3.12 HAZARDS AND HAZARDOUS MATERIALS

This section describes the existing environmental conditions as they pertain to hazards and hazardous materials that have the potential to effect human health and the environment within and adjacent to the project site. The general and site-specific discussion of hazards and hazardous materials contained herein provides the environmental baseline by which environmental impacts are identified and measured. Environmental impacts are discussed in Section 4.0.

3.12.1 REGULATORY SETTING

FEDERAL

Comprehensive Environmental Response, Compensation, and Liability Act

On December 11, 1980, the United States Congress passed the Comprehensive Environmental Response Compensation Liability Act (CERCLA: 42 U.S.C. Section 9601, et seq.). CERCLA, also referred to as “Superfund,” provides broad federal authority to respond to potential or direct releases of hazardous substances that may jeopardize the environment or public health. CERCLA establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites; provides for liability of persons responsible for releases of hazardous waste at such sites; and, when no responsible party can be identified, fund cleanup of these sites (USEPA, 2007). During site clean up, the responsible party is required to comply with all CERCLA regulations, including tracking hazardous materials and potentially contaminated media such as soils and ground water that are generated during site cleanup and remediation. The United States Environmental Protection Agency (USEPA) evaluates contaminated sites, including former Department of Defense (DoD) sites, for inclusion on a priority list and assigns a cleanup priority to sites that pose an immediate threat to the environment. Also known as the National Priority List (NPL), the list is intended to guide USEPA in determining which sites are given priority for further investigation. The project site is not listed as an NPL site; however, CERCLA regulations do apply during remedial activities at the project site.

Defense Environmental Restoration Program

The Defense Environmental Restoration Program (DERP) was established by Section 211 of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and is codified in Sections 2701-2707 of Title 10 of the United States Code. DERP is a single program, funded by several accounts, which provide for the cleanup of hazardous substances associated with past DoD activities and is consistent with the provisions of CERCLA.

Base Realignment and Closure Act/Defense Base Realignment and Closure Act

The Base Realignment and Closure Act (BRAC) of 1988 and Defense Base Realignment and Closure Act (DBRAC) of 1990, require the DoD, or other responsible federal agencies, to comply with a variety of environmental laws during base closure and transfer of DoD sites to non-military entities. These laws
include CERCLA and the National Environmental Policy Act (NEPA), which requires environmental review of major federal actions to ensure potential environmental impacts are addressed. Compliance with Section 120 of CERCLA is required for all BRAC installations and defines the role of the USEPA and appropriate state agencies during the clean up process of such sites. The USEPA’s role in the BRAC process includes an evaluation of the property for possible inclusion on the NPL. Subsequently, DoD enters into an interagency agreement with USEPA and appropriate state agencies to provide regulatory oversight of the clean up process. DoD must commence Remedial Investigations (RI) and Feasibility Studies (FS) within a certain timeframe once the site is listed on the NPL. If a site is not listed on the NPL, the site is still required to comply with all CERCLA regulations.

Installation Restoration Program

The Installation Restoration Program (IRP) is one of the programs funded by DERP. The first step under the IRP is Remedial Investigation (RI), the purpose of which is to identify the cause and extent of contamination at a particular site and identify potential threats to the public and the environment from such contamination. If further action is necessary, a FS is prepared to develop the options for cleaning up the site. After the RI and FS have been completed, the information in the FS is used to develop a Proposed Workplan, which is presented as a fact sheet that describes the various cleanup options under consideration and identifies the option preferred by the responsible party. The Proposed Workplan is distributed for public comment, with public meetings held to solicit input. Following the public comment period, a Record of Decision (ROD) is submitted to the USEPA. The ROD describes how the responsible party will implement the clean up, if deemed necessary. Upon acceptance by the USEPA, a notice is placed in local newspapers to inform the community of the cleanup decision. The ROD then becomes the governing document for future clean up. The next steps are a series of potential human health and ecological risk assessments, corrective action plans (CAPs), and removal actions (when necessary). Such activities document remedial activities such as excavating impacted soils or groundwater extraction and treatment systems. The site would then progress into the Operations and Maintenance Phase (O & M). During this phase, review and updates occur to address the effectiveness of remedial activities, including a comprehensive evaluation of the remedial systems. These reviews can take place quarterly, bi-annually, or annually, depending on the extent of the remedial systems that are in place. The IRP requires the entire O & M phase to be reviewed, at a minimum, once every five years.

Under the Navy IRP program, a Finding of Suitability for Early Transfer of Disposal Areas 3, 5, 10, and 13 (FOSET) was prepared by the Navy and submitted to the City of Richmond (Navy, 2008). The FOSET (Appendix X) summarizes the nature and extent of contamination and any response actions taken under the Navy IPR. In 2003, the Navy transferred all but approximately 40 acres of the Point Molate NFD to the City. The 40 acres that are still under Navy ownership includes several investigation areas (discussed below) where cleanup is on-going (Navy, 2008).
Since issuance of the Draft EIS/EIR, the City and US Navy have completed the transfer of the remaining acreage and the City now owns the entire Point Molate property. Environmental responsibilities for completing the remaining cleanup activities, along with approximately $28.5 million of federal funding, were transferred to the City in accordance with the Early Transfer Cooperative Agreement executed between the City and Navy.

**Resource Conservation and Recovery Act**

The Resource Conservation and Recovery Act (RCRA) was passed by Congress (42 U.S.C. Section 6901-6992k) authorizing the USEPA to control hazardous waste from generation to disposal, and provides a framework for managing non-hazardous wastes. The 1984 amendments to RCRA, known as the “Federal Hazardous and Solid Waste Amendments” (HSWA), require a phasing out of landfill disposal of hazardous waste. HSWA requires state and local governments to implement solid waste programs that ensure hazardous wastes are not disposed in public landfills. A second amendment in 1986, addresses potential problems associated with hazardous substances, including petroleum products that are stored within underground storage tanks (USTs). RCRA requires anyone who produces or transports hazardous waste to implement a tracking system, including maintaining manifests to document the type of hazardous waste, point of origin, and ultimately the location of the disposal site where the wastes are to be transferred. Any contaminated soils or groundwater that are deemed a hazardous waste and/or untreated groundwater that originates from remedial investigations on the project site would be subject to RCRA cradle to grave regulations. In California, the responsible agency that enforces the RCRA is the California Department of Toxic Substances Control (DTSC).

**STATE**

**California Environmental Protection Agency**

The California Environmental Protection Agency (Cal/EPA) was created in 1991 to better coordinate State environmental programs, reduce administrative duplication, and address the greatest environmental and health risks. Cal/EPA unifies the State's environmental authority under a single cabinet-level agency. Cal/EPA oversees the following agencies: Air Resources Board, Integrated Waste Management Board, Department of Pesticide Regulation (DPR), State Water Resources Control Board (SWRCB), DTSC, and Office of Emergency Services (OES).

Originally enacted in 1985, Government Code Section 65962.5 requires Cal/EPA to prepare a hazardous waste and substances site list, known as the “Cortese list”. Listing on the Cortese list has a bearing on local permitting processes as well as compliance with environmental regulations. For petroleum contaminated sites the Regional Water Quality Control Board (RWQCB) requires development and implementation of a CAP where groundwater has been contaminated or where petroleum contamination in soils has the potential to impact groundwater at levels beyond regulatory thresholds.
Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act is the primary law for surface and ground water quality regulations within California. Acting through the RWQCB in the San Francisco Bay Area (Bay Area), the SWRCB regulates surface and groundwater quality pursuant to the Porter-Cologne Water Quality Act. The RWQCBs have the regulatory authority to supervise the cleanup of hazardous wastes sites referred to them by local agencies in those situations where water quality may be affected. Under the San Francisco Region Basin Plan, the San Francisco Regional Water Quality Control Board (SFRWQCB) is responsible for overseeing the discharge of water (from remediation activities and redevelopment activities) to surface waters. Refer to Section 3.3 for additional water quality regulatory background.

Past releases from operations at the Point Molate Naval Fuel Depot (NFD) have resulted in impacted soils and groundwater beneath the site. The primary contaminant of concern is petroleum hydrocarbons, although soils and groundwater at the NFD have been affected by other contaminants. The early transfer property of the NFD Point Molate to the City of Richmond is subject to the provisions set forth in CERCLA under the regulatory oversight of the SFRWQCB. Prior to the transfer of Navy owned property to the City of Richmond several removal actions were required by the SFRWQCB to clean up the NFD Point Molate. Site Cleanup Orders were adopted by the Navy in 1995. In 1997, the Orders were revised to include a time schedule for clean up and remedial activities. The time lines were implemented under several cleanup actions that are ongoing. A new Site Cleanup Order was adopted by the SFRWQCB on November 12, 2008, which outlines the specific deliverables and schedule to complete the outstanding evaluations, remediation work, monitoring, and reporting for the site. On September 15, 2009, the SFRWQCB vacated and remanded to the Board the 2008 Order. The action was in response to a petition filed arguing that the Order is subject to a determination under CEQA and is not categorically exempt from review. Upon remand, the SFRWQCB may determine that the Order is eligible for a statutory exemption, may rely on this Final EIR, or may determine that the Order qualifies for CEQA’s common sense exception. A revised Order will be prepared and circulated for public comment following the City’s selection of an alternative analyzed in the Final EIR. It is expected, based on consultation with the SFRWQCB, that the revised order will similar to the 2008 Order in scope and content. The steps in the final transfer process are outlined in Section 2.1.4. The vacated Site Cleanup Order is included in Appendix X. The cleanup activities continue under the regulatory oversight of the SFRWQCB.

Hazardous Substance Control Laws

The California Health and Safety Code Division 20, Chapter 6.95, requires businesses that generate, store, or transport hazardous materials to submit a Hazardous Materials Business Plan (HMBP). The DTSC delegates enforcement of the HMBP requirements to local environmental health departments.

The Hazardous Waste Control Act (HWCA) of 1972 established the basis for the California Hazardous Waste Control Program within the California Department of Public Health (CDPH). Included in the Act are definitions of what is considered a hazardous waste, the definition of hazardous, and what is
3.12 Hazards and Hazardous Materials

necessary for appropriate handling, processing and disposal of hazardous and extremely hazardous waste in a manner that would protect the public, livestock, and wildlife. The HWCA also established a tracking system for the handling and transportation of hazardous waste from the point of waste generation to the point of ultimate disposition, as well as a system of fees to cover the costs of operating the hazardous waste management program. The HWCA is California’s implementation of the federal RCRA “cradle to grave tracking” requirement. The primary purpose is to regulate hazardous materials and hazardous wastes generation and storage. The USEPA used several components of the California’s HWCA when CERCLA was first introduced in 1980. The primary State entity that oversees the cradle to grave law is the DTSC.

**California Accidental Release Program**

The California Accidental Release Program (CalARP) is governed by regulations set forth in the California Health and Safety Code (Section 25531 through 25543.3) requiring a facility that stores, generates, treats, or manufactures a regulated hazardous material to develop and submit Risk Management Plans (RMPs). The RMPs must document all CERCLA regulated hazardous materials, method of storage, location of storage areas, amounts present at a facility, and safety features for containing a potential release. The purpose of the CalARP is to prevent the accidental release of hazardous materials from a stationary source. The Contra Costa County Health Services Hazardous Materials Program administers the CalARP Programs within the City of Richmond (City) and Contra Costa County (County).

**Office of the State Fire Marshal and CAL FIRE**

The California Building Code (CBC) Section 701A.3.2 was amended in coordination with the Office of the State Fire Marshal, which states that all new buildings located in any fire hazard severity zone within the State Responsibility Areas, Local Agency Very-High Fire Hazard Severity Zone, or any Wildland-Urban Interface Fire Area shall file building permits that comply with Chapter 7A of the CBC. This amendment to the CBC was incorporated to protect against destructive wildfire within the urban interface zone.

The California Department of Forestry and Fire Protection (CAL FIRE) has developed a mapping system to classify Very High Fire Hazard Severity Zones within Local Responsibility Areas (LRAs). LRAs are defined as areas outside the jurisdiction of CAL FIRE that fall within city or county fire protection. The mapping program classifies lands according to whether a very high fire hazard is present, and identifies measures to mitigate the rate of spread and reduce the potential intensity for uncontrollable fires (CAL FIRE, 2008). The project site is within the jurisdiction of the Richmond Fire Department, as described in Section 3.10.
LOCAL

Contra Costa County

Contra Costa County passed the Industrial Safety Ordinance to reinforce regulatory requirements designed to protect public health and safety (Contra Costa, 2008). This ordinance requires regulated facilities to implement safety programs to prevent chemical accidents from occurring that could have a detrimental impact to surrounding communities. The County ordinance requires reviews, inspections, and audits that supplement existing federal and state regulations governing accidental releases of harmful substances.

City of Richmond General Plan

As discussed within Section 3.9, the project site and all adjacent parcels within the project site are covered by the City of Richmond (City) General Plan dated August 1994, which sets standards and regulations to enforce the goals and policies of the general plan.

Safety Element

The City General Plan Safety Element includes the following policies relevant to hazards and hazardous materials:

SF-B.1 Ensure that adequate fire equipment, fire breaks, facilities, water (with sufficient pressure and emergency backup systems), and access are provided for a quick and efficient response in any area designated in the Zoning Ordinance or in an environmental review document as having a fire hazard.

SF-B.3 Control erosion, minimize damage to the ridge’s appearance, and restore wildlife habitat if a firebreak proves necessary to protect the public from a serious fire hazard.

SF-B.4 Provide fire prevention facilities and equipment necessary to protect the community.

SF-B.5 Require a high level of fire resistance in all new and remodeled structures.

SF-B.7 Ensure that the production, use, storage, disposal, transport, and treatment of hazardous materials within the City limits is adequately regulated.

Existing and proposed programs and actions designed to meet SF-B-7 include the following:

Programs and Actions

SF-B.7 City will require the project applicant, for every potentially contaminated location to be developed within Richmond, to have the site inspected by a Registered Environmental Assessor
(i.e., a professional environmental scientist or engineer registered as an REA in California) for the presence of hazardous materials and wastes. The investigations shall take the form of environmental audits, and shall include, at a minimum, site inspections for hazardous materials, examination of historic records, and reviews of public agency records. Reports detailing the results of the inspections shall be submitted to the City for review. The report preparer shall either certify that the site is free of hazards or recommend preparation of a site mitigation plan. If the results of the environmental audit indicate a potential for contaminated soils, the City will require the applicant to work with appropriate state and regional agencies to fully analyze the site and remediate the problem. The City shall check that inspection reports are on file prior to project approval and prior to any excavation or construction. Acceptance of the site inspections report shall allow the proposed development to proceed to the permitting stage. All activities under this mitigation shall be done in conformance with the policies and procedures presented in Chapter 11 of the County Hazardous Waste Management Plan.

City of Richmond Zoning Ordinance

At the local level, a user of hazardous materials within the City is required to obtain a conditional use permit through the City’s permitting process as required by Section 15.04.820.020 of the City Zoning Ordinance. The City defines a hazardous material as any substance that is regulated as a hazardous material and classified under Federal Occupational Safety and Hazard Administration (Fed-OSHA) and CFR Title 49.

City of Richmond Industrial Safety Ordinance

The City, mirroring an ordinance passed by Contra Costa County, passed the Industrial Safety Ordinance (ISO) to prevent the release of hazardous materials from chemical facilities, including petroleum refineries, to surrounding communities in quantities that could result in adverse effects to human health. The ISO applies to all stationary sources. There are two facilities within the City that are regulated under the ISO: the Chevron Richmond Refinery and the General Chemicals West Richmond Works. The ISO requires stationary sources to:

a. Submit a safety plan to Contra Costa Health Services,
b. Develop a written human factors program,
c. Conduct a root cause analysis for each major chemical accident or release,
d. Conduct process hazard analyses for each covered process, and
e. Perform and document a security and vulnerability assessment once every five years after the initial assessment (or as delegated under federal regulation).

The ISO gives the Contra Costa Health Services the responsibility of:
3.12 Hazards and Hazardous Materials

a. Reviewing safety plans submitted by stationary sources and require necessary modifications to comply with the ISO,
b. Conducting initial audits and inspections of submitted safety program, and
c. Initiate safety inspections for compliance with the ISO within 30 days of a major chemical release or accident.

3.12.2 ENVIRONMENTAL SETTING

In order to determine the existing environmental setting in relation to hazards and hazardous materials and development of the project alternatives, a Phase, Pre-Acquisition – I Environmental Site Assessment (ESA) was conducted by AMEC Geomatrix, Inc., April 2008 in accordance with American Society of Testing and Materials (ASTM) Standard E1527-05 to summarize documented releases, storage, generation, and use of hazardous materials on or adjacent to the project site. Development of the ESA involved review of existing documentation and searches of government databases that contain information relating to releases, storage, generation, and use of hazardous materials on or adjacent to the project site to determine if Recognized Environmental Conditions (RECs) currently exist on-site (Appendix P). RECs are defined under ASTM Standard E1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process as:

“…the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to included de minimis conditions that generally do not present a materials risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies”.

The ASTM definition specifies that RECs merely identify a release, or threat of release of hazardous materials and are not an indication of potential impacts to human health or the environment. The definition of a REC includes the presence of a hazardous material such that presence of that material may be considered within compliance limits of the appropriate regulatory agency or law, and are not indicative of potential direct human health or ecological impacts. As such, there is not a direct correlation between RECs and direct impacts to human health or the environment.

In addition to the ESA, an evaluation of the efficacy of previously executed remediation resulting in regulatory closure was performed to develop a baseline for comparison of each project alternative and potential impacts associated with development of the project site.
3.12 Hazards and Hazardous Materials

**DOCUMENTATION REVIEW**

Upon closure of the Point Molate NFD, a series of environmental reviews were performed under the BRAC and DBRAC processes to assess environmental conditions. The base closure activities required the Navy to conduct a basewide Environmental Baseline Survey (EBS) in 1996 (Navy, 1996) under the Navy’s IRP. The basewide EBS grouped the project site into parcels identified as EBS Parcels 1 through 37, as shown in Figure 3.12-1. A Supplemental EBS was prepared in 2003 which updated the 1996 basewide EBS parcels; which were based on the progress of environmental assessments. The purpose of the Supplemental EBS was to help identify parcels available for lease or transfer and identify those parcels undergoing cleanup activities since the original 1996 EBS. The 37 EBS Parcels with similar environmental issues were consolidated into 13 property disposal areas (identified as Disposal Areas 1 through 13; Figure 3.12-2). Together, the EBS and the Supplemental EBS were intended to provide a comprehensive evaluation of available environmental information for real property at the NFD Point Molate. The EBS Parcels and Disposal Areas are referenced in the ESA to document the location of RECs and associated cleanup activities on the project site.

The Navy prepared a Finding of Suitability for Early Transfer (FOSET) of Disposal Areas 3, 5, 10, and 13 (included in Appendix X). These Disposal Areas correspond to the previously mentioned Installation Restoration Program investigation areas; IR-01 (Disposal Area 10), IR-02 (Disposal Area 5, partial), IR-03 (Disposal Area 3), IR-4 (Disposal Areas 5 and 13). The purpose of the FOSET is to document the Navy’s finding that the remaining Navy owned property are suitable for early transfer to the City of Richmond pursuant to the provisions of CERCLA § 120 (h)(3)(C). The FOSET presents the Navy’s findings that the areas that are being remediated; consisting of approximately 40-acres are suitable for early transfer with appropriate notices, covenants, easements, and restrictions that are specified in the FOSET. The FOSET summarizes the prior cleanup activities that have occurred since the Navy implemented the IRP under the BRAC Act as described previously. Any ongoing or planned remedial or corrective actions for which the Navy is responsible will be carried out under an Early Transfer Cooperative Agreement (ETCA) for NFD Point Molate between the U.S Navy and the City of Richmond (Appendix P) (Navy, 2008). The FOSET executed by the Navy provides the basis for the determination by the Navy that the property is suitable for early transfer. The FOSET is part of the package of documents the SFRWQCB sends to the governor requesting deferral of the covenant warranting that all remedial actions necessary to protect human health and the environment has been taken prior to the date of transfer (Navy, 2008).

During the basewide EBS, the Navy determined that several releases of hazardous materials had occurred over the years of operation. Operating under the corresponding programs, various studies, remediation workplans, monitoring studies, and closure documents have been prepared over the years concerning the extent of the hazardous materials releases and the potential for redevelopment of the NFD site. A representative sample of those reports that were prepared for the NFD and reviewed during preparation of the ESA is provided in Table 3.12-1.
SITE LAYOUT MAP
Formal Naval Fuel Depot Point Molate
Richmond, California
AO 04/14/2008 134

UNDERGROUND STORAGE TANKS
WATER TANKS
FORMER TREATMENT POND
PARCEL BOUNDARY
RESIDENTIAL AREA BUILDINGS
INDUSTRIAL/OPERATIONS BUILDINGS
WAREHOUSE
ADMINISTRATION BUILDING
SUBMERGED LAND PARCELS
WASTE DISPOSAL AREA R-01
SANDBLASTING AREAS R-02
TREATMENT PONDS AREA R-03
SHORELINE INVESTIGATION R-04

Figure 3.12-1
Environmental Baseline Survey Parcels

SOURCE: Geomatrix, 4/14/2008; AES, 2008

Note:
1. TANKS 21, 22, and 24 are Government owned; Parcels 5 is leased land
2. Locations of Tank 5, Tank 6, Building 72, Buildings 73, 74, and 75 are shown for reference, but they all have been removed.
3. BASEMAP IS FROM 1890 BASELINE ENVIRONMENTAL BASELINE SURVEY (PSC, 1986)
Area 8
Area 12
Area 2
Area 11
Area 10
Area 6
Area 5
Area 4
Area 13
Area 9
Area 3
Area 1

LEGEND
UNDERGROUND STORAGE TANK
PROPERTY BOUNDARY
BASEMAP IS FROM FINAL FINDING OF SUITABILITY TO TRANSFER (TETRA TECH, 2005c).

SCALE 1" = 400'

SOURCE: Geomatrix, 1/2/2008; AES, 2008

Figure 3.12-2
Disposal Areas
### TABLE 3.12-1
**REPRESENTATIVE CATALOG OF ENVIRONMENTAL STUDIES OF THE PROJECT SITE**

<table>
<thead>
<tr>
<th>Title</th>
<th>Date</th>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandblast Grit Area (Site 2) Removal Action Final Project Completion Report</td>
<td>November 4, 1998</td>
<td>Tetra Tech EM INC. for US Navy</td>
<td>Report of work performed to remove contaminated material and eliminate health risk from areas where contaminated material was removed.</td>
</tr>
<tr>
<td>Offshore Ecological Risk Assessment</td>
<td>November 24, 1999</td>
<td>Tetra Tech EM INC. and Entrix Inc. for US Navy</td>
<td>Report presenting the results of the assessment of risk to ecological receptors associated with the offshore areas.</td>
</tr>
<tr>
<td>Final Phase II Remedial Investigation Report</td>
<td>June 2, 2000</td>
<td>Tetra Tech EM INC. for US Navy</td>
<td>Report presenting the results of the Phase II Remedial Investigation and documenting the current site status and nature and extent of contamination at the site.</td>
</tr>
<tr>
<td>Final Environmental Impact Statement/Environmental Impact Report for the Disposal and Reuse of Fleet and Industrial Supply Center</td>
<td>February 2002</td>
<td>US Department of the Navy and City of Richmond Co-Lead Agencies</td>
<td>Combined EIS/EIR evaluating the environmental consequences related to different base closure and reuse options at Point Molate.</td>
</tr>
<tr>
<td>Final Corrective Action Plan</td>
<td>March 4, 2002</td>
<td>Tetra Tech EM INC. for US Navy</td>
<td>Plan to evaluate and remediate the effects of unauthorized releases from fuel storage operations within site USTs.</td>
</tr>
<tr>
<td>Final Sampling and Analysis Plan (Field Sampling Plan/Quality Assurance Project Plan)</td>
<td>September 12, 2002</td>
<td>Tetra Tech EM INC. for US Navy</td>
<td>Plan identifying the monitoring plan to support various remediation programs.</td>
</tr>
<tr>
<td>Final Record of Decision (ROD) Installation Restoration Site 1 Naval Fuel Depot, Point Molate, Richmond</td>
<td>June 2005</td>
<td>US Navy</td>
<td>Document presenting the selected remedial action for IR-01</td>
</tr>
</tbody>
</table>

**Note:** All documents are available from the Main Branch of the Richmond City Library. This list is not exhaustive, but representative of the studies conducted in the recent past.

**Source:** AES, 2007

Through review of previous documentation, several leaking underground storage tanks (LUSTs), four primary sites identified under the IRP (identified below as IR-01 through IR-04), a firing range, hazardous building / equipment materials, and other isolated areas of chemical storage were identified.
**ENVIRONMENTAL DATABASE LISTINGS**

The project site was then reviewed for environmental database listings to determine if areas of the project site are listed for past hazardous materials release incidents, storage, or generation in government maintained databases (Table 3.12-2). The database search was performed using a geographical information system to plot locations of past and/or current hazardous materials involvement. Databases were searched for sites and listings up to two miles from a point roughly equivalent to the center of the project site. A project area environmental database report (Appendix Q) was prepared for the project site, which lists the available records for hazardous materials involvement on and adjacent to the project site (EDR, 2007).

<table>
<thead>
<tr>
<th>Database</th>
<th>Type of Record</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPL</td>
<td>National Priority List</td>
<td>USEPA</td>
</tr>
<tr>
<td>CORRACTS¹</td>
<td>RCRA² Corrective Actions Report System</td>
<td>USEPA</td>
</tr>
<tr>
<td>SPL</td>
<td>State equivalent priority</td>
<td>STATE</td>
</tr>
<tr>
<td>SCL</td>
<td>State equivalent CERCLIS³ list</td>
<td>STATE</td>
</tr>
<tr>
<td>CERCLIS/ NFRAP⁴</td>
<td>Sites currently or formerly under review by USEPA</td>
<td>USEPA</td>
</tr>
<tr>
<td>LUST</td>
<td>Leaking Underground Storage Tanks</td>
<td>State Regulatory Commission</td>
</tr>
<tr>
<td>SWLF</td>
<td>Permitted as solid waste landfills, incinerators or transfer stations</td>
<td>State/ Regional Regulatory Commission</td>
</tr>
<tr>
<td>CA FID UST</td>
<td>Database of active and inactive USTs</td>
<td>STATE</td>
</tr>
<tr>
<td>CORTESE⁵</td>
<td>State index of properties with hazardous waste</td>
<td>STATE</td>
</tr>
<tr>
<td>TOXIC PITS</td>
<td>Toxic pits cleanup facilities</td>
<td>STATE</td>
</tr>
<tr>
<td>EMI</td>
<td>Emissions Inventory Data, California Air Resources Board</td>
<td>STATE</td>
</tr>
<tr>
<td>RCRA Info</td>
<td>RCRA violations/enforcement actions</td>
<td>USEPA</td>
</tr>
<tr>
<td>CA Bond Exp. Plan</td>
<td>California Bond Expenditure Plan, CDPH administered appropriation of Hazardous Substance Cleanup bond Act funds, no longer updated.</td>
<td>STATE</td>
</tr>
<tr>
<td>UST/AST</td>
<td>Registered underground or aboveground storage tanks</td>
<td>STATE</td>
</tr>
<tr>
<td>HIST UST</td>
<td>Historical UST Registered Database</td>
<td>STATE</td>
</tr>
<tr>
<td>RCRA SQG⁶</td>
<td>Sites that generate hazardous materials</td>
<td>USEPA</td>
</tr>
<tr>
<td>HAZNET</td>
<td>Hazardous Waste Information System</td>
<td>STATE</td>
</tr>
<tr>
<td>State CSCSL NFA</td>
<td>State Confirmed or Suspected Contaminant Site List No Further Action</td>
<td>STATE</td>
</tr>
</tbody>
</table>

Note:  
¹CORRACTS: Corrective Action Report System, a USEPA database of corrective actions taken at a RCRA-regulated site.  
²RCRA: Resource Conservation and Recovery Act  
³CERCLIS: Comprehensive Environmental Response, Compensation and Liability Information System  
⁴NFRAP: No Further Remedial Action Planned (archived CERCLIS sites)  
⁵CORTESE: based on input from 14 State databases.  
⁶RCRIS SQG: Resource Conservation and Recovery Information System Small Quantity Generator. According to Federal guidelines, a SQG produces less than 1,000 kg/month of non-acutely hazardous wastes.  

The majority of the listings identified from the environmental database search are associated with the NFD. The associated RECs were identified during the documentation review and are further discussed below in the REC discussion.

The results of the database search identified several other listings of hazardous waste generators, hazardous waste releases, regulated air emissions, above ground storage tanks (ASTs), LUSTs, large quantity generator of hazardous materials, and registered UST on or within a half-mile radius of the project site. A summary of the NPL sites located outside of the project site is provided in Table 3.12-3.

### Table 3.12-3
<table>
<thead>
<tr>
<th>Site Identification</th>
<th>Environmental Database</th>
<th>Material</th>
<th>Media Affected</th>
<th>Case Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Bell</td>
<td>RCRA-SQG</td>
<td>Not Reported</td>
<td>N/A</td>
<td>No violations reported</td>
</tr>
<tr>
<td>Pinole Point</td>
<td>CA Bond Exp. Plan</td>
<td>Zinc and Lead</td>
<td>Topsoil, groundwater</td>
<td>Post-closure permit and remedial action order by CDPH</td>
</tr>
<tr>
<td></td>
<td>EMI</td>
<td>Criteria Air Pollutants</td>
<td>Air</td>
<td>N/A</td>
</tr>
<tr>
<td>PakTank Corporation</td>
<td>EMI</td>
<td>Criteria Air Pollutants</td>
<td>Air</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>AST</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>HAZNET</td>
<td>Other inorganic wastes, waste oil and mixed oil, polymeric resin waste, unspecified alkaline solution,</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>LUST</td>
<td>RCRA Info</td>
<td>Diesel Fuel</td>
<td>Soil only</td>
<td>Case Closed</td>
</tr>
<tr>
<td></td>
<td>CA FID UST</td>
<td>N/A</td>
<td>N/A</td>
<td>Inactive UST</td>
</tr>
<tr>
<td></td>
<td>Contra Costa Co. Site List</td>
<td>N/A</td>
<td>N/A</td>
<td>Inactive UST</td>
</tr>
<tr>
<td>HIST UST</td>
<td>SWEEPS UST</td>
<td>Bulk liquid terminal</td>
<td>N/A</td>
<td>5 USTs</td>
</tr>
<tr>
<td>Pacific Molasses Company</td>
<td>LUST</td>
<td>Diesel fuel</td>
<td>Soil only</td>
<td>Case Closed</td>
</tr>
<tr>
<td>Caltrans-Richmond/San Rafael</td>
<td>CA FID UST</td>
<td>N/A</td>
<td>N/A</td>
<td>Inactive</td>
</tr>
</tbody>
</table>

Source: EDR Report, 2007 (Appendix Q)
Of the sites listed outside of the project site, the Pinole Point, PakTank, and Pacific Molasses Company listings identified releases of hazardous materials to the environment. All three sites are listed as closed cases.

**DESCRIPTION OF RECOGNIZED ENVIRONMENTAL CONDITIONS**

The following is a summary of the RECs identified during the documentation review and environmental database search. The RECs are grouped by the source/generator, while REC locations are identified in relation to the EBS Parcels and Disposal Areas, as identified in the ESB and Supplemental ESB studies prepared for the NFD. The location of EBS Parcels and Disposal Areas are shown in Figure 3.12-1 and Figure 3.12-2, respectively.

**Underground Storage Tanks**

**Naval Fuel Depot**

Bulk fuel was stored in twenty 50,000-gallon barrels (bbl) (8-million-liter) USTs, all of which were connected through a system of underground pipelines. Fuel was transferred through a series of valve boxes, pipelines, and eight high-capacity pump stations. These features occupy approximately 180 acres of the site and were evaluated as Environmental Baseline Survey (EBS) parcels 2 through 14, 24, 27, and 28 (PRC, 1996), all of which were transferred from the Navy to the City in September 2003. Nineteen of the USTs have been cleaned of bulk product, and as of 2002, one of the tanks was being used to store wastewater (US Navy, 2002).

Two smaller capacity USTs (2,400 and 13,000 bbl [0.38 and 2.1 million liters]) stored sludge and ballast water. These tanks are inactive and have also been cleaned. One 8,000-gallon (30,000-liter) diesel fuel tank and one 1,000-gallon (3,800-liter) pesticide and wastewater tank were removed in 1990. One 8,000-gallon (30,000-liter) gasoline tank for use by the property caretaker was removed in 1999. Sixteen smaller tanks, consisting of one 1,000-gallon (3,800-liter) heating oil tank for Building 6 and fifteen 550-gallon (2,100-liter) heating oil tanks associated with the residential units, were emptied, cleaned, and removed in 1999 (US Navy, 2002).

A Corrective Action Plan (CAP) describing the closure and cleanup of the USTs (twenty 50,000-bbl [8-million-liter], one 2,400-bbl [0.38-million-liter], and one 13,000-bbl (2.1-million-liter]) was issued in February 2002 (Tetra Tech EMI, 2002a). The Navy intends to close, capping in place, all USTs that are regulated under the SWRCB UST Regulations (23 C.C.R. Division 3, Chapter 16). These regulations require preparation of closure plans, which identify the closure requirements including removal of the contents, soil sampling and cleanup, and future monitoring requirements. The closure plan specifies that the USTs will be sealed from public access and periodically monitored for structural integrity and vapor levels. A long-term monitoring plan for the USTs has been prepared to monitor contaminants during subsequent closure and decommissioning activities. Upon early transfer of the Point Molate NFD; a UST management plan will be prepared and approved by the SFRWQCB. The management plan will include
a schedule for environmental case closure of the USTs that will ensure appropriate and reasonable timelines for future monitoring and case closure according to the SFRWQCB directives.

Structural closure of all of the on-site USTs and pipelines was completed and approved by Contra Costa County in 2005. Structural closure of each individual UST required removing all standing liquids from the tank bottom, draining and removal of piping and valves, soil sampling within the valve box and piping excavation areas, and installation of drainage systems that accelerate surface water percolation and limit ponding of rain water around the UST perimeter. A semiannual basewide groundwater monitoring program (BWMP) has been implemented to demonstrate the effectiveness of monitored natural attenuation (MNA) in accordance with the verification monitoring plan as described in the Final CAP (TTEMI, 2002a). The SFRWQCB has authorized regulatory closure of USTs 1, 7, 9, 10, 11, 16, 17, and 20. The regulatory closure of USTs 1, 7, 9, 10, 11, 16, 17, and 20 indicates that no further work is required. Based on the previous environmental investigations and remedial activities associated with the compliance program, the following potential environmental issues remain within the hillside UST areas:

- USTs 2-6, 8, 12-15, 18, and 19 have not received regulatory closure. The opinion of the SFRWQCB caseworker is that insufficient information is available for case closure at this time;
- Recent groundwater samples collected at the hillside UST wells and seep areas contain petroleum hydrocarbons and other fuel-related chemicals; and
- Petroleum-impacted soil may have been left in place after valve box and pipeline removal actions were completed in the hillside areas (TTEMI, 2002a).

Additional Leaking Underground Storage Tanks

The LUSTs identified during the environmental database search, located on ESB Parcels 21 and 24 resulted in soil contamination. According to the listings, both incidents have been remediated and the cases have been recorded as closed by the State of California.

Environmental Site Assessment Conclusions

The hillside USTs and former fuel distribution system associated with the NFD represent a source of potential impact to soil and groundwater. Detected concentrations of fuel-related constituents near the USTs, seep areas, former valve boxes, and former fuel pipelines have been relatively elevated. In particular, there are 12 USTs and associated seep areas that have not yet received regulatory closure. Additionally, deed restrictions issued by the SFRWQCB and the Navy restrict access or use of the USTs and prohibits placement of anything on top of the USTs. Based on the findings from previous environmental investigations, the recorded environmental land use restrictions, and the opinion of the SFRWQCB caseworker that insufficient information is available for case closure at this time, USTs 2-6, 8, 12-15, 18, and 19, their associated seep areas, and the former fuel distribution system are considered an existing REC.
The other leaking USTs identified on and near the project site are closed cases and therefore are not considered existing RECs.

Waste Disposal Areas

IR-01: Waste Disposal Area I

A former unlined waste disposal area (identified as IR-01 under the IRP) is located in EBS Parcel 7 (Figure 3.12-1) and designated as Disposal Area 10 (Figure 3.12-2). IR-01 is the site of a former landfill that was used by the NFD facility. The landfill area is approximately 400-feet long, and ranges from 50 feet to 200 feet wide, and up to 50 feet deep in some locations. IR-01 is located on a southwesterly facing slope within a steep ravine near the center of the project site as shown in Figure 3.12-1. The primary wastes that were disposed within the landfill consisted of construction debris and brush. Drums containing residual fuel and tank bottom sludge also were disposed of in this area (Navy, 1996).

A Phase I Remedial Investigation was conducted at IR-01 in 1994, which confirmed the widespread presence of Total Extractable Petroleum Hydrocarbons (TEPH), primarily JP-5 (jet fuel), and polynuclear aromatic hydrocarbons (PAHs) in soil and groundwater. Additionally, benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in the soil. A Phase II Remedial Investigation was conducted at IR-01 between 1998 and 1999 that further defined the nature and extent of impacts to groundwater and soil. Based on the results of the investigations, a removal action was conducted, which included installation of a soil cover cap, a seep collection system and drainage controls in 2001 (Foster Wheeler, 2002). Soil below the cap contains jet fuel and gasoline at concentrations exceeding the Fuel Product Action Levels (FPAL). A Fuel Product Action Level Development Report was created by the Navy to meet compliance criteria under the California Code of Regulations (CCR), Title 23, Article 7 and the California Health and Safety Code, Chapter 6.7, Underground Storage of Hazardous Substances, Section 25298 and is based on findings from the Ecological Risk Assessment and Human Health Risk Assessment. An oil water separator (OWS) was added in 2002 to remove oil from the seepage collection system. In 2005, a filtration system was installed to remove hydrocarbons from the OWS effluent. Post-closure maintenance and monitoring is currently being conducted annually at IR-01 in accordance with the Final Post Closure Maintenance and Monitoring Plan (TTEMI, 2002b), which was approved by the SFRWQCB.

Land use restrictions are in place to maintain the integrity of the soil cover cap and prohibit residential development at IR-01. Semiannual groundwater monitoring in this area is ongoing under the (BWMP) monitoring program. Two of the five groundwater monitoring wells and a surface water seep show the presence of free product, which is based on a visible sheen and/or the presence of a distinct layer on the water surface. The remaining three wells have levels of diesel range organic below the FPAL. It should be noted, however, that the detection limit for the diesel range organics was above the FPAL, so the laboratory results are therefore inconclusive. IR-01 will continue to be monitored through the (BWMP) monitoring program. The opinion of the SFRWQCB caseworker is that the Navy has not been able to
demonstrate containment under the current BWMP. The SFRWQCB has requested that the Navy install one additional monitoring well down-gradient of IR-01, and the Navy has agreed to do so.

**IR-02: Sandblast Grit Disposal Areas**

Four equipment sandblasting areas and sandblasting grit disposal areas, located in EBS parcels 13, 21, and 29 (Figure 3.12-1) and Disposal Areas 5, 6, and 11 (Figure 3.12-2), were identified during the DBRAC processes. Soils were potentially affected with heavy metals that are localized where sandblasting occurred or sandblast grit was buried and disposed. These affected areas were combined into IR-02, Sandblast Grit Disposal Areas. The Sandblast Grit Disposal Areas are IR-02 Areas A and B (Historic District) and IR-02 Areas C, D, and E (Drum Lot 2). Area A is located east of Main Road and south of Building 123. Sandblasting of unpainted metal surfaces was conducted directly south of Building 123 over an area covered by a concrete slab. Area B is located approximately 200 feet east of area A and north of Building 85 where sandblast grit may have been disposed on an asphalt area. During initial site inspections by Navy contractors, small piles of sandblast grit were observed in Area B, however, during subsequent visits, no sandblast grit was observed in Area B. No sandblast grit was observed in Area D as well. In 1997, approximately 192 cubic yards of sandblast grit intermixed with soils were removed from Area A and disposed of at an off-site landfill as hazardous waste. No removal action was completed for Area B and D, since no sandblast grit was visibly present. Areas C is located in the northwest corner of Drum Lot 2 where portions of the concrete drum lot was used for staging equipment and metal cleaning by a contractor. Area E is located in a grass and brush area to the north of Drum Lot 2 (Figure 3.12-1).

In 1997, approximately 18 cubic yards of affected soils were removed from Area E. There were no visible signs of sandblast grit within Area C. Following the removal action, one confirmation sample was collected from Areas C and Area E and analyzed for indicator metals that were identified as constituents of concern (COCs). Samples were compared to USEPA Region 9 Preliminary Remediation Goals (PRGs) for soils in residential and industrial areas and California EPA Modified PRGs for cadmium, chromium, and nickel. The indicator metals we present at concentrations below the PRGs (Appendix P). A subsequent human health risk screening assessment and a qualitative ecological risk assessment was conducted to evaluate potential risks to human health and the environment. The human health risk assessment found that the exposure potential to COCs are not expected to result in adverse human health effects. Further, the ecological risk assessment indicated that the habitat at IR-02 is highly disturbed and or poor quality for wildlife habitat, therefore exposure pathways were not present (Appendix P). Based on these findings, a No Further Action Record of Decision was prepared in 1999 and approved by the SFRWQCB. The EPA concurred with the Navy findings. No further actions are planned for IR-02.

**IR-03: Treatment Ponds Area**

The Treatment Ponds Area (IR-03) is composed of three aeration basins built over a former sump pond located in EBS parcels 20 and 25 (Figure 3.12-1) and Disposal Area 3 (Figure 3.12-2). The sump pond
was used for the containment of contaminated fuels, tank bottom sludge, bunker fuel, leaking drums, and possibly other liquid wastes. Upon closure in 1975, liquids, sludge, and wastes in the sump pond were removed and disposed of off-site at a permitted landfill. The pond was then filled with soil and rock derived from a local borrow pit (US Navy, 1998).

During previous monitoring, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), TPH, BTEX, and sporadic low-level chlorinated VOCs have been detected in soil and groundwater at IR-03. An extraction trench and treatment system was installed to intercept and remove floating fuel and contaminated groundwater for treatment (US Navy, 1996). A groundwater treatment plant designed to treat extracted groundwater was installed as part of ongoing removal and remedial actions performed by the Navy. A Draft FS and draft CAP that address soil and groundwater impacts at IR-03 were submitted to the SFRWQCB by the Navy in May and June 2005, respectively. The Draft CAP proposes to remove 81,000 cubic yards of affected soils that remain at depths greater than twelve feet below ground surface (bgs) since prior removal of affected soils within IR-03 were not intended to go deeper than twelve feet bgs. The SFRWQCB will require a Final Feasibility Study and Remedial Action Plan upon the early transfer of the Point Molate NFD that would propose final cleanup criteria for IR-03.

Environmental Site Assessment - Waste Disposal Area Conclusions

Soil and/or groundwater samples collected at IR-01 (former waste disposal area) have contained petroleum hydrocarbons, fuel related VOCs, and PAHs. The former landfill area has been capped with a soil cover and currently is under post-closure monitoring requirements. Based on the findings from previous environmental investigations and the opinion of the SFRWQCB caseworker that the Navy has not been able to demonstrate containment under the current monitoring program, IR-01 is considered a REC.

The SFRWQCB has concurred that no further action is required at IR-02 (SFRWQCB, 2000).

Soil and/or groundwater samples collected at IR-03 (former treatment ponds area) have contained petroleum hydrocarbons, chlorinated VOCs (CVOCs), PAHs, and metals. The Navy is responsible for submitting a CAP to the SFRWQCB for remediation of soil and groundwater in the former treatment ponds area. A new Site Cleanup Order was adopted by the SFRWQCB on November 12, 2008, which outlines the specific deliverables and schedule to complete the outstanding evaluations, remediation work, monitoring, and reporting for IR-03. A conceptual Remediation Plan was summarized in Section 2.0 and is attached as Appendix X. Based on the findings from previous environmental investigations and the current regulatory status of the former treatment ponds area, IR-03 is considered a REC.
3.12 Hazards and Hazardous Materials

Fuel/Chemical Storage

IR-04: Shoreline Areas

IR-04 comprises the entire length of shoreline within the project site (Figure 3.12-1). This area was included as an IR site because of past fuel spills and leaks that may have entered Bay waters and sediments. Investigations at IR-04 include soil and groundwater sampling along the shoreline.

IR-04 consists of the shoreline areas, Drum Lot 1, Drum Lot 2, and Building 87. Drum lot 1 is a paved area located near the fuel pier, just south of the containment wall/extraction wall within IR-03. Former uses of Drum lot 1 include the storage of large quantities of 55-gallon drums filled on-site for off-site transport. Multiple sources of petroleum hydrocarbons include underground pipelines leading to and from the fuel pier, a pump station manifold, storage of 55-gallon drums, oils, lubricants, underground piping associated with the ballast, sediment, and water oil recovery systems. Additionally, a pipeline that formerly supplied the drum filling plant and truck loading rack located on the north end of the site contributed to the potential sources. Fuel pier pipelines and associated valve boxes were removed from 1998 to 2000. Initial shoreline investigation conducted in 1994 found TPH, BTEX, and CVOCs in groundwater and TPH, BTEX, and PAHs in soil. Based on the results of the investigation, a removal action was conducted, which included installation of an extension to the IR-03 containment wall (described above) into the IR-04 area. Subsequent risk assessments at IR-04 have indicated no human health risks at the public beach area relative to recreational visitors and park maintenance employees and no risk to ecological resources from offshore sediments (TTEMI, 2000). As such, the Navy has recommended no further action (NFA) at the public beach area, north shoreline area, and Drum Lot 1. The NFA status is based on a finding of no significant potential human health risk relative to future recreational user, future park maintenance worker, and hypothetical future residential scenarios, as well as no ecological risk (TTEMI, 2003a). A portion of the south shoreline area was recommended by the Navy to be included in future removal actions based on potential ecological risk from exposure to PAHs and TPH in soil. Following excavation of 206 tons of pesticide-impacted soil around Building 87, NFA was recommended by the Navy for soil at Drum Lot 2 and Building 87 based on no significant potential human health risk relative to current industrial worker, hypothetical recreational and construction worker scenarios and no ecological risk. Analytical data from groundwater samples collected during 1999 and 2000 identified trichloroethylene (TCE) and its breakdown products in groundwater in an area located in the northwestern portion of Drum Lot 2. Although the Navy determined no potential unacceptable risk to human health or to the environment from TCE and its breakdown products in groundwater near building 87, the Navy and SFRWQCB determined that additional data was necessary to further characterize the TCE plume. The Navy recommended additional groundwater investigation in the northwestern portion of Drum Lot 2 (Figure 3.12-3). The SFRWQCB concurred with these findings in letters dated December 3, 2002 and March 25, 2003. Based on the Navy’s recommendations, groundwater at Drum Lot 2 was included in the BWMP and is currently being sampled during all semiannual groundwater monitoring between July 2003 and March 2008 (Navy, 2008). As previously mentioned, the SFRWQCB will require Remedial Action Plan upon the early transfer of the Point Molate NFD that would propose final
Figure 3.12-3
Trichloroethylene (TCE) Plume

cleanup criteria for IR-04. The conceptual plan was summarized in Section 2.0 and is attached as Appendix X.

In the course of archaeological excavations undertaken in the south shoreline area in the summer of 2008, several wooden crates containing 5-gallon glass jugs were discovered approximately 5.5 feet below the surface. A small amount of an unidentified liquid substance was noted within and adjacent to the 5-gallon jugs. After detecting a chemical odor, the Richmond Fire Department was contacted by the field crew. The City’s Hazardous Materials team responded, along with the Contra Costa Environmental Health Department. Following air sampling within the confined space of the discovery and a pH test, neither of which indicated the presence of acutely hazardous substances, clearance to proceed with the archaeological work was granted by the Richmond Fire Department and Contra Costa County Environmental Health Department. Subsequent laboratory analysis of saturated soils recovered from the discovery location indicated the presence of the chlorinated pesticide Dichloro-Diphenyl-Trichloroethane (DDT) at a low concentration. The detected level was 0.19 parts per billion (ppb). The SFRWQCB ESL for DDT is 1,700 ppb, therefore the presence of DDT in soil is not considered a threat. Additionally, the chlorinate solvents Trichloroethene (TCE) and Tetrachloroethene (PCE) were found in soils collected in the excavation areas. The detected concentrations are 0.29 milligrams per kilogram (mg/kg) for TCE and 42 mg/kg for PCE. The ESL for TCE and PCE are 0.37 mg/kg and 1.9 mg/kg respectively. The levels of PCE in soil represent an exceedance of the Residential ESL for shallow soil less than ten feet below ground surface (bgs) where groundwater is not a potential drinking water source. However, as discussed in Section 2.0, the south shoreline area would be used as a park under all of the development alternatives.

Subsequent risk assessments conducted by the Navy included Drum Lot 1. The risk assessment for Drum Lot 1, Drum Lot 2, and Building 87 concluded that soil and groundwater impacts pose no unacceptable risk to human receptors, given future industrial worker and hypothetical future residential scenarios, or ecological receptors and no further action was recommended (Sullivan & TTEMI, 2005). Currently, semiannual groundwater monitoring in these IR-04 areas are ongoing under the base wide monitoring program.

A risk assessment conducted by the Navy in 2003 found no risk to recreational users of the Point Molate Public Beach Area and no negative impacts to offshore biological receptors (US Navy, 2003b). The assessment subdivided the area into a northern area, a southern area, and a drum lot (Drum Lot 1). Although the assessment indicated human health risk is below acceptable levels established by the USEPA, the southern area has ecological receptors that could be affected by contaminants and levels of PAH and VOC are high enough in groundwater near the drum lot to merit continued monitoring (US Navy, 2002). The shoreline areas would be included in the future monitoring plan upon the proposed early transfer.
Environmental Site Assessment- Fuel/Chemical Storage Conclusions

As discussed above, soil and/or groundwater samples collected at Drum Lot 1 have contained petroleum hydrocarbons, CVOCs, and PAHs. Removal actions and a risk assessment have been completed and no further action has been recommended by the Navy for soil and groundwater. The SFRWQCB concurred with the Navy’s recommendation for soil, but has not approved a no further action status for groundwater in this area. Based on the findings from previous environmental investigations and its current regulatory status, Drum Lot 1 is considered a REC.

Soil and/or groundwater samples collected in the south shoreline area have contained petroleum hydrocarbons and PAHs. Removal actions and a risk assessment have been completed and no further action has been recommended by the Navy and approved by the SFRWQCB for soil. Groundwater monitoring is ongoing under the base wide monitoring program. Based on the findings from previous environmental investigations and its current regulatory status, the south shoreline area is considered a REC.

Groundwater samples collected at Drum Lot 2 (IR-04) have contained CVOCs. Additional sampling in this area has delineated the groundwater plume and demonstrated that the concentrations are generally stable or decreasing. A risk assessment has been completed and no further action has been recommended by the Navy, but has not been approved by the SFRWQCB. Based on the findings from previous environmental investigations and its current regulatory status, Drum Lot 2 (IR-04) is considered a REC.

Soil samples collected at Building 87 have contained pesticides and PAHs. A removal action and risk assessment have been completed and no further action has been recommended by the Navy for soil, but this recommendation has not yet been approved by the SFRWQCB. Based on the findings from previous environmental investigations and its current regulatory status, Building 87 is considered a REC.

Asbestos-Containing Materials Sites

An Asbestos-Containing Material (ACM) is defined by USEPA as a material containing greater than one percent of asbestos. ACM is generally considered to be potentially hazardous when it is damaged or friable (a state in which the material can be crushed, pulverized, or crumbled by hand pressure when dry) and accessible. DoD policy states that all property containing ACMs will be conveyed, leased, or otherwise disposed of “as-is,” through the BRAC process unless ACM is determined to pose a threat to human health at the time of transfer.

The Navy conducted asbestos surveys of all structures at the project site in 1993, 1995, and 1997 (US Navy, 1996). Damaged friable ACM that was considered to pose a potential hazard was found in 13 of the former housing units and six other structures. The damaged material generally consisted of torn or weathered parts of thermal system insulation around hot water pipes. In accordance with USEPA
3.12 Hazards and Hazardous Materials

guidelines, the damaged material was either spot-removed or repaired. Remaining ACM in acceptable condition is currently being managed in place.

Environmental Site Assessment- Asbestos-Containing Material Site Conclusions

The presence of ACM on the project site is considered a REC.

Lead-Based Paint Sites

DoD policy regarding lead-based paint (LBP) in residential areas is to manage it in a manner protective of human health and the environment and to comply with all applicable laws and regulations. An LBP survey was conducted in the 29 former residential units by the Navy Public Works Center (PWC) in September 1994 (US Navy, 1996). LBP was found inside the 29 units surveyed and elevated levels of lead (maximum concentration of 1,748 mg/kg) were detected in soil outside the units. The residential units are not currently being used as residences, and residential use of these buildings was not a component of the proposed reuses at the time of the survey. Consequently, the Navy determined not to abate the LBP and associated lead-contaminated soils (US Navy, 1996).

Environmental Site Assessment-Lead-Based Paint Site Conclusions

Due to the age of the structures located on site, it is assumed these structures potentially contain LBP. The presence of LBP is considered a REC.

Polychlorinated Biphenyls Transformers

The Navy conducted a survey to identify possible polychlorinated biphenyl (PCB)-containing equipment in 1996(Appendix P). Transformer oil with PCB concentrations above 50 ppm becomes hazardous when the oil is no longer in use. Seven transformers were found to contain PCBs at concentrations of 50 ppm or greater and were subsequently replaced with non PCB transformers by the Navy (Appendix P). Another seven transformers and two electrical devices were found to contain PCBs at concentrations less than 50 ppm. These transformers and electrical devices remain in place (US Navy, 1998). According to the FOSET, none of the transformers located on the early transfer property require a removal action (Navy, 2008).

Environmental Site Assessment- Polychlorinated Biphenyls Transformer Conclusions

The presence of PCBs within transformers on the project site is considered a REC, although the presence of the transformers do not require a removal action according to Title 40 Code of Federal Regulations (CRF) § 761.3, and non-PCB transformers are defined as a transformer that contains less than 50 ppm PCB.
Other Areas

The Navy conducted additional investigations between 1999 and 2002, and identified potential impacts in association with a former small arms firing range in EBS parcel 14 (Figure 3.12-1), chemical contamination associated with railroad ties, and possible chemical handling at Buildings 13 and 18.

Site-specific EBS investigation data obtained during the 1998 to 2000 investigations showed areas of impacted soil located within the firing range target berm area posing potential unacceptable risks to human health and the environment (TTEMI, 2003a). In June 2001, Navy conducted site-specific supplemental Phase II EBS activities at EBS parcel 14 in which the Navy excavated 72 tons of soil containing elevated concentrations of lead. Soil confirmation sampling at EBS parcel 14 showed that a significant potential risk to human health (under future adult and child residential use scenarios) and the environment from lead was no longer present at the site (TTEMI, 2003a). The SFRWQCB concurred with a NFA status for EBS parcel 14 in a December 3, 2002 letter (TTEMI, 2003a).

The Navy evaluated whether soil and groundwater impacted with TCE extended from Building 18. Results indicated no unacceptable risk to human health based on comparison to conservative residential soil and drinking water criteria and no complete pathway existed for ecological receptors. Based on this evaluation, a NFA status was approved for Building 18 (TTEMI, 2003a).

A portion of the Richmond Beltline Railroad passes through the project site. Originating from a spur near Castro Street in the City of Richmond, the rail line traverses through the Chevron Refinery along the shoreline, and makes its way around Point San Pablo before passing through the project site. Historically, the rail line was composed of a single set of tracks. Following NFD occupation of the project site in 1941, the spurs were added from the main line to facilitate the transfer of fuel from the Bay to the on-site USTs. The spurs were constructed in two areas: Drum Lot 1 and Drum Lot 2, identified above. Historically, these two additional spurs were used to transport fuel from the pier. The handling of the fuels may have resulted in spills along the rail lines, potentially resulting in soil contamination. Additionally, as is typical of all railroad lines in the region, the railroad ties were historically treated with creosote, a known human carcinogen (NTP, 2008).

Adjacent to the boiler house, Building 13 in Disposal Area 11 (Figure 3.12-2) is a 50,000-gallon, above-ground storage tank (AST). The AST has a secondary concrete containment wall system. No releases have been reported from the AST.

Building 18 is located in EBS Parcel 21 (Figure 3.12-2) and was used as a storage shed. Historical evidence indicates the shed was used to store chemicals including TCE. The Navy evaluated the potential contamination of soil and groundwater surrounding Building 18 with TCE. Results indicated no unacceptable risk to human health based on comparison to conservative residential soil and drinking
water criteria and no complete pathway existed for ecological receptors. Based on this evaluation, a NFA was deemed appropriate for Building 18 (TTEMI, 2003a).

**Environmental Site Assessment- Other Area Conclusions**

- The firing range would not be considered a REC.
- Potential chemical releases and handling practices along the railroad spurs may have resulted in environmental impact, which have not been addressed during previous site investigations; therefore, the presence of the railroad spurs is considered a REC.
- Potential concerns associated with the 50,000-gallon diesel AST located adjacent to Building 13 have not been addressed during site investigations; therefore, the presence of the AST is considered a REC.
- Based on the results of the Navy investigation of soils and groundwater, Building 18 is not considered a REC.

**Chevron Richmond Refinery: Anhydrous Ammonia**

The Chevron Company owns and operates a petroleum refinement facility that is located immediately east of the project site, east of the Potrero Ridge. The Chevron Richmond facility (facility) is the largest refinery in the Bay Area with a capacity of 245,000 barrels of crude oil per day. The primary business of the facility is to produce fuels for vehicle transportation, including the refinement of gasoline, jet fuel, and diesel fuel from crude oil. The facility also produces lubricating oils and liquefied petroleum gas (LPG). Anhydrous ammonia (NH₃) is a by-product of the petroleum refining process, with on-site storage areas capturing and storing the gas. Human exposure to NH₃ reacts with moisture in mucosal surfaces (eyes, skin, and respiratory tract) to produce ammonium hydroxide, which may cause injury. The severity of the injury depends upon the concentration and duration of exposure. NH₃ is lighter than air and will rise, which causes the gas to dissipate rapidly into the atmosphere. Ecological exposure to NH₃ could cause harmful impacts to aquatic life, plants and livestock. The severity of the impacts depends upon the concentration and duration of exposure.

**Chevron On-site Active Mitigation Measures**

Chevron is required under CalARP guidelines to implement on-site active mitigation measures at the NH₃ storage area that is designed to minimize the risk of releasing NH₃ into the environment from possible fire or over-pressurization incidents. Exposure safeguards were installed when the NH₃ storage was relocated in 1991. Specific on-site active prevention and mitigation systems currently in place are:

(1) Each storage vessel and surrounding containment structure is equipped with a firewater deluge system. The system is designed to emit water that would potentially disperse a vapor cloud and to cool the vessel in the event of a fire.
(2) The NH₃ storage area is equipped with a NH₃ leak detection system with both audible and control room alarms.

(3) The NH₃ storage area is equipped with alarms, pressure relief devices, excess flow valves, and emergency block valves to prevent or limit the severity of a release.

(4) The NH₃ storage area is encircled by a firewater-monitor fog system, which consists of water fog sprays that effectively disperse the vapor cloud. One large water fog spray can be remotely operated.

(5) The drainage in the storage area is such that a release of liquid drains away from the bullets and minimizes the surface area to reduce the amount of evaporation.

Under the CalARP program, the Chevron facility is required to conduct a hazard assessment as part of the RMP requirements, which include a Worst Case Scenario (WCS) analysis and an Alternative Release Scenario (ARS) analysis. This analysis is described in detail in the 2002 Navy EIS/EIR (Appendix U). The purpose of the analysis is to evaluate an accidental NH₃ release from the facility and to determine the exposure associated with such a release using differing modeling scenarios. The USEPA has published guidelines to be used in the modeling scenarios. The distance of possible gaseous vapor cloud dispersal, described as the scenario circle, is analyzed using the following factors; physical properties of the material, circumstances of the initial release, environmental conditions (wind direction and wind speed), and topography. The USEPA has stated that the distance between a regulated facility and potential at risk public areas under WCS and ARS conditions should not be considered a zone in which the public is in danger, rather the WCS/ARS zone is intended to encourage communication between a facility and its adjacent residential population and act as a tool for developing emergency response plans internally and in conjunction with outside emergency response organizations. Emergency response planning guidelines (ERPG) are used to define the possible health impacts within the modeling scenarios.

Following the information presented in the RMP, the 2002 Navy EIS/EIR (Appendix U) determined that the project site was located completely within the scenario circle under a WCS event, and three quarters of the project site fell within the ARS. The 2002 Navy EIR/EIS determined that potential exposure would occur due to sensitive receptors being located with the ERPG 2 exposure zone. No mitigation measures, in lieu of buffer zones and technical controls, are feasible under BAAQMD guidelines; therefore, the risk is significant and unmitigable.

These findings have been contradicted by a more recent site-specific consequence modeling analysis. Specifically, the 2002 Navy’s EIS/EIR WCS/ARS analysis does not take into account that Chevron has installed on-site active mitigation systems (discussed above) as well as controls currently in place to prevent and protect against a catastrophic ammonia release within the facility, nor was is-topography or other environmental conditions of the region taken into account.
Consequence Modeling Analysis

A consequence modeling analysis was prepared in 2007 by Marine Research Specialists (MRS), to provide an additional evaluation of an accidental NH₃ release from the facility and to determine the possible site-specific exposure associated with such a release (Appendix M). For the NH₃ vessel, the initial release scenario would result from a failure of the largest liquid line that connects to the storage vessel. Such a release would likely include the activation of on-site Chevron active mitigation system safety features, such as excess flow valves and water spray systems. The MRS analysis included the creation of a third scenario, which balances the probability, impacts, and dispersal between the WCS and ARS. This third scenario is referenced as the Likely Worst-Case Scenario (Appendix M). There is little controversy as to the specific characteristics of a potential accidental release; however, modeled consequences will vary with environmental conditions and other factors.

The MSR consequence modeling analysis is developed along CalARP guidelines, similar to the RMP discussed in the 2002 Navy EIR/EIS (Appendix U), with the inclusion of quantitative estimates of the release probabilities, topographical information, and the preventative and response safety measures in place at the facility.

In this analysis, the intervening terrain along the Potrero Hills forms a substantial physical barrier between the facility and the project site and provides the following conclusions regarding dispersal pattern. From the facility NH₃ storage tank location, which is approximately 10 feet above mean sea level (msl), the terrain rises 350 feet, and then transitions through wooded terrain towards the project site before falling to 65 feet above msl at the upper edge of the site. The distance from the NH₃ tank to the project site is 4,590 linear feet. The intervening terrain has several effects on the advection and dispersion of an ammonia vapor cloud including:

1. The height of the Potrero Ridge along the eastern border of the site increases the actual linear feet that a vapor cloud would travel from the Chevron Facility to the project site by 100 feet. With the height of the intervening hills included, the distance from the NH₃ tank to the project site increases from 4,590 linear feet to 4,690 feet.
2. The terrain precludes an ammonia vapor cloud from traveling over the ridge during periods with extremely low wind speeds or inversion heights below approximately 350 feet; thereby, containing the vapor and not allowing it to travel onto the project site.
3. Another effect of the terrain is an increase in the turbulence and vapor cloud diffusion as the potential vapor cloud travels over the terrain. As a result, the vapor cloud becomes dispersed and less concentrated as it travels over the hills, towards the project site.

All of these factors contribute to enhanced vapor cloud dispersion and lower than expected ammonia concentrations that would potentially expose the persons residing at or using the project site (MRS, 2007).
Prevailing wind patterns, as an additional dispersal factor, further reduce the probability that the project site would be affected by a release of NH₃. The MRS analysis includes a wind frequency distribution study, which found that wind blows in an easterly direction from the Chevron facility towards the project site roughly 16 percent of the time. “During all other periods any accidental ammonia release would be transported away from the site (MRS, 2007:15).”

MRS methodology includes the release probabilities for each of the three scenarios (WCS, ARS, Likely Worst-Case), based upon specific cause of the initial release (MRS, 2007; 8). The probabilities are provided in Table 3.12-4.

<table>
<thead>
<tr>
<th>Release Scenario</th>
<th>Cause</th>
<th>Probability per year / Return Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worst-Case Scenario (WCS)</td>
<td>Storage vessel failure</td>
<td>9.0 x 10^-4/yr (once every 11 million years)</td>
</tr>
<tr>
<td>Alternative Release Scenario (ARS)</td>
<td>Catastrophic bleeder valve failure</td>
<td>1.4 x 10^-3/yr (once every 725 years)</td>
</tr>
<tr>
<td>Probable worst-case scenario</td>
<td>Catastrophic liquid pipe failure</td>
<td>7.8 x 10^-5/yr (once every 12,820 years)</td>
</tr>
</tbody>
</table>

Source: Marine Research Specialists, 2007

The MRS consequence modeling analysis through methods discussed above has deemed the WCS as insignificant to the proposed project site due to the extremely low probability, and current safety record of the facility storage vessels. Analysis of the ARS concluded that consequences would be negligible due to the active mitigation measures and technical safe guards at the facility and environmental conditions at the site. The Likely Worst-Case Scenario additionally deems the consequences as negligible with the incorporation of the water deluge system and other on-site facilities mitigation measures, technical safeguards, and the environmental conditions present (MRS, 2007).

**Emergency Response Program (ERP)**

Overall safety is a function of a facility’s prevention program as well as its accident mitigation program, i.e., the ability to minimize the on-site and off-site consequences should an accident occur. The Chevron facility maintains an Emergency Response Program (ERP) designed to protect worker and public safety as well as the environment. To comply with the CALARP, a written ERP for responding to accidental chemical releases, including procedures for notifying the public and local emergency response agencies, must be established by the facility. The ERP also includes the maintenance, inspection, and testing of emergency response equipment. In addition, the facility’s Fire Department, the largest refinery fire department in the United States, works closely with local emergency responders in preparing for emergencies. The ERP addresses all aspects of emergency response, including proper first aid and medical treatment for exposures, evacuation plans and accounting for personnel after an evacuation,
notification of local emergency response agencies and the public if a release does occur, and post-incident cleanup and decontamination requirements. Copies of the plan are also maintained throughout the facility. The ERP is reviewed annually and updated accordingly to ensure that it remains accurate and current. Every employee receives training as necessary to perform his or her specific emergency response duties.

The ERP includes procedures to notify employees, emergency responders, government agencies, and the community in the event of a release. Upon the first detection of a release or other emergency situation, an employee would call the refinery emergency phone number, which initiates the emergency response. For hazardous material releases with potential off-site impacts (or meeting other reporting criteria), Contra Costa Health Services (CCHS), the City’s Fire Department, and other agencies are notified immediately. If appropriate, the CCHS will activate the Community Warning System (CWS) to alert the community. The facility worked closely with CCHS to establish the CWS and was a major contributor to the CWS project. The CWS consists of several components as follows:

- **Sirens**: Five siren systems may be activated to provide a loud audible signal throughout the cities of Richmond and San Pablo. A total of 20 sirens are available throughout the area. Upon hearing the sirens, residents would proceed indoors to shelter-in-place and monitor their TV or radio to obtain further instructions or more information about the incident.

- **Telephone Emergency Notification System (TENS)**: The TENS system calls households and businesses and transmits short messages through the telephone about the incident and recommended protective actions. In the near future, emergency alert receivers may be available, which would provide the community with an additional means of notification in the event of a chemical emergency.

- **Media**: An initial warning, updates, instructions, and an all-clear message would be distributed to the community through radio, television, and cable by CCHS.

**Fire Hazards**

The project site is located within a Very High Fire Hazard Severity Zone (VHFHSZ), as designated by the City of Richmond Fire Department ([Figure 3.12-4](#)). Development within a VHFHSZ is subject to City standards regarding building materials and surrounding vegetation management.

As described in **Section 3.5**, the project site is characterized by the presence of several vegetation communities, including: annual grassland, coastal scrub, mixed riparian, eucalyptus woodland, and, invasive scrub. On-site fuel loading is significant given the wide distribution of eucalyptus woodlands and associated latter fuels.
LEGEND

- Very High Fire Severity Zone

SOURCE: City of Richmond, 2008; ESRI Data, 2007; AES 2008

Figure 3.12-4
Very High Fire Severity Zone