Everett Louie

From: Stephen Griswold
Sent: Wednesday, October 9, 2024 9:43 AM
To: Everett Louie; Alicia Nuchols
Subject: Re: Anne Nounou shared "CDMS24-00015 Agency Comment Packet" with you

Good morning Everett,

I wanted to let you know that the Bethel Island MAC voted to recommend approval of CDMS24-00015 last night by a 5-0 vote. This information was alos relayed to the applicant directly last night.

Please let me know if you have any questions!

Regards,

Stephen W. Griswold III
Deputy Chief of Staff

Office of Supervisor Diane Burgis
3361 Walnut Boulevard, Suite 140
Brentwood, CA 94513
Phone: (925) 655-2330
Direct: (925) 655-2339
Cell: (925) 839-3355

From: Everett Louie <Everett.Louie@dcd.cccounty.us>
Date: Wednesday, September 25, 2024 at 2:40 PM
To: Stephen Griswold <Stephen.Griswold@bos.cccounty.us>, Alicia Nuchols <Alicia.Nuchols@bos.cccounty.us>
Subject: RE: Anne Nounou shared "CDMS24-00015 Agency Comment Packet" with you

Hi Stephen,

I spoke to the applicant today and they stated that they never received anything.

If you could include their contact on the agenda send out.
owen@realestatesvs.com
ntaratsas@dmbdevelopment.com

Thank you!

Everett Louie, Planner II

CONTRA COSTA COUNTY
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
COMMUNITY DEVELOPMENT DIVISION
30 Muir Road
Martinez, CA 94553-4601
Phone: 925-655-2700
Fax: 925-655-2758

AGENCY COMMENT REQUEST

Date 8/6/24

We request your comments regarding the attached application currently under review.

DISTRIBUTION

INTERNAL

- ✔ Building Inspection
- Grading Inspection
- Advance Planning
- Housing Programs
- Trans. Planning
- Telecom Planner
- ALUC Staff
- HCP/NCCP Staff
- ✔ APC PW Staff
- ✔ County Geologist

HEALTH SERVICES DEPARTMENT

- ✔ Environmental Health
- Hazardous Materials

PUBLIC WORKS DEPARTMENT

- ✔ Engineering Services (1 Full-size + 3 email Contacts)
- Traffic
- ✔ Flood Control (Full-size)
- Special Districts

LOCAL

- ✔ Fire District _____
  - San Ramon Valley – (email) rwendel@srvfire.ca.gov
  - ✔ Consolidated – (email) fire@cccfpd.org
  - East CCC – (email) brodriguez@eccfpd.org
- ✔ Sanitary District Ironhouse Sanitary
- ✔ Water District CCWD, Diablo Water
- City of _____
- School District(s) _____
- LAFCO
- Reclamation District # _____
- East Bay Regional Park District
- Diablo/Discovery Bay/Crockett CSD
- ✔ MAC/TAC Bethel Island MAC
- Improvement/Community Association
- ✔ CC Mosquito & Vector Control Dist (email)

OTHERS/NON-LOCAL

- ✔ CHRIS (email only: nwic@sonoma.edu)
- CA Fish and Wildlife, Region 3 – Bay Delta
- Native American Tribes

ADDITIONAL RECIPIENTS

Delta Protection Commission, Delta Stewardship Council

Please submit your comments to:

Project Planner Maria Lara-Lemus
Phone # 925-655-2904
E-mail maria.lara-lemus@dcd.cccounty.us
County File # CDMS24-00015

Prior to August 20, 2024

* * * * *

We have found the following special programs apply to this application:

- ✔ Active Fault Zone (Alquist-Priolo) Liquefaction zone
- ✔ Flood Hazard Area, Panel # _____
- 60-dBA Noise Control
- CA EPA Hazardous Waste Site
- High or Very High FHSZ

* * * * *

AGENCIES: Please indicate the applicable code section for any recommendation required by law or ordinance. Please send copies of your response to the Applicant and Owner.

Comments: None (Below) ___ Attached

Proposed parcels are part of a sub division and meet Fire Code and Fire District Requirements

Submit Fire Sprinkler Plans.

Print Name M. Anderson

Signature 8/15/24 DATE

Agency phone # 925 941 3300

CONTRA COSTA
CONSERVATION & DEVELOPMENT

Planning Application Summary

County File Number: CDMS24-00015 **File Date: 8/1/2024**

Applicant:
Owen Poole SDC Delta Coves LLC
151 Spyrock Court
Walnut Creek, CA 94595
owen@realestatesvs.com
(925) 933-4928

Property Owner:
Owen Poole
151 Spyrock Court
Walnut Creek, CA 94595
owen@realestatesvs.com
(925) 933-4928

Project Description:
The applicant requests Minor Subdivision permit approval for the division of a 0.517 acre lot. They are proposing three (3) parcels ranging from 6,798 sqft to 8,016 sqft. The subject property consists of lots 263, 264, and 265 of Tract 6013 in the Delta Coves area.

Project Location: (Address: 485 HALCYON PL, BETHEL ISLAND, CA 945111122), (APN: 031210060)

Additional APNs:

General Plan Designation(s): SL
Zoning District(s): "P-1, -FH -UE"
Flood Hazard Areas: See Map
AP Fault Zone:
60-dBA Noise Control:
MAC/TAC:
Sphere of Influence:
Fire District: CONSOLIDATED FIRE Former ECC
Sanitary District: IRONHOUSE SANITARY
Housing Inventory Site:

Fees:

Fee Item	Description	Account Code	Total Fee	Paid
048F	Fish & Wildlife Fee ($75)	002606-9660-REV-000-5B048F	75.00	75.00
052B	Notification Fee ($30)	002606-9660-REV-000-5B052B	30.00	30.00
HSDR	Environmental Health Fee ($57)	002606-9660-REV-000-5BHSDR| $5.00	57.00	57.00
MSS0034	Tentative Subdiv Map Rvw-Minor	000350-9665-000-000-5B0034	7500.00	7500.00
		Total:	**7662.00**	**7662.00**

CONTRA COSTA
HEALTH
2120 Diamond Blvd. Suite 100 | Concord, CA 94520
Phone: 925-608-5500 | Fax: 925-608-5502
cchealth.org

8/13/2024

CONTRA COSTA COUNTY CONSERVATION AND DEVELOPME
Attn: MARIA LARA LEMUS
30 MUIR RD
MARTINEZ, CA94553

RE: CDMS2400015
485 HALCYON PL
APN: 031 210 060
Service Request #: SR0023303

Dear MARIA LARA LEMUS :

Contra Costa Environmental Health (CCEH) has received a request for agency comment regarding the above referenced project. See below for our comments grouped by environmental health program:

- If an onsite water supply well is used for this project, it must meet current standards, including construction, yield, water quality, and setbacks. A hydrogeological study may be required to ensure adequate water supply.

- A permit from CCEH is required for any well or soil boring prior to commencing drilling activities, including those associated with water supply, environmental investigation and cleanup, or geotechnical investigation.

- Any abandoned wells (water, environmental, or geotechnical) and septic tanks must be destroyed under permit from CCEH. If the existence of such wells or septic tanks are known in advance or discovered during construction or other activities, these must be clearly marked, kept secure, and destroyed pursuant to CCEH requirements.

- If this project is not served by sanitary sewer and an onsite wastewater disposal system (septic system) is needed for this project, a permit from CCEH is required prior to installation. The new septic system, including disposal field replacement area must comply with current standards. Holding tanks for sewage disposal are prohibited unless these are owned and maintained by a public entity.

- For proposed subdivisions/minor subdivisions served by onsite wastewater disposal systems (septic systems). It must be demonstrated that each lot can accommodate a septic system meeting current standards, including disposal field replacement area.

- For proposed subdivisions/minor subdivisions served by onsite private water wells. It must be demonstrated that each lot has a water supply well meeting current standards, including construction, yield, water quality, and setbacks. A hydrogeological study may be required to ensure adequate water

supply.

- If the project will require a small public water system, these systems must operate under permit from CCEH. The water supply (e.g. well) must meet current standards, including construction, yield, water quality, and setbacks. A hydrogeological study may be required to ensure adequate water supply.

- If the proposed lot line adjustment involves properties served by an onsite waster disposal system (septic system). The new lot configurations must accommodate the septic system(s), including the disposal field replacement area(s), without conflicting with current standards (e.g., setbacks to property lines).

- If the proposed lot line adjustment involves properties served by an onsite water well. The new lot configurations must not conflict with current standards(e.g., setbacks to property lines).

- Horse boarding facilities are subject to the requirements of the Contra Costa County Cleanwater Program, including routine inspections. The applicant can contact CCEH for details.

- It is recommended that the project be served by public sewer and public water wherever possible.

These comments do not limit an applicant's obligation to comply with all applicable laws and regulations. If the proposed project is subject to regulation by CCEH, the project tenant must apply for all applicable health permits. Should you have any questions, please do not hesitate to contact Environmental Health at (925) 608-5500 or CoCoEH@cchealth.org.

Sincerely,

Kristian Lucas, REHS
Director of Environmental Health

DARWIN MYERS ASSOCIATES
ENVIRONMENTAL RESEARCH ■ ENGINEERING GEOLOGY

August 19, 2024

Everett Louie, Project Planner
Contra Costa County
Department of Conservation & Development
Community Development Division
30 Muir Road
Martinez, CA 94553

Subject: **Geologic Peer Review/ 30-Day Comments**
CDMS24-00015 / Owen Poole (owner)
Owen Poole, SDC Delta Coves, LLC (applicant)
APN 031-210-060 / 485 Halcyon Place (0.57 ac.)
Bethel Island Area, Contra Costa County
DMA Project #3019.24

Dear Everett,

Based on your authorization we have reviewed application material submitted by the project proponent. The proposed 3-Lot residential subdivision is located within the Delta Coves portion of Bethel Island. The Tentative Subdivision Map for the Delta Coves project identifies the Project Site as Lots #263, 264 & 265. However, the Delta Coves approval combined the area of those three lots into a single parcel. The current request is to allow the site to be subdivided as was originally proposed. If the pending application is approved, the three new residential lots on the CDMS24-00015 project site would be compatible with prevailing residential lot sizes on Halcyon Place. The Tentative Parcel Map for CDMS24-00015 indicates the County File numbers for the Delta Coves project as SD6013 and SD9582.

Purpose

The purpose of our review is to provide a professional opinion on the adequacy of available published geologic and soils reports and maps issued by public agencies in combination with the any site-specific geotechnical exploration reports adequate for the purposes of preparing the CEQA document for the project. The project civil engineers are Ruggeri-Jenson-Azar, Inc.[1] They prepared the Tentative Parcel Map (TPM). Although geotechnical reports were prepared for the Delta Coves project, no geotechnical reports accompanied the application. In general, reports more than 3 years old require updating.

Prior to deeming the application complete, the County requires sufficient data on site conditions to allow: *(i)* delineation the potential geologic hazards based on adequate subsurface data, and *(ii)* the data must be sufficient to serve as the primary basis for preparation of the "Geology and Soils" chapter of the CEQA document. Appendix G of the CEQA Guidelines issued by the State of California identifies the potential geologic and seismic hazards that must be evaluated by the CEQA document (see Table 1 for a list of the potential hazards that must addressed by the CEQA document).

[1] Ruggeri-Jensen-Azar ,Inc., 2024, *Delta Coves Parcel* (3 Sheets), RJA Job # 131019 (dated July 2024).

1308 PINE STREET ■ MARTINEZ, CA 94553 ■ 925/370-9330

In summary, prior to deeming the application complete, Contra Costa County requires sufficient data on site conditions to allow delineation of the potential geologic hazards based on adequate subsurface data. Ultimately, approval of projects in areas of high liquefaction potential shall be contingent on:

- Geotechnical engineering studies which define and delineate potentially hazardous conditions,
- Recommend means of mitigation of any adverse conditions that were confirmed to be present on the project site (e.g. liquefaction potential, expansive and/or corrosive soils, and
- Documentation of proper implementation of the mitigation measures throughout the construction period.

Table 1
Appendix G of State CEQA Guidelines

7. GEOLOGY AND SOILS – *Would the project:*				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	☐
ii) Strong seismic ground shaking?	☐	☐	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☐
iv) Landslides?	☐	☐	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☐
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☐

Background

1. Active Faults

Figure 1 presents a Vicinity Map. The project site is identified by a red dot that is within a red bullseye. The base map shows topography, blueline creeks, State Route 4, local road network and city boundaries. Additionally, it shows faults mapped by the U.S. Geological Survey (USGS) that are represented by a black

dashed line.[2] These faults are not classified by activity status (i.e., they are bedrock faults that are presumed to be inactive—i.e., no proven Holocene displacement).

The nearest fault that is considered active by California Geological Survey (CGS) is the northwest trending Greenville fault that passes approximately 15 miles southwest of the project site. The northwest trending Concord fault passes approximately 20 miles west-southwest of the project site. These faults are considered capable of generating an earthquake of magnitude 6.5 to 7.0. The CGS has issued maps that delineate *Earthquake Fault Zones* (EFZs) Theses zones encompass the recently active and potentially active traces of the Greenville and Concord faults. Typically, an EFZ is 1,700 to approximately 2,000 ft. in width (locally wider where there are branching or subparallel traces). According to the CGS, recently active and potentially active traces of the active faults may be present anywhere in the Earthquake Fault Zone (i.e. the location of future surface rupture generally can be assumed to be along an active major fault trace). Because the subject property is not within the Earthquake Fault Zone delineated by the CGS, the probability of the project experiencing surface rupture can be considered very low. It should be recognized that the CGS does not delineate an EFZ unless it determines there is clear evidence of surface fault rupture during Holocene time (i.e. during the last 11,700 years±).

2. Seismicity

In additionally to the known active faults in Contra Costa County, there is a seismically active blind thrust belt underlies the Coast Range - Great Valley geomorphic boundary passes through the eastern portion of Contra Costa County. Its location is not well established, and this fault zone map consists of branching traces. One of those traces may pass within 1 mile of the project site (see Figure 1). As mapped by the USGS, this fault trace trends approximately N10°W. It is not known to offset Quaternary deposits. Consequently, the location shown on published maps is based on technical data of petroleum firms that was accessed by the USGS (typically deep seismic reflection data, possibly supplemented with data from deep borings that were logged by petroleum company geologists). This through-going fault is often referred to by geologists as the *Great Valley fault*. It represents a major geologic contact (basement rock west of the Great Valley fault is the Franciscan mélange; east of the fault the basement rock is granitic and metamorphic rock. Although the Great Valley fault is not considered active by the CGS, it is a potential seismic source. Earthquakes associated with the Great Valley fault system include the 1983 Coalinga earthquake and 1985 Kettleman Hills earthquake, of magnitudes 6.7 and 6.1 respectively. Additionally, two greater than 6.0 magnitude earthquakes are believed to have occurred on the fault system in 1892 near Winters and Dixon. Similar magnitude (or larger) seismic events could originate on the segment of this fault system that passes through eastern Contra Costa County.

In summary, the precise location of the *Great Valley Fault System* and associated blind-thrust faults are not well known because the earthquakes on this fault system do not result in fault rupture at the ground surface. Wakabayashi and Smith (1994) have proposed preliminary segmentation of the Great Valley Fault System.[3] In the Alameda-Contra Costa County area, a 30-kilometer-long segment with a characteristic earthquake magnitude of 6.7 is indicated. Overall, Wakabayashi and Smith state the recurrence interval for the average Great Valley Fault segment, as estimated from historical seismicity, is 360 to 440 years. In summary, the San Francisco Bay Region is considered one of the most seismically active regions of the United States. Consequently, it can be assumed that the proposed improvements will be subject to one or more major earthquakes during their useful life. Earthquake intensities vary depending on numerous factors, including

---

[2] Graymer, R., D.L. Jones & E.E. Brabb, 1994. *Preliminary Geologic Map Emphasizing Bedrock Formations in Contra Costa County, California.* U.S. Geological Survey Open File Report 94-622.

[3] Wakabayashy, J., and Smith, D.L., 1994, *Evaluation of Recurrence Intervals, Characteristic Earthquakes, and Slip Rates Associated with Thrusting along the Coast Range-Central Valley Geomorphic Boundary, California*, Bulletin of the Seismological Society of America, Vol. 84, No. 6.

(i) earthquake magnitude, *(ii)* distance of the site from the causative fault, *(iii)* geology of the site, *(iv)* duration of earthquake shaking, and other factors. The USGS has stated that there is a 72 percent chance of at least one magnitude 6.7 or greater earthquake striking the Bay Region between 2014 and 2043.[4]

3. Bedrock Geologic Map

In 1994 the USGS issued a digitized bedrock geology map of Contra Costa County. Figure 2 presents a portion of this map. The base map shows the local road network and water bodies (blue color). The USGS maps the site and other lands on the valley floor as Quaternary deposits, undifferentiated (Qu). The nearest bedrock is indicated to be 7½ mi. southwest of the site. These formations range in age from Pliocene to Eocene. The depth to bedrock beneath the project site is unknown but may exceed 300 ft. below the ground surface.

4. Quaternary Geologic Map

In 1997 the USGS issued a map that divided Quaternary deposits of Contra Costa County into nine categories that vary in age, depositional environment and engineering properties.[5] A portion of this USGS map is presented in Figure 3 at a scale of 1 in.= 1,000 ft. Five different surficial deposit units are mapped on the Delta lowlands. The legend for Figure 3 divides these units into groups according to age (i.e. from Historic deposits to units of Holocene and Holocene/Pleistocene age). Table 2 presents a brief description of these units. According to Figure 3 the project site is located within an area mapped as *Dune Sand* (Qds). This unit is of Late Pleistocene and Holocene age. It consists of fine-grained, very well-sorted, well-drained eolian deposits. They occur mainly in two large northwest-southeast trending sheets as well as many small hills, most displaying Barchan morphology. Qds is inferred to have begun accumulating after the last interglacial high stand of sea-level began to recede about 71 ka and continued to form when sea level dropped to its Wisconsin minimum (estimated to be 18 ka), and probably ceased to accumulate after sea level reached its present elevation (est. to be 6 ka).The dunes display as much as 30 meters of erosional relief and in many areas, they are overlain by basin deposits (Qhb) and peaty mud (Qhpm) of Holocene age. Additionally historic deposits include *Artificial Levee Fill* (alf) and *Artificial Stream Channel* (Qhasc).

Table 2

Holocene & Late Pleistocene Deposits Mapped in the Bethel Island Area

Qhpm **Peat and Peaty Mud (Holocene)** – Water saturated peat and mud deposited in tidal wetlands. These deposits are the time equivalents of the Bay mud (Qhbm), and they consist in large part of the decomposed remains of roots and rhizome, particularly *Scirpus acutus* (tule), *Pharagmites australis* (common reed), and *Distichlis spicata* (salt grass).
Qhl **Natural Levee Deposits (Holocene) -** Loose, moderately to well-sorted sandy or clayey silt grading to sandy or silty clay. These deposits are porous and permeable and provide conduits for transport of groundwater. Levee deposits border stream channels, usually both banks, and slope away to flatter floodplains and basins. Levee deposits are best developed along San Pablo and Wildcat Creeks on the Richmond Bay Plain, along the valley of Walnut Creek and along Marsh Creek in the San Joaquin Valley.
Qhb **Basin Deposits (Holocene)** -- Very fine silty clay to clay deposits occupying flat areas in the Brentwood dune field where the basin deposits bury older eroded sand dunes (Qds).
Qhaf **Alluvial Fan and Fluvial Deposits (Holocene).** Alluvial fan deposits are brown or tan, medium dense to dense, gravely sand or sandy gravel that generally grades upward, to sandy or silty clay. Near the digital fan edges,

[4] Aagaard, Blair, Boatwright, Garcia, Harris, Michael, Schwartz, and De Leo, 2016, *Earthquake Outlook for the San Francisco Bay Region, 2014-204M3*, USGS Fact Sheet 2016-3020, revised August 2016; ver. 1.1)

[5] Helley E.J. and R.W. Graymer, 1997. *Quaternary Geology of Contra Costa County and Surrounding Parts of Alameda, Marin, Sonoma, Solano, Sacramento and San Joaquin Counties, California.* A Digital Database. U.S. Geological Survey, Open File Report 97-98.

the fluvial deposits are typically brown, never reddish, medium dense sand that fines upward to sandy or silty clay. The best developed Holocene alluvial fans in Contra Costa County are on the Richmond Bay Plain and the fans of Sand and Deer Creeks in the Brentwood Area. All other alluvial fans and fluvial deposits are confined to narrow valley floors.

Qds **Dune Sand (Pleistocene & Holocene).** Fine-grained, well-sorted, well-drained, eolian deposits that Include sand hills which display Barchan morphology; inferred to have been deposited from 71,000 to 6,000 years before present.

5. Seismic Hazard Zone Mapping Act

The provisions of the Seismic Hazard Mapping Act can be found in the California Public Resources Code, Chapter 7.8, Sections 2690-2699.6. This law is similar in many respects to the Alquist-Priolo Earthquake Fault Zone Mapping Act, which has been implemented by the County for nearly 50-years. However, the official Seismic Hazard Zone (SHZ) maps issued by the California Geological Survey (CGS) identify areas that are at-risk of earthquake triggered landslides and earthquake triggered liquefaction. The procedure for issuance of official SHZ maps is to distribute preliminary review copies of the SHZ maps and invite local jurisdictions, public agencies, and property owner/ general public to provide comment, particularly technical data. The CGS professional staff reviews the comments/ technical data provided. Based on input provided on the preliminary map(s), the CGS may modify the Preliminary Map. Finally, a public hearing is held before the State Mining and Geology Board with a recommendation from the CGS that the map(s) be approved. When SHZ maps are accepted as adequate by the Mining and Geology Board, they are distributed to local jurisdictions and public agencies. Nearly all land development projects that are located within areas at-risk of earthquake-triggered landslide displacement or liquefaction (or both) and which will eventually lead to construction of structures for human occupancy (including all major and minor subdivisions), require comprehensive geological/ geotechnical investigation.

There are standards for the required investigations. To ensure that the resulting reports comply with the standards of the CGS, state law requires that all reports be subject to peer review by a California licensed geologist or geotechnical engineer acting on behalf of the local jurisdiction. A copy of each consultant-prepared report, along with evidence of peer review, must be forwarded to the CGS within 30 days of completion of the peer review. Accompanying each SHZ map is a Seismic Hazard Zone Report.[6] Those reports explain the factors used by the CGS staff in their analysis and present the report presents technical data on a) geology, b) groundwater, c) geologic probabilistic seismic hazard analysis model and its application to liquefaction and landslide hazard assessment d) results of materials testing, d) ground motion assessment, e) lists key references and f) explanation of the associated zoning technique. The CGS uses a *Probabilistic Seismic Hazard Analysis Model* (PSHM) to calculate peak ground acceleration (PGA) used in its analysis. The PSHM utilizes ground motion hazards from potential earthquakes of all magnitudes and distances and on all potential seismic sources. These sources are integrated to yield the shaking level from each earthquake based on earthquake magnitude, rupture distance, type of fault (strike-slip, reverse, normal, subduction), and other parameters. Details of the PSHM analysis is presented on pg. 21 of the SHZ Report.

Figure 4 presents a portion of the Jersey Island 7.5-Minute Quadrangle. SHZ map showing the project site and vicinity (scale of 1 in.=2,000 ft.). This map was adopted by the State Mining and Geology Board on January 11, 2018. The boundary of the project site is shaded red and centered within a red bullseye; the base map shows the local road network, water bodies (blue) and topography (10 ft. contour interval). As shown, the project site is within an *Earthquake-Induced Liquefaction Zone*. In making its determination the CGS considers the engineering properties of the various Quaternary deposits known to occur in the subsurface, available information on the elevation of the water table, and local seismic conditions. In this

[6] CGS, 2018, Seismic *Hazard Zone Report for the Jersey Island 7.5-Minute Quadrangles, Contra Costa County, California,* SHZ Report 123.

case, deposits known to occur in the subsurface are water saturated Dune Sand. The adopted SHZ map requires rigorous evaluation of liquefaction potential that follows guidelines presented in CGS Special Publication 117A.[7] The SHZ Report provides background information utilized in preparation of the SHZ map, including the geology and seismicity of the Quadrangle map and the methodology used to provide evaluation of liquefaction potential. Using this approach, the CGS prepared a map that forecasts peak ground acceleration (PGA). That was used in the liquefaction analysis of the CGS. SHZ Report 121 (Plate 3.2) indicates that the Project Site is within an area rated as having a Probabilistic PGA of 0.23 - 0.24g's (i.e., 10% risk of exceedance in 50 years). For lands rated at-risk of liquefaction, there is a potential for permanent lateral and vertical ground displacements such that mitigation as defined in Public Resource Code Section 2693c is required. Disclaimer #8 on the SHZ map acknowledges that some sites within the designated hazard areas may have already been mitigated to standards of the local jurisdiction (i.e., the CGS has not performed exhaustive studies of previous geotechnical and engineering geologic reports).

Relationship of SHZ Maps to CEQA

Regarding the relationship of SHZ's to the CEQA process, the State of California CEQA Guidelines indicate the following:

> *Nothing in these guidelines is intended to negate, supersede or duplicate any requirement of the SHZ. At the discretion of the lead agency, some or all of the investigations required by the Seismic Hazzard Mapping Act may occur either before, concurrent with or after the CEQA process.*

The Guidelines go on to indicate that if the investigation does not precede CEQA, it may be desirable for the CEQA document to describe the full range of mitigation measures that may be required to stabilize the land development project. However, if all or part of the investigation is performed prior to completion of the CEQA process, it may be possible to narrow the discussion of mitigation alternatives to only those that would provide reasonable protection of the public safety given site-specific knowledge of field conditions.

Safety Element

As previously noted, the Seismic Hazard Zone (SHZ) Map considers the project site and all properties parcels on Bethel Island to be within an area that is at-risk of liquefaction and associated ground failure. Rigorous site-specific studies and needed to evaluate liquefaction. Where liquefiable soils are confirmed to be present in the subsurface, effective mitigation of the hazard posed to new development is required. Operative General Plan policies are presented in Table 3. Note that Policy 10-21 has the following components: *(i)* define and delineate the hazardous geologic and/or soils conditions, *(ii)* recommend means of mitigating the adverse conditions that were confirmed to be present on the site, and *(iii)* identify the means to assure that the recommendation presented in the geotechnical/ geologic report are properly interpreted and implemented by their client and the client's contractor.

---

[7] California Geological Survey, 2008, *Guidelines for Evaluating and Mitigating Seismic Hazards in California,* CGS Special Publications 117A.

Table 3
General Plan Liquefaction Policies

Policy 10-18. This General Plan shall discourage urban or suburban development in areas susceptible to high liquefaction dangers and where appropriate subject to the policies of 10-20 below, unless satisfactory mitigation measures can be provided, while recognizing that there are low intensity uses such as water-related recreation and agricultural uses that are appropriate in such areas.

Policy 10-19. To the extent practicable, the construction of critical facilities, structures involving high occupancies, and public facilities shall not be sited in areas identified as having a high liquefaction potential, or in areas underlain by deposits classified as having a high liquefaction potential.

Policy 10-20. Any structures permitted in areas of high liquefaction damage shall be sited, designed and constructed to minimize dangers from damage due to earthquake-induced liquefaction.

Policy 10-21. Approvals to allow the construction of public and private development projects in areas of high liquefaction potential shall be contingent on geologic and engineering studies which define and delineate potentially hazardous geologic and/or soils conditions, recommend means of mitigating these adverse conditions, and on proper implementation of the mitigation measures.

DMA Evaluation

1. Investigative Methods

Quantitative evaluation of liquefaction potential normally involves evaluation of the deposits penetrated in the borings that collect samples during drilling as well as gathering field test data on the engineering properties of the deposits penetrated as well as determining the depth to the water table. Alternatively, Cone Penetration Test (CPT). CPT probes are typically extended to depths typically ranging to 50 -75 ft. below the ground surface. This *in situ* testing method is used to obtain deeper data more quickly than gathering data with conventional auger drilling methods. It relies on using an instrumented probe with a conical tip that is pushed into the soil hydraulically at a constant rate. As the probe advances, it collects data on tip resistance, shear resistance, groundwater pressure, etc. The data gathered on the engineering properties of the alluvial deposits penetrated by the CPTs can be correlated with soil properties (e.g., distinguish the presence of sands, silty sands, silty clays, clays, gravels, as well as estimating the degree of induration of the layers encountered). Note that the CPT probes do not allow for direct measurement of the water table, and do not allow for sampling. Consequently, it is not unusual for geotechnical investigations to include both auger drilling and CPT probes.

2. Liquefaction Hazards

The hazards posed by liquefaction include ground failure and settlement. The types of ground failure include ground cracks, permanent waves, differential settlement and a type of landslide referred to by geologists as a *lateral spreading failure*. [8] If liquefaction of relatively near surface sands were to occur, there would be a risk that the liquefied horizon, along with the overlying soils, would move laterally toward the a nearby Delta waterway. Conversely, if the liquefiable layer is relatively deep it might not result in lateral spreading because those alluvial, estuarine, fluvial and/or sand dune deposits would be confined laterally and vertically. The Safety Element includes four policies indicating that at-risk areas require evaluation of liquefaction potential and effective mitigation of the hazard posed to new development. Operative General Plan policies are presented in Table 3.

[8] Lateral spreading is a type of ground instability that results in ground displacements that occur when liquefaction of a soil layer causes insufficient strength for lateral stability. This phenomenon occurs when either the ground surface or the soil layer subject to liquefaction is sloped, or when there is an open face or waterway or slough adjacent to a potential liquefiable soil layer.

3. Expectations of Contra Costa County

As stated at the top of pg. 2 of this peer review letter, the County (and the SHZ Mapping Act) expect:

a. Submittal of a *Geologic Hazard Report* that identifies potentially hazardous conditions (in this case, analysis of liquefaction potential, along with any other hazards that may exist, such as expansive and corrosive soils, slope stability, etc.),
b. Recommend means of any adverse conditions that were confirmed to be present on the site, and
c. During the construction process, provide documentation of the implementation of all mitigation measures (i.e., the *Geologic Hazards Report* shall include recommendations for construction monitoring and testing to ensure that the client and contractor properly interpret and implement all geo-related mitigation measures.)

We understand that there was a historic investigation of liquefaction potential performed for the Delta Coves project. It is the responsibility of the project geotechnical engineer to provide an update of the historical investigation(s) as they pertain to the CDMS24-00015 Project Site. The update report shall identify locations of previous borings and CPTs that are pertinent to the currently proposed project and provide details of the approach to corrective earthwork performed as it pertains to the currently proposed project. It should also be recognized that assessment of the liquefaction hazard has undergone many changes over the decades. A concern we have is placing reliance on the results of a historic investigation (e.g. the original Delta Coves liquefaction investigation). Although the historic Delta Coves investigation was compliant with the standards at that time, there have been advances in the understanding of liquefaction over the subsequent years. Consequently, we are of the opinion that compliance with SHZ standards warrants an updated analysis that is fully compliant with prevailing knowledge and standards. This is particularly true if there is not subsurface data from the immediate vicinity of the CDMS24-00015 project site. As an example of a more recent model, we note a 2014 publication of the UC Davis Center for Geotechnical Modeling,[9] and there are numerous others research papers the provide advances in knowledge of aspects of liquefaction analysis. We expect the updated geotechnical report will include new analysis of liquefaction that will confirm (or modify) our understanding of the hazard posed by liquefaction. Additionally, we expect the updated report to provide a comparison of the deterministic PGA that is typically used in the liquefaction analysis with the probabilistic PGA used by the CGS in their analysis of liquefaction.

DMA Recommendation

The immediate need of the Department of Conservation & Development is to determine if there is sufficient data to allow the processing of the pending application. It is our opinion that the application must be considered incomplete, pending submission of an updated Geologic Hazards Report that fully addresses the liquefaction hazard. We anticipate that the update will utilize existing data to the degree that is appropriate. However, the analysis methodology shall be based on the prevailing current standards of care as it is reflected by the SHZ requirements for a rigorous geotechnical investigation. We anticipate that additional subsurface exploration may be required (e.g., 60 ft. deep CPT; or perhaps re-running an existing CPT log(s) that are within or very near the project site but using a more recent computer model). The update report shall provide justification for the computer program that is used and justification for the assumptions that are inputs to the computer model run. Additionally, we request that the update report include a comparison of deterministic PGA used in the analysis with the probabilistic PGA used by the California Geological Survey in SHZ Report 123.

---

[9] Boulanger, R.W. and Idriss, I.M., 2014, *CPT and SPT Based Liquefaction Triggering Procedure,* Center for Geotechnical Modeling, Report UCD/CGM 14/01.

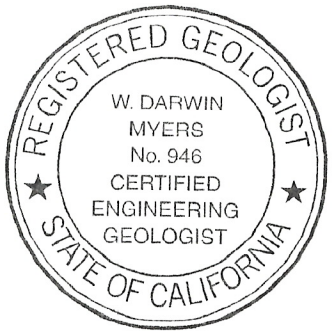
We acknowledge that a second report may be needed as a condition of approval to provide specific standards and criteria for final grading, drainage and foundation design recommendations that are based on the project proponents specific approach to development.

Limitations and Purpose

This review has been performed to provide technical advice to assist the Community Development Division with discretionary permit decisions. Our services have been limited to review of the documents identified in this peer review letter. Our opinions and conclusions are made in accordance with generally accepted principles and practices of the engineering geology profession.

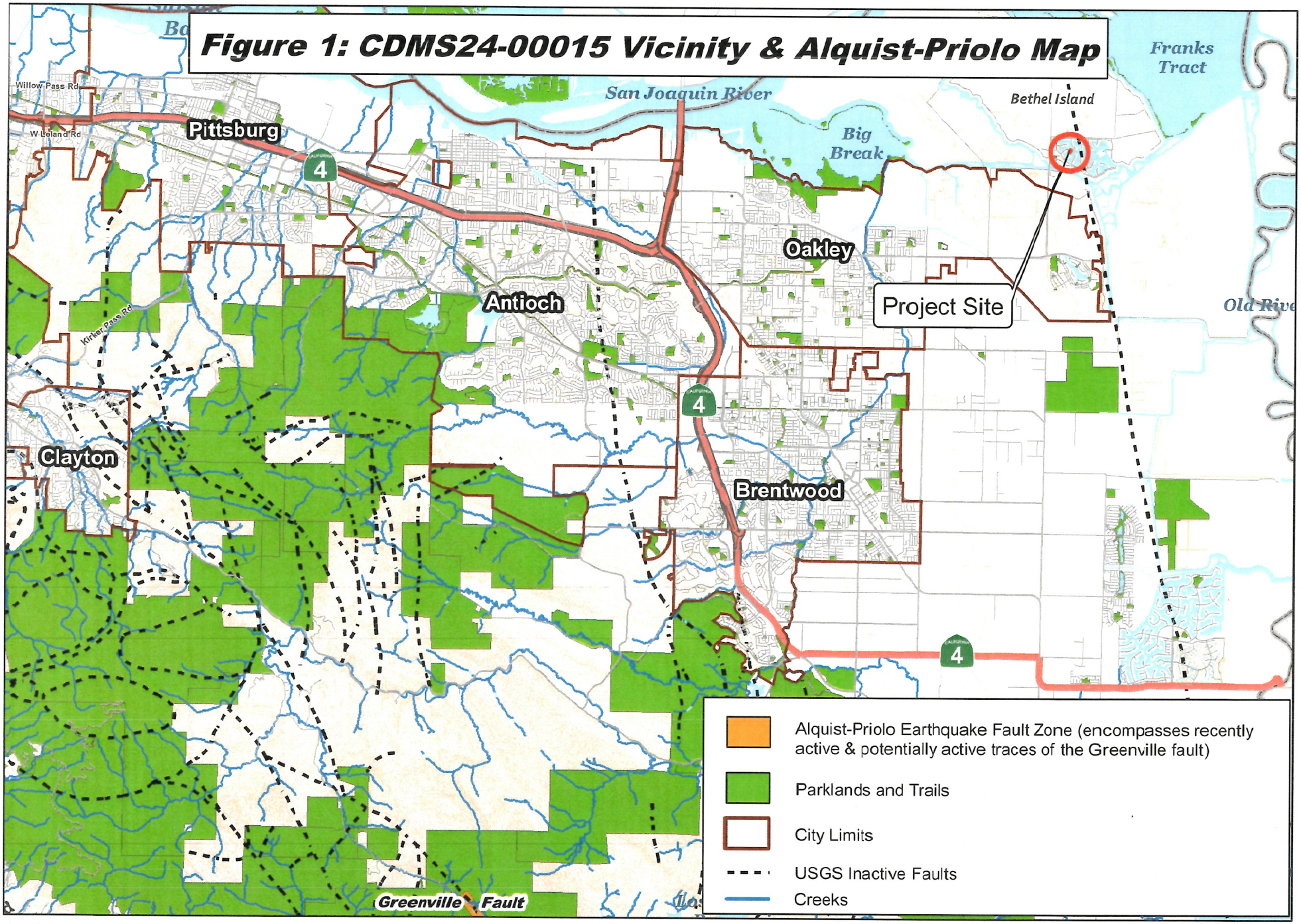
We trust this letter provides the evaluation and comments that you requested. Please call if you have any questions.

Sincerely,
DARWIN MYERS ASSOCIATES



Darwin Myers, CEG 946
Principal

Figure 1: CDMS24-00015 Vicinity & Alquist-Priolo Map

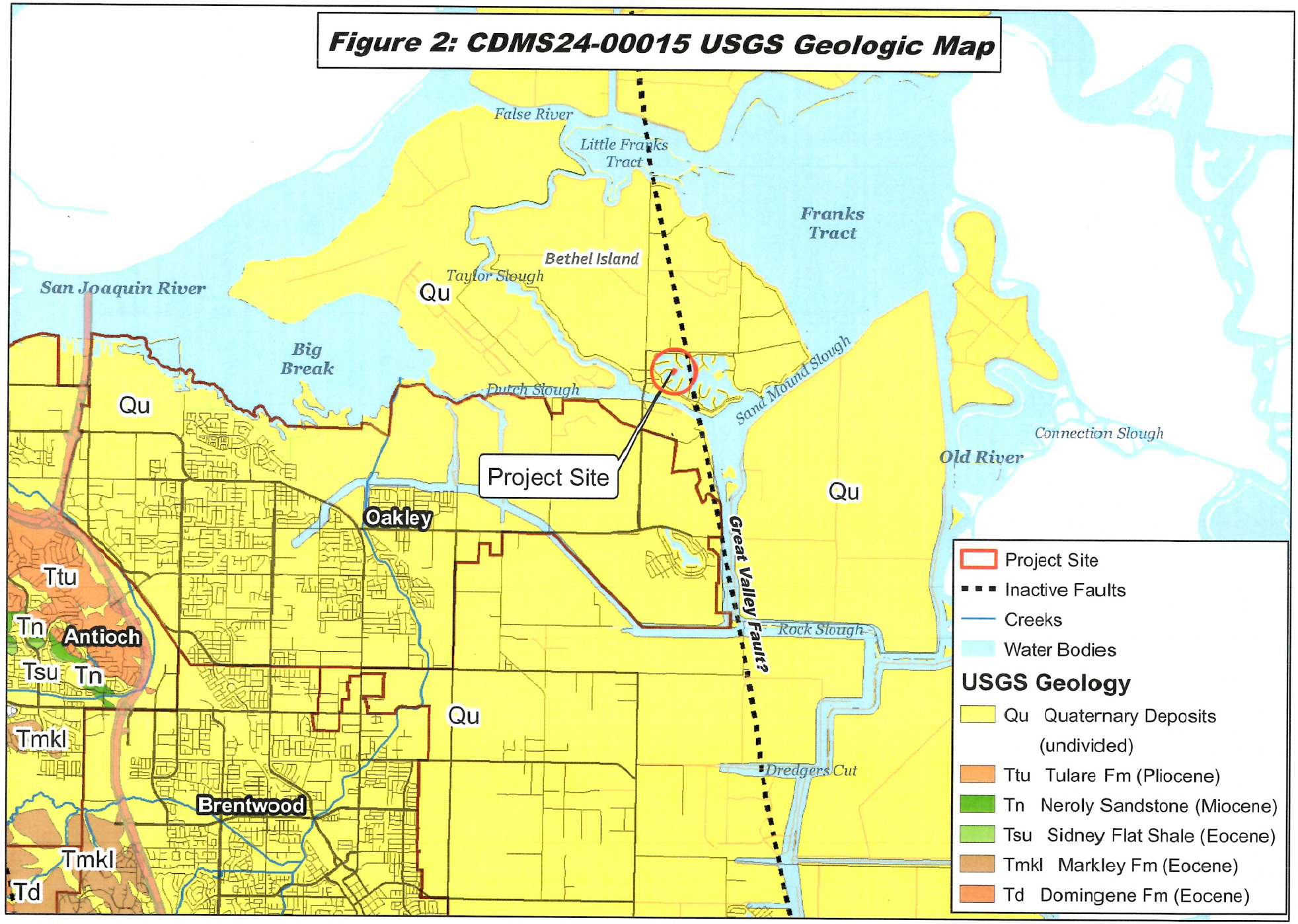


0 2 4 8 Miles

source CGS, 2007, Special Publication 42

Map Created 8/13/2024
by Contra Costa County Department of Conservation and Development, GIS Group
30 Muir Road, Martinez, CA 94553
37:59:41.791N 122:07:03.756W

Figure 2: CDMS24-00015 USGS Geologic Map



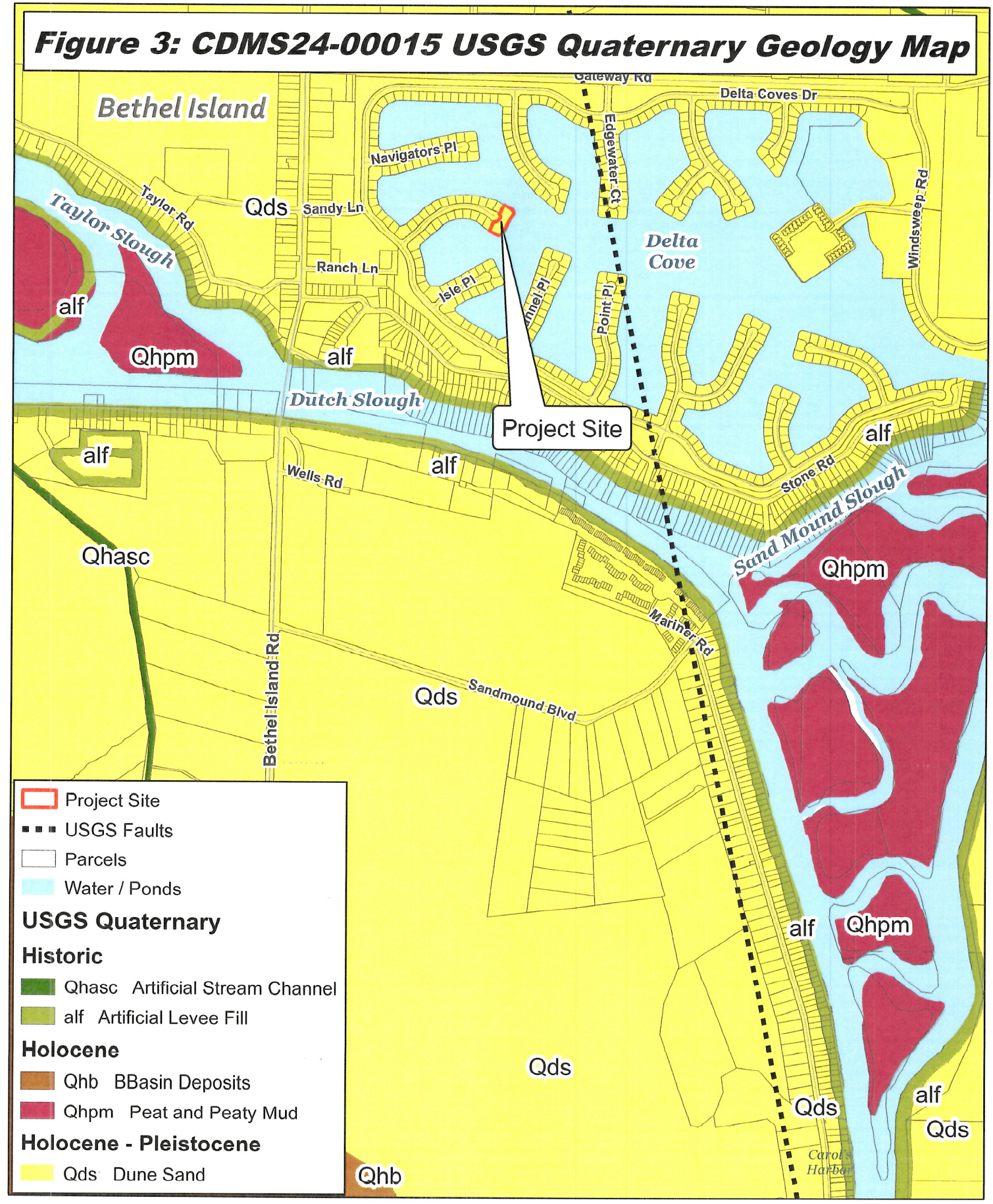
N

0 0.5 1 2 Miles

Source: USGS Open File Report 94-622

Map Created 8/13/2024
by Contra Costa County Department of
Conservation and Development, GIS Group
30 Muir Road Martinez, CA 94553
37:59:41.791N 122:07:03.756W

Figure 3: CDMS24-00015 USGS Quaternary Geology Map



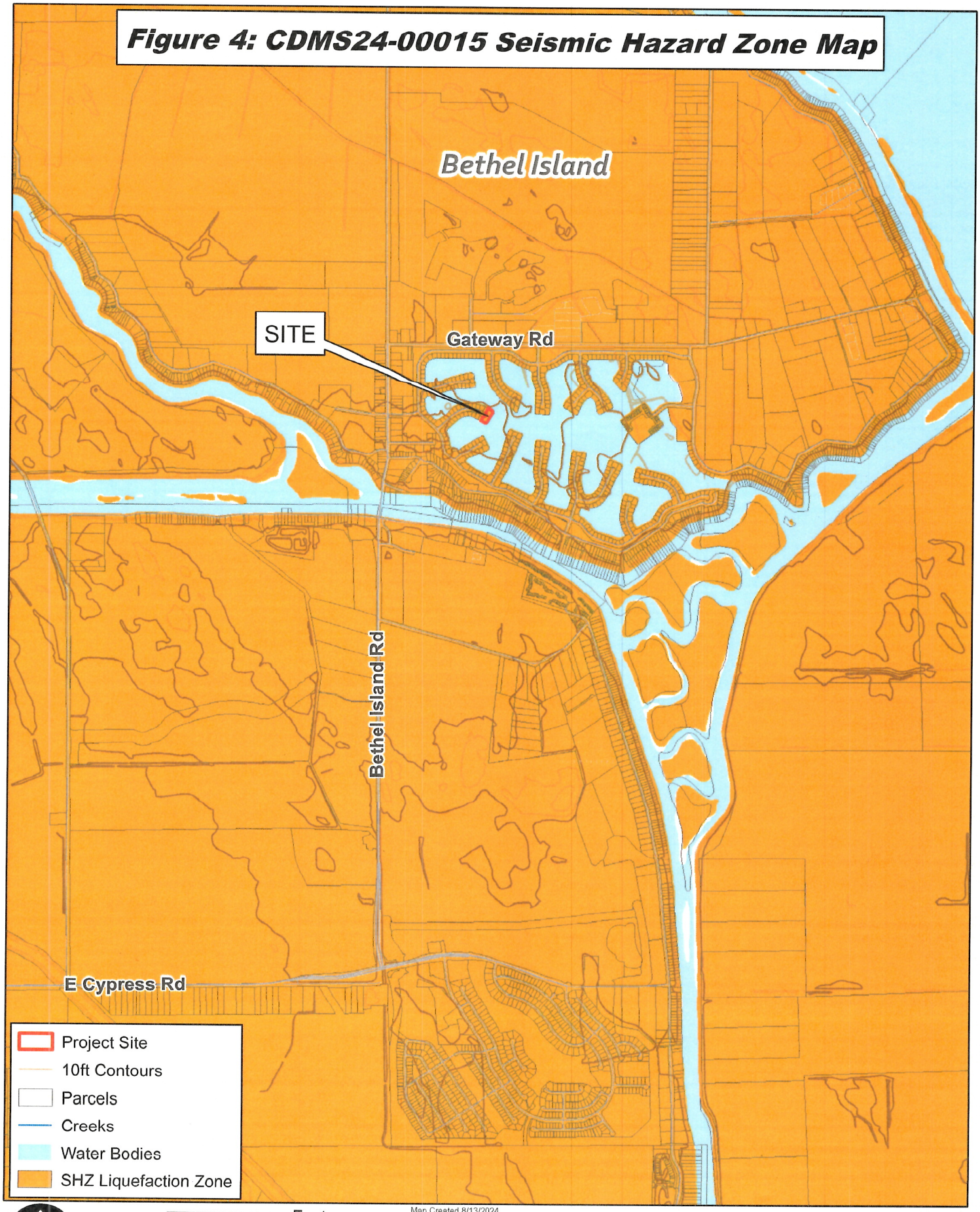
N

0 500 1,000 2,000 Feet

Source: USGS Open File Map 97-98

Map Created 8/13/2024
by Contra Costa County Department of Conservation and Development, GIS Group
30 Muir Road, Martinez, CA 94553
37 59 41 791N 122 07 03 756W

Figure 4: CDMS24-00015 Seismic Hazard Zone Map



Feet
0 500 1,000 2,000

Source: CGS Jersey Island, Boudin Island, Brentwood, Woodward Island SHZ Maps 2018,

Map Created 8/13/2024
by Contra Costa County Department of Conservation and Development, GIS Group
30 Muir Road, Martinez, CA 94553
37 59 41 791N 122 07 03 756W

DARWIN MYERS ASSOCIATES
ENVIRONMENTAL RESEARCH ■ ENGINEERING GEOLOGY

November 5, 2024

Everett Louie, Project Planner
Contra Costa County
Department of Conservation & Development
Community Development Division
30 Muir Road
Martinez, CA 94553

Subject: **Geologic Peer Review / 2nd Letter**
CDMS24-00015 / Owen Poole (owner)
Owen Poole, SDC Delta Coves, LLC (applicant)
APN 031-210-060 / 485 Halcyon Place (0.57 ac.)
Bethel Island Area, Contra Costa County
DMA Project #3031.24

Dear Everett,

On August 19, 2024, we issued a peer review letter for the captioned application, which is a 3-Lot subdivision of a 0.57 ac. parcel. [1] The site is located within Delta Coves development, at the northern terminus of Halcyon Place. As noted in our previous peer review letter, the Seismic Hazard Zone Mapping of the California Geological Survey (GS) classifies all of Bethel Island as being within an area that is potential subject to earthquake induced liquefaction. The captioned project was not accompanied by a historical geotechnical report(s), or by a geotechnical update report that provided *(i)* an overview of the previous liquefaction investigation performed by Berlogar Geotechnical Consultants (BGC), *(ii)* discussion of the findings of that previous investigation as it related to the proposed 3-lot residential subdivision, and *(iii)* summary of the BGG remedial grading as it pertains to the 3-lot residential subdivision. We requested data on the history of the Delta Coves project and have received the assistance needed to complete our review. Consequently, the evaluation and recommendations presented herein supersede those presented in our previous peer review letter.

This peer review letter does not repeat the background information on the geologic and seismic setting of the project site, nor does it present Safety Element policies or summarize provisions Seismic Hazard Zone (SHZ) Mapping Act and the related policies and standards for implementation of this state law. This information was presented in our August 19, 2024, peer review letter.

Investigation of Berlogar Geotechnical Consultants

1. Introduction

The Delta Coves project is a 310-acre and 500+ lot development within an area that was known to be subject

[1] Darwin Myers Associates, 2024, *Geologic Peer Review/ 30-Day Comments, CDMS24-00015/ Owen Poole (owner), Owen. Poole, SDC Delta Coves, LLC (applicant), APN 031-210-060 / 485 Halcyon Place (0.57 ac.), Bethel Island Area, Contra Costa County, California,* DMA Project 3019.24 (dated August 19, 2024).

1308 PINE STREET ■ MARTINEZ, CA 94553 ■ 925/370-9330

to inundation, liquefaction and compressible soils. The major subdivision application was submitted in 1980 (SD80-06013). BGC served as the project geotechnical engineers. The geotechnical report that provided assessment of liquefaction hazard and provided mitigation measures used historic subsurface data, but with substantial additional borings and Cone Penetration Test (CPT) probes. [2] It should be recognized that the 2003 BGC investigation was peer reviewed by Hultgren-Tillis Engineers in behalf of both Contra Costa County and the Bethel Island Municipal Improvement District (BIMUD) during the design phase of the investigation.

2. Subsurface Exploration

The scope of BGC's subsurface investigation included *(i)* drilling of 106 flight auger borings to borings (to establish the ground water levels): *(ii)* drilling and logging of 41 rotary wash borings, which included gathering of Standard Penetration Test data on the consolidation of the earth materials penetrated and allowed the opportunity to retrieving samples for laboratory testing: *(iii)* 81 Cone Penetration Test (CPT) probes, *(iv)*.logging of 21 test pits, and *(v)* in areas where organic soils were present at the surface 22 shallow tube samples were collected for laboratory testing.

3. Probabilistic Seismic Hazard Analysis Model

A critical input into the liquefaction analysis is the seismicity of the project site. BGC evaluated ground motion hazards from potential earthquakes of a broad range of magnitudes and distances from the project site, as well as other earthquake parameters (e.g., approx. fault length, slip rate, max credible moment magnitude, and approx. distance from the site). The fault zones analyzed are listed on pg. 6 of the BGC report. They included all known active San Francisco Bay Region faults within 64 km of the site, and well as four(4) segments of the Great Valley fault, which is are located east of the project site. The Great Valley fault is not considered active by the USGS because there is no evidence of surface rupture during Holocene time (i.e., the last 10,000 yrs +/-), but it is regarded as a seismic source. As stated in the BGC report, the horizontal peak ground acceleration (HPGA) was estimated using the FRISKSP computer program (Blake, 1998). According to the 2001 edition of the California Building Code, a risk level of 10 percent exceedance in a 50 yr. period is appropriate for residential development. BGC determined that at the western and eastern corners of the site the HPGA to be 0.35 and 0.335. An average HPGA of 0.34g was used by BGC in their liquefaction evaluation., and the acceleration was applied at the design finish grade (elev. +10 ft.). For the design earthquake associate with the HPGA, in their liquefaction analysis BGC used a seismic event having Modal Magnitude of 6.35.

To compare these seismic parameters calculated by BGC with those in the Seismic Hazard Zone Report for the site, we reviewed SHZ Report 123, Plates 3.3 and 3.4. This SHZ report for the Jersey Island Quad was issued in 2018 (15 years after BGC's report was issued). For the Delta Coves project site, the SHZ Plate 3.3 indicates a probabilistic PGA in the range of 0.44-to 0.46g for a seismic event having 10% probability of exceedance in 50 yrs. Plate 3.4 indicates a Modal Magnitude for the design earthquake 6.53. In summary, Probabilistic analysis methods have evolved. However, the approach used by BGC was consistent with the standard of care in 2003 but is not fully equal to the current standard of care.

4. Liquefaction Evaluation

BGC estimated the cyclic resistance ratio (CRR) and cyclic stress ratio (CSR) using the Simplified Procedures recommended during the 1996 and 1998 research workshops held by the National Center of Earthquake Engineering (Youd & Idress, 2001). BGC goes on to explain the procedures used to obtain

[2] Berlogar Geotechnical Consultants,2003, *Liquefaction Investigation, Delta Coves, Gateway Road, Contra Costa County, California for DUC Housing Partners, Inc.*, BGC Job # 2450.100 (dated May 27, 2003).

normalized STP blow counts. BGC also performed laboratory gradation testing of sand and silt samples retrieved from borings to determine the fines content (i.e. % of sample by weight passing through the No. 200 sieve) of the dune sand deposits in the Delta Coves project area. BGC's liquefaction analysis was based chiefly on STP blow counts and gradation testing. CPT records were used for comparison purposes. The resulting analyses indicate that 52 borings and 127 CPTs confirm the presence of liquefiable sands. The approximate limits of the liquefiable sands are shown on Plate 4 of the BGC report (see this map in Appendix A). According to BGC, the liquefiable sediments were located within the alluvial deposits that overlie the dune sands; the dune sands themselves were determined to be too well consolidated to be candidates for liquefaction, and many zones within dune sands contained substantial fines content. CPTs No. 46 and 47 were located in the immediate vicinity of the CDMS24-00015 project site (see Appendix A for the CPT logs). They indicate dune sand (chiefly described as silty sand and sandy silt) to a depth of approximately 33 ft. below the original ground surface.

5. Mitigation of the Liquefaction Hazard

BGC describes the methods of mitigating the liquefaction hazard within the Delta Coves project. Those methods include a) remove and replace, b) deep dynamic compaction, c) vibro-compaction. Additionally, BGC provides a recommendation for dewatering (i.e., use of subdrains and cutoff walls to control/ maintain the existing elevation of the water table. Grading plans for Delta Coves were based on final graded pads elevated above the FEMA flood hazard zone (i.e., all pads at elevation of +10 ft.).

6. Post Soil Improvement Testing

In areas where either deep dynamic compaction or vibrio-compaction were used, post-treatment testing was recommended by BGC to confirm that the liquefiable soil has been adequately densified to preclude liquefaction (i.e., employ SPT blow counts of test borings to verify that liquefaction hazard has been adequately mitigated).

7. Gradients of Engineered Slopes

BGC recommended the corrective grading for the Delta Coves project be based on use of slope gradients of 2:1 (horizontal: vertical) for an engineered slope that will remain above the water table and 2½:1 (h:v) for slopes that will be below the water table.

8. Organic Soils / Use of Select Fill

Based on the data collected, the organic rich soils on the project site are relatively sands. During corrective grading, BGC recommended that by using a select fill material that blending organic soils with granular soils such that the resulting blended fill material is 3 parts on site inorganic soil to 1-part granular organic soil. (Peat material was deemed to be unsuitable for use in engineered material and it was recommended by BGC that it be removed from the project site or its use restricted to landscape areas. BGC estimates volumes of organic materials as follows:

- Granular Organic Soils 320,000 to 350,000 cu. yds.
- Peat 15,000 to 20,000 cu. yds.

9. Recommended Future Geotechnical Services

The 2003 report recommended that BGC be retained to review construction plans and specifications to ensure their client and the contractor correctly interpret the intent of the geotechnical recommendations. During construction, BGC recommends they be retained to provide observations of the contractor's field

procedures as well as field and laboratory testing to verify compliance of the as-graded project with geotechnical recommendations. (Monitoring during construction also provides the opportunity for the geotechnical engineer to determine if supplemental recommendations are needed for any areas where exposed conditions vary substantially from those that were the basis of the design recommendations.) Note that BGC stated that future geotechnical review of final construction may be needed for the condominium complex, marina structures and harbor entrance areas. Depending on design details for these project areas, supplemental recommendations may be required. In 2006, BGC issued a 2nd geotechnical report presenting the project engineers updated/ supplemental recommendations that was based on additional subsurface data..[3] Appendix 1 presents the log of Boring 29 as well as CPTs #46 and #47; 142 & 143. An annotated map is presented in this appendix showing the locations of these subsurface data points with respect to the CDMS24-00015 project site.

10. Corrective Grading

In 2006 BGC provided updated geotechnical recommendations. Appendices presented in that report included the logs, fully documenting supplemental subsurface exploration that occurred during the period 2003- 2005.Mass grading of Delta Coves commenced during the period March 2006. That construction, including implementation of mitigation measures for the liquefaction hazard. This phase of the Delta Coves project extended through January 2008 (i.e., 22-month construction period). To mitigate the potential damage associated with liquefaction, ground improvements measures including deep dynamic compaction, stone columns, in addition to the earthwork). Improvements also included construction of a slurry trench cutoff wall with a clay cap that was constructed around the perimeter of the lagoon. The purpose of this wall was to prevent lagoon waters from seeping through the levee. Underground utilities and sewer improvements were installed during the five-year period late 2008 through late 2013. With the installation of utilities completed, the buildout of residential structures was ready to commence.

11. Liquefaction Assessment of CDMS24-00015 Project Site

As previously noted, the BGC investigation confirmed that not all of Delta Coves land development project was underlain by potentially liquefiable sediments. According to the 2003 BGC report, the CDMS24-00015 project site and adjacent lots fronting on Halcyon Place were confirmed to be underlain by silty sands that were determined by BGC non-liquefiable due to their high STP blow counts and results of gradation testing. Consequently, the grading which subsequently occurred on the site only involved fill placement to achieve the planned final grades, which raised the elevation of the Halcyon Place lots to +10 ft.

BGG Investigation

1. Introduction

In 2018 the Baez Engineering Group (BGG) was retained by DMB, Inc to summarize the previous, relevant subsurface data from a 310-ac. study area. [4] Table 3 of that BGG report provides a citation of the previous reports that were the subject of their review. As a check on the work performed by others, the BGG investigation included an additional 28 borings (see Appendix A of the BGG report for the logs of those 28 borings). Appendix B of the BGG report presented the results of laboratory testing of samples collected

---

[3] Berlogar Geotechnical Consultants, 2006, *Geotechnical Investigation, Subdivision 6013 – Delta Coves, Bethel Island, Contra Costa County, California, Volume 2 of 2,* BGC Job # 2450.100 (dated March 10, 2006).

[4] Baez Geotechnical Group, Inc., 2018, *Subsurface Investigation, Delta Coves Subdivision 60813, and Parcels B Through E, Delta Coves Drive and Windsweep Road, Bethel Island, Contra Costa County, BGG* Job #G004.06 (dated May 31, 2018).

during drilling of the borings. Testing was focused on evaluation of the engineering properties of the fill, including the potential for compaction-related settlement (testing was performed by the laboratory of Engeo, Inc. using ASTM testing method). BGG scope of work included corrosion potential testing. That data is presented in Appendix C of the BGG report. The corrosivity testing was performed by Cerco Analytical. Note that Appendix 2 of our peer review letter includes exhibits from the 2018 BGG report:

- Plate 2 shows the Delta Coves project, with residential finger streets that project out into the lagoon. In this base map the location of all of the 29 boring logged by BGG in 2018. Note that Boring B8 was located within the CDMS24-00015 project site. The log is this boring is presented the page which follows Plate 2.
- Plate 3 shows areas of previous ground improvement (i.e., blue shading identifies lands where liquefiable sands were confirmed present and where the mitigation measure was over-excavation if the saturated, liquefiable sands occurred followed by placement of engineered fill; the red shading identifies area were deep dynamic compaction was utilized to compact the soils and thereby mitigating the liquefaction hazard. Also shown are the cutoff slurry wall (shaded orange) and the area of stone column treatment (shaded green). These mitigations were designed and constructed to preclude saturation of the perimeter levees. The project site of CDMS24-00015 is unshaded, indicating that the project site was determined by BGC to have a liquefaction potential that was less-than-significant (i.e. these sand dune deposits were evaluated by BGC and determined to be sufficiently indurated to preclude the potential for liquefaction under the seismic loading produced by the design earthquake).
- Plate 4 shows contours identifying the depth of a distinctive of a throughgoing impervious clay/silt layer that was traced throughout the Delta Coves project.
- Plate 5A presents schematic profiles. Boring B-8 (logged by BGG) confirmed the project site is underlain by

2. Discussion of Subsurface Conditions

Delta Coves is generally underlain by an estimated 10 to 15 ft. of engineered fill. The fill placement was based on geotechnical recommendations of the previous geotechnical engineering firm. That earthwork was accomplished with full compliance with the provisions of a grading permit issued by Contra Costa County; and the earthwork was monitored by the project geotechnical engineers at that time to ensure their recommendations were properly interpreted by their client's contractors. Most of the Delta Coves project is underlain by soil that was densified by ground modification methods. BGG presents their interpretation of subsurface conditions on Plates 5A through 5D of the BGG report. Not all BGG's borings encountered groundwater. Where groundwater was encountered it was found to be approximately 6 to 8 ft. below the ground surface. BGG notes that water levels are expected to be influenced by tidal fluctuations as well as being influenced by the slurry wall that was constructed on the perimeter of the lagoon, where the groundwater level is expected to be approximately 10 ft.+/- below the ground surface. In closing, BGG presents a statement of limitations indicating. Briefly summarized, BGG states a) that the scope of their investigation was limited to relatively shallow exploration, the results of laboratory testing representative samples and review of previous geotechnical investigations performed by others and b) the investigation was conducted in accordance with current geotechnical engineering standards; no warranty is expressed or implied.

3. 2021 BGG Investigation

The purpose of the 2021 BGG investigation was to provide design-level recommendations for the construction of improvements within Parcels B, C, D & E of Delta Coves. The scope of the 2021 investigation included the logging of seven (7) test pits (Plate 2 of the 2021 BGG report shows the location

of test pits; test pits and test pit logs are presented in Appendix 1 of the BGG report. The fill penetrate on that site was placement of the fill placed during mass grading of the site during period 2006-2008 (i.e., placement of that fill was monitored by BGC). The BGG investigation was intended to verify the engineering properties of the fill and comment on its suitability for the support of the proposed improvements (residences, streets, driveways and flatwork).The material exposed on the walls of the test pits was described as follows:

> *0-1 ft Silty sand, gray-brown, dry, medium dense, fine- to medium-grained sand.*
>
> *1-2 ¾ ft. Sand with silt to silty sand, brown, moist medium dense to dense, fine-grained sand (Testing indicates this unit has a 7.7% moisture content; sample consolidated 0.2% upon surcharge loading to 1,500 psf; and an additional 0.4% after saturation).*
>
> *2 ¾-5½ ft. Sand with silt, dark gray, moist, dense, fine-grained sand (Gradation testing indicates 82% sand, 11% silt & 6% clay). A field percolation test performed on soils in TP-6 at a depth of 4 ft. indicated a percolation rate of 0.9 in./hr.*

Regarding the field percolation testing, BGG cautions that the designer of the stormwater management improvements should determine the appropriate rate to be used for design purposes and apply an appropriate factor of safety to the field percolation test results. BGG then summarizes the results of their 2018 investigation (i.e., the project site is underlain by 10 to 15 ft. of engineered fill from past mass grading activities. Underlying the engineered fill is original ground (sandy soils) that were densified by ground modification using *Dynamic Compaction Treatment.* BGG then references the plates presented in their report. The primary conclusion of BGG is that parcels that were the subject of the investigation are suitable for residential development provided BGG's geotechnical recommendations are incorporated into the design and construction of the project.

- Foundations. Residential structures are to be supported on post-tensioned slab foundations.
- Seepage. Groundwater is expected to be about 6 ft. below the ground surface. Water may seep into trench excavations for deep underground utilities. Therefore, the underground contractor should be prepared to handle infiltration of water into deep utility excavations.
- Penetration of Slurry Trench Cut-Off Wall. If underground utilities cut through the trench or its clay cap, special backfill recommendations are required. The civil plans shall contain the recommended backfill methods.
- Additional Design Recommendations. These recommendations address *(i)* site preparation/ final grading, *(ii)* utility trench excavation and backfill, *(iii)* California Building Code seismic design parameters for a Class D project site with modified peak ground acceleration of 0.56g, *(iv)* foundations for isolated accessory structures, and for exterior flatwork, *(v)* pavement design, including subgrade and aggregate base, and *(vi)* recommendations for future geotechnical services, including plan review as well as observations and testing services during the construction period.

DMA Evaluation

BGG's 2003 and 2006 reports provide design level recommendations for the construction of the Delta Coves project. Those reports were peer reviewed by Kevin Tillis of the firm Hultgren-Tillis Engineers, the County's peer review geotechnical engineer for this project. The project site and all residential lots that front on Halcyon Place were determined to be in an area underlain by Dune Sands, and borings and CPTs indicated the Dune Sands that were too well consolidated to be a candidate for liquefaction. The subsurface data points providing technical data on subsurface conditions on the CDMS24-00015 site include CPT's 46 and 47 along with a 2018 Boring of BGG (i.e., boring B-8). Appendix A presents maps and logs pertinent

to subsurface conditions on the site of CDMS24-00015 project site.

It should be noted that the evaluation of liquefaction hazard has advanced in the past 15 years. Now most liquefaction analyses utilized CPT data rather than relying of STP blow counts, and the recent geotechnical studies have refined the amount of a more precise tools for assessing the fines content of sand that would preclude liquefaction. Also, the peak ground acceleration (PGA) used by Berlogar Geotechnical Consultants for their design earthquake is substantially lower that the PGA used by the California Geological Survey in the Seismic Hazard Zone report of the SHA map that accompanied the Jensey Island Quad.(i.e. SHZ map 123). Nevertheless, we have no objection to deeming the applicant complete.

DMA Recommendations

GEO-1 A design level geotechnical report shall be submitted prior to the issuance of residential building permits. The report shall be subject to review by the County's peer review geologist, and review/approval of the Zoning Administrator. Improvements, grading and building plans shall carry out the recommendations of the approved report.

Purpose and Limitations

The purpose of our review was to provide a professional opinion on the adequacy of the historic geotechnical reports Berlogar Geotechnical Consultants (BGC) for evaluation of the hazard of posed by liquefaction. BGG delineated the hazard areas on provided mitigation measures. Subsequently BGC provided monitoring to ensure their recommendations were properly implemented during site grading which occurred during the period commencing in March 2006 and completed in January 2008. Hultgren-Tillis Engineers provided peer review services for Contra Costa County. All earthwork was done under permits issued by Contra Costa County and the record indicates that the developer satisfied the requirements of the Building Inspection Division, Public Works Department and utility service providers.

Our services have been limited to review of the reports referenced. Our opinions and conclusions are made in accordance with generally accepted principles and practices of the engineering geology profession. We trust this letter provides the evaluation and comments that you requested. Please call if you have any questions.

Sincerely,
DARWIN MYERS ASSOCIATES

Darwin Myers

Darwin Myers, CEG 946
Principal

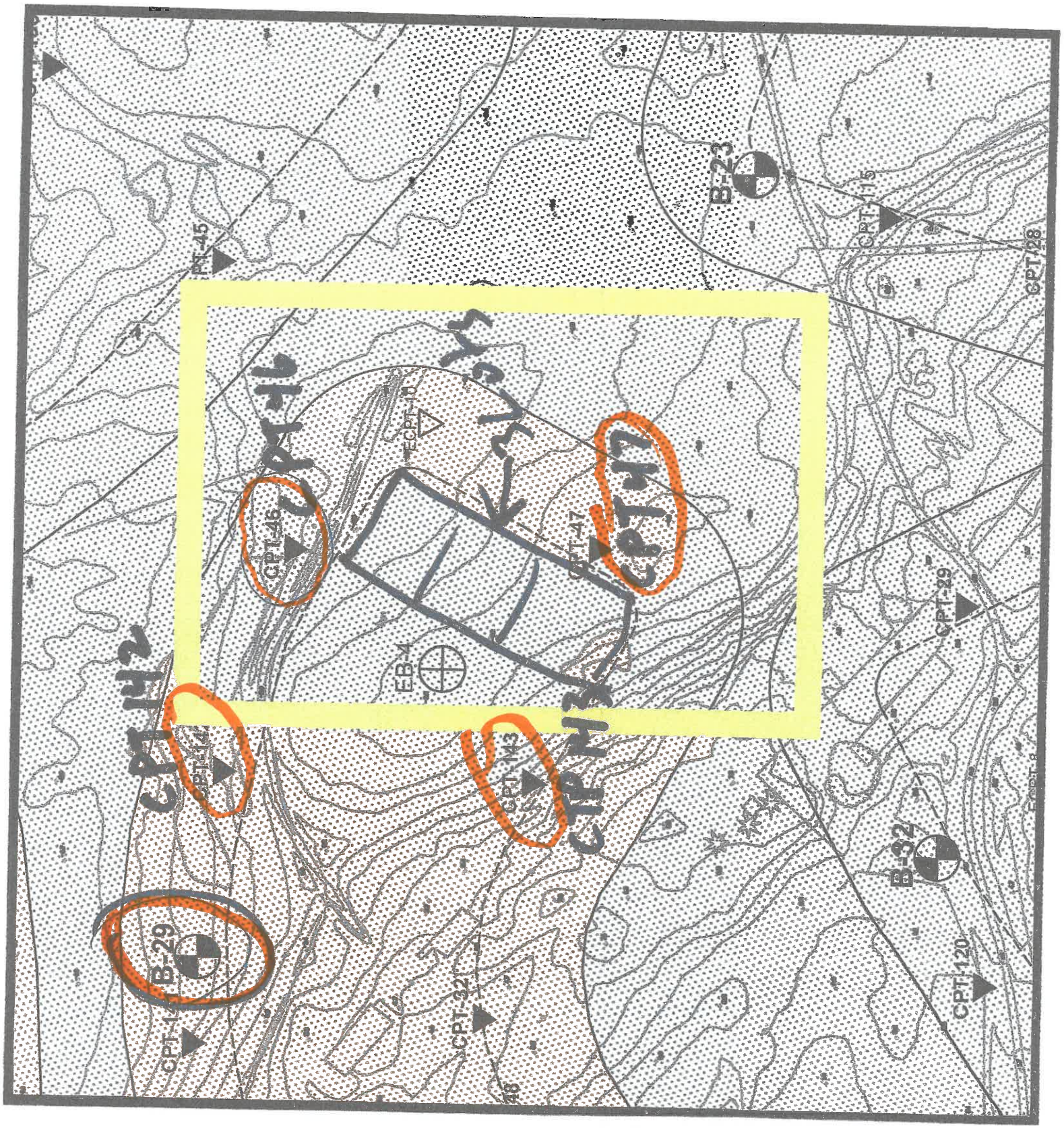
Appendix 1

Selected Logs & Map

Berlogar Geotechnical Consultants

Liquefaction Mitigation, Delta Coves Development (2006 & 2008)

Appendix 1


B-23
CPT-115
CPT-28
CPT-45
CPT-46
CPT-47
EB-4
CPT-29
CPT-M3
B-32
B-29
CPT-120
CPT-32

BORING LOG B-29

JOB NUMBER: 2450.100 **DATE DRILLED:** 2-24-03

JOB NAME: Delta Coves **SURFACE ELEVATION:** -3.5 feet

DRILL RIG: Rotary Wash **DATUM:** Mean Sea Level

SAMPLER TYPE:	DRIVE WEIGHT - LB	HEIGHT OF FALL - IN
■ 2.5 inch I.D. Split Barrel	140	30
☑ Standard Penetration Test	140	30

BLOWS PER FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT p.c.f.	DEPTH IN FEET	USCS CLASSIFICATION	DESCRIPTION
6	6.5	111		SP-SM	SAND TO SILTY SAND, top 3 inches gray-brown, below 3 inches light gray-brown, moist, loose, fine-grained sand, limonite stains
					below 4 feert, becomes light to medium gray, saturated, loose to medium dense
10	13.4	106	5		
14	15.6	123	10		
					below 13 feet, becomes light brown-gray, medium desne
23	19.5	110	15		
					below 17-1/2 feet, becomes light to medium green-gray, medium dense
28	21.6	103	20		

BORING LOG B-29

JOB NUMBER: 2450.100 **SHEET:** 2 **OF:** 3

JOB NAME: Delta Coves **DEPTH:** 20 feet **TO** 40 feet

NOTES:

BLOWS PER FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT p.c.f.	DEPTH IN FEET	USCS CLASSIFICATION	DESCRIPTION
28	21.6	103		SP-SM	SAND TO SILTY SAND, light to medium green-gray, wet to saturated, medium dense, fine-grained sand
					below 23 feet, gradual color change to light brown-gray, medium dense
21	22.8	104	25		
					below 30 feet, becomes dense
31	21.8	103	30		
				ML	CLAYEY SILT, light brown-gray, wet, stiff, trace fine-grained sand, limonite stains
15	33.5	90	35		
20	34.9	90	40		

BORING LOG B-29

JOB NUMBER: 2450.100 **SHEET:** 3 **OF:** 3

JOB NAME: Delta Coves **DEPTH:** 40 feet **TO** 41-1/2 feet

NOTES:

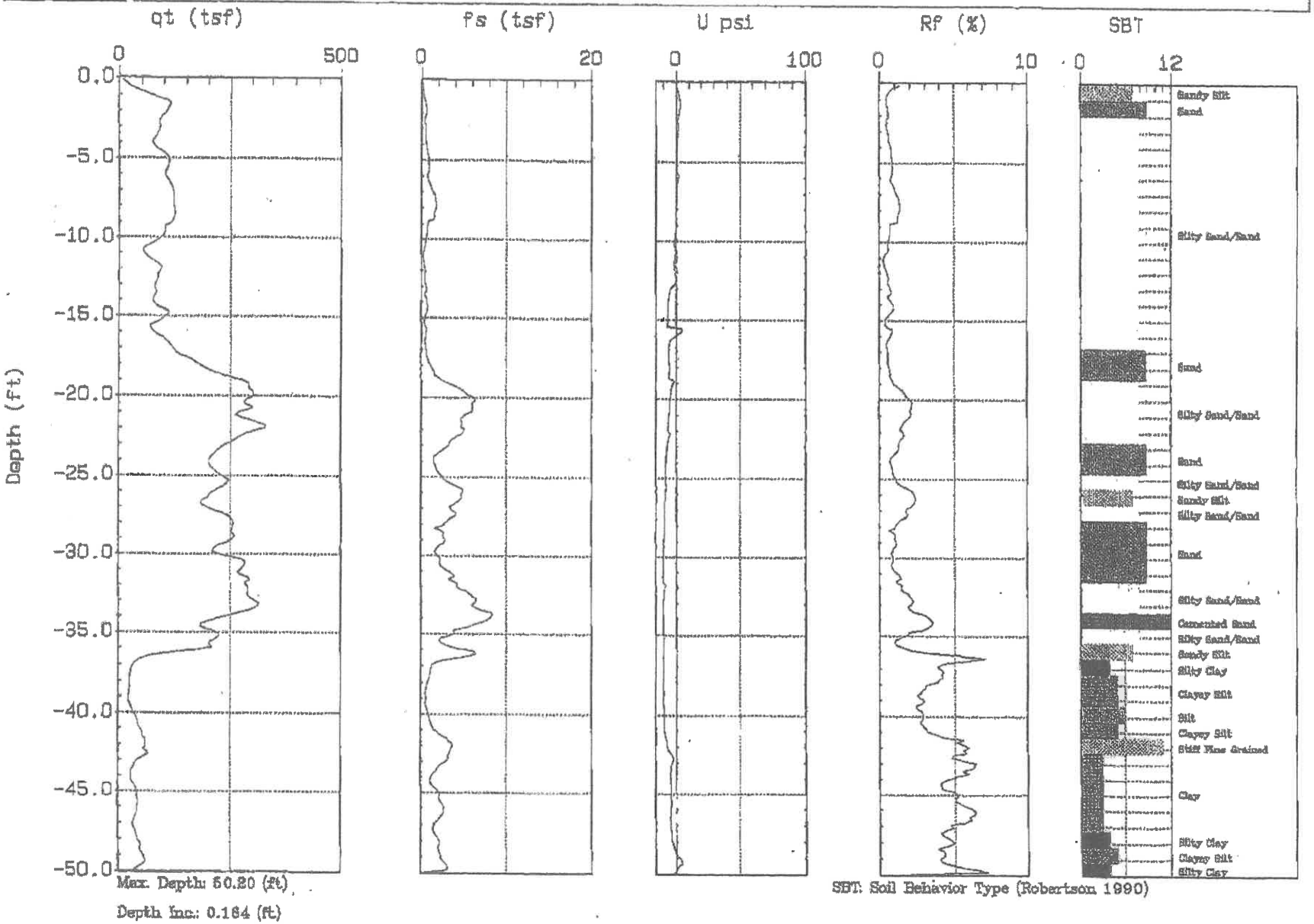
BLOWS PER FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT p.c.f.	DEPTH IN FEET	USCS CLASSI-FICATION	DESCRIPTION
20	34.9	90		ML	CLAYEY SILT, light brown-gray, wet, stiff, trace fine-grained sand, *limonite stains*
			45		Boring terminated at 41-1/2 feet. Free water encountered at 8-1/2 feet.
			50		
			55		
			60		

GREGG

BERLOGAR

Site : BETHEL ISLAND
Location : CPT-46

Geologist : R. VAHAMAKI
Date : 02:14:03 10:34



Max. Depth: 50.20 (ft)
Depth Inc.: 0.164 (ft)

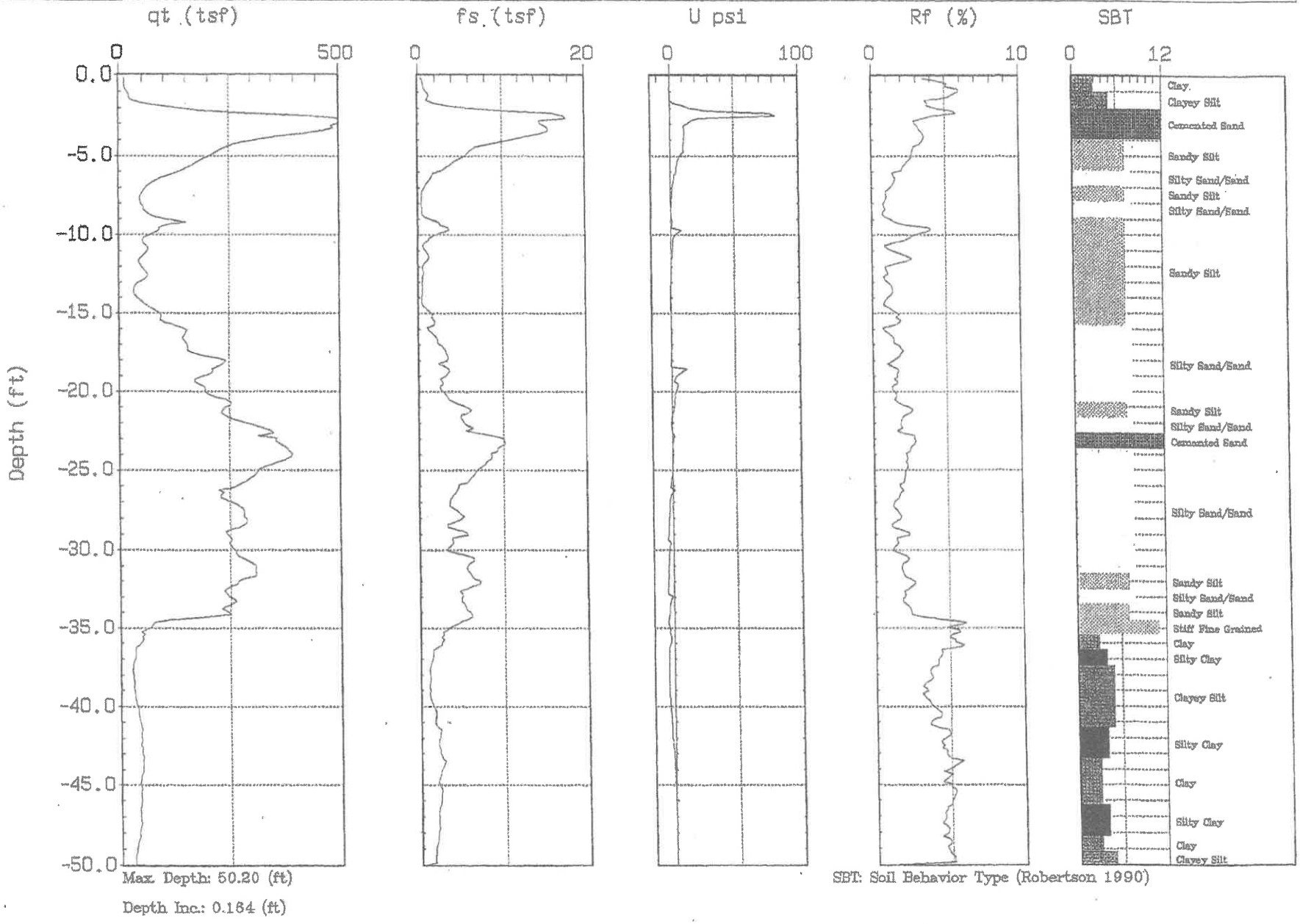
SBT: Soil Behavior Type (Robertson 1990)

GREGG

BERLOGAR

Site : BETHEL ISLAND
Location : CPT-47

Geologist : R. VAHAMAKI
Date : 02:14:03 11:23



Max. Depth: 50.20 (ft)

Depth Inc.: 0.164 (ft)

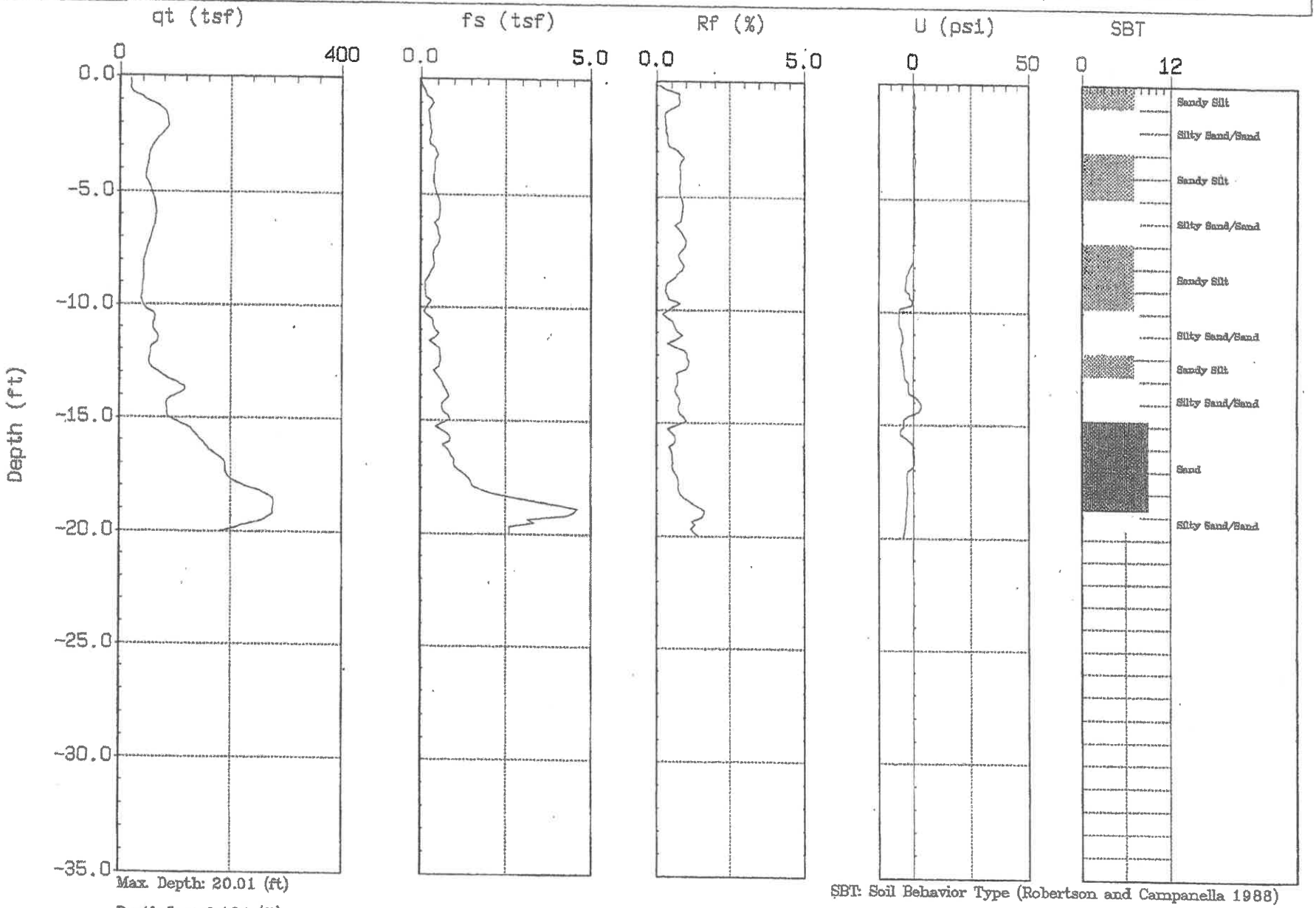
SBT: Soil Behavior Type (Robertson 1990)

GREGG

BERLOGAR

Site: DELTA COVE
Location: CPT-142

Geologist: R. VAHAMAKI
Date: 04:01:04 15:02



Max. Depth: 20.01 (ft)

Depth Inc.: 0.164 (ft)

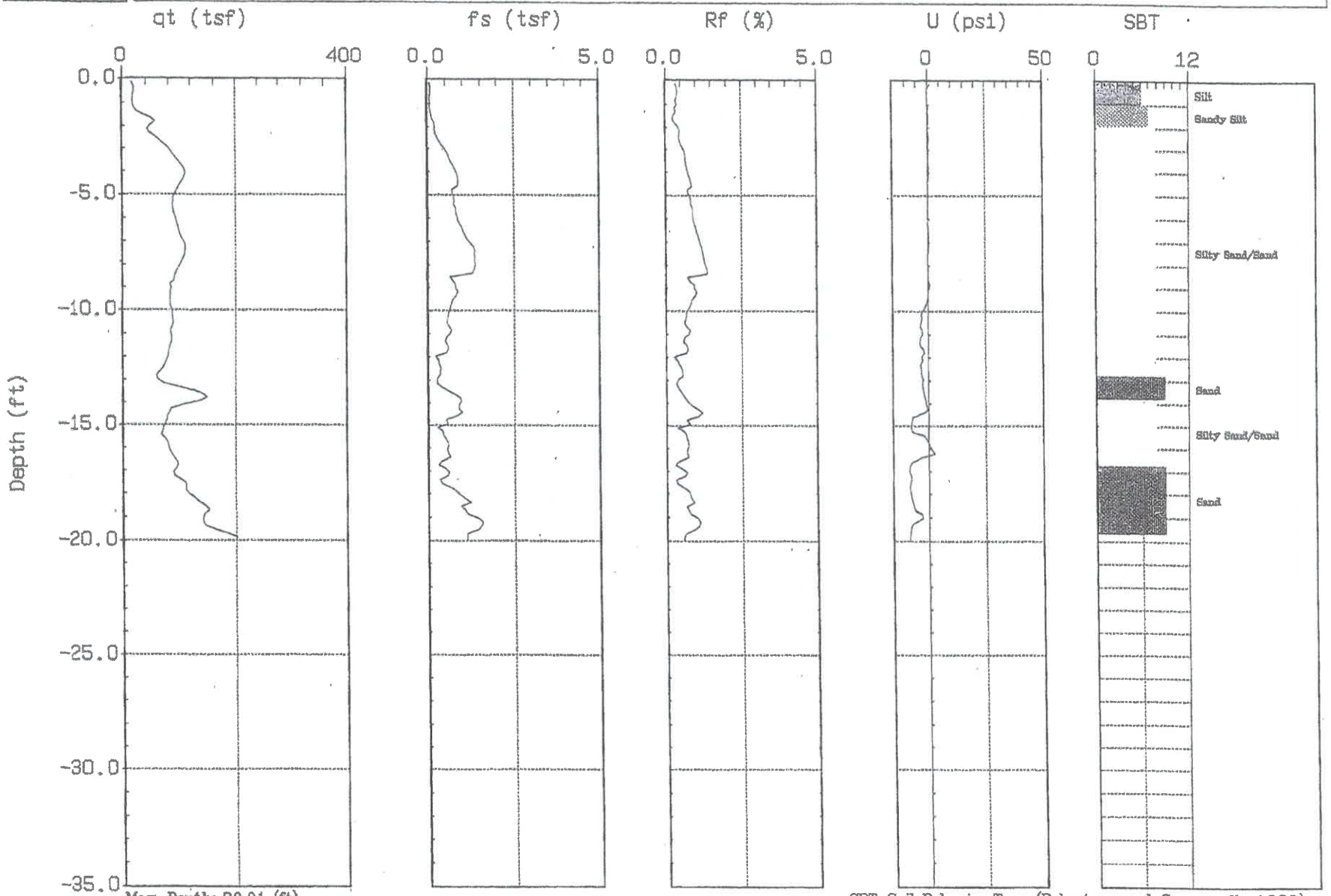
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

BERLOGAR

Site: DELTA COVE
Location: CPT-143

Geologist: R. VAHAMAKI
Date: 04:01:04 13:58



Max. Depth: 20.01 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

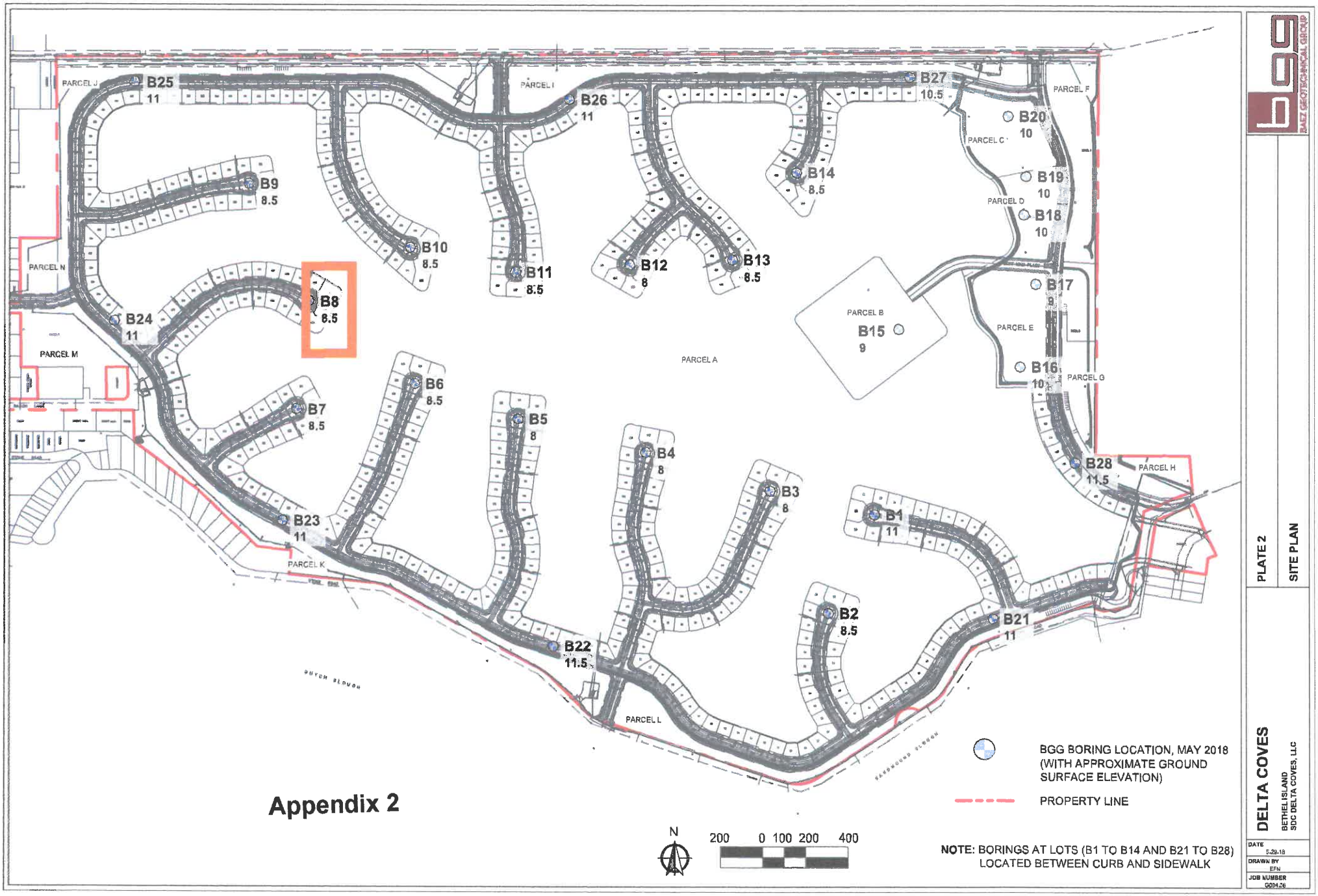
Appendix 2

Selected Logs & Maps

Baez Geotechnical Group

2024 Report for CDMS24-00015

Delta Coves Development



Appendix 2

BGG BAEZ GEOTECHNICAL GROUP

PLATE 2

SITE PLAN

DELTA COVES

BETHEL ISLAND

SDC DELTA COVES, LLC

DATE 5-29-18

DRAWN BY EFN

JOB NUMBER G004.26

BORING NUMBER: B-8

PROJECT NAME: Delta Coves - Subsurface Investigation
PROJECT NUMBER: G004.06
DATE DRILLED: 05/03/2018
DRILLING CONTRACTOR: Exploration Geoservices
DRILLING METHOD: Hollow stem auger
LOGGED BY: SMP
NOTES: Elevations from project drawings by RJA

PROJECT LOCATION: Bethel Island, CA
CLIENT: SDC Delta Coves, LLC
GROUND ELEVATION: 8.5 feet MSL
GROUNDWATER: 2.5 feet MSL
SAMPLER TYPE:
Modified California Sampler
Standard Penetration Test

USCS	MATERIAL DESCRIPTION	ELEVATION (feet)	DEPTH (feet)	SAMPLER	BLOW COUNT (blows/foot)	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	PLASTICITY INDEX	FINES CONTENT % PASSING #200
SM	SILTY SAND, brown, moist, loose, fine-grained sand, with weeds	8.5	0						
SP	SAND with SILT, mottled light to dark brown, moist, dense, fine- to medium-grained sand				36	106	14.8		
SP	SAND, gray and black, moist, dense, fine-grained	3.5	5		40				
	below 6 feet, mottled brown and gray, saturated (ϕ = 31 degrees, c = 690 psf)				84	104	14.4		
						108	20.3		10.5
	below 8 feet, light to dark gray, wet	0			50				
SM/ ML	SILTY SAND to SANDY SILT, mottled light to medium gray and light rust-orange, wet, dense, fine-grained sand	-1.5	10		44				
SP and SM	SAND and SILTY SAND, mottled light to dark gray and rust-orange, moist, very dense, fine- to medium-grained sand	-6.5	15		54				
	Bottom of Boring at 15 feet bgs Groundwater encountered at 6 feet bgs *Note: Subsurface soils encountered are considered to be engineered fill from previous grading events*	-11.5	20						

BAEZ GEOTECHNICAL GROUP

PLATE 3

AREAS OF PREVIOUS GROUND IMPROVEMENTS

DELTA COVES

BETHEL ISLAND
SDC DELTA COVES, LLC

DATE 5-29-18

DRAWN BY EFN

JOB NUMBER G004.06

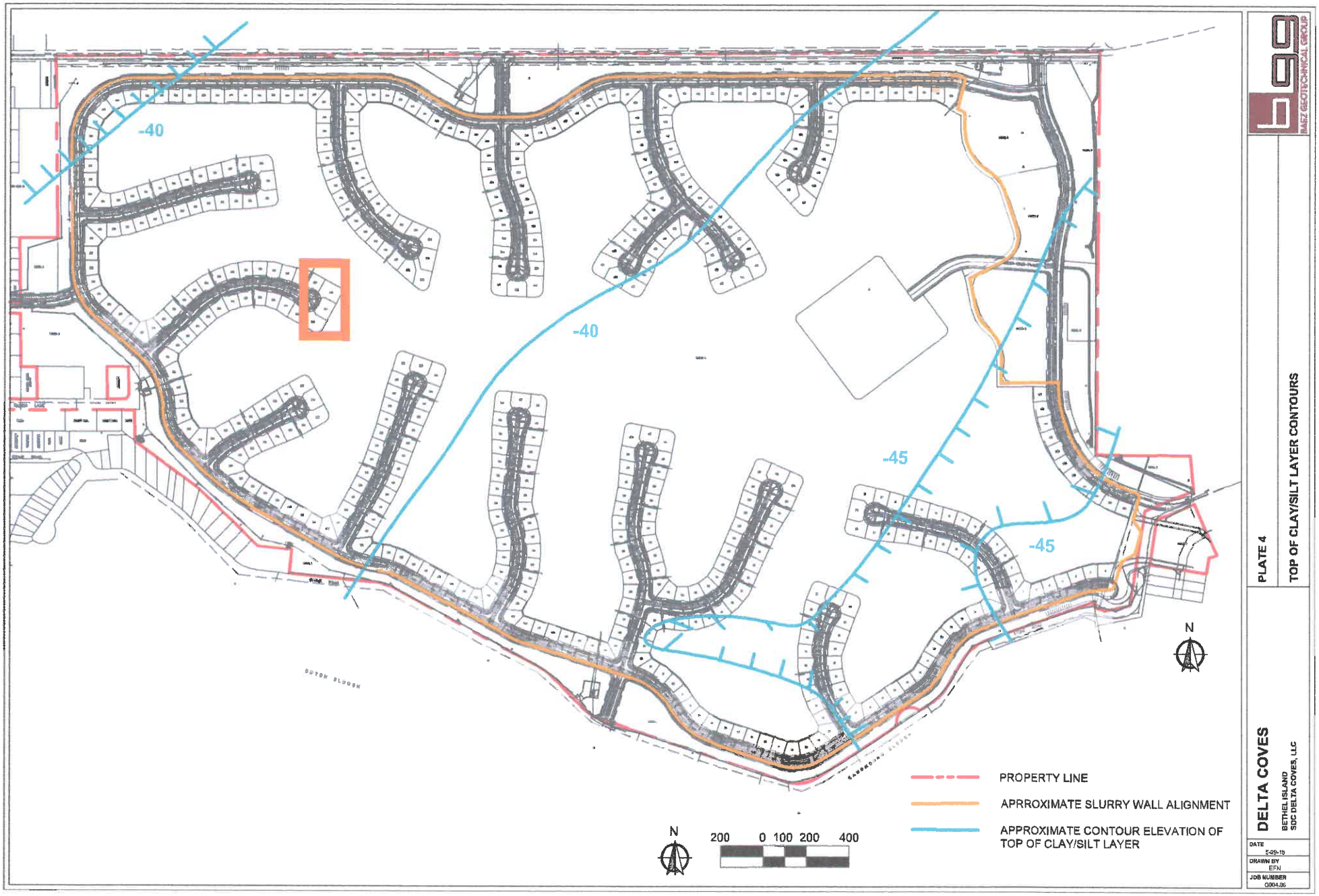


PLATE 4

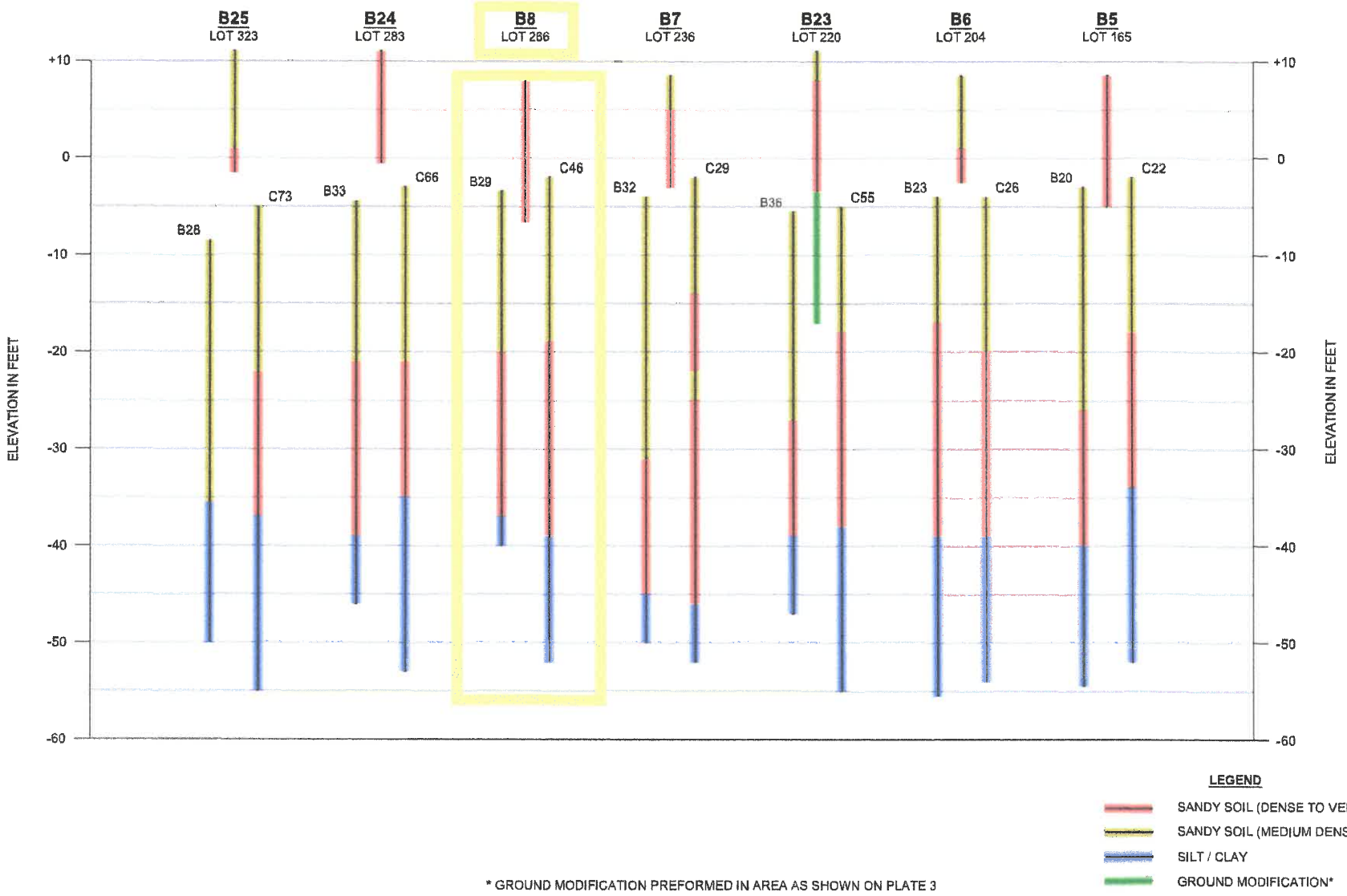
TOP OF CLAY/SILT LAYER CONTOURS

DELTA COVES

BETHEL ISLAND
SDC DELTA COVES, LLC

DATE	5-29-19
DRAWN BY	EFN
JOB NUMBER	0004J6

PLATE 5A - SCHEMATIC SUBSURFACE PROFILES - WEST



* GROUND MODIFICATION PREFORMED IN AREA AS SHOWN ON PLATE 3

BAY GEOTECHNICAL GROUP

PLATE 5A

SCHEMATIC SUBSURFACE PROFILES - WEST

DELTA COVES

BETHEL ISLAND
CONTRA COSTA COUNTY, CA
SDC DELTA COVES, LLC

DATE 5-22-18
DRAWN BY EFN
JOB NUMBER G004.06

Contra Costa County
Public Works Department

Warren Lai, Director
Deputy Directors
Stephen Kowalewski, Chief
Allison Knapp
Sarah Price
Carrie Ricci
Joe Yee

Memo

December 24, 2024

TO: Everett Louie, Project Planner, Department of Conservation and Development

FROM: For Larry Gossett, Senior Civil Engineer, Engineering Services Division

SUBJECT: **MINOR SUBDIVISION MS24-0015**
STAFF REPORT AND CONDITIONS OF APPROVAL
(Owen Poole/Halcyon Place/Bethel Island/APN 031-210-060)

FILE: **MS24-0015**

We have reviewed the application for **minor subdivision MS24-0015** received by your office on **July 6, 2024**, and submit the following comments:

Background
The applicant requests Minor Subdivision permit to re-establish Lots 263, 264 and 265 of Tract 6013, which were previously merged to form this single parcel. The new parcels will match the property lines as originally created by the parent subdivision.

The property is located in Bethel Island and zoned P-1. The property abuts Halcyon Place and two other residential parcels to the west and is otherwise surrounded by the waters of Delta Cove.

All infrastructure (roads, drainage, utilities, etc.) was installed under the prior subdivision. No additional improvements are necessary.

TRAFFIC and TRANSPORTATION
Subsequent to the filing of the original subdivision map, the streets, which had previously been dedicated to the County, were vacated and are now privately maintained by the Homeowner's Association. No encroachment permits from the County will be required.

Stormwater Management and Discharge Control
A Stormwater Control Plan (SWCP) is required for applications that will create and/or redevelop impervious surface area exceeding 5,000 square feet in compliance with the County's Stormwater Management and Discharge Control Ordinance (§1014) and the County's Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit. While no estimated quantity of impervious surfaces was provided, a cumulative excess of 5,000 square feet of new impervious surface could render submittal of a Stormwater Control Plan necessary.

A SWCP, if necessary, shall be prepared using the latest edition of the Stormwater C.3 Guidebook and template (available at www.cccleanwater.org) and meet the requirements of the Regional Water Quality Control Board.

Floodplain Management
The property does not lie within the Special Flood Hazard Area (100-year flood boundary) as designated on the Federal Emergency Management Agency Flood Insurance Rate Map.

Lighting District Annexation
The subject parcel is already annexed into the L-100 lighting district and will require no further annexation.

Area of Benefit Fee
The applicant will need to comply with the requirements of the Bridge/Thoroughfare Fee Ordinance for the Bethel Island and ECCRFFA/RTDIM Areas of Benefit, as adopted by the Board of Supervisors. This fee shall be paid prior to issuance of building permits.

Drainage Area Fee and Creek Mitigation
The property is located within unformed Drainage Area 45. There is currently no fee ordinance adopted by the Board of Supervisors for this area.

LG:ss
G:\engsvc\Land Dev\MS\MS 24-0015\Staff Report and Conditions of Approval 12-24-24.docx

c: J. LaRocque, Engineering Services
L. Gossett, Engineering Services
A. Vazquez Engineering Services
Owen Poole, *applicant*
151 Spyrock Court
Walnut Creek, CA 94595

PUBLIC WORKS RECOMMENDED
CONDITIONS OF APPROVAL FOR SUBDIVISION MS24-0015

COMPLY WITH THE FOLLOWING CONDITIONS OF APPROVAL PRIOR TO FILING OF THE PARCEL MAP.

General Requirements:

- In accordance with Section 92-2.006 of the Ordinance Code, this subdivision shall conform to all applicable provisions of the Subdivision Ordinance (Title 9). Any exceptions therefrom must be specifically listed in this conditional approval statement. The drainage, road and utility improvements outlined below require the review and approval of the Public Works Department and are based on the tentative map received by the Department of Conservation and Development, Community Development Division, on August 1, 2024.

- Improvement plans prepared by a registered civil engineer shall be submitted, if necessary, to the Public Works Department, Engineering Services Division, along with review and inspection fees, and security for all improvements required by the Ordinance Code for the conditions of approval of this subdivision. Any necessary traffic signing and striping shall be included in the improvement plans for review by the Transportation Engineering Division of the Public Works Department.

Roadway Improvements (Frontage):

- Any cracked and displaced curb, gutter, and sidewalk shall be removed and replaced along the project frontage of Halcyon Place. Concrete shall be saw-cut prior to removal. Existing lines and grade shall be maintained. New curb and gutter shall be doweled into existing improvements.

Bicycle - Pedestrian Facilities:

Pedestrian Access

- Curb ramps and driveways should be designed and constructed in accordance with current County standards. A detectable warning surface (e.g. truncated domes) shall be installed on all curb ramps. Adequate right-of-way shall be dedicated at the curb returns to accommodate the returns and curb ramps; accommodate a minimum 4-foot landing on top of any curb ramp proposed.

- Applicant shall design all public and private pedestrian facilities for accessibility in accordance with Title 24 and the Americans with Disabilities Act. This shall include all sidewalks, paths, driveway depressions, and curb ramps.

Drainage Improvements:

Collect and Convey

- Applicant shall collect and convey all stormwater entering and/or originating on this property, without diversion and within an adequate storm drainage system, to *an adequate* natural watercourse having definable bed and banks, or to an existing adequate public storm drainage system which conveys the stormwater to *an adequate* natural watercourse, in accordance with Division 914 of the Ordinance Code.

Miscellaneous Drainage Requirements:

- Applicant shall design and construct all storm drainage facilities in compliance with the Ordinance Code and Public Works Department design standards.

- Applicant shall prevent storm drainage from draining across the sidewalk(s) and driveway(s) in a concentrated manner.

National Pollutant Discharge Elimination System (NPDES):

- The applicant shall comply with all rules, regulations and procedures of the National Pollutant Discharge Elimination System (NPDES) for municipal, construction and industrial activities as promulgated by the California State Water Resources Control Board, or any of its Regional Water Quality Control Boards (Central Valley - Region V).

  Compliance shall include developing long-term best management practices (BMPs) for the reduction or elimination of stormwater pollutants. The project design shall incorporate wherever feasible, the following long-term BMPs in accordance with the Contra Costa Clean Water Program for the site's stormwater drainage:

  - Minimize the amount of directly connected impervious surface area.
  - Install approved full trash capture devices on all catch basins (excluding catch basins within bioretention area) as reviewed and approved by Public Works Department.
  - Trash capture devices shall meet the requirements of the County's NPDES Permit.
  - Place advisory warnings on all catch basins and storm drains using current storm drain markers.
  - Offer pavers for household driveways and/or walkways as an option to buyers.
  - Construct concrete driveway weakened plane joints at angles to assist in directing run-off to landscaped/pervious areas prior to entering the street curb and gutter.
  - Other alternatives comparable to the above as approved by the Public Works Department.

ADVISORY NOTES

- Applicant will be required to comply with the requirements of the Bridge/Thoroughfare Fee Ordinance for the ECCRFFA/RTDM and Bethel Island Area of Benefit as adopted by the Board of Supervisors. Payment is required prior to issuance of a building permit.

- Applicant shall comply with all rules, regulations, and procedures of the National Pollutant Discharge Elimination Systems (NPDES) for municipal, construction and industrial activities as promulgated by the California State Water Resources Control Board, or any of its Regional Water Quality Control Boards (Central Valley - Region V).

- This project may be subject to the requirements of the Department of Fish and Wildlife. It is the applicant's responsibility to notify the Department of Fish and Wildlife of any proposed construction within this development that may affect any fish and wildlife resources, per the Fish and Wildlife Code.

- This project may be subject to the requirements of the Army Corps of Engineers. It is the applicant's responsibility to notify the appropriate district of the Corps of Engineers to determine if a permit is required, and if it can be obtained.