

ATTACHMENT 3

***REVISED REHABILITATION ANALYSIS
(APPENDIX J OF THE DRAFT SEIR)***



September 12, 2019

Mr. Nick Pappas
Winehaven Legacy LLC
2392 Morse Avenue
Irvine, California 92614

sent via email to: npappas@suncal.com

Subject: Evaluation of Environmental Issues Identified in Draft Phase I Environmental Site Assessment and the Likely Range of Remediation Scenarios to be Implemented to Mitigate Issues Facilitating Redevelopment, Former Point Molate Naval Fuel Depot, Richmond, California

Dear Nick:

Per your request, Terraphase Engineering Inc. (Terraphase) has prepared this letter in response to requests from the City of Richmond ("the City") in discussion of the results of the Draft Phase I Environmental Site Assessment (ESA) dated August 29, 2019, and prepared by Terraphase on behalf of Winehaven Legacy LLC (Winehaven Legacy) for the potential redevelopment of the Former Point Molate Naval Fuel Depot in Richmond, California ("Point Molate" or "the Site"). In a teleconference meeting between the City (and their consultants), Winehaven Legacy, and Terraphase on September 4, 2019, the City requested that an evaluation of a range of likely remediation and mitigation options be explored that may be necessary in order to facilitate the residential uses proposed in Winehaven Legacy's proposed project. In particular, the City of Richmond was interested in the range of potential soil movement necessary to complete these activities so that they could evaluate the potential impacts of these activities in the context of the ongoing California Environmental Quality Act (CEQA) analysis of the proposed redevelopment project. This letter summarizes our findings in this regard and is based upon our experience working on the Site since 2010, interactions with the Regional Water Quality Control Board (RWQCB) during that same time period, and our understanding of the management strategies currently utilized at the Site for each identified issue.

This analysis is presented in the following tables:

- Table 1: DRAFT Summary of Environmental Conditions, Point Molate Naval Fuel Depot, Richmond, California, which summarizes each issue identified in the Draft Phase I ESA and the potential mitigation measures for each issue.
- Table 2: DRAFT Summary of Remedial Measures Scenarios, Point Molate Naval Fuel Depot, Richmond, California, which summarizes whether each issue impacts the residential re-uses at the Site and the best case, most-likely case, and reasonable-worst case scenarios for the mitigation of each issue.

It should be noted that the Site is subject to RWQCB Order No. R2-2011-0087. This Order provides the pathway for evaluating each site, developing risk assessments and remediation plans, and modifying Land-Use Controls as necessary to support the redevelopment of Point Molate. The RWQCB is the designated lead regulatory agency representing the State of California in this work.

Limitations

Terraphase site assessment and investigation work has been completed in accordance with the scope of work set out between Terraphase and the Client in this work order. Recommendations or conclusions made by Terraphase are based on our research, site reconnaissance, field work, former laboratory testing, and site information provided to us by the Client. It is important to recognize that even the most comprehensive scope of services may fail to detect environmental liabilities on a particular site. Therefore, Terraphase cannot “certify” that a site is free of environmental contamination. No expressed or implied representation or warranty is included or intended in our reports, except that our services were performed as described by our scope of services in accordance with the standard of care of our profession. The impacts of future events may require further investigation of the Site and subsequent data analysis along with revision of recommendations or conclusions.

In preparation of site assessment and investigation reports, Terraphase has relied upon, and assumes to be accurate, site information provided by Winehaven Legacy LLC and other persons. Except as otherwise stated in the reports, Terraphase will not attempt to verify the accuracy or completeness of any such information.

Reports may be used only by the Client for this project. Any party other than the Client who wishes to use reports must notify Terraphase that they are using the reports. Based on the intended use of the report, Terraphase may require supplemental work to be performed and may require that the report be revised and reissued. Terraphase can discuss options and prepare a cost estimate for Phase II work as our Phase I ESA progresses. Both reports can be prepared contemporaneously to save costs and effort. Costs to implement the Phase II are not included in this estimate. Terraphase accepts no liability or responsibility whatsoever for or in respect to any use or reliance upon this report by a third party.

Feel free to contact William Carson at 510-645-1850 x31 with any questions on this document.

Sincerely,
For Terraphase Engineering Inc.



William Carson, PE (C60735)
Principal Engineer

Attachments: Table 1: DRAFT Summary of Environmental Conditions
Table 2: DRAFT Summary of Remedial Measures Scenarios

ATTACHMENTS

Table 1 - DRAFT Summary of Environmental Conditions

Point Molate Naval Fuel Depot, Richmond, California

Area	Summary	Major Actions to Date	REC / HREC / CREC / Other	Contaminants	Management/Mitigation Strategy
IR Site 1 - Landfill Area	IR Site 1 is a construction debris landfill in the center of the Site. The Navy consolidated the material at IR Site 1 and constructed a landfill to contain the material.	Consolidation and Construction of Soil Cover for Landfill - 2001/2002	CREC	Petroleum Hydrocarbons	The Navy issued a ROD in 2005 that required ongoing operation, maintenance and monitoring activities for the landfill and restricted the use of this site. Per Task 11 of the RWQCB Order R2-2011-087, the requirements of the ROD must be met and any amendment to that ROD. Potential risks to human health and the environment are mitigated through the active management of this site in compliance with RWQCB Order R2-2011-0087.
IR Site 2 - Sand Blast Grit Areas	IR Site 2 encompassed 5 isolated areas where sand blast grit was suspected to be disposed of onsite. These sites were located near Building 123 (Area 2A and 2B) and in and around IR Site 4 (Area 2C, 2D, and 2E).	Removal of Sand Blast Grit in 1997.	REC (Area 2A and 2B) and HREC (Area 2C, 2D, and 2E)	Metals	RWQCB issued a No Further Action Letter for the sand blast grit areas in 2000 allowing for unrestricted site use. There were 5 areas evaluated. Confirmation samples collected at Area 2A and 2B indicate concentrations of metals, primarily lead, that exceed the current residential standards for unrestricted site use. This standard has been lowered by the California regulators since this cleanup was completed in 1997. Confirmation samples at Areas 2C, 2D, and 2E indicate concentrations of metals meet current standards for residential site use. Although the Site is currently restricted against residential land-uses, the closure for Areas 2A and 2B does not specifically reference LUCs. If Area 2A or 2B is redeveloped as residential, additional risk evaluation of the lead concentrations in soil is merited. If risks to human health or the environment are identified, this risk will be mitigated through a remedial action under RWQCB oversight. Typical remedial actions for this type of contamination that would be evaluated and then implemented are soil removal and disposal and/or capping the material in place with a land-use restriction. Given the extent of these areas, the total soil addressed would likely be less than 1,000 tons.
IR Site 3	IR Site 3 is the location of the former treatment ponds. Most recent remedial activities were completed in 2014 and 2015 under supervision of RWQCB in response to RWQCB Order Number R2-20111-0087. Additional activities are necessary before the regulatory agency issues approval of the remedial action. Groundwater monitoring for IR Site 3 is conducted under the sitewide groundwater monitoring program.	Groundwater Cutoff and Treatment System from 1995-2015 Removal of underground fuel pipelines in 1998-2000 Waste Water Treatment Pond Closures in 2003 Mass Excavation in 2014 and 2015	REC	Petroleum Hydrocarbons, PAHs, Lead and Arsenic	RWQCB has issued a letter stating that upon modification of the Soil and Groundwater Management Plan for the Site, additional soil-gas sampling, and revising the document to respond to their comments, the site LUC can be modified to allow for restricted residential uses. The Site is being remediated to the satisfaction of the RWQCB per R2-2011-0087 and per Task 3b of that Order; the Remedial Action Completion Report is currently being reviewed and commented on by the RWQCB. After completion of the modified LUC, the potential risk to residential site users will be mitigated. The RWQCB has also commented on the concentrations of HOPs in groundwater at IR Site 3 as a potential threat to San Francisco Bay ecology. This is being addressed through additional evaluation of the potential risk associated with these compounds in IR Site 3. If risks requiring groundwater treatment are identified, remediation would occur along the shoreline or in the contingency groundwater treatment trench installed in IR Site 3.
IR Site 4 - Drum Lot 1	In IR Site 4 Drum Lot 1, the Navy conducted remedial investigation activities and removed the underground fuel pipelines and surrounding soil as part of a sitewide pipeline removal program. The Navy recommended no further action for soil in these areas based on confirmation sampling from the fuel pipeline excavations and investigations. However, the regulatory agency did not concur with these findings. Groundwater is monitored as part of the sitewide groundwater monitoring program.	Removal of underground fuel pipelines in 1998-2000	REC	Petroleum Hydrocarbons	Per RWQCB Order R2-2011-0087 Task 4c, a Risk Assessment is to be performed to evaluate whether additional remedial actions are necessary to allow for proposed land-use. If remedial action is necessary, it will need to be completed to the satisfaction of the RWQCB per Task 4d of the RWQCB Order. This risk will be mitigated through implementation of a remedial action under RWQCB oversight. Typical remediation for this type of contamination that would be evaluated and then implemented are soil removal and disposal and/or capping the material in place with a LUC.
IR Site 4 - Drum Lot 2	IR Site 4 Drum Lot 2 includes the Building 87 Area. The Navy conducted remedial investigation activities and a soil removal activity at Building 87, including the removal of the DVECC UST. The Navy recommended no further action for soil in these areas. However, the regulatory agency did not concur with these findings. Under RWQCB oversight per RWQCB Order R2-2011-0087, additional in-situ remediation activities were conducted to reduce groundwater concentrations of chlorinated solvents in 2012 and 2013. Groundwater is monitored as part of the sitewide groundwater monitoring program.	Building 87 Pesticide Soil Removal - 2001 In-situ Groundwater Treatment of Dissolved TCE - 2012/2013 per Task 4a and 4b of RWQCB Order R2-2011-0087	REC	Chlorinated Solvents and Pesticides	Per RWQCB Order R2-2011-0087 Task 4c, a Risk Assessment is to be performed to evaluate whether additional remedial actions are necessary to allow for proposed land-use. If remedial action is necessary, it will need to be completed to the satisfaction of the RWQCB per Task 4d of the RWQCB Order. This risk will be mitigated through implementation of a remedial action under RWQCB oversight. Typical remedial action for this type of contamination that would be evaluated and then implemented are soil removal and disposal and/or capping the material in place with a LUC.

Table 1 - DRAFT Summary of Environmental Conditions

Point Molate Naval Fuel Depot, Richmond, California

Area	Summary	Major Actions to Date	REC / HREC / CREC / Other	Contaminants	Management/Mitigation Strategy
USTs B, C, 2, 3, 5, 6, 8, 13, 15, 18, and 19 Open Large Hillside USTs	The USTs were structurally closed in-place, but regulatory environmental closure has not been granted for these USTs from the RWQCB. Groundwater monitoring occurs as part of the sitewide groundwater monitoring program. Post-closure maintenance and monitoring to reduce the chances that the tanks will become a physical hazard is conducted in accordance with the PMMP (ITSI 2005b) and the work plan for UST structural inspections (Terraphase 2011a). Land-use restrictions prohibit development in the area above the USTs.	Structure closure in 2005 Environmental Closure Request for UST-B and UST-C in March 2009 and UST-2 in 2016	REC	Petroleum Hydrocarbons	RWQCB has commented on closure request for UST-2 and has not responded to request for closure of UST-B and UST-C. Structural closure requires ongoing inspection, maintenance, and monitoring and there is a LUC preventing development and uses on top and around the USTs. Groundwater contamination is monitored in the vicinity of each open UST site. UST closure must be requested from RWQCB per Order R2-2011-0087. Further removal of a large UST is subject to the requirements of RWQCB Order R2-2011-087 - Task 6 - UST Removal Plan. Ongoing activities are reported on a quarterly basis per Task 7 of the RWQCB Order R2-2011-0087. Risks to human health and the environment will be mitigated by implementing the RWQCB-approved plans during UST removal actions and monitoring to ensure that transport of contaminants that are a potential risk to San Francisco Bay is not occurring.
USTs 1, 4, 7, 9, 10, 11, 12, 14, 16, 17 and 20 - Closed Large Hillside USTs	The USTs were structurally closed in-place and regulatory environmental closure was received for these tanks from the RWQCB. Post-closure maintenance and monitoring to reduce the chances that the tanks will become a physical hazard is conducted in accordance with the PMMP (ITSI 2005b) and the work plan for UST structural inspections (Terraphase 2011a). Land use restrictions prohibit development in the area above the USTs.	Structure closure in 2005 Environmental Closure: UST-1 - 2006, UST-4 - 2010, UST-7 - 2007, UST-9 - 2007, UST-10 - 2008, UST-11 - 2008, UST-12 - 2012, UST-14 - 2008, UST-16 - 2007, UST-17 - 2007, and UST-20 - 2006	CREC	Petroleum Hydrocarbons	RWQCB has issued environmental closure for each of these large hillside USTs. Structural closure requires ongoing inspection, maintenance, and monitoring and there is a LUC preventing development and uses on top of and around the USTs. Further removal of a large UST is subject to the requirements of RWQCB Order R2-2011-087 - Task 6 - UST Removal Plan. Ongoing activities are reported on a quarterly basis per Task 7 of the RWQCB Order R2-2011-0087. Risks to human health and the environment during UST removal will be mitigated by implementing the RWQCB-approved plans.
Small USTs	Three smaller USTs (an 8,000-gallon gasoline UST and two 750-gallon diesel USTs) were removed from the Site in the 1990s. In addition, one 13,000-gallon UST at Building 6 and fifteen heating oil USTs near the former housing units located at the Site were closed-in-place. Evidence of soil sampling associated with closure of these USTs was not identified in the information reviewed as part of the Phase I ESA.	Tanks Closed in place per US Navy Environmental Baseline survey of 1996	REC	Petroleum Hydrocarbons	These tanks have been closed in place per the US Navy site documents but have not been investigated and would be investigated and remediated as necessary under the oversight of the RWQCB. Potential risks to human health and environment from these smaller USTs will be mitigated through implementation of risk assessment and a remedial action under RWQCB oversight. Most of these tanks will be closed per the Low-Threat Underground Storage Tank Case Closure Policy documented in State Water Board Resolution No. 2012-0016. If additional remedial measures are required, typical remedial actions for this type of contamination include soil/groundwater removal and disposal and monitored natural attenuation.
Former Small Arms Firing Range	The small arms firing range is located at the southern perimeter of the Site. A no further action determination for the former small arms firing range was made based on an unrestricted use assuming risk thresholds that are no longer used by the local regulatory agencies. The calculated 95% UCL for lead used in the HHRA (193.71 mg/kg) exceeds the current residential screening level currently used by RWQCB and DTSC of 80 mg/kg, but is below the commercial/industrial screening level of 320 mg/kg. In addition, estimated adult and child 99 th percentile blood-lead concentrations exceed the 1 µg/dL threshold; calculations were not completed for a commercial/industrial scenario however are expected to meet Commercial/Industrial standards based on the 95% UCL being less than 320 mg/kg.	Small soil removal action in 2001	REC	Lead	The small arms firing range has a NFA letter for unrestricted site use but because of changes in regulatory thresholds would not meet a residential standard. Although the site is currently restricted against residential land-uses, the closure for the small arms firing range does not specifically reference LUCs. If the former small arms firing range is redeveloped as residential, additional risk evaluation of the lead concentrations in soil is merited. If risks to human health or the environment are identified, this risk will be mitigated through a remedial action under RWQCB oversight. Typical remedial activities for this type of contamination that would be evaluated and then implemented are soil removal and disposal and/or capping the material in place with a land-use restriction. Given the extent of these areas the total soil addressed would likely be less than 1000 tons.
PCB Oil Transformers	Several pole-mounted and some pad-mounted transformers are or have been located at the Site. Seventeen of the transformers were identified as containing PCBs at levels greater than laboratory reporting limits. PCB-contaminated transformers (i.e., transformers where PCBs were detected at concentrations greater than 50 ppm) were replaced, but transformers with PCBs less than 50 ppm may still be present at the Site. Information regarding the condition of the transformers (i.e., whether evidence of leaks or seeps were observed) was not found in information reviewed and soil sampling in the vicinity of the transformers was not conducted. Leaks of transformer oil with greater than 1 ppm PCBs from the transformers may have impacted shallow soil.	Removal of PCB transformers with concentration in excess of 50 ppm	REC	PCBs	Potential PCB spills from transformer will be investigated under RWQCB oversight prior to demolition activities to identify any leaks that require response action. If PCB contamination is identified, potential risk to human health and the environment will be mitigated through soil removal or site capping carried out under RWQCB oversight.

Table 1 - DRAFT Summary of Environmental Conditions

Point Molate Naval Fuel Depot, Richmond, California

Area	Summary	Major Actions to Date	REC / HREC / CREC / Other	Contaminants	Management/Mitigation Strategy
Lead Based Paint contamination in building driplines	LBP has been identified on exterior surfaces of buildings at the Site. LBP on exterior surfaces can chip and flake and result in lead contamination in the soil near the drip lines of the buildings. No information pertaining to soil sampling conducted within the drip lines of buildings was identified during the information reviewed as part of the Phase I ESA.	Lead based paint is likely present on the exterior of buildings constructed prior to 1978.	REC	Lead	In the RWCCB-approved Soil and Groundwater Management Plan (2012) protocols have been developed to manage lead-contaminated soil in building driplines. This Soil and Groundwater Management Plan was prepared in accordance with Task 2 of RWQCB Order R2-2011-0087. Risk associated with LBP will be mitigated by implementing the RWQCB approved protocols in the Soil and Groundwater Management Plan (Section 7.3).
Groundwater Contamination	Historical releases of petroleum and VOCs have resulted in impacts to groundwater at concentrations exceeding regulatory standards. Groundwater monitoring is conducted under the sitewide groundwater monitoring program.	See interim remedial action under IR Site 4 Drum Lot 2 and remedial action at IR Site 3 Remedial Action Completion Report Sitewide Groundwater Monitoring Program (Last Report in 2019). See Soil and Groundwater Management Plan (2012).	REC - HOPs in Groundwater / CREC - Groundwater Monitoring Program	Petroleum Hydrocarbons, Chlorinated Solvents	Per RWQCB Order R2-2011-0087 Task 2, a Soil and Groundwater Management Plan satisfactory to the RWQCB was submitted and approved in 2012. This plan is used to perform soil-disturbing activities at Point Molate to manage potential contamination. The RWQCB has commented on the concentrations of HOPs in groundwater at IR Site 3 and other locations at Point Molate NFD as a potential threat to San Francisco Bay ecology. This is being addressed through additional evaluation of the potential risk associated with these compounds. If risk to the ecology in San Francisco Bay is identified from groundwater contamination, additional remediation of the shoreline groundwater will be implemented as necessary to mitigate this risk.
Former Rail Road Spurs	Railroad tracks were constructed and used by the Navy along the shoreline for bulk transport. The railroad coincided with other areas previously investigated for petroleum hydrocarbons. Other contaminants associated with railroads from this time period are lead arsenate pesticides.	Phase II Environmental investigation in support of Bay Trail along shoreline - 2016	REC	Arsenic, lead, and PAHs	The 2016 NCE memorandum summarizing this investigation includes recommendations for mitigating risk associated with this contamination by managing the material in place, including isolating the soil beneath a cap consisting of the Bay trail or soil and/or developing institutional controls to avoid exposures to affected soils.
Hazardous Building Materials	There are known hazardous material that have been observed in the building materials and utilities. These primarily include ACMs and LBP.	LBP is likely present in and on buildings constructed prior to 1978. Navy tested and identified select buildings having exterior ACMs - 1998 Terraphase identified underground water supply utilities constructed of asbestos concrete pipe during IR Site 3 remediation 2014/2015	Other	Lead, Asbestos, and Other	Per City of Richmond requirements, before any structures at the Site are demolished, hazardous building material survey and abatement will be required to attain the demolition permit. Asbestos abatement is subject to BAAQMD requirements. The abatement of these building materials is discussed in the Soil and Groundwater Management Plan (Terraphase 2012). Risk associated with hazardous material in buildings to be demolished will be mitigated through implementation of proper abatement strategies in compliance with local and state regulations.

Notes:

As defined in ASTM 1527-13: REC - "The term recognized environmental conditions means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment."

As defined in ASTM 1527-13: HREC - "historical recognized environmental condition—a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

As defined in ASTM 1527-13: CREC - "controlled recognized environmental condition—a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

Abbreviations:

µg/dL - micrograms per deciliter, ACMs - asbestos-containing materials, BAAQMD - Bay Area Air Quality Management District, HHRA - Human Health Risk Assessment, HOPS - hydrocarbon oxidation products, IR - Installation Restoration, LBP - lead-based paint, LUC - Land-Use Control, mg/kg - milligrams per kilogram, NFA - No Further Action, PCB - polychlorinated biphenyl, ppm - parts per million, ROD - Record of Decision, RWQCB - Regional Water Quality Control Board, TCE - trichloroethene, UST - underground storage tank, VOC - volatile organic compound

Table 2 - DRAFT Summary of Remedial Measures Scenarios
Point Molate Naval Fuel Depot, Richmond, California

Area	Within Area for Proposed Residential Development	Best-Case Scenario	Most Likely Case Scenario	Reasonable Worst-Case Scenario
IR Site 1 - Landfill Area	No	Not Applicable	Not Applicable	Not Applicable
IR Site 2 - Sand Blast Grit Areas	Yes - Areas 2A and 2B may require additional removal of lead-impacted material or site cap	Removal of 0.5 foot over 10% of Area 2A (25,500 sf) and 2B (8,500 sf) - 60 cy for offsite disposal as California-regulated non-RCRA hazardous waste.	Removal of 0.5 foot over 50% of Area 2A (25,500 sf) and 2B (8,500 sf) - 310 cy for offsite disposal as California-regulated non-RCRA hazardous waste.	Removal of 1 foot over 75% of Area 2A (25,500 sf) and 2B (8,500 sf) - 940 cy for offsite disposal as California-regulated non-RCRA hazardous waste.
IR Site 3	Portions of IR Site 3 within Residential Development	No further soil removal to allow for restricted residential development per RWQCB Letter 2019.	No further soil removal to allow for restricted residential development per RWQCB Letter 2020.	No further Soil Removal to allow for restricted residential development per RWQCB Letter 2021.
IR Site 4 - Drum Lot 1	IR Site 4 - Drum Lot 1 is proposed for residential redevelopment east of Stenmark Drive.	No further soil removal and no additional remediation necessary to support residential scenario.	Removal of additional surficial soil is required to meet residential clean-up goals. Assumes 40,000 sf to 5 feet to meet restricted residential standards. Approximately 7,400 cy of soil for offsite disposal as non-hazardous waste.	Removal of additional surficial soil is required to meet residential clean-up goals. Assumes 80,000 sf to 5 feet to meet restricted residential standards. Approximately 14,800 cy of soil for offsite disposal as non-hazardous waste.
IR Site 4 - Drum Lot 2	Drum Lot 2 is proposed for residential redevelopment east of Stenmark Drive.	No further soil removal and no additional remediation necessary to support residential scenario.	No further soil removal and vapor mitigation system required in northwest portion of Drum Lot 1 (approx. 22 units).	No Further Soil Removal and Vapor Mitigation system required in northwest portion of Drum Lot 1 (approx. 35 units).
USTs B, C, 2, 3, 5, 6, 8, 13, 15, 18, and 19 - Open Large Hillside USTs	Two open USTs (B and C) have already been demolished and removed with contaminated soils. Seven open USTs (2, 3, 5, 6, 8, 18 and 19) are planned for removal as part of the residential development and associated grading activities. Open USTs 13 and 15 will remain in place after development.	In addition to the mass grading necessary for the removal of the USTs, an additional 1 foot of soil underlying approximately 25% of the area of the removed USTs will require removal to gain closure. Approximately 300 cy per UST or 2,100 cy of petroleum-affected materials to be removed from the Site for offsite disposal.	In addition to the mass grading necessary for the removal of the USTs, an additional 1 foot of soil underlying approximately 75% of the area of the removed USTs will require removal to gain closure. Approximately 900 cy per UST or 6,300 cy of petroleum-affected materials to be removed from the Site for offsite disposal.	In addition to the mass grading necessary for the removal of the USTs, an additional 1 foot of soil underlying approximately 150% of the area of the removed USTs will require removal to gain closure. Approximately 1,800 cy per UST or 12,600 cy of petroleum-affected materials to be removed from the Site for offsite disposal.
USTs 1, 4, 7, 9, 10, 11, 12, 14, 16, 17 and 20 - Closed Large Hillside USTs	Five closed USTs (1, 4, 9, 10, and 20) are planned for removal as part of the residential development and associated grading activities. Six closed USTs (7, 11, 12, 14, 16, and 17) will remain in place after development.	In addition to the mass grading necessary for the removal of the USTs, an additional 1 foot of soil underlying approximately 10% of the area of the removed USTs will require removal as contaminated soils unsuitable for reuse are unearthed. Approximately 100 cy per UST or 500 cy of petroleum-affected materials to be removed from the Site for offsite disposal.	In addition to the mass grading necessary for the removal of the USTs, an additional 1 foot of soil underlying approximately 25% of the area of the removed USTs will require removal as contaminated soils unsuitable for reuse are unearthed. Approximately 250 cy per UST or 1,250 cy of petroleum-affected materials to be removed from the Site for offsite disposal.	In addition to the mass grading necessary for the removal of the USTs, an additional 1 foot of soil underlying approximately 50% of the area of the removed USTs will require removal as contaminated soils unsuitable for reuse are unearthed. Approximately 500 cy per UST or 2,500 cy of petroleum-affected materials to be removed from the Site for offsite disposal.
Small USTs	All of the smaller USTs are located with the residential grading and development footprint. Three smaller USTs (an 8,000-gallon gasoline UST and two 750-gallon diesel USTs) were removed from the Site in the 1990s. In addition, one 13,000-gallon UST at Building 6 and fifteen heating oil USTs near the former housing units located at the Site were closed-in-place.	Removal of in place USTs and soil equivalent to 1x the volume of the USTs is required. Approximately 100 cy of petroleum-affected soil for offsite disposal.	Removal of in place USTs and soil equivalent to 3x the volume of the USTs is required. Approximately 300 cy of petroleum-affected soil for offsite disposal.	Removal of in place USTs and soil equivalent to 10x the volume of the USTs is required. Approximately 1,000 cy of petroleum-affected soil for offsite disposal.
Former Small Arms Firing Range	No	Not Applicable	Not Applicable	Not Applicable
PCB Oil Transformers	Transformers are located within the Residential Redevelopment foot print. Seventeen of the transformers were identified as containing PCBs at levels greater than laboratory reporting limits. PCB-contaminated transformers (i.e., transformers where PCBs were detected at concentrations greater than 50 ppm) were replaced, but transformers with PCBs less than 50 ppm may still be present at the Site.	Additional soil removal is not necessary after removal of transformers.	Minor Soil removal is necessary after removal of 5 transformers. Approximately 10 cy per transformer or 50 cy in total of PCB-contaminated soil removed from the Site.	Minor Soil removal is necessary after removal of 10 transformers. Approximately 10 cy per transformer or 100 cy in total of PCB contaminated soil removed from the Site.
Lead Based Paint contamination in building driplines	Building affected by lead based paint are present in the residential redevelopment footprint. LBP has been identified on exterior surfaces of buildings at the Site. LBP on exterior surfaces can chip and flake and result in lead contamination in the soil near the drip lines of the buildings.	Assume 50% of dripline is not covered by hardscape so it must be tested, 25% of this dripline is affected and requires offsite disposal 1 foot deep and 10 feet wide around the building. Dripline total is approximately 10,000 linear feet. Approximately 500 cy of LBP-affected soil requires disposal offsite as California-regulated non-RCRA hazardous waste.	Assume 50% of dripline is not covered by hardscape so it must be tested, 50% of this dripline is affected and requires offsite disposal 1 foot deep and 10 feet wide around the building. Dripline total is approximately 10,000 linear feet. Approximately 1,000 cy of LBP-affected soil requires disposal offsite as California-regulated non-RCRA hazardous waste.	Assume 50% of dripline is not covered by hardscape so it must be tested, 100% of this dripline is affected and requires offsite disposal 1 foot deep and 10 feet wide around the building. Dripline total is approximately 10,000 linear feet. Approximately 2,000 cy of LBP-affected soil requires disposal offsite as California-regulated non-RCRA hazardous waste.
Groundwater Contamination	Groundwater contamination related to HOPs is currently undergoing risk evaluations for potential ecological affects in San Francisco Bay. Potential treatment or removal actions will be along the shoreline of San Francisco Bay and substantially not within the footprint of the residential development. No additional removals would be related to redeveloping the Site as residential.	Not Applicable	Not Applicable	Not Applicable

Table 2 - DRAFT Summary of Remedial Measures Scenarios
 Point Molate Naval Fuel Depot, Richmond, California

Area	Within Area for Proposed Residential Development	Best-Case Scenario	Most Likely Case Scenario	Reasonable Worst-Case Scenario
Former Rail Road Spurs	Railroad tracks were constructed and used by the Navy along the shoreline for bulk transport. The railroad coincided with other areas previously investigated for petroleum hydrocarbons. Other contaminants associated with railroads from this time period are lead arsenate pesticides. The former railway is predominantly along the shoreline and subject to evaluations as part of the construction of the Bay Trail. These areas are not proposed for residential redevelopment. There is residential development proposed where railway was in IR Drum Lot 1 and IR Drum Lot 2. These areas will be addressed as part of the work in these two areas discussed above. Approximately 500 feet adjacent to IR Site 4 Drum Lot 2 and 4,800 linear feet north of IR Site 3 are within residential footprint and are discussed here.	Assume that 25% of track length requires removal of soil to approximately 1 foot below ground surface and 25 feet wide to meet residential standards. Approximately 1,200 cy of soil to be removed from the Site and disposed of offsite because of arsenic contamination.	Assume that 50% of track length requires removal of soil to approximately 1 foot below ground surface and 25 feet wide to meet residential standards. Approximately 2,400 cy of soil to be removed from the Site and disposed of offsite because of arsenic contamination.	Assume that 75% of track length requires removal of soil to approximately 1 foot below ground surface and 25 feet wide to meet residential standards. Approximately 3,600 cy of soil to be removed from the site and disposed of offsite because of arsenic contamination.
Hazardous Building Materials	Buildings with known hazardous building material are located within the proposed residential development footprint. These primarily include ACMs and LBP. Demolition and removal will not require the additional removal of soil or remediation activities beyond the proper abatement of material prior and during demolition activities.	None	None	None
Total Non-Haz Waste Soil disposal		3900	17700	34600
Total California-regulated Non-RCRA hazardous waste disposal		560	1310	2940

Notes:
 Unless otherwise noted, soil disposal is likely non-hazardous.

Abbreviations:
 ACMs - asbestos-containing materials, cy - cubic yards, HOPS - hydrocarbon oxidation products, IR - Installation Restoration, LBP - lead-based paint, PCB - polychlorinated biphenyl, ppm - parts per million, RCRA - Resource Conservation and Recovery Act, RWQCB - Regional Water Quality Control Board, sf - square feet, UST - underground storage tank