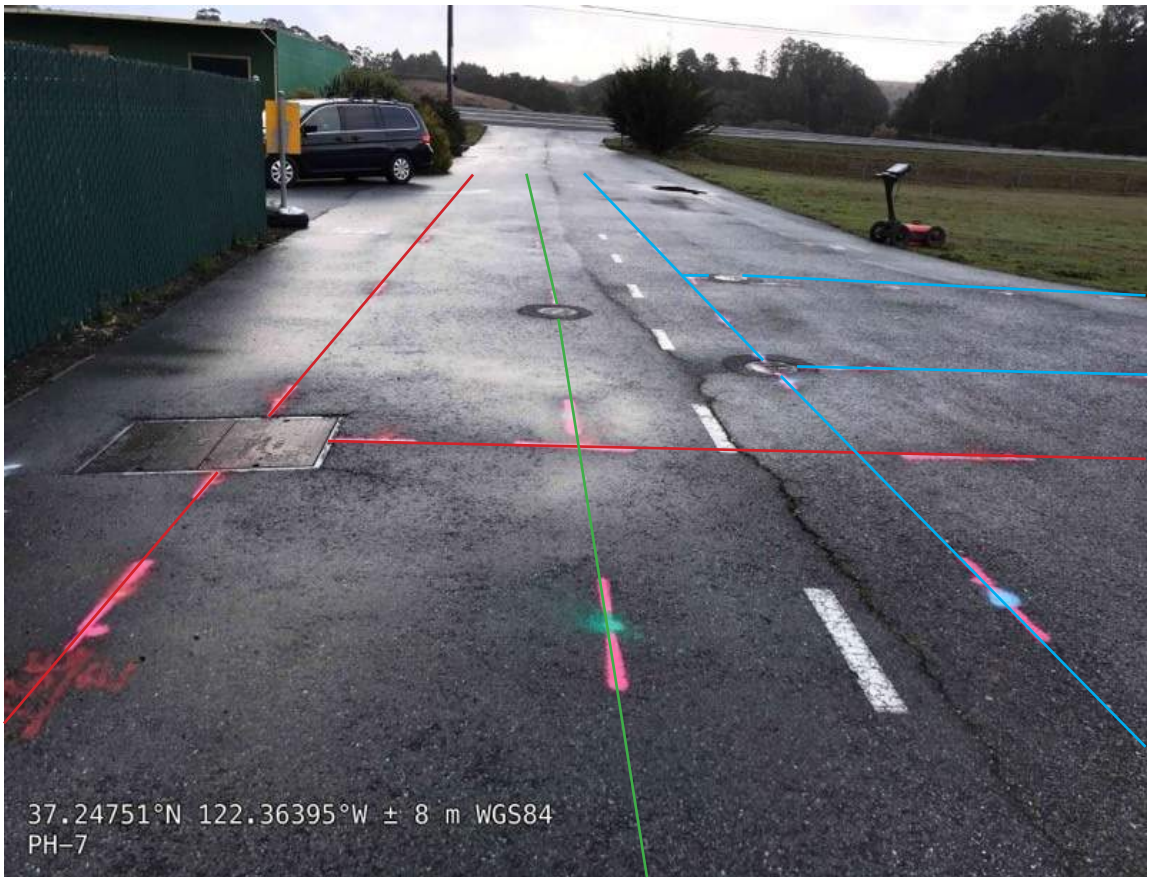
Results
Designated area was marked and located, our technicians ran GPR to see potential unknown utilities or anomalies that could be threats during excavation work. The following utilities have been located and marked. Electrical, Water, Sewer, Storm Drain, and GPR Unknown.

Standard report was put together to display the utilities on images taken in the field. Images are to be used as visual reference, they are not to scale and should not be used for measurements or anything else than their intended purpose. During preparation of report, the job site was reviewed. Special attention was taken to make sure no other utilities were missed as apart of our quality control procedure.

SD/SS Water Elec Gas Unkn Comm

SD/SS Water Elec Gas Unkn Comm

SD/SS Water Elec Gas Unkn Comm



SD/SS Water Elec Gas Unkn Comm

SD/SS Water Elec Gas Unkn Comm

SD/SS Water Elec Gas Unkn Comm

SD/SS Water Elec Gas Unkn Comm

SD/SS Water Elec Gas Unkn Comm

SD/SS Water Elec Gas Unkn Comm

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SD/SS Water Elec Gas Unkn Comm