

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

ORDER NO. R2-2022-00XX

SITE CLEANUP REQUIREMENTS for:

**PACIFIC GAS AND ELECTRIC COMPANY AND
PORT OF SAN FRANCISCO**

for the offshore property located between:

**PIER 39 AND PIER 43½
SAN FRANCISCO
SAN FRANCISCO COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Regional Water Board), finds that:

1. Site Location

The Site consists of intertidal and subtidal sediment covering about 47 acres along the northern San Francisco waterfront from Pier 39 East Basin Marina on the east to Pier 43½ on the west (Figure 1). The northern boundary of the investigation area is about 1,000 feet offshore. The seawall along the Embarcadero is the southern boundary of the site. The adjacent, upland shoreline consists of retail stores, restaurants, parks, parking lots and public rights of ways (roads and sidewalks). A substantial portion of the Site is permitted for operation and maintenance of piers and wharfs, maintenance dredging and maritime vessel operations.

2. Site History

- a. Shoreline Development: The Site and adjacent uplands were historically part of San Francisco Bay with tidal mudflats extending from the historical natural shoreline. These mudflats were filled in after a seawall was constructed along the southern portion of the Site in the late 1800s. The area south of the Site was filled in by the early 1900s and became an industrial area. Several short piers/wharfs, as well as the bulkhead wharf along the seawall allowed boat access to the shoreline. Between 1913 and 1917, Piers 29 to 41 were constructed. Pier 45 was constructed in 1929 and Piers 43 and 43½ were constructed by 1938. The configurations of the piers have changed substantially through time. The current configuration was achieved in 2013.
- b. Former Beach Street Manufactured Gas Plant History: In 1899, the San Francisco Timber Preserving Company, a creosoting facility, occupied the future location of the Beach Street Manufactured Gas Plant (MGP) on the

block bounded by Beach, Mason, Jefferson, and Powell Streets. In 1900, the San Francisco Coke and Gas Company (SFC&G) purchased the property and began coke and coal gas production. In 1907, the SFC&G changed its corporate name to Metropolitan Light and Power Company (ML&PC) and converted to carbureted water gas and oil gas production. Several corporate changes and sales occurred in late 1911. On November 18, 1911, ML&PC formed the Metropolitan Gas Corporation (MGC). Then, on November 23, November, it sold the Beach Street MGP property to the newly formed MGC. On November 29, MGC sold the property to San Francisco Gas and Electric Company, which then on December 2 sold all property acquired from MGC to PG&E.

- c. PG&E operated the former Beach Street MGP until 1931, when natural gas became available in San Francisco and gas manufacturing ceased at this location. In the mid-1950s, the property was sold and redeveloped for commercial use (e.g., shops, hotel). The former MGP and immediately surrounding upland are under regulatory oversight by the Department of Toxic Substances Control (Envirostor case 60001256).

The former Beach Street MGP is known to have used three different gas generation processes: coke and coal carbonization, carbureted water and oil gas. Each process produced somewhat different byproducts, specifically non-aqueous phase coal tars and solid lampblack, all of which predominantly contain polycyclic aromatic hydrocarbons (PAHs). PAHs are a class of chemicals that occur naturally as mixtures in coal, crude oil, and petroleum products (e.g., gasoline). PAHs also are produced when coal, oil, gas, wood, garbage, and tobacco are burned. PAHs have been known to have adverse effects on humans and aquatic life.

- d. Other Sources of PAHs: In addition to the former Beach Street MGP, there were many industrial operations along the waterfront area of the Site, including some that likely generated waste streams containing PAHs. For instance, the creosoting facility, in which wood was soaked in tar to preserve it, is a probable source of PAHs. Moreover, incidental spills, runoff from land sources, discharge from the combined storm sewers, and atmospheric deposition are further sources of PAHs.

3. **Named Dischargers**

Pacific Gas and Electric Company (PG&E) is named as a Discharger because of substantial evidence that it discharged pollutants to sediment. This evidence includes PG&E's use of PAHs in its operations of the former Beach Street MGP, the plant's proximity to the shoreline (Figure 2), the presence of these same pollutants in sediment, and the findings of the source evaluation of PAH mixture

composition in sediments in the Final Remedial Investigation Report (Haley & Aldrich 2020).

The Port of San Francisco (the Port) is named as a Discharger because it is the current owner of the offshore and shoreline property, it has knowledge of the discharge or the activities that caused the discharge, and it has the legal ability to control the discharge. PG&E and the Port are collectively referred to hereinafter as the Dischargers.

If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on the Site where it entered or could have entered waters of the state, the Regional Water Board will consider adding those parties' names to this order.

This Order serves as Site Cleanup Requirements for remediation of sediment contamination between Pier 39 and Pier 43½ that poses potential current or future unacceptable risk to human and ecological receptors.

4. **Regulatory Status**

The Site is or has been subject to the following Regional Water Board orders:

- a. The Port is subject to the July 29, 2014, Water Quality Certification, Maintenance Dredging Program through 2023. This Water Quality Certification included, as Condition 11, a Water Code section 13267 requirement for a technical report characterizing the potential threat to water quality and risk to aquatic life posed by PAHs in sediment at the Pier 39 Marina. The technical report requirements have been fulfilled.
- b. PG&E and the Port were subject to a 2017 Water Code section 13267 requirement for additional technical information related to the ongoing sediment investigation triggered by the 2014 Water Code section 13267 requirement. The technical report requirements have been fulfilled.
- c. PG&E and the Port were subject to a 2020 Water Code section 13267 requirement for technical information related to the ongoing sediment investigation, including a draft feasibility study and remedial action plan. The technical report requirements have been fulfilled.

5. **Site Hydrology**

Site sediments are dominantly silt with varying amounts of sand and clay, consistent with the ubiquitous bay mud found throughout the Bay. The sediment at the mudline (the sediment surface) is generally soft with a high-water content; however, with depth (approximately 2 to 3 feet below mudline), the sediment is

more consolidated (i.e., generally lower water content). Porosity and permeability generally decrease with depth below mudline.

The Site exhibits varying mudline elevations depending on sedimentation rates, maintenance dredging, wind-generated waves, and vessel activities.

Depressions resulting from propeller wash (scour areas) are observed in four locations (Figure 2): (1) within the southwest corner of the Pier 39 West Basin, (2) at Pier 41½, (3) at Pier 43½, and (4) on the eastern edge of the Pier 39 East Basin. Scour areas in the Pier 39 West Basin, at Pier 41½, and at Pier 43½ are associated with the vessel docks for the Blue & Gold, San Francisco Bay Ferry, and the Red and White, respectively.

Site hydrology is governed by tidal conditions and some influence of nearshore currents. Those tidal conditions maintain the sediment contaminated by historical placement or release of materials in the nearshore areas. Contaminated sediments generally are buried beneath cleaner sediments that have accumulated. The presence of the scour areas indicates that large vessel traffic is a significant hydrodynamic driver in portions of the Site. In addition, dredging to maintain navigation depths is another activity that can expose PAHs buried under existing clean sediment cover.

6. Remedial Investigation

A Final Remedial Investigation Report was developed by PG&E in conjunction with the Port and submitted to the Regional Water Board in January 2020. Sediment investigations were performed between 2015 and 2018. Over 900 sediment samples along with sediment porewater and surface water samples were collected for laboratory analysis of PAH concentrations at numerous locations throughout the investigation area (Figure 3). Key findings are summarized herein:

- a. Sediment Characterization: The extent of PAH contamination in sediment has been laterally and vertically characterized to concentrations consistent with the Central Bay ambient level, which is 4,540 micrograms per kilogram ($\mu\text{g}/\text{kg}$) total PAHs. The total PAH concentration in sediment is calculated as the sum of the concentrations of the 25 PAH chemicals included in the San Francisco Bay Regional Monitoring Program (San Francisco Estuary Institute 2015).
- b. Source Identification: Sediment samples were tested for the presence of an extended list of PAH analytes, including both parent and alkylated PAHs, to support a source evaluation. Based on the evaluation, PAHs in sediment likely are associated with the following: (1) historical sources; (2) urban influence (e.g., atmospheric fallout, stormwater runoff) and potentially (3) unidentified point sources. Historical sources include MGP by-products

(coal tar and lampblack) and creosote from wood treating operations. Both MGP and wood-treating operations occurred adjacent to the Bay. The spatial distribution of PAH sediment impacts associated with these sources and the results of upland soil investigations support the conclusion that the PAH sediment impacts resulted primarily from disposal or spillage into the Bay from MGP and creosote facilities rather than historical or ongoing migration from upland sources. Figure 4 illustrates the following: (a) MGP source material in sediment corresponding to the three different gas generation processes known to have been used at the former Beach Street MGP; (b) creosote source material (c) the 1938 wharfs/piers, which coincide with the distribution area for MGP and creosote source material; and (d) total PAH concentrations above 100,000 µg/kg in sediment;. Figure 4 supports the conclusion that total PAH sediment concentrations above 100,000 µg/kg are predominantly indicative of MGP waste, with some minor areas indicative of creosote source material.

- c. Risk Assessment: To evaluate potential impairments of beneficial uses of the Bay due to PAH sediment impacts, PG&E first identified potential exposure pathways for human and ecological receptors considering the beneficial uses and current and foreseeable uses of the waterfront. For humans, three types of receptors were identified and evaluated: (1) recreational users (e.g., swimmers) who could be exposed to surface water via incidental ingestion and dermal contact; (2) commercial/maintenance workers (e.g., dock workers) who could be exposed to surface water via incidental ingestion and dermal contact; and (3) recreational fishers who could consume fish/shellfish that have bioaccumulated PAHs. For ecological receptors, four types of receptors were identified and evaluated: (1) infaunal and epibenthic invertebrates; (2) pelagic and demersal fish, (3) birds, and (4) marine mammals. Exposure routes for ecological receptors include ingestion of and dermal contact with surface water/pore water, ingestion of and dermal contact with sediment, and ingestion of fish/shellfish that have bioaccumulated PAHs. The exposure evaluation used several biological assessment methods, involving multiple life stages of potential receptors and both lethal and sublethal adverse effects linked to site-specific, total PAH sediment concentrations. This empirical testing was supplemented by sampling and evaluation of Bay water, sediment pore water, and benthic community condition. Where exposure or responses could not be reliably measured, predictive modeling was used to assess human and ecological receptor risk, including food web exposure to PAHs in sediment.

PG&E developed a data evaluation framework to analyze the multiple lines of evidence, identify areas with potential PAH-related impacts to beneficial uses, and inform management decisions. The data evaluation framework considers bulk sediment total PAH concentration, PAH source type, and direct assessment of the potential impairment of benthic community, benthic habitat,

and surface water quality. The data evaluation framework is consistent with the statewide sediment quality objectives (State Water Board 2018). The data evaluation framework established a site-specific, total PAH sediment concentration range between 87,200 µg/kg (site-specific no observed effects concentration for aquatic toxicity or NOEC) and 425,000 µg/kg (the lowest site-specific effects concentration or LSSEC) to be considered in designating areas and volumes of sediment for remedial evaluation. The NOEC value of 87,200 µg/kg total PAHs represents the highest sediment concentration that underwent biological testing with no observed aquatic toxicity. The LSSEC value of 425,000 µg/kg represents the lowest sediment concentration where biological testing (bioaccumulation) generated tissue concentrations that exceeded screening levels for potential toxicity.

- d. Preliminary Identification of Remedial Response Areas: Based on the sediment characterization, source identification, and risk assessment, a total PAH concentration of 100,000 µg/kg in bulk sediment was chosen as a screening threshold to preliminarily identify areas of sediment to be considered for remediation in the feasibility study and remedial action plan.

7. Feasibility Study / Remedial Action Plan

A Feasibility Study and Remedial Action Plan (FS/RAP) was developed by PG&E in cooperation with the Port and submitted to the Regional Water Board on September 24, 2021. The FS evaluated remedial approaches to remove or manage sediment contaminated by PAHs from historical MGP operations. A summary of the FS is presented below:

- a. Remedial Action Objective: The FS set forth a single remedial action objective: to prevent toxicity to benthic invertebrates, birds, and humans who may be exposed to PAHs by consuming biota with PAH concentrations bioaccumulated in prey tissue via direct contact with sediments and associated porewater or through the aquatic food web.
- b. Remedial Action Level: The FS also proposed the total PAH concentration of 100,000 µg/kg, developed during the Remedial Investigation, to protect against bioaccumulation and PAH exposure as the Remedial Action Level (RAL). The RAL serves to define the final remedial response areas where remediation is warranted. The RAL is justified because: (1) it will protect against bioaccumulation, the primary risk at the Site, and direct PAH exposure; and (2) it is a reasonable indicator of MGP-related PAH pollution amongst the other historical and current sources of PAHs along the waterfront. In addition, the predicted post-remediation, surface-weighted average concentration for the upper 3-feet of sediment within each remedial response area is below 44,792 µg/kg, which is the Effects-Range Median by Long et al. (1995). This is a widely accepted marine sediment screening level

predictive of potential adverse effects to benthic organisms. Based on the RAL, there are five areas requiring remediation, identified as Areas A (west) through E (east) on Figure 5.

- c. Remedial Technology Screening: The FS identified and selected potential remedial technologies for further consideration by initially screening a wide array of remedial technologies and materials management process options based on applicability for the Site, then evaluating the retained technologies and options for effectiveness, implementability and relative cost. The retained remedial technologies include three general categories: institutional controls, containment and removal. The retained materials management process options include three general categories: ex-situ dewatering, disposal, and decant water treatment.
- d. Remedial Alternatives: The FS developed three remedial alternatives:
 - Alternative 1 (No Action) – The No Action alternative is carried through the evaluation as the baseline condition against which the performance of the other remedial alternatives is evaluated. Under this alternative, no activities would be implemented to remove, treat, contain, or monitor sediment impacts.
 - Alternative 2 (Focused Dredge, Capping, Armoring, Monitoring, and Institutional Controls) – A combination of dredging and capping would be employed, with residuals management and/or armoring where necessary, to allow focused removal and physical/chemical isolation of sediments to protect beneficial uses under current and reasonably foreseeable future conditions. The total estimated sediment removal for this alternative is about 87,000 cubic yards over an area of about 9.8 acres.
 - Alternative 3 (Maximum Dredge, Residuals Management, and Limited Capping, Monitoring, and Institutional Controls) – Dredging would be employed to remove the maximum feasible extent of impacted sediment with residuals management within the dredge prisms. Subareas with limited access where dredging is not feasible would be capped. The total estimated sediment removal for this alternative is about 510,000 cubic yards over an area of about 20 acres.
- e. Evaluation of Alternatives: The alternatives were evaluated using the following six criteria to provide sufficient information for comparison:
 - Effectiveness, including:
 - Overall protection of human health and the environment
 - Compliance with applicable, relevant and appropriate requirements

- Long-term effectiveness and permanence
 - Reduction of toxicity, mobility, or volume through treatment
 - Short-term effectiveness
 - Implementability
 - Cost-effectiveness
 - Regulatory and community acceptance
 - Sustainability
 - Sea level rise resiliency
- f. Recommended Alternative: Alternatives 2 and 3 both would be effective and are consistent with the maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses of such water, and will not result in exceedance of applicable water quality objectives. While Alternative 2 would leave more existing contamination in place, it would generate a smaller removal volume and have fewer and lesser construction impacts in addition to fewer short-term impacts on the workers, community, and environment. Therefore, Alternative 2 is the recommended Site-wide remedial alternative.
- g. Remedial Action Plan for Alternative 2: The Remedial Action Plan describes the activities necessary to implement the recommended alternative (Alternative 2: Focused Dredge, Capping, Armoring, Monitoring, and Institutional Controls) at the five remedial response areas (Figure 6). The general remediation activities will include: (a) pre-mobilization activities (engineering design, technical specifications, sampling for sediment disposal characterization); (b) utility clearance; (c) preparation of a materials handling facility to process dredged sediment and stage capping/armoring materials; (d) site preparation (e.g., debris removal); (e) in-water construction controls installation; (f) demolition activities; (g) dredging activities; (h) capping activities; (i) materials handling, dewatering, and water treatment; and (j) demobilization. Implementation of remedial action currently is anticipated to occur over a five-year period during the annual work-in-water window period between 2023 and 2029.
- h. Public Comment: The FS/RAP was posted for a 30-day public comment period between October 20 and November 19, 2021.
- i. Approval of FS/RAP: Following a 30-day public comment period, Regional Water Board staff have reviewed the public comments and have found the FS/RAP acceptable. By the Board's adoption of this Order, the FS/RAP Alternative 2 is accepted as the preferred alternative.

8. Remedial Response Area Restoration

Implementation of the RAP will impact Bay waters/sediment defined as jurisdictional by Section 404 of the Clean Water Act. In order to implement the planned remediation of the Site, the Dischargers are required to obtain the following permits: (1) a federal Clean Water Act section 404 permit and Rivers and Harbors Act Section 10 permit from the U.S. Army Corps of Engineers; (2) a Clean Water Act Section 401 Water Quality Certification from the Regional Water Board; (3) an incidental take permit from the California Department of Fish and Wildlife; and (4) a permit pursuant to the McAteer-Petris Act from the San Francisco Bay Conservation and Development Commission (BCDC). Compensatory mitigation for loss of waters or temporary benthic habitat disturbance will be performed as reviewed and required by the National Marine Fisheries Service, BCDC and Regional Water Board. The Dischargers will provide documentation of all mitigation actions within and outside the project boundary in the final Project Construction Completion Report submitted to the permitting agencies.

9. Basis for Cleanup

- a. **General:** State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," known as the Antidegradation Policy, applies to this discharge. It requires maintenance of high water quality unless a lesser water quality is consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses, and will not result in exceedance of applicable water quality objectives. Activities that produce waste and discharge to high-quality waters must meet controls that ensure that pollution or nuisance will not occur and that the highest quality water consistent with the maximum benefit of the people of the state will be maintained.

This order and its requirements are consistent with Resolution No. 68-16. It is not known whether the waters around Pier 39 to Pier 43½ were high quality in 1968, the time of the adoption of the Antidegradation Policy; the MGP waste, however, has been present in the sediment since the early 1900s. Even assuming the waters are high quality waters, this order's requirements will not result in degradation. The order will require removal or management of large amounts of PAH-contaminated sediment, which will improve water quality and protect beneficial uses in the area. Although dredging will produce temporary discharges, these discharges will be controlled by the control, avoidance, and minimization measures as part of the remedial response area remedial implementation workplans, conditions of the Mitigation Monitoring and Reporting Program (MMRP) developed as part of the CEQA Initial Study/Mitigated Negative

Declaration (MND), and the water quality certification, all of which will ensure that pollution or nuisance do not occur and that water quality is protected.

State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. It directs the Regional Water Boards to set cleanup levels equal to background water quality or the best water quality which is reasonable, if background levels cannot be restored. The cleanup plan established in this order will achieve the best water quality that is reasonable, in light of costs, accessibility of the contamination, and the technologies available. Achieving background levels of PAHs is not feasible, given the difficulty of deep dredging in the vicinity of the existing waterfront structures and the expense this dredging entails.

- b. **Beneficial Uses:** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board, Office of Administrative Law and the U.S. EPA, where required.

Regional Water Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high total dissolved solids, low yield, or naturally-high contaminant levels. The water at this Site, San Francisco Bay, meets the exception of high total dissolved solids.

The Basin Plan designates the following existing beneficial uses of the San Francisco Bay Central Basin include:

- Industrial service supply
- Industrial process supply
- Commercial and sport fishing
- Shellfish harvesting
- Estuarine habitat
- Fish migration
- Preservation of rare and endangered species
- Fish spawning
- Water contact recreation
- Noncontact water recreation

10. **Basis for 13304 Order:** Water Code section 13304 authorizes the Regional Water Board to issue orders requiring Dischargers to cleanup and abate waste where the Dischargers has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance. Here, PG&E caused or permitted MGP waste to be deposited in sediment at the site, where it is creating or threatening to create pollution or nuisance. The Port is the current owner of the offshore and shoreline property, it has knowledge of the discharge or the activities that caused the discharge, and it has the legal ability to control the discharge.
11. **Basis for 13383 requirements:** Water Code section 13383 authorizes the Regional Water Board to “establish monitoring, inspection, entry, reporting, and recordkeeping requirements... for any person who discharges, or proposes to discharge, to navigable waters.” Here, PG&E’s proposed remedial actions will result in temporary discharges to navigable waters, so the reports required by this order are authorized by Water Code section 13383.
12. **Cost Recovery:** Pursuant to Water Code section 13304, the Dischargers are hereby notified that the Regional Water Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Regional Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.
13. **California Environmental Quality Act:** The Regional Water Board, as lead agency for this project, prepared an Initial Study, Mitigated Negative Declaration (MND), and Mitigation Monitoring and Reporting Program (MMRP), which evaluate and address the remedial action plan for the Site. These documents have been circulated for public review in compliance with CEQA and applicable regulations. On _____, the Executive Officer of the Regional Water Board adopted the MND and MMRP as Resolution No. R2-2022-00XX, finding that they reflect the independent judgment and analysis of the Regional Water Board and that there is no substantial evidence in the record that the project will have significant impacts, if mitigated in compliance with the MMRP (Cal. Code Regs., tit. 14 § 15074(b)-(d)). The MND and all supporting documentation and records are available at the Regional Water Board’s office and on the GeoTracker publically-accessible database.
14. **Notification:** The Regional Water Board has notified the Dischargers and all interested agencies and persons of its intent under Water Code section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.

15. **Public Hearing:** The Regional Water Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to sections 13304 and 13267 of the Water Code, that the Dischargers (or their agents, successors, or assigns) shall clean up and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner that will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.
3. Activities associated with the cleanup that will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. REMEDIAL ACTION PLAN IMPLEMENTATION

The remedial action plan for the entire project is described in Finding 7. Due to the complexity of the project, which will require permitting, preparation of the materials handling facility, arranging access, coordinating with local businesses to limit disruption, and a multi-year implementation period, remedial action will be conducted in stages, with a workplan to govern implementation of each stage. Thus, the Regional Water Board will require submittal of a workplan for preparation of the materials handling facility (Task 4) and for implementation of remedial actions at each of the five remedial response areas A through E at the Site (Task 7, 10, 13, 16 and 19). Each workplan must be acceptable to the Executive Officer and approved in writing. Additional risk management measures such as institutional controls to ensure the remedy remains effective are to be evaluated and proposed in the Risk Management and Monitoring Plan (Task 2). The Risk Management and Monitoring Plan must be acceptable to the Executive Officer and approved in writing.

C. TASKS

1. **ANNUAL STATUS REPORT AND IMPLEMENTATION WORKPLAN SCHEDULE**

COMPLIANCE DATE: February 15, 2023 and annually thereafter

Submit a document acceptable to the Executive Officer that includes:

- a. Annual Status Report – A description of the activities performed during the preceding year and describing the planned activities for the coming year.
- b. Implementation Workplan Schedule – Schedule for the submission of each workplan required per Task 3 (Material Handling Facility Preparation and Operations Plan), Task 6 (Area A), Task 10 (Area B), Task 14 (Area C), Task 18 (Area D), and Task 22 (Area E). Given the complexity of remedial construction at this Site, the Dischargers may propose changes to the schedule with reasonable cause. If updates or changes to the schedule are proposed, adequate justification shall be provided and must be acceptable to the Executive Officer and approved in writing.

2. **RISK MANAGEMENT AND MONITORING PLAN**

COMPLIANCE DATE: March 1, 2023

Submit a plan(s) acceptable to the Executive Officer that includes the following post-remedial implementation components:

- a. Risk Management Plan – The plan shall: (i) identify activities or events after remedy construction that may disturb or undermine remedy components (e.g., caps, existing sediment cover above PAH-polluted sediment) or otherwise mobilize PAH polluted sediment remaining in place; (ii) describe monitoring of remedy components, frequency and methodologies; (iii) describe protocols and procedures for repair and maintenance of caps or other engineering controls; and (iv) outline notification and reporting requirements.
- b. Long Term Monitoring Plan – The plan shall: (i) document and report the success of remediation for all remedial response areas after construction; (ii) address monitoring the integrity of engineered sediment caps and existing sediment cover above PAH-polluted sediment and any other installed remedy components (e.g., armoring); and (iii) propose a monitoring and reporting schedule.
- c. Institutional Control Evaluation Report – The report shall: (i) evaluate the need for institutional controls (e.g., land use covenant and environmental restrictions) after remedy construction to prohibit land and water use changes that could disturb or undermine remedy components (e.g., caps, existing sediment cover above PAH-polluted sediment) or otherwise mobilize PAH pollution remaining in place; (ii) describe potential institutional controls; (iii) evaluate the appropriateness of such institutional controls for the Site; and

(iv) propose institutional controls for implementation, including the recommended mechanism of administration and enforcement.

3. **MATERIAL HANDLING FACILITY PREPARATION AND OPERATIONS PLAN**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a technical report(s) acceptable to the Executive Officer describing the activities necessary to prepare the material handling facility (MHF) for use and plans necessary to operate the MHF and control, avoid, or minimize impacts, including: (a) ambient perimeter air monitoring plan; (b) dust, vapor and odor control plan (c) community protection plan; (d) stormwater pollution prevention plan/water pollution control plan or erosion sediment control plan; (e) waste management and transportation plan; (f) sediment processing and water management plan; (g) hazardous materials control plan; (h) notifications and reporting; and (i) schedule of activities.

4. **MATERIALS HANDLING FACILITY PREPARATION IMPLEMENTATION**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a progress report that demonstrates that actions to prepare the materials handling facility have been commenced, including documentation that a contractor has been placed under contract to undertake construction as well the documentation that the necessary authorizations or permits have been obtained to complete the work to meet Task 5.

5. **MATERIAL HANDLING FACILITY PREPARATION COMPLETION REPORT**

COMPLIANCE DATE: Within 6 months of completion of work

Submit a technical report acceptable to the Executive Officer documenting completion of the MHF preparation activities as described by the Task 3 MHF Preparation and Operations Plan as approved by the Executive Officer. Preparation work at the MHF will be deemed complete upon demobilization from the preparation activities described in the MHF Preparation and Operations Plan.

6. **AREA A REMEDIAL IMPLEMENTATION WORKPLAN**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a technical report(s) acceptable to the Executive Officer presenting a detailed plan and schedule of the remedial action implementation and control, avoidance and minimization measures to be implemented during remedial operations, including: (a) ambient perimeter air monitoring plan; (b) dust, vapor and odor control plan (c) community protection plan; (d) surface water quality monitoring plan; (e) water pollution control plan for stormwater and sediment erosion control; (f) dredging and capping operations plan; (g) sediment processing and construction water management plan; (h) waste management and disposal plan; (i) notifications and reporting; and (j) schedule of activities.

7. AREA A REMEDIAL IMPLEMENTATION COMPLETION

COMPLIANCE DATE: Per schedule required in Task 1

Submit a progress report that demonstrates that the sediment remediation field activities at Area A (e.g., dredging, capping) have been completed and Area A has been restored.

8. AREA A REMEDIAL IMPLEMENTATION COMPLETION REPORT

COMPLIANCE DATE: Within 6 months of completion of Area A remedial action (Task 7)

Submit a technical report acceptable to the Executive Officer documenting implementation of the sediment remedial action activities as described by the Task 6 remedial implementation workplan. Remedial action in Area A will be deemed complete when all sediment derived from Area A is transported from the MHF and is disposed. If the remedial action in Area A spans more than one construction season, the report will be submitted at the end of the second season.

9. AREA A RISK MANAGEMENT AND MONITORING PLAN IMPLEMENTATION COMPLETION REPORT

COMPLIANCE DATE: Within 12 months of completion of Area A remedial action (Task 7)

Submit a progress report that demonstrates that the approved risk management measures and monitoring have been implemented for Area A in accordance with the Risk Management and Monitoring Plan (Task 2), as approved by the Executive Officer. The report shall demonstrate that any additional institutional controls specific to Area A, as identified in the Risk Management and Monitoring Plan, have been implemented.

10. **AREA B REMEDIAL IMPLEMENTATION WORKPLAN**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a technical report(s) acceptable to the Executive Officer presenting a detailed plan and schedule of the remedial action implementation and control, avoidance and minimization measures to be implemented during remedial operations, including: (a) ambient perimeter air monitoring plan; (b) dust, vapor and odor control plan (c) community protection plan; (d) surface water quality monitoring plan; (e) water pollution control plan for stormwater and sediment erosion control; (f) dredging and capping operations plan; (g) sediment processing and construction water management plan; (h) waste management and disposal plan; (i) notifications and reporting; and (j) schedule of activities.

11. **AREA B REMEDIAL IMPLEMENTATION COMPLETION**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a progress report that demonstrates that the sediment remediation field activities at Area B (e.g., dredging, capping) have been completed and Area B has been restored.

12. **AREA B REMEDIAL IMPLEMENTATION COMPLETION REPORT**

COMPLIANCE DATE: Within 6 months of completion of Area B remedial action (Task 11)

Submit a technical report acceptable to the Executive Officer documenting implementation of the sediment remedial action activities as described by the Task 10 remedial implementation workplan. Remedial action in Area B will be deemed complete when all sediment derived from Area B is transported from the MHF and is disposed. If the remedial action in Area B spans more than one construction season, the report will be submitted at the end of the second season.

13. **AREA B RISK MANAGEMENT AND MONITORING PLAN IMPLEMENTATION COMPLETION REPORT**

COMPLIANCE DATE: Within 12 months of completion of Area B remedial action (Task 11)

Submit a progress report that demonstrates that the approved risk management measures and monitoring have been implemented for

Area B in accordance with the Risk Management and Monitoring Plan (Task 2), as approved by the Executive Officer. The report shall demonstrate that any additional institutional controls specific to Area B, as identified in the Risk Management and Monitoring Plan have been implemented.

14. **AREA C REMEDIAL IMPLEMENTATION WORKPLAN**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a technical report(s) acceptable to the Executive Officer presenting a detailed plan and schedule of the remedial action implementation and control, avoidance and minimization measures to be implemented during remedial operations, including: (a) ambient perimeter air monitoring plan; (b) dust, vapor and odor control plan (c) community protection plan; (d) surface water quality monitoring plan; (e) water pollution control plan for stormwater and sediment erosion control; (f) dredging and capping operations plan; (g) sediment processing and construction water management plan; (h) waste management and disposal plan; (i) notifications and reporting; and (j) schedule of activities.

15. **AREA C REMEDIAL IMPLEMENTATION COMPLETION**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a progress report that demonstrates that the sediment remediation field activities at Area C (e.g., dredging, capping) have been completed and Area C has been restored.

16. **AREA C REMEDIAL IMPLEMENTATION COMPLETION REPORT**

COMPLIANCE DATE: Within 6 months of completion of Area C remedial action (Task 15)

Submit a technical report acceptable to the Executive Officer documenting implementation of the sediment remedial action activities as described by the Task 14 remedial implementation workplan. Remedial action in Area C will be deemed complete when all sediment derived from Area C is transported from the MHF and is disposed. If the remedial action in Area C spans more than one construction season, the report will be submitted at the end of the second season.

17. **AREA C RISK MANAGEMENT AND MONITORING PLAN IMPLEMENTATION COMPLETION REPORT**

COMPLIANCE DATE: Within 12 months of completion of Area C remedial action (Task 15)

Submit a progress report that demonstrates that the approved risk management measures and monitoring have been implemented for Area C in accordance with the Risk Management and Monitoring Plan (Task 2), as approved by the Executive Officer. The report shall demonstrate that any additional institutional controls specific to Area C, as identified in the Risk Management and Monitoring Plan have been implemented.

18. **AREA D REMEDIAL IMPLEMENTATION WORKPLAN**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a technical report(s) acceptable to the Executive Officer presenting a detailed plan and schedule of the remedial action implementation and control, avoidance and minimization measures to be implemented during remedial operations, including: (a) ambient perimeter air monitoring plan; (b) dust, vapor and odor control plan (c) community protection plan; (d) surface water quality monitoring plan; (e) water pollution control plan for stormwater and sediment erosion control; (f) dredging and capping operations plan; (g) sediment processing and construction water management plan; (h) waste management and disposal plan; (i) notifications and reporting; and (j) schedule of activities.

19. **AREA D REMEDIAL IMPLEMENTATION COMPLETION**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a progress report that demonstrates that the sediment remediation field activities at Area D (e.g., dredging, capping) have been completed and Area D has been restored.

20. **AREA D REMEDIAL IMPLEMENTATION COMPLETION REPORT**

COMPLIANCE DATE: Within 6 months of completion of Area D remedial action (Task 19)

Submit a technical report acceptable to the Executive Officer documenting implementation of the sediment remedial action activities as described by the Task 18 remedial implementation workplan. Remedial action in Area D will be deemed complete when all sediment derived from Area D is

transported from the MHF and is disposed. If the remedial action in Area D spans more than one construction season, the report will be submitted at the end of the second season.

21. **AREA D RISK MANAGEMENT AND MONITORING PLAN IMPLEMENTATION COMPLETION REPORT**

COMPLIANCE DATE: Within 12 months of completion of Area D remedial action (Task 19)

Submit a progress report that demonstrates that the approved risk management measures and monitoring have been implemented for Area D in accordance with the Risk Management and Monitoring Plan (Task 2), as approved by the Executive Officer. The report shall demonstrate that any additional institutional controls specific to Area D, as identified in the Risk Management and Monitoring Plan have been implemented.

22. **AREA E REMEDIAL IMPLEMENTATION WORKPLAN**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a technical report(s) acceptable to the Executive Officer presenting a detailed plan and schedule of the remedial action implementation and control, avoidance and minimization measures to be implemented during remedial operations, including: (a) ambient perimeter air monitoring plan; (b) dust, vapor and odor control plan (c) community protection plan; (d) surface water quality monitoring plan; (e) water pollution control plan for stormwater and sediment erosion control; (f) dredging and capping operations plan; (g) sediment processing and construction water management plan; (h) waste management and disposal plan; (i) notifications and reporting; and (j) schedule of activities.

23. **AREA E REMEDIAL IMPLEMENTATION COMPLETION**

COMPLIANCE DATE: Per schedule required in Task 1

Submit a progress report that demonstrates that the sediment remediation field activities at Area E (e.g., dredging, capping) have been completed and Area E has been restored.

24. **AREA E REMEDIAL IMPLEMENTATION COMPLETION REPORT**

COMPLIANCE DATE: Within 6 months of completion of Area E remedial action (Task 23)

Submit a technical report acceptable to the Executive Officer documenting implementation of the sediment remedial action activities as described by the Task 22 remedial implementation workplan. Remedial action in Area E will be deemed complete when all sediment derived from Area E is transported from the MHF and is disposed. If the remedial action in Area E spans more than one work in-water window, which is expected as stated in the FS/RAP, the report will be submitted at the end of the second season.

25. **AREA E RISK MANAGEMENT AND MONITORING PLAN IMPLEMENTATION COMPLETION REPORT**

COMPLIANCE DATE: Within 12 months of completion of Area E remedial action (Task 23)

Submit a progress report that demonstrates that the approved risk management measures and monitoring have been implemented for Area E in accordance with the Risk Management and Monitoring Plan (Task 2), as approved by the Executive Officer. The report shall demonstrate that any additional institutional controls specific to Area E, as identified in the Risk Management and Monitoring Plan have been implemented.

26. **IMPLEMENTATION OF CEQA MITIGATION MEASURES**

COMPLIANCE DATE: Per schedule required in Task 1

Regional Water Board staff prepared an Initial Study and Mitigated Negative Declaration, including a Mitigation Monitoring and Reporting Plan that was adopted by the Regional Water Board on _____. PG&E and the Port concur that all of the mitigation measures can be included as requirements of this Order. The required mitigation measures are included as Attachment A.

27. **FIVE-YEAR REVIEW REPORT**

COMPLIANCE DATE: February 15th of the year that is four years following the submission of the first remedial implementation completion report for a given remedial response area as defined in the schedule (Task 1) and every five years thereafter until the Executive Officer approves curtailment

Submit a technical report acceptable to the Executive Officer evaluating the effectiveness of the remedial construction for the Site. The report shall include:

- a. Summary of activities completed during the preceding five-year period
- b. Summary of monitoring to ensure that remedy components (e.g., caps, existing sediment cover above PAH-polluted sediment) remain in place and effective and that residual PAH pollution remaining in place is not mobilized.
- c. Summary of additional investigations (including results) and significant modifications to the remedial action, if required
- d. Evaluation of remedy effectiveness in controlling contaminant migration and protecting human health and the environment
- e. Recommendations for further actions (e.g., sediment cap maintenance or repair, remedy adaptation), if warranted, and a time schedule

D. **PROVISIONS**

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted sediment or surface water shall not create a nuisance as defined in Water Code section 13050(m).
2. **Good Operation & Maintenance:** The Dischargers shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this order.
3. **Cost Recovery:** The Dischargers shall be liable, pursuant to Water Code section 13304, to the Regional Water Board for all reasonable costs actually incurred by the Regional Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of

the effects thereof, or other remedial action, required by this order. If the Site addressed by this order is enrolled in a State Water Board-managed reimbursement program, reimbursement shall be made pursuant to this order and according to the procedures established in that program. Any disputes raised by the Dischargers over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.

4. **Access to Site and Records:** In accordance with Water Code section 13304(b)(3) and 13267(c), the Dischargers shall permit the Regional Water Board or its authorized representative:
 - a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this order.
 - b. Access to copy any records required to be kept under the requirements of this order.
 - c. Inspection of any monitoring or remediation facilities installed in response to this order.
 - d. Sampling of any surface water or sediment that is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the Dischargers.
5. **Contractor / Consultant Qualifications:** All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.
6. **Lab Qualifications:** All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Regional Water Board using approved U.S. EPA methods or demonstrated equivalent methods for the type of analysis to be performed (e.g., extended list of PAHs for forensic source evaluation). Quality assurance/quality control (QA/QC) records shall be maintained for Regional Water Board review. This provision does not apply to analyses that can only reasonably be performed onsite (e.g., temperature).
7. **Document Distribution:** Electronic copies of all correspondence, technical reports, and other documents pertaining to compliance with this order shall be uploaded to the State Water Board's GeoTracker database within five business days after submittal to the Regional Water Board. [Guidance for electronic information submittal](#) is available at:

http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal

8. **Reporting of Changed Owner or Operator:** The Dischargers shall file a technical report on any changes in contact information, Site occupancy or ownership associated with the property described in this Order.
9. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the Dischargers shall report such discharge to the Regional Water Board by calling (510) 622-2369.

A written report shall be filed with the Regional Water Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

This reporting is in addition to reporting to the California Emergency Management Agency required pursuant to the Health and Safety Code.

10. **Enforcement:** Failure to comply with the provisions of this Order may result in the imposition of civil liabilities, imposed either administratively by the Regional Water Board or judicially by the Superior Court in accordance with Water Code sections 13268, 13304, 13308, 13350, and/or 13385, and/or referral to the Attorney General of the State of California for injunctive relief or civil or criminal liability. Failure to submit, late or inadequate submittal of technical reports and workplan proposals, or falsifying information therein, is a misdemeanor and may subject the Responsible Parties to additional civil liabilities. This Order does not preclude or otherwise limit in any way the Regional Water Board's ability to take appropriate enforcement action for the Responsible Parties' violations of applicable laws, including, but not limited to, discharging without a permit and failing to comply with applicable requirements. The Regional Water Board reserves its rights to take any enforcement action authorized by law
11. **Delayed Compliance:** If the Dischargers are delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the Dischargers shall promptly notify the Executive Officer, and the Regional Water Board may consider revisions to this order.

12. **Periodic Site Cleanup Requirements Order Review:** The Regional Water Board will review this order periodically and may revise it when necessary.

I, Michael Montgomery, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on _____.

Michael Montgomery
Executive Officer

Compliance Notice: Failure to comply with the requirements of this Order may subject you to enforcement action, including but not limited to imposition of administrative civil liability under Water Code sections 13268 or 13350, or referral to the Attorney General for injunctive relief or civil or criminal liability.

List of Reference Documents

Haley & Aldrich. 2020. Final Remedial Investigation Report for the Pier 39 to Pier 45 Sediment Investigation. January 10.

Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder. 1995. Incidence of Adverse Biological Effects of Chemical Concentrations in Marine and Estuarine Sediments. Environmental Management 19(1): 81-97.

San Francisco Estuary Institute. 2015. Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments. July 24.

Attachments:

A – CEQA Mitigation Measures

B – Figures

Figure 1 – Site Location Map

Figure 2 – Site Area and Bathymetry

Figure 3 – Sample Location Map

Figure 4 – PAH Source Material in Sediment

Figure 5 – Remedial Response Areas

Figure 6 – Remedial Actions for Each Response Area

ATTACHMENT A – CEQA MITIGATION MEASURES

BIOLOGICAL RESOURCES

Mitigation Measure BIO-1A: In-water work activities may not be conducted during the December 1 to March 15 Pacific herring spawning season. As the spawning season approaches (month of November), a trained biologist shall monitor the waters within a specified distance of in-water Project activities for spawning event indicators (e.g., presence of milt in the water, active surface predation of herring by birds or marine mammals) and/or conduct herring egg surveys. If required, work shall be stopped if a spawning event is detected in the immediate vicinity of in-water work and shall not resume until spawning has ended and herring embryos have hatched.

Mitigation Measure BIO-1B: A hydroacoustic assessment shall be completed to determine which construction activities may produce sounds levels that could result in take of listed fish species. Based on assessment findings, appropriate measures (e.g., sound attenuation or work window restrictions) shall be incorporated into project authorization requests. All avoidance measures, monitoring, reporting, timing, and work limit requirements established within the agency consultation and/or authorization shall be fully implemented. Any identified compensatory mitigation shall be completed consistent with agency consultation and authorization requirements.

Mitigation Measure BIO-2: Project activities that could impact nesting birds will be scheduled to greatest extent practicable to avoid the nesting season (February 1 to August 31). If it is not possible to schedule such activities to occur between September 1 and January 31, a pre-construction nesting bird survey of all suitable nesting habitat within the zone of influence shall be conducted by a qualified biologist within 7 days prior to commencement of construction activities, scheduled to occur within the nesting season. The zone of influence would include the area immediately surrounding the work location that supports suitable nesting habitat that could be affected by the Project due to visual or auditory disturbance associated with construction activities scheduled to occur during the nesting season. If no nesting birds are observed during the survey, construction activities may commence as planned.

If nesting birds are observed during the survey, the qualified biologist shall review results with the Dischargers (PG&E and the Port of San Francisco) and contractor, evaluate whether the schedule of construction activities could affect the active nests, and recommend measures to the project biologist based on the PG&E Nesting Bird Management Plan, which could include establishing a non-disturbance buffer (e.g., 50 feet for non-raptors and 250 feet for raptors). This buffer would remain in place until such a time as the young have been determined (by a qualified biologist) to have fledged. These buffers may be

modified (e.g., by reducing their size or installing a blind) as deemed appropriate by the project biologist in coordination with U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW).

A brief survey report documenting the preconstruction survey area and findings shall be prepared by the qualified biologist and submitted to the Dischargers prior to initiation of construction during the nesting season. The report shall document presence or absence of any active nests and prescribe a suitable non-disturbance buffer if active nests are present and could be disturbed by Project-related activities. No report of findings is required if construction is initiated during the non-nesting season (September 1 to January 31) and continues uninterrupted according to the above criteria.

If any birds begin nesting within active work areas after construction has commenced, they will be nesting in an environment with high levels of existing and ongoing disturbance and a no work exclusion buffer shall be established around the active nests. However, a qualified biologist shall monitor the nest twice a week. If the qualified biologist determines that birds are showing signs of distress associated with construction (e.g., frequent vocalization or flushing from the nest), a non-disturbance buffer shall be established as determined by the qualified biologist.

Mitigation Measure BIO-3: Prior to construction, a native oyster survey will be completed. If oysters are within or immediately adjacent to the Project Area, it shall first be determined whether avoidance of the beds is feasible. If feasible, impacts on the oyster bed shall be avoided. If complete avoidance is not feasible, the Dischargers shall request guidance from the National Marine Fisheries Service (NMFS) regarding the need for and/or feasibility of moving affected beds. Translocation of oyster beds shall be consistent with methods and recommendations presented in Shellfish Conservation and Restoration in San Francisco Bay: Opportunities and Constraints (Zabin et al. 2010).

Mitigation Measure BIO-4: A hydroacoustic assessment shall be completed to determine which construction activities could produce sounds levels that could result in harassment of marine mammals (Level A or B). Based on assessment findings appropriate measures (e.g., monitoring during specified work activities with stop work authority) shall be incorporated into an Incidental Harassment Authorization (IHA) or Letter of Authorization (for the Marine Mammal Protection Act and federal Endangered Species Act protected species). All monitoring, reporting, timing, and work limit requirements established within the project authorizations shall be fully implemented. Any identified compensatory mitigation shall be completed consistent with agency consultation and authorization requirements.

CULTURAL AND TRIBAL RESOURCES

Mitigation Measure CUL-1: In the unlikely event that previously unidentified archaeological, cultural, tribal cultural, or historical sites, artifacts, or features are uncovered during remediation, beyond the structural remnants previously identified, recorded, and evaluated, work shall be suspended within 100 feet (30 meters) of the find and redirected to another location. A qualified professional archaeologist shall be contacted immediately to examine the discovery. Project personnel shall not collect cultural resources. If the discovery can be avoided or protected and no further impacts would occur, the resource shall be documented on California Department of Parks and Recreation 523 forms, and no further effort shall be required.

If the resource cannot be avoided and may be subjected to further impacts, PG&E or its representative shall evaluate the significance of the discovery following federal and state laws outlined above and implement data recovery or other appropriate treatment measures if warranted. Evaluation of historical-period resources shall be done by a qualified historical archaeologist, whereas evaluation of prehistoric resources shall be done by a qualified archaeologist specializing in California prehistoric archaeology. If tribal cultural materials are present, the archaeologist shall contact and coordinate with the relevant Tribal Historic Preservation Officer(s). Evaluations may include archival research, oral interviews, and/or field excavations to determine the full depth, extent, nature, and integrity of the deposit.

Mitigation Measure CUL-2: If human remains are encountered, all work shall stop in the immediate vicinity (within 100 feet) of the discovered remains and the County Coroner (or the City and County of San Francisco Medical Examiner) shall be notified. In addition, a qualified archaeologist shall be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Coroner must contact the Native American Heritage Commission (NAHC) so that a “Most Likely Descendant” can be designated and further recommendations regarding treatment of the remains can be provided.

If the remains are not Native American, the Coroner will consult with the archaeologist and the Lead Agency to develop a procedure for the proper study, documentation, and ultimate disposition of the remains. If a determination can be made as to the likely identity of the remains—either as an individual or as a member of a group—an attempt shall be made to identify and contact any living descendants or representatives of the descendant community. As interested parties, these descendants may make recommendations to the owner, or representative, for the treatment or disposition, with proper dignity, of the remains and grave goods.

RECREATION

Mitigation Measure REC-1: The Dischargers shall coordinate with all relevant stakeholders (Red and White Fleet, Blue & Gold Fleet, and other recreational businesses affected by construction activities) to develop a plan to address impacts on recreational boating businesses as a result of construction activities. The plan shall discuss how stakeholders and contractors will coordinate and phase construction activities and/or find alternative options (e.g., temporary relocation of businesses, alternate berthing locations) to minimize impacts. In addition, the Dischargers shall work with stakeholders to facilitate communication to the public of any changes to recreational business offerings and schedules in the Project Area well in advance of such changes.

TRANSPORTATION

Mitigation Measure TRANS-1: The Dischargers shall coordinate with all relevant stakeholders (e.g., Blue & Gold Fleet and the Water Emergency Transportation Authority) to develop a plan to address transportation-related impacts on commuter ferry service as a result of construction activities. The plan shall address how stakeholders and contractors will coordinate and phase construction activities and/or find alternative options (e.g., temporary relocation of ferry services, alternate berthing locations) to minimize impacts on commuter ferry service. In addition, the Dischargers shall work with stakeholders to facilitate notifications and communications to the public (e.g., online updates) of any ferry service schedule and berthing location changes well in advance of such changes.

REFERENCE

Zabin, C.J., S. Attoe, E.D. Grosholz, and C. Coleman-Hulbert. 2010. Shellfish Conservation and Restoration in San Francisco Bay: Opportunities and Constraints Final. Report for the Subtidal Habitat Goals Committee (Appendix 7-1).

ATTACHMENT B – FIGURES



MAP SOURCE: USGS
 USGS QUAD: SAN FRANCISCO NORTH
 SITE COORDINATES: 37°48'36\"/>



**HALEY
 ALDRICH**

PACIFIC GAS AND ELECTRIC COMPANY (PG&E)
 PIERS 39 TO 45 SEDIMENT INVESTIGATION AREA
 SCR ORDER
 SAN FRANCISCO, CALIFORNIA

SITE LOCATION

SEPTEMBER 2021

FIGURE 1



LEGEND

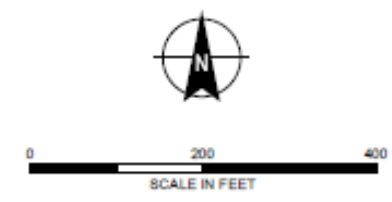
- SCOUR FEATURE BELOW OPERATIONAL USE LIMITS (INCLUDING 2-FT ALLOWANCE)
- SITE BOUNDARY
- PIER 39 MARINA
- FORMER BEACH STREET MANUFACTURED GAS PLANT (MGP)

BATHYMETRY, IN FEET (NAVD88)

- High : 6.54
- Low : -55.21

NOTES

1. MULTIBEAM BATHYMETRY DATA COLLECTED 2019; SOME PORTIONS OF THE INVESTIGATION AREA COULD NOT BE IMAGED DUE TO OBSTRUCTIONS OR INSUFFICIENT WATER DEPTHS.
2. AERIAL IMAGERY SOURCE: NEARMAP, 1 MARCH 2021

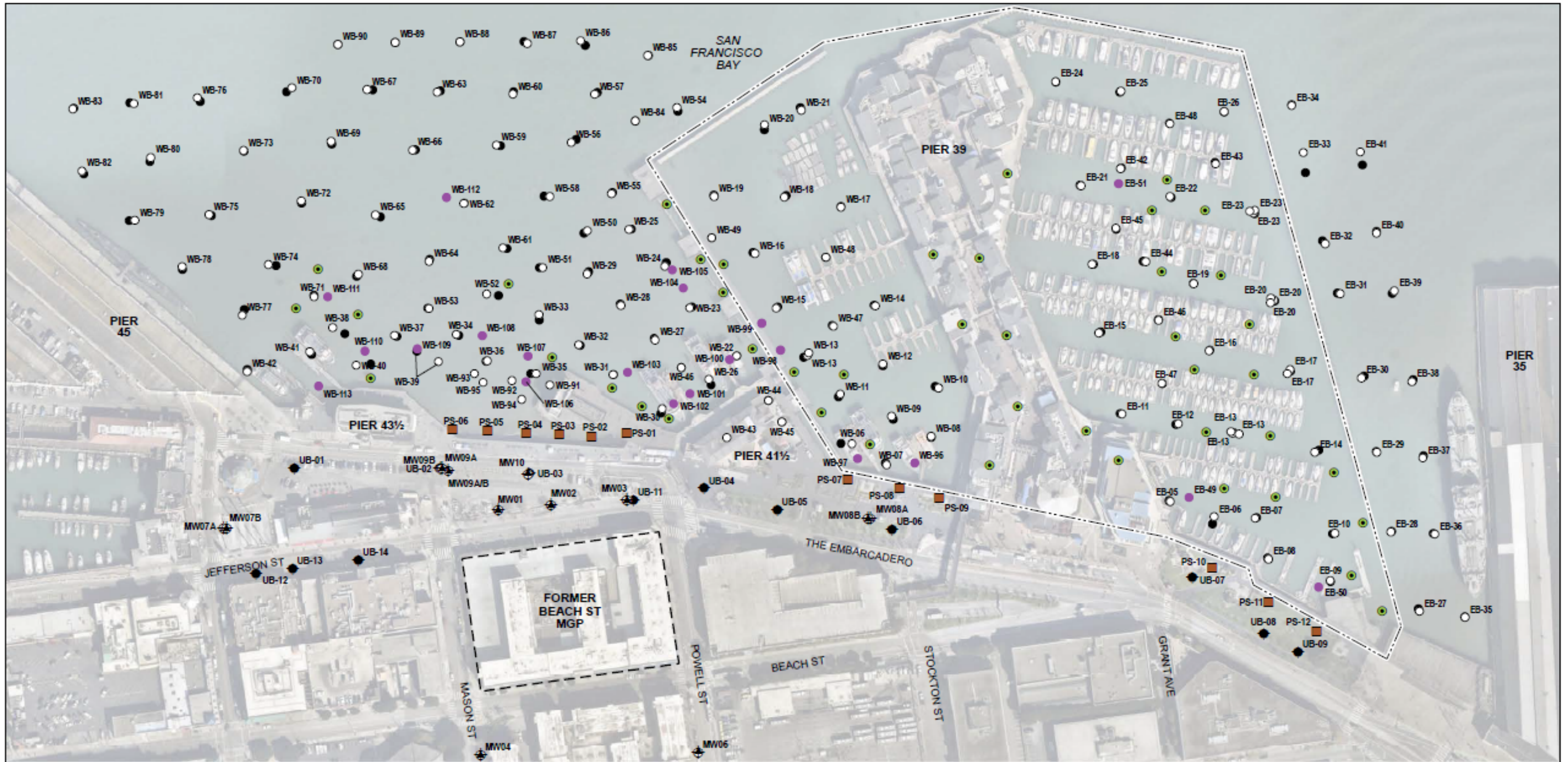


HALEY ALDRICH

PACIFIC GAS AND ELECTRIC COMPANY (PG&E)
PIERS 39 TO 45 SEDIMENT INVESTIGATION AREA
SCR ORDER
SAN FRANCISCO, CALIFORNIA

SITE AREA AND BATHYMETRY

SEPTEMBER 2021 FIGURE 2



LEGEND

- COMPLETED PRE-DESIGN SAMPLE STATION
- VIBRACORE
- GRAB SAMPLE
- GRAVITY CORE, PORE WATER, AND SURFACE WATER STATION
- PASSIVE SAMPLER
- ⊕ MONITORING WELL
- UPLAND BORING
- PIER 39 MARINA

FORMER BEACH STREET MANUFACTURED GAS PLANT (MGP)

NOTES

1. WB - WEST BASIN
2. EB - EAST BASIN
3. FOR EACH STATION CLUSTER, ONLY A SINGLE LABEL IS PROVIDED; INDIVIDUAL DOTS INDICATE DISTINCT SAMPLE LOCATIONS.
4. AERIAL IMAGERY SOURCE: NEARMAP, 1 MARCH 2021

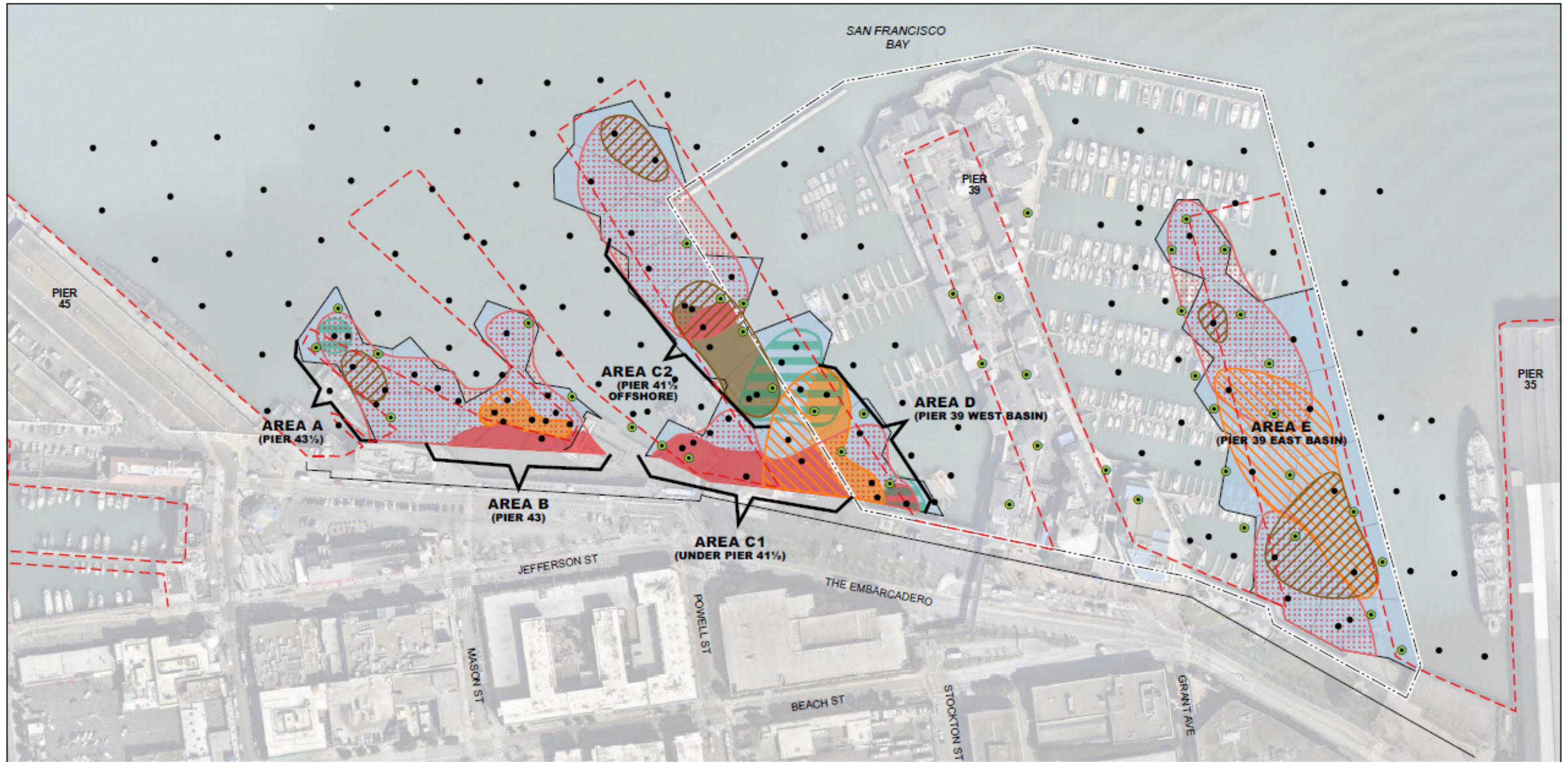


HALEY ALDRICH PACIFIC GAS AND ELECTRIC COMPANY (PG&E)
PIERS 39 TO 45 SEDIMENT INVESTIGATION AREA
SCR ORDER
SAN FRANCISCO, CALIFORNIA

SAMPLE LOCATION MAP

SEPTEMBER 2021

FIGURE 3



- SAMPLE LOCATION
- COMPLETED PRE-DESIGN SAMPLE STATION
- SURVEYED SEAWALL
- - - 1938 HISTORICAL WHARFS/PIERS
- SEDIMENT TOTAL PAH GREATER THAN 100,000 µg/kg AT ANY DEPTH
- PIER 39 MARINA

- PAH SOURCE TYPES**
- SOLIDS - SURFACE, PATTERNS - SUBSURFACE
- END MEMBER S-1 (MGP TYPE)
 - END MEMBER S-2 (MGP TYPE)
 - END MEMBER S-3 (MGP TYPE)
 - END MEMBER S-4 (CREOSOTE)

- NOTES**
1. ABBREVIATIONS/ACRONYMS:
 BSS - BELOW SEDIMENT SURFACE
 FT MLLW - FEET BELOW MEAN LOWER LOW WATER
 MGP - MANUFACTURED GAS PLANT
 TOTAL PAH-25 = SUM OF 25 POLYCYCLIC AROMATIC HYDROCARBONS
 µg/kg - MICROGRAMS PER KILOGRAM
 WB - WEST BASIN
 EB - EAST BASIN
 2. SOLID COLORS SHOW APPROXIMATE SURFACE EXTENT OF EACH SOURCE TYPE WITH PAH-25 > 100,000 MICROGRAMS PER KILOGRAM (µg/kg).
 3. PATTERNS SHOW APPROXIMATE SUBSURFACE LATERAL EXTENT OF EACH SOURCE TYPE WITH PAH-25 > 100,000 µg/kg.
 4. APPROXIMATE LOCATION OF HISTORICAL WHARFS/PIERS DERIVED FROM GOOGLE AERIAL IMAGERY (1938).
 5. THIESSEN POLYGONS WERE GENERATED FOR COMBINED SET OF GRAVITY CORES AND VIBRACORES.
 6. AERIAL IMAGERY SOURCE: NEARMAP, 1 MARCH 2021

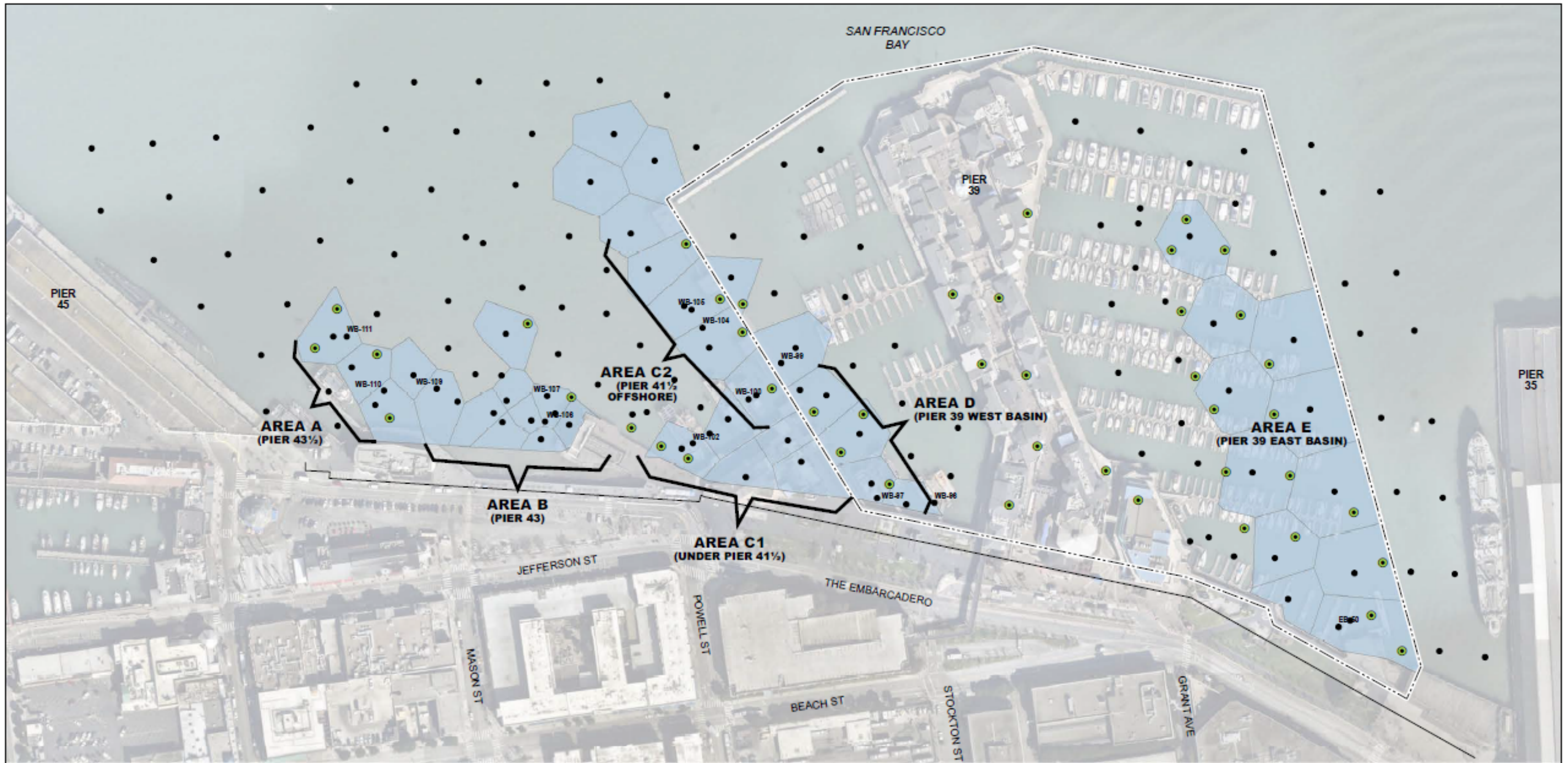




SCALE IN FEET

HALEY ALDRICH PACIFIC GAS AND ELECTRIC COMPANY (PG&E)
 PIERS 39 TO 45 SEDIMENT INVESTIGATION AREA
 SCR ORDER
 SAN FRANCISCO, CALIFORNIA

PAH SOURCE MATERIAL IN SEDIMENT



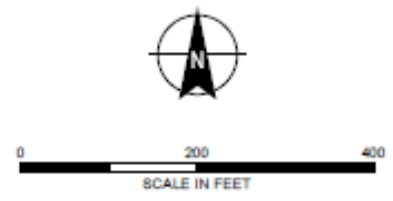
- COMPLETED PRE-DESIGN SAMPLE STATION
- SAMPLE LOCATION
- SURVEYED SEAWALL
- SEDIMENT TOTAL PAH GREATER THAN 100,000 µg/kg AT ANY DEPTH
- ⋯ PIER 39 MARINA

NOTES

1. ABBREVIATIONS/ACRONYMS:
 BSS = BELOW SEDIMENT SURFACE
 FT MLLW = FEET BELOW MEAN LOWER LOW WATER
 MGP = MANUFACTURED GAS PLANT
 TOTAL PAH-25 = SUM OF 25 POLYCYCLIC AROMATIC HYDROCARBONS
 µg/kg = MICROGRAMS PER KILOGRAM
 WB = WEST BASIN
 EB = EAST BASIN

2. THIESSEN POLYGONS WERE GENERATED FOR COMBINED SET OF GRAVITY CORES AND VIBRACORES.

3. AERIAL IMAGERY SOURCE: NEARMAP, 1 MARCH 2021

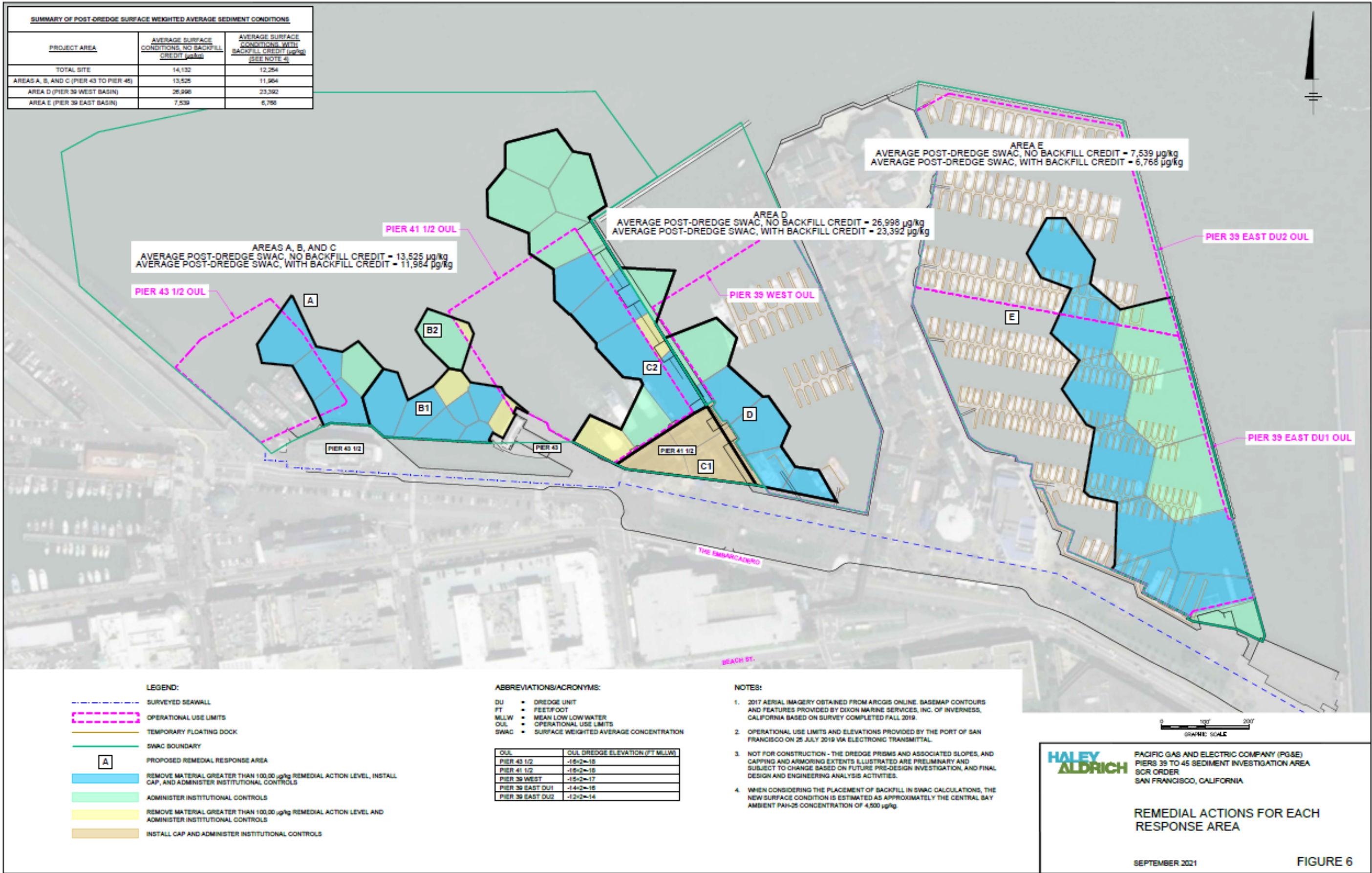


HALEY ALDRICH PACIFIC GAS AND ELECTRIC COMPANY (PG&E)
 PIERS 39 TO 45 SEDIMENT INVESTIGATION AREA
 SCR ORDER
 SAN FRANCISCO, CALIFORNIA

REMEDIAL RESPONSE AREAS

SEPTEMBER 2021

FIGURE 5



SUMMARY OF POST-DREDGE SURFACE WEIGHTED AVERAGE SEDIMENT CONDITIONS

PROJECT AREA	AVERAGE SURFACE CONDITIONS, NO BACKFILL CREDIT (µg/kg)	AVERAGE SURFACE CONDITIONS, WITH BACKFILL CREDIT (µg/kg) (SEE NOTE 4)
TOTAL SITE	14,132	12,254
AREAS A, B, AND C (PIER 43 TO PIER 45)	13,525	11,964
AREA D (PIER 39 WEST BASIN)	26,998	23,392
AREA E (PIER 39 EAST BASIN)	7,539	6,768

AREAS A, B, AND C
 AVERAGE POST-DREDGE SWAC, NO BACKFILL CREDIT = 13,525 µg/kg
 AVERAGE POST-DREDGE SWAC, WITH BACKFILL CREDIT = 11,964 µg/kg

AREA D
 AVERAGE POST-DREDGE SWAC, NO BACKFILL CREDIT = 26,998 µg/kg
 AVERAGE POST-DREDGE SWAC, WITH BACKFILL CREDIT = 23,392 µg/kg

AREA E
 AVERAGE POST-DREDGE SWAC, NO BACKFILL CREDIT = 7,539 µg/kg
 AVERAGE POST-DREDGE SWAC, WITH BACKFILL CREDIT = 6,768 µg/kg

- LEGEND:**
- SURVEYED SEAWALL
 - OPERATIONAL USE LIMITS
 - TEMPORARY FLOATING DOCK
 - SWAC BOUNDARY
 - A PROPOSED REMEDIAL RESPONSE AREA
 - REMOVE MATERIAL GREATER THAN 100.00 µg/kg REMEDIAL ACTION LEVEL, INSTALL CAP, AND ADMINISTER INSTITUTIONAL CONTROLS
 - ADMINISTER INSTITUTIONAL CONTROLS
 - REMOVE MATERIAL GREATER THAN 100.00 µg/kg REMEDIAL ACTION LEVEL AND ADMINISTER INSTITUTIONAL CONTROLS
 - INSTALL CAP AND ADMINISTER INSTITUTIONAL CONTROLS

ABBREVIATIONS/ACRONYMS:

DU	• DREDGE UNIT
FT	• FEET/FOOT
MLLW	• MEAN LOW LOWWATER
OUL	• OPERATIONAL USE LIMITS
SWAC	• SURFACE WEIGHTED AVERAGE CONCENTRATION

OUL	OUL DREDGE ELEVATION (FT MLLW)
PIER 43 1/2	-18+2=-16
PIER 41 1/2	-16+2=-14
PIER 39 WEST	-15+2=-13
PIER 39 EAST DU1	-14+2=-12
PIER 39 EAST DU2	-12+2=-10

- NOTES:**
- 2017 AERIAL IMAGERY OBTAINED FROM ARCGIS ONLINE. BASEMAP CONTOURS AND FEATURES PROVIDED BY DIXON MARINE SERVICES, INC. OF INVERNESS, CALIFORNIA BASED ON SURVEY COMPLETED FALL 2019.
 - OPERATIONAL USE LIMITS AND ELEVATIONS PROVIDED BY THE PORT OF SAN FRANCISCO ON 25 JULY 2019 VIA ELECTRONIC TRANSMITTAL.
 - NOT FOR CONSTRUCTION - THE DREDGE PRISMS AND ASSOCIATED SLOPES, AND CAPPING AND ARMORING EXTENTS ILLUSTRATED ARE PRELIMINARY AND SUBJECT TO CHANGE BASED ON FUTURE PRE-DESIGN INVESTIGATION, AND FINAL DESIGN AND ENGINEERING ANALYSIS ACTIVITIES.
 - WHEN CONSIDERING THE PLACEMENT OF BACKFILL IN SWAC CALCULATIONS, THE NEW SURFACE CONDITION IS ESTIMATED AS APPROXIMATELY THE CENTRAL BAY AMBIENT PAH-25 CONCENTRATION OF 4,500 µg/kg.

HALEY ALDRICH
 PACIFIC GAS AND ELECTRIC COMPANY (PG&E)
 PIERS 39 TO 45 SEDIMENT INVESTIGATION AREA
 SCR ORDER
 SAN FRANCISCO, CALIFORNIA

REMEDIAL ACTIONS FOR EACH RESPONSE AREA