Programmatic EHE/EHMP Document
Iwilei District Mauka
Iwilei District

Prepared by
Mark Sutterfield
For the Hawaii Department of Health
February 2013 Version 1.0

Acknowledgements of Major Contributors
Environmental Science International for Sections of EHE and EHMP
Weston Solutions for Area Geology

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Figure 1 **Guidelines: Area Covered by EHE/EHMP**

Appendices:

Appendix A **GUIDELINES FOR LANDOWNERS, TENNENTS UTILITIES COMPANIES AND CONSTRUCTION CONTRACTORS**

Appendix B
Reporting Forms

B.1 Written Follow-Up Notification Form
B.2 Health and Safety Plan-Oil Hazards
B.3 Construction Activities Release Response Plan
B.4 Inactive Pipeline Removal Plan
B.5 Soil Management Plan
B.6 Groundwater Management Plan
B.7 Free Product Management Plan
B.8 Vapor Management Plan
B.9 Storm Water Management Plan
B.10 Contingency Plans

LIST OF ACRONYMS

Acronym	Definition
AST	Above Ground Storage Tank
BMP	Best Management Practices
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
C&C	City and County
COPC	Contaminant of Potential Concern
COC	Contaminant of Concern
HDOT	Hawaii Department of Transportation
EAL	Environmental Action Level
EHE	Environmental Hazard Evaluation
EHM	Environmental Hazard Management
EPA	Environmental Protection Agency
EPM	Exposure Prevention Management
ESI	Environmental Science International, Inc.
HDOH	Hawaii Department of Health
HEER	Hazard Evaluation and Emergency Response
HVOC	Halogenated Volatile Organic Compound
IDM	Iwilei District Mauka
LEL	Lower Explosive Limit
LEPC	Local Environmental Planning Committee
Makai	Sea Side
Mauka	Mountain Side
MNA	Monitored Natural Attenuation
MTBE	Methyl Tert-Butyl Ether
O&M	Operation and Maintenance
OSHA	Occupation Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCS	petroleum-contaminated soil
PEL	permissible exposure limits
PID	photo-ionization detector
PPE	personal protective equipment
ppm	parts per million
QA	Quality Assurance
QAPP	Quality Assurance Procedures Plan
RP	Responsible Party
SAP	Sampling and Analysis Plan
SPH	Separate Phase Hydrocarbons
STEL	short-term exposure limit
SVOC	Semi-Volatile Organic Compound

TGM	Technical Guidance Manual
TPH	Total Petroleum Hydrocarbon
TPH-d	Total Petroleum Hydrocarbon as Diesel Fuel
TPH-g	Total Petroleum Hydrocarbon as Gasoline
TPH-o	Total Petroleum Hydrocarbon as Oil
TTLR	Tanker Truck Loading Rack
TWA	time-weighted average
UIC	Underground Injection Control
UGP	Underground Pipeline
UST	Underground Storage Tank
VOC	Volatile Organic Compound
VRP	Voluntary Response Program

Section 1.0 – Introduction

The Iwilei District Mauka of North Nimitz Highway (further referred to as the IDM) is dominated by large retail chain stores including the following; Costco, Home Depot, Lowe's, and Best Buy. A number of these retail outlets entered the Hawaii Department of Health (HDOH) Voluntary Response Program (VRP) and have or will soon receive Letters of Completion (LOC) exempting them from liability for the chemicals of concern (COC) remediated under the VRP.

Contamination is presently managed in place at all IDM VRP sites (Lowe's, Home Depot, Costco, the Sprint Lot and BEI parcel) and non VRP sites such as the Dole Cannery Building and the Dole Theatre Building and at the former Gasco site. Under the present conditions and controls, contamination in the area does not pose a threat to human health or the environment. Some of the sites remediated under the Environmental Response Law (Chapter 128D) already have approved Environmental Hazard Management Plans (EHMPs) while others are required to develop Environmental Hazard Evaluations (EHEs) and EHMPs should subsurface construction activities occur on site. This document does not supersede existing site specific EHEs and EHMPs or the need to develop site specific documents for land development and construction projects. However HDOH recognizes that developing independent, site specific EHEs and EHMPs for small scale projects both on private sites and in roadways and common areas can lead to delays in construction as HDOH is required to approve new plans prior to construction. In addition, offsite construction in

roadways and common areas will likely encounter contamination that must be properly managed by construction and environmental contractors. EHEs and EHMPs currently do not exist to deal with these contingencies. This area-wide EHE/EHMP, can be used by landowners, tenants, and utilities companies to assist in developing individual EHEs and EHMPs for construction activities including managing and reporting subsurface activities in roadways that encounter contamination.

Section 2.0 – Purpose

The purpose of this document is to provide consistent and effective management practices when subsurface activities in the IDM encounter petroleum contaminated soil, groundwater, or elevated soil vapors. Petroleum related contamination and metals are emphasized because they are the most common contaminants found in most if not all of the affected areas. Small construction activities covered by this document include; utility trenches (for water, natural gas, electricity, telephone, cable), box culverts and storm drain laterals, sanitary sewers, street lights, traffic lights, grease traps, septic tanks and minor construction activities both in roadways,common areas and for sites that presently do not have an EHE/EHMP. If in doubt that this EHE/EHMP is deatailed enough to provide appropriate guidance for planned subsurface construction activities contact the DOH prior to commencing the project. Full scale redevelopment of parcels in areas of known or suspected contamination will still require full site characterization and if contamination is encountered a site specific EHE and EHMP should be prepared to address contamination within the site boundary. Please contact the HEER Office if you are unsure whether this document applies to you subsurface construction activities.

2.1 How to use this Document

The procedures, information, guidelines and sample hazard management plans referred to herein are not intended to be a comprehensive description of all of the rules, regulations, laws and other requirements applicable to a construction project. They are only intended to provide general information and should not be used in place of appropriately qualified personnel. Each landowner, tenant, and construction contractor is responsible for complying with all applicable rules, regulations, laws and other requirements and for preparing their own hazard management plans for their own site-specific project.

This document is meant to be used in the field when contamination is encountered during subsurface activities. The first person to notice contamination during subsurface construction activities is the backhoe of machine operator. An environmental consultant or a supervisor knowlegeable in dealing with contaminated soil and groundwater should be onsite during construction activities. The machine operator relays the discovery of the release to the designated onsite environmental consultant or supervisor who then phones in the release, communicates with others involved in the chain of command and ensures the EHE/EHMP is followed in dealing with contaminated soil and groundwater. Based on the nature and type of construction the EHE is broad enough to detail potential hazards. The EHMP provides a range of options for dealing with contaminated soil and groundwater should it be encountered. The Guidelines for Landowners, Tenants, Utilities Companies and Construction Contractors (Appendix A) provide graphic and photographic examples of how to deal with contaminated soil and groundwater and include a Project Implementation Form. This form is a checklist that was developed based on HDOH experience with a wide range of events that occur during construction.

The forms contained in Appendix B can be used to document the proper handling of contamination, provide record keeping for the project and fulfill reporting requirements for HDOH.

If subsurface construction is planned in the IDM the following steps should be taken to ensure proper handling of contaminated media.

1. Report any petroleum contaminated soil or groundwater to the HEER Office. (Section 9 and Appendix B.1) By following this document it is not necessary to stop work when contamination is encountered.
2. Read the EHE section of this document to become familiar with the potential hazards associated with contaminated soil and groundwater.
3. Develop a site specific Health and Safety Plan (Section 10 and Appendix B.2)
4. Develop a Construction Activities Release Response Plan (Section 11 and Appendix B.3).
5. If contaminated soil is encountered, develop a Soil Management Plan (Section 13 and Appendix B.5).
6. If contaminated groundwater is encountered, develop a Groundwater Management Plan (Section 14 and Appendix B.6).

7. If inactive pipelines are encountered, develop an Inactive Pipeline Removal Plan (Section 12 and Appendix B.4).
8. If free product is encountered, develop a Free Product Management Plan (Section 15 and Appendix B.7).
9. If elevated soil vapor is encountered, develop a Soil Vapor Management Plan (Section 16 and Appendix B.8).
10. If contamination is in or could be in contact with storm water, develop a Storm Water Management Plan (Section 17 and Appendix B.9).
11. If engineering controls, administrative controls or PPE fail to function as designed, develop the appropriate exposure contingency control plan(s) (Section 18 and Appendix B.10)

Fill out the individual plans in Appendix B by following approved practices in the EHMP sections of the document (Sections 8 through 16). Record actions taken on the appropriate form(s), keep a copy for your records and submit a copy to the HEER Office to fulfill reporting requirements.

Failure to follow this document will require responsible parties to follow previously established procedures. These procedures include halting excavation when contamination is discovered, reporting the release to HEER Emergency Preparedness and Response Section, and/or waiting for an inspection by an On Scene Coordinator prior to re-commencing excavation. Failure to report a release could lead to fines of up to $10,000 a day. Failure to properly handle soil and groundwater could lead to fines from other agencies such as the Solid and Hazardous Waste Branch, the Clean Water Branch and the Coast Guard.

Disclaimer:
The procedures, information, guidelines and sample hazard management plans referred to herein are not intended to be a comprehensive description of all of the rules, regulations, laws and other requirements applicable to a construction project. They are only intended to provide general information and should not be used in place of appropriately qualified personnel. Each landowner, tenant, and construction contractor is responsible for complying with all applicable rules, regulations, laws and other requirements and for preparing their own hazard management plans for their own site-specific project.

Section 3.0 – History and Background

For the past 100 years, the area that is the focus of this document has been dominated by heavy industry including; pineapple canning and support industries, a box manufacturing plant, a manufactured natural gas plant, a petroleum bulk storage facility and a chemical manufacturing and storage facility. These industries required large volumes of petroleum products which were supplied by pipelines originating from Honolulu Harbor and stored on site in above ground and below ground storage tanks (ASTs & USTs).

The area has since transitioned from heavy industry to retail outlets. Numerous petroleum releases occurred over the years and site redevelopment activities in the area often encounter contamination:however few sites presently have approved EHEs and EHMPs in place. No guidance presently exists for construction in roadways and common areas owned by the City and County (C&C) or the State.

The Iwilei District Participating Parties (IDPP) is a group of responsible parties (RP) including the Hawaii Department of Transportation (HDOT) that has signed an enforceable agreement (May 2006) with the State to remediate the Iwilei Harbor area makai of North Nimitz Highway (NNH). The IDPP does not have obligations in this area and has classified the majority of the IDM covered by this document as Operational Unit 3 (OU3) requiring property owners and tenants to remediate their individual properties without assistance from the IDPP.

Section 4.0 - Area Covered

The area covered by this document lies mauka (mountain side) of North Nimitz Highway (NNH) and makai (sea side) of Dillingham Blvd. The western boundary is the Kapalama Canal and the eastern boundary is North King Street (Figure 1in the Guidelines). Technical approaches in this document can also be used in other areas of Oahu with similar lithology with non-drinking water utility, and greater than 150 meters from a surface water body provided that these areas have been well characterized with respect to known or suspected release sources nature and extent of released contaminants, and subsurface geology.

Section 5.0 - Area Covered Geology

The Iwilei area is located on the southeast coastal plain of the Island of Oahu, which was formed on the eroded banks of two shield volcanoes, the Koolau and the Waianae. The volcanic series underlying the site was formed by rapid succession of volcanic flows with little evidence of erosion between eruptive events. The mode of emplacement produced vesicular basalt of high permeability that is referred to as the basal aquifer (Visher and Mink, 1964).

The soil at the Site is classified by the United States Department of Agriculture Soil Conservation Service as part of the Lualualei-Fill Land-Ewa Association or *fill land mixed* (Foote et al., 1972).

Historically, the Iwilei area was filled with material from a variety of sources to raise the ground surface elevation for the development and improvement of Honolulu Harbor facilities. The emplaced fill consisted of dredge spoils from the nearby harbor channels as well as soil and debris imported from other areas, including debris from several significant Chinatown fires, including one in 1866 that leveled most of the 50-acre Chinatown district,and the subsequent Great Chinatown Fire, a historic Honolulu event that occurred in January1900. The fill is laterally discontinuous and, in general, consists of sands and clays similar in character in most cases to the underlying caprock unit sediments.

The caprock unit consists of layers of inter-bedded unconsolidated and consolidated sediments and weathered volcanic rock. The sediments include both marine and terrestrial materials including sands and gravels (of both coral and basalt origins), semi-consolidated silts and clays, fossilized reef corals, and weathered basalt flows. The top of the cap-rock unit is encountered at approximately 2 to 10 ft bgs. The base of the cap-rock unit is at approximately 600ft bgs.

The cap-rock layer is shallow and porous. This layer extends from the base of the emplaced fill to approximately 40ft bgs and is composed of mainly porous, coarse-grained soils (i.e., gravels and sands).

The shallow confining layer is encountered at depths of approximately 40 ft bgs, and appears to be laterally continuous beneath the area, and extends to depths between approximately 65 and 75 ft bgs. It is composed of inorganic, finer-grained sediments that are described in the geotechnical borings as stiff to hard silts. Soil classification tests indicate that the silt has low permeabilityand is plastic with a substantial amount of clay.

There are no active drinking water wells within the Iwilei District. The entire area is makai of the underground injection control line and the shallow groundwater is not considered a potential drinking water source.

Section 6.0 – Environmental Hazard Evaluation

6.1 – Contaminants of Potential Concern

Based on previous investigations conducted in the area, the following contaminants off potential concern (COPCs) may be encountered during subsurface construction projects.

☐ Total Petroleum Hydrocarbons (TPH) as gasoline (TPH-g), as diesel (TPH-d), and oil (TPH-o)
☐ Benzene, Tolune, Etheylbenzene, Xylene (BTEX)
☐ Methyl-tert-butyl ether [MTBE]
☐ Styrene
☐ Halogenated Volatile Organic Compounds (HVOCs)
☐ Polycyclic Aromatic Hydrocarbons (PAHs)
☐ Metals (inorganics)
☐ Light, Non-Aqueous Phase Liquid (LNAPL)/Free product (e.g., gasoline, diesel fuel, fuel oils, lubricating oils, benzene, toluene, xylenes)

The PAHs identified in this area include acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[a]pyrene, benzo[g.h,i]perylene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene. The metal contaminants of concern (COCs) detected in the area include arsenic, barium, cadmium, chromium, lead, mercury, and silver.

The metals (lead and arsenic) identified in the area are usually associated with glass and debris from landfill disposal after the Chinatown fires of 1886 and 1900.

6.2 Gross Contamination

Gross contamination refers to physical conditions that present odor, nuisance, and general pollution concerns. It includes free product, sheen, objectionable odors and tastes (in drinking water), and general resource degradation. At high levels, certain types of gross contamination can

become a physical hazard (e.g., the presence of flammable vapors or liquids, such as those associated with gasoline). In general, the contaminants in areas considered to be grossly contaminated are relatively immobile, are nontoxic to humans, and do not threaten ecological receptors.

Gross contamination in groundwater includes potentially mobile free product, contaminated drinking water supplies, nuisance odors from surface water, objectionable taste in drinking water, petroleum hydrocarbon sheen on surface water, and general resource degradation.

In the absence of institutional and/or engineered controls, future human populations and ecological receptors at the property could be exposed to gross contamination (e.g., free product, objectionable odors).

6.3 Direct Exposure

The direct exposure hazard involves human contact with contaminated soil and groundwater, or soil vapor either directly or indirectly. Direct contact can be made through incidental ingestion or dermal contact, or the inhalation of dust in outdoor air. Indirect contact can be made through the inhalation of soil vapors in outdoor air. In general, the contaminants in areas considered to present a direct exposure hazard are relatively immobile, are potentially toxic to humans, and do not threaten ecological receptors.

In the absence of institutional and engineered controls, future human populations at the property could be exposed to contaminated soil (including contaminated dust), groundwater, or soil vapor inside buildings

6.4 Soil Vapor Intrusion

Vapor intrusion involves the exposure of human populations to volatile chemical compounds that have entered a building or other enclosed structure from contaminated subsurface soil or contaminated groundwater. In general, the contaminants in areas considered to present a vapor intrusion hazard are volatile chemicals that are toxic to humans through the inhalation of vapors.

In the absence of remediation and institutional and engineered controls, future human receptors at the property could be exposed to volatile organic constituents (VOC) vapors.

6.5 Leaching

Leaching is the movement of contaminants from vadose zone soils into underlying groundwater through chemical and physical mechanisms. The principal chemical mechanism is the dissolution of contaminants into water (e.g., percolating rainwater, irrigation water) moving downwards through the vadose zone. Physical mechanisms include (1) the entrainment of contaminants bound in a colloid phase by water moving through the vadose zone and (2) mass movement of contaminants through the vadose zone by infiltrating water. In general, the contaminants in areas considered to present a leaching hazard typically are mobile, volatile chemicals that are toxic to humans and may threaten ecological receptors at sites located close to surface water bodies.

In the absence of engineered controls at the property, groundwater could be contaminated through the leaching of contaminants from vadose zone soils by infiltrating groundwater.

6.6 Ecotoxicity

6.6.1 Terrestrial Ecotoxicity

Ecotoxicity refers to the capability of a contaminant to damage an ecological population, ecological community, or ecosystem. The ecotoxicity of a contaminant typically is based on its toxicity to one or more species, its persistence in the environment, and its ability to bioaccumulate. The two populations under consideration are flora and fauna in terrestrial (i.e., land) habitats and in aquatic (e.g., marine) habitats.

Impacts to terrestrial flora and fauna can occur through exposure of populations to contaminated soil. In general, the contaminants in areas considered to present a terrestrial eco-toxicity hazard typically are relatively immobile, non-volatile chemicals that are toxic to ecological receptors. Because there are no current or future sensitive ecological receptors at the property, terrestrial eco-toxicity is not considered a concern and will not be evaluated further. As there are no terrestrial flora or fauna concerns in the area terrestrial eco-toxicity is not considered an environmental hazard.

6.6.2 Aquatic Ecotoxicity

Impacts to aquatic (i.e., marine) flora and fauna can occur through the discharge of contaminated groundwater into surface waters. In general, the contaminants in areas considered to present an aquatic eco-toxicity hazard typically are mobile, volatile chemicals that are toxic to ecological receptors. In the absence of engineered controls, sensitive populations

could be exposed to groundwater contaminants entering the surface water bodies such as the ocean streams, or lakes via a potential preferential pathway (i.e., the current and future storm drains).

Section-7.0 Exposure Pathways

The potential exposure pathways to human receptors that have been identified in the IDM include ingestion, inhalation, and dermal contact. These are described briefly below.

7.1 Ingestion

Ingestion is the oral intake of a solid or liquid material. The ingestion of contaminated soil or groundwater is a human health risk and a direct exposure hazard. Accidental ingestion of contaminated soil or groundwater will be of concern during the portion of construction where contaminated soil and groundwater are exposed.

7.2 Inhalation

Inhalation is the act of drawing air, other gases, vapors, fumes, smoke, dust, or mists into the lungs. The inhalation of contaminated soil (as dust) is a human health risk and a direct exposure hazard. VOC vapors released from surface soil potentially pose an indirect exposure hazard. During excavation and construction activities, contaminated subsurface soils may be disturbed, thus increasing the potential release of dust into the work area.

7.3 Dermal Contact

Dermal contact is the direct exposure of skin to solids, liquids, or gases. Dermal contact with contaminated soil, groundwater, or soil vapor is a direct exposure hazard. During excavation and construction activities, contaminated subsurface soils and groundwater are likely to be encountered, thus increasing the potential for dermal contact. Dermal contact with contaminated soil, groundwater, and soil vapor (and contact with free product) will be of concern during the portion of construction activities where contaminated soil and groundwater are exposed.

SECTION 8.0 – Environmental Hazard Management Plan

This EHMP has been developed to mitigate the potential exposure of construction workers and other on-site workers to COCs during activities associated with future construction activities. The plan consists of several individual plans, each addressing a specific potential COCs source (see

Section 6.1) and methods of handling contaminated media. The individual plans include the following.

1. Release Reporting Plan.
2. Health and Safety Plan
3. Construction Activities Release Response Plan
4. Inactive Petroleum Pipeline Management Plan
5. Soil Management Plan
6. Groundwater Management Plan
7. Free Product Management Plan
8. Vapor Management Plan
9. Storm Water Management Plan
10. Exposure Contingency Plans

The plans include engineering and administrative controls, as well as requirements for personal protective equipment [PPE] and a monitoring program. Prior to the initiation of construction work, on-site workers will be informed and educated about the potential hazards posed by COCs and the methods used to prevent exposure. Report construction activities in contaminated media by filling out appropriate form(s) in Appendix B and submitting the forms to the HEER Office.

Section 9.0 – Release Reporting Plan

Encountering oil contaminated soil or groundwater during subsurface construction activities is considered a release and must be reported to the HEER Office by the following procedures:

The contractor must immediately notify the Hawaii State Emergency Response Commission (HSERC/HEER) ((808) 586-4249 or (808) 247-2191 after work hours) and the Local Emergency Planning Committee (LEPC) 808 723-8960 after discovering contaminated soil and/or groundwater.

For oil in the IDM a release would include:

1 Any amount of oil which causes a sheen on the groundwater in an excavation.
2 Any free product that appears on groundwater.
3 Visual or olfactory evidence of oil contamination.
4 If free product is encountered, report release in accordance with HAR 11-451. It is not necessary to stop work if you follow this document.
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9.1 Immediate Verbal Notification

In the event of a release that causes an imminent threat to human health or the environment, the first call shall be to 9-1-1.

Immediate verbal notification shall be provided to the HSERC/HEER and LEPC either via telephone or in person. HEER/HSERC will not accept initial notification via fax or e-mail. In addition, unless it is specifically stated that a verbal notification is being given to a State On-Scene Coordinator (SOSC) on scene during an incident, the presence of a SOSC does not constitute a notification. When in doubt, the contractor should call and speak to an OSC. There is no penalty for reporting a release unnecessarily, but there are large penalties for not reporting a release.

Provide the following information to the extent known at the time of the notice so long as no delay in responding to the emergency results. It is expected that notification occur within 20 minutes of discovery of the release. (Do not delay due to incomplete notification information related to the release):

1. Name and telephone number of the caller.
2. Name and telephone number of a contact person, (if different from the caller) that can provide timely information as the incident is occurring.
3. Name (trade and chemical), of the hazardous substance which has been released.
4. Approximate quantity of the hazardous substance which has been released.
5. Location of the incident.
6. Date and time of spill, release, or threatened release.
7. Description of what happened (source and cause of the release).
8. Immediate danger or threat posed by the release.
9. Name, address, and telephone number of the responsible party or potentially responsible party.
10. Measures taken or proposed to be taken in response to the release as of the time of the notification.
11. Any known injuries or advice regarding medical attention necessary for exposed individuals.

12. The names and phone numbers of other federal, state, or local government agencies that have been notified of the release.
13. Any other information that may help emergency personnel respond to the incident.

Once the information has been provided, the caller will be provided with a HEER Incident Case Number, which shall be referenced in any future correspondence including the written notification submittal. Federal requirements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Oil Pollution Act (OPA). Releases of Reportable Quantities (RQ) of CERCLA hazardous substances and releases of oil which causes a sheen on water must also be reported to the National Response Center at 1(800) 424-8802

9.2 Written Follow-Up Notification Contents

Notification , including all information provided in the verbal notification described above and any other pertinent information not previously provided, shall also be made in writing to the HSERC/HEER. This written notification shall be sent to HSERC/HEER no later than thirty (30) days after initial discovery of a release. The written notification can be sent by certified mail, faxed, hand-delivered, or another means which provides proof of delivery. Photos should be included to document the incident. Written
Follow-up Notification Form is provided in Appendix B.1.

9.3 Recordkeeping Requirements for Encountered Contamination

Fill out Form B.1 for your records and send a copy to the HEER Office.

Section 10–Health and Safety Plan

Provide a Health and Safety Plan (HSP) for workers performing excavations that are deep enough to encounter or potentially encounter the COCs and hazards described in Sections 6.0 (EHE). The HSP should generally include the following:

- Requirements that workers be trained in dealing with separate phase hydrocarbons (SPH) and chemical substances and hazards, including, but not limited to, the use of appropriate personal protective equipment.

- General site control and safety requirements such as site access controls, information on emergency medical facilities, and good worker practices.
- Description of present and potential hazards, including COC action concentration levels, where appropriate.
- Emergency contact information.

A HSP is not a substitute for OSHA/HIOSH requirements. Employers of construction workers/utility workers must comply with all applicable OSHA/HIOSH requirements. See form B.2 for additional guidance.

Section 11.0 – Construction Activities Release Response Plan

Parties should operate under a site-specific release response plan. The sample Construction Activities Release Response Plan provided in Appendix B.3 can be used as a starting point.

On-site workers need to minimize the probability of releases from excavations during construction. They should familiarize themselves with the site conditions and the potential presence of SPH in the subsurface. Health and safety and soil and groundwater management plans should be prepared.

Nevertheless there is still a possibility that uncontrolled releases of SPH and SPH-impacted soil and groundwater could occur. In this event, human health concerns would include contact with the SPH, exposure to fire hazards and disruptions to site activities, including possibly local traffic. Environmental impacts of concern would be the discharge of SPH or sheen to harbor waters either directly or via a storm drain or other type of surface water conveyance.

A response plan to deal with uncontrolled releases should be available to the construction workers and other parties. It should include a description of the types of releases, list the names and contact information of the release response team and the parties that need to be notified, provide a list of available response equipment, describe the response procedures, and outline the release reporting requirements.

The plan should also note that the HEER Office has developed an Incident Action Plan (IAP) to deal with any major accidental releases of COCs in the Iwilei District. In the event a release threatens to get beyond the control of

the construction contractors or parties performing work on the Site, the contacts in the IAP need to be notified.

Section 12.0 – Inactive Petroleum Pipeline Management Plan

This section provides guidance on how to prepare for and manage below ground inactive petroleum pipelines located or exposed during excavation or other subsurface activities.

12.1 Preparatory Work

Prior to performing any subsurface work, parties should review historical documents and plans for information on inactive pipelines identified to date. However, this information is not warranted or guaranteed as being accurate and complete as historical pipeline information has not been well documented. In some instances, previously unknown inactive pipelines may be discovered for the first time during excavation or other subsurface activities.

Notify the HEER office if any inactive pipelines are encountered.

12.2 General

Parties should manage soil from the excavation or other subsurface activities in accordance with the soil management plan Section 13 . To the extent possible leave inactive pipelines in the ground if they extend beyond the required excavation. In the event segments of these pipelines are discovered and need to be removed, the following guidelines should be observed:

12.3 Pipeline Tapping, Draining and Removal

If a pipeline is discovered attempt to identify the nature of the pipeline and confirm that it is not active. Contact the HEER Office or others, including Hawaii One Call and the appropriate utility company if one can be identified, prior to any excavation work to confirm that any pipeline segments to be removed are inactive. Parties undertaking their own pipeline removal should prepare and use a site-specific plan, which incorporates the procedures described in this section. The site-specific plan can be based on the sample inactive Pipeline Removal Plan provided in Appendix B.3.

Do not attempt to remove pipeline segments without first draining the pipeline segment or determining that it is empty. To the extent practicable,

any drainable fluids need to be drained before cutting the pipeline. Petroleum fluids recovered from the pipelines must be representatively sampled and tested to determine how they can be recycled or disposed of in full accordance with Title 11, 58.1 and Chapters 260-279 of the Hawaii Administrative Rules and any other state and federal regulation governing this activity.

Only personel knowledgeable and trained in pipeline removal should be used to cut, drain, and remove pipelines. Remove the required pipeline segments by cutting. If there is a potential explosion hazard cutting should be with a wet saw or some other non-sparking tool. If the pipelines are suspected to be asbestos covered a qualified contractor must direct this work and recommend appropriate procedures and PPE including procedures for removal. Ensure that the area below and adjacent to the cutting locations is covered with plastic sheeting and absorbent material. In addition, a catch basin should be placed directly beneath the cutting location. Pipelines may be under pressure and therefore a vacuum truck should be onsite during cutting to recover any released fluids. Pipeline fluids collected in the catch basin should be pumped out.

Cut-off ends of remaining pipeline segments need to be appropriately sealed, or otherwise closed, to prevent any potential leakage. Suitable seals include cement plugs, blind flanges, or other methods not involving hot welding. Welding is not appropriate due to the potentially explosive nature of SPH and its associated vapors.

12.4 Removed Pipe Handling

In many cases sections of removed pipeline contain heavy viscous petroleum products that appear to be immobile. However, once the pipes and product heat up on the surface, the product can liquefy and cause a release. If sections of waste pipe are stored on site prior to disposal the area should be lined with plastic and bermed to contain any SPH that may have mobilized due to atmospheric heating.

12.5 Other Sub-Surface Utilities

Other subsurface utilities such as cable, water and sewage lines, and electrical lines may also be discovered during excavations. The nature of the utilities and whether they are presently active should be determined prior to removal. The One Call Center at 1-866-423-7287 (or 811) can help determine the nature and origin of active subsurface utilities.

12.7 Record Keeping

Parties should record field observations that include the location of the pipeline relative to fixed landmarks (including Global Positioning System coordinates), the depth, diameter, pipeline type, and any other distinguishing features, type of SPH, beginning and ending fluid levels, volumes of each type of fluid removed (e.g., water and SPH), flow rates, direction of flow, and any other information pertinent to the pipeline contents. Provide the field observations with detailed photographs to the HEER Office, and if requested the landowners. Complete Appendix B.4 for your records and send a copy to HDOH.

13.0 – Soil Management Plan

The purpose of the soil management plan is to ensure the proper handling and management of petroleum contaminated soil (PCS) that could be encountered during future construction. The principal hazards posed by petroleum-contaminated soil are direct exposure, gross contamination, and/or vapor intrusion into existing or future buildings. Because of the likelihood of contamination soil, cannot be re-used off site without laboratory testing and comparison of testing results against the most restrictive EALs (unrestricted use, within 150 meters of a water body over a drinking water resource).

Surface (approximately 0 to 2 feet bgs) soils in the IDM Area consist of fill that may not be impacted by COCs. The results of the site characterization conducted in the IDM previously indicate that shallow subsurface (greater than approximately 2 feet bgs) soils across the majority of the area have been impacted by COCs. This subsurface soil contamination is readily apparent through visual and olfactory observations. Typically, PCS is stained black or discolored and has a petroleum hydrocarbon odor.

Contaminated soil should be assessed during subsurface construction activities. In areas of known contamination contractors should be notified in advance of mobilization to properly prepare for dealing with contaminated soil.

Soil containing glass, pottery shard and charred soil or wood probably originated as fill from the Chinatown fires. This soil could contain elevated levels of metals such as lead and arsenic and must be properly managed during construction activities.

There are two landfills on Oahu that are permitted by that accept contaminated soil for disposal, Waimanalo Gulch Sanitary Landfill and PVT Land Company Landfill. A Hazardous Waste Characterization must be performed on the soil prior to disposal. Contact the HDOH Solid and Hazardous Waste Branch at (808) 586-4226 for further information and see the HDOH *Construction and Demolition (C&D) Waste Disposal General Guidance* (HDOH 2011c). Potential characteristics that could cause PCS to be classified as Hazardous Waste include: 1) Ignitability and 2) Failure of the Toxic Characterization Leaching Procedure (TCLP) for contaminants in the soil, especially lead and arsenic. Soil that is classified as hazardous waste must be disposed of at a hazardous waste facility on the mainland. There are no, permitted, hazardous waste landfills in Hawai‘i.

Refer to the HEER office document *Evaluation of Imported and Exported Fill Material* for guidance on testing of soils for reuse or disposal (HDOH 2011b).

13.1 Soil Management

Should contaminated subsurface soil be encountered during excavation, appropriate response actions will be taken and the actions will conform with DOH and EPA regulatory guidelines. The response actions include ensuring that workers have the appropriate level of PPE, that the excavated PCS is segregated from clean soil, and that the PCS is managed properly following excavation. PCS is defined as soil that exhibits petroleum staining, and/or a petroleum hydrocarbon odor, with or without mobile free product. An environmental consultant will use field observations and measurements to assess the excavated soil. Based on professional experience and judgment they will determine whether or not the excavated soil is PCS.

There are two categories of PCS; 1) moderately contaminated soil exhibiting slight petroleum odors and staining and 2) heavily contaminated soil with a very strong petroleum odor, very dark staining, and potentially mobile free product. From an analytical standpoint, heavily contaminated soil is defined as soil with a total TPH concentration in excess of 5,000 mg/kg (subsurface gross contamination; see HDOH 2011a). Gasoline and diesel free product in soil could be mobile at concentrations as low as 5,000 mg/kg, which is HDOH’s gross contamination action level for TPHg and TPHd in subsurface soils. Although somewhat arbitrary, this serves as a useful tool for separating heavily contaminated soil from less contaminated soil. Test to determine if soil exceeds 5,000 mg/kg THP

include laboratory analysis, and field tests such as the glove test and the paper towel test. The glove test consists of squeezing a hadfull of soil in a gloved hand. If oil droplets remain on the glove assume the soil exceeds the 5,000 mg/kg threshold and do not resue the soil on site. The paper towel test consists of squeezing a handful of soil in a paper towel. If droplets of oil appear on the paper towel assume the soil exceeds the 5,000 mg/kg threshold and do not resue the soil on site. The soil used in the field tests should be representative of the soil in the stockpile. If the soil conatins free product it should be handles as per Section 15 Free Product Management Plan.

The anticipated tasks associated with managing excavated soil are summarized as follows:

- The DOH HEER Office will be notified at least 7 days prior to construction activities that could disturb PCS.

- If PCS is observed during excavation activities, field oversight will be provided to direct the excavated soil to the appropriate stockpile, direct the appropriate use of excavated soils as on-site backfill versus offsite disposal, and provide health and safety guidance related to the potential exposure of workers to COCs.

- Soil stockpiles will be created by laying down 10-mil black plastic (polyethylene) sheeting in a designated on-site soil stockpiling area. The edges of the plastic sheeting will be underlain by bermed soil. The height of the bermed soil will be sufficient to prevent storm water runoff from breaching it. Excavated soil will be placed inside the bermed area on top of the plastic sheeting. At the end of each day or in the event of a significant rain event, the stockpiles will be covered by plastic sheeting. The plastic covering will be secured with sufficient ballast (e.g., sandbags, boulders, concrete blocks) so that it will not be dislodged by strong winds.

- PCS that is excavated will be segregated from clean soil and stockpiled on plastic sheeting. Both the clean soil and PCS stockpile(s) will be covered at the end of each day by plastic sheeting to mitigate potential dust concerns and to prevent contact with rainwater and storm water runoff. See Appendix A for additional details.

- If soil is classified as moderately contaminated (i.e., reported TPH <5,000 mg/kg) then the soil can be used as backfill on-site. Floating free product must be removed to the extent practible prior to backfilling any excavation.

- If soil is classified as heavily contaminated (i.e reported TPH>5000 mg/kg) then it must be profiled and disposed of at an appropriate landfill site.

- In determining whether excavated soil can be used for on-site backfill, its structural suitability should also be considered, although this is not a requirement under HDOH guidance. The soil could be considered not structurally suitable if the soil cannot support the foundation loading of a structure intended to be placed over backfilled and compacted soil, it does not meet the technical specifications for backfilling of utility trenches, or because of other design or constructability requirements.

- If PCS contaminated soil is to be used in roadways then the soil must also meet roadway design criteria of the City and County (C&C) and the State Department of Transportation (DOT).

- Soil that is not structurally suitable for reuse should be reused in other areas of the site or profiled and taken off-site for appropriate disposal in a landfill.

- PCS and debris-contaminated soil that is used as backfill on-site will be placed a minimum of one foot bgs and covered with clean soil.

- If there is no place to stockpile PCS soil then it should be profiled and hauled to the landfill for disposal. Stockpiling more than one cubic yard of PCS at an offsite location requires a solid waste management permit from the Solid and Hazardous Waste Branch (see HDOH 2011c).

13.2 Soil Testing

The two types of chemical testing detailed below may have to be conducted before stockpiled soil is placed back in the excavation (i.e., re-used) or disposed in a suitable landfill (i.e., disposal, see also HDOH 2011c).

Re-Use Testing:

This testing involves field tests for PCS related and other potentially relevant COCs (Section 6.1). The results of this testing are used to guide soil re-use, as described above. Note that this testing can either be conducted on excavated soils that are stockpiled or on *in-situ* soils during pre-excavation field investigations.

Landfill Profile Testing: This testing involves determining suitability of the soil for use as daily cover or disposal as a waste at a landfill. Soils that are not re-used (backfilled), as described above, can generally be disposed in a suitable landfill. Disposal of these soils would be subject to Landfill Profile Testing. Information regarding chemical analysis and the disposal options (i.e. as cover or as waste) should be obtained from the relevant landfill. Soils that meet the landfill's standards for interim/daily cover or longer-term, intermediate should be used as such. The former typically requires that the soil meet HDOH EALs for commercial/industrial land use while the latter typically requires that EALs for unrestricted reuse be met. The disposal costs for these soils are typically lower than for more contaminated soil that cannot be used for cover. Soils not suitable for use as cover or other uses at the landfill must be disposed of as waste. Soil testing to pre-profile the soil for off-site disposal can also be conducted as part of the pre-excavation field investigations.

Stockpile Testing

Recommendations for sampling of soil stockpiles are provided in the HDOH guidance *Evaluation of Imported and Exported Fill Material* (HDOH 2011b). If the stockpile is less than 20 cubic yards (cy), one soil batch ("Decision Unit") should be tested using multi-increment sampling approaches. If the stockpile is larger than 20 cy, then every 20 cy up to the first 100 cy should be tested. For stockpiles larger than 100 cy, MI samples should be collected from a minimum of five Decision Units up to 500 cy of soil (e.g., up to 100 cy each). Appropriate Decision Unit volumes for larger stockpiles of soil should be discussed with the HEER office on a case-by-case basis. Note the cost of sampling and segregating clean soil from PCS versus the cost of disposal of all soil as PCS may preclude the benefit of testing small volumes of PCS for potential reuse. The qualified environmental professional should direct soil sample collection and testing methods in accordance with the most current TGM guidelines. Parties undertaking excavation are responsible for employing a qualified environmental professional and determining whether the TGM guidelines have changed.

In addition to the above two types of testing, physical testing may also be needed to determine, for example, the strength of the soils and their suitability for use as backfill or building foundation support. The guidelines for physical testing are not within the scope of this EHMP however.

13.3 Engineering and Administrative Controls

Dust and vapor control methods may be necessary during construction-related work in which PCS is encountered. These controls include the use of plastic sheeting on soil stockpiles, vapor control using vapor suppressants, and dust suppression using applied water.

It is anticipated that Level D PPE will be appropriate for workers during future construction. Should site conditions warrant, the PPE will be upgraded to Level C. Ultimately, the contractor is responsible for monitoring site conditions and supplying site workers with appropriate training and PPE, in accordance with 29 cfr 1910 and 29 cfr 1926.

13.4 Soil Contaminated with Debris

Soil containing glass, pottery shard and charred soil or wood probably originated as fill from or both of the Chinatown fires. This soil could contain elevated levels of metals such as lead and arsenic. This soil must be properly managed during construction activities. Debris-contaminated soil can be reused on site provided the soil meets the previously described structural criteria and is covered by a minimum of one foot of clean fill. A Hazardous Waste Determination must be made for soil to be disposed of at a landfill.

PCS or debris-contaminated soil can only be reused onsite. Soil for reuse offsite must meet EALs for unrestricted land use, less than 150 meters from a surface water body and above a drinking water source. Offsite reuse or disposal of soil that exceeds these EALs could fall under Solid and Hazardous Waste regulations for creation of an illegal waste disposal site.

13.5 Periodic Inspections and Preventive Maintenance

A key component of the plan is routine inspections. Accordingly, all locations where there is a possibility that on-site workers could be exposed to PCS (e.g., open excavations, soil stockpiles) will be inspected at a frequency appropriate for access and activities carried out on the site (e.g., daily for sites being used or accessed on a daily basis). The site should also be inspected prior to and following adverse weather conditions that could disrupt control measures (e.g., heavy winds or rains). In addition, daily inspections of the security fence, locked gates, and dust screen will

be performed during construction and excavation activities. Replacement and repair of damaged or inadequate chain link fences, dust screens, storm water control measures, stockpile covers, berms, etc., will be performed immediately after discovery. PPE will be inspected for damage and defects before donning.

13.6 Record Keeping and Reporting

Detailed records of workspace monitoring, PCS excavation, soil stockpiling and testing, soil testing, soil reuse and disposal, inspections and maintenance and response activities will be maintained. Significant issues will be communicated to site workers on a prompt basis. Minor deviations from the EHE/EHMP are acceptable based on field discretion. Major deviations should be approved by HDOH in advance of implementation. All deviations should be explained and documented; complete Appendix B.5 for your records and send a copy to HDOH.

Section 14.0 –Groundwater Management Plan

The purpose of the groundwater management plan is to ensure the proper handling and management of contaminated groundwater that could be encountered during construction in the IDM. The principal hazard posed by contaminated groundwater is gross contamination.

Shallow groundwater in the area is typically encountered approximately 4 to 7 feet bgs. The results of the site characterization activities conducted in the area conducted to-date indicate that groundwater in the area has been impacted by COCs. Groundwater contamination may be apparent through visual and olfactory observations. Contaminated groundwater may have a measurable thickness of free product, petroleum hydrocarbon odor or sheen.

Contaminated groundwater in the area has been encountered during a number of previous site characterizations and remedial activities. It is unlikely that residual groundwater contamination is at a level that warrants extensive response actions or disposal; however it is important to note that additional site characterizationactivities may be required depending on conditions encountered in the field.

14.1 Groundwater Management

Should contaminated groundwater be encountered during excavation activities, appropriate response actions must be taken and the actions will

conform to DOH and EPA regulatory guidelines. The response actions include ensuring that workers have the appropriate level of PPE and that free product, sheen and groundwater are managed properly should dewatering be performed. The anticipated tasks associated with managing groundwater are summarized below.

- If groundwater is encountered during construction excavation activities, field oversight will be provided to identify contaminated groundwater, direct appropriate dewatering should such activities be performed, manage the disposal of groundwater should such activities be necessary, and provide health and safety guidance related to the potential exposure of workers to COCs.
- If free product is encountered during construction excavation activities , manage free product as described in Section 15.

- Dewatering is not anticipated during future construction. However, should dewatering become necessary, water will likely be pumped into on-site infiltration pits, and will not be allowed to discharge off-site.

- If off-site discharge is necessary, a Notice of Intent [NOI] for National Pollutant Discharge Elimination System [NPDES] coverage will be submitted to the DOH. The NOI will include a dewatering plan. Prior to discharge into a storm sewer or aquatic habitat, the water will be tested and, if necessary, treated to address both free product and dissolved-phase contamination. Water with contaminant concentrations that exceed the EALs for chronic aquatic toxicity will not be discharged off-site.

- The generation of groundwater requiring disposal is not anticipated during future construction. However, should such disposal become necessary, the groundwater will be stored on-site in appropriate containers (e.g., 55-gallon drums), sampled, analyzed for the appropriate COCs to determine the disposal options, and disposed of properly. For additional details See the Guidelines Appendix A.

14.2 Vapor Control

Vapor control methods (e.g., vapor suppressants) may be necessary during construction-related work in which contaminated groundwater is encountered. It is anticipated that Level D PPE will generally be appropriate for workers. Should site conditions warrant, the PPE will be upgraded to

Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 16.0).

14.3 Periodic Inspections and Preventive Maintenance

A key component of the plan is routine inspections. Accordingly, all locations where there is a possibility that on-site workers could be exposed to contaminated groundwater (e.g., open excavations, dewatering pits) will be inspected daily.

Should groundwater requiring disposal be generated, the storage containers will be inspected regularly for rust and other signs of deterioration while they remain on-site, pending disposal. Should on-site dewatering be performed, the infiltration pit(s) will be inspected daily to ensure that there is no accidental discharge.

14.4 Record Keeping and Reporting

Detailed records of workspace monitoring, dewatering (if performed), groundwater disposal (if performed), and response activities will be maintained. Significant issues will be communicated to site workers on a regular basis. Minor deviations from the EHE/EHMP are acceptable based on field discretion. Major deviations should be approved by HDOH in advance of implementation. All deviations should be explained and documented in the Appendix. Complete Appendix B.6 for your records and send a copy to HDOH.

Section 15.0 – Free Product Management Plan

The purpose of the Free Product Management Plan is to ensure the proper handling and management of free product encountered during subsurface construction activities. The principal hazards posed by free product are direct exposure and gross contamination. Additional related hazards include flammable/explosive vapors.

Free product in the IDM is confined to the general area of the capillary fringe of the water table, which is approximately 4 to 7 feet bgs. The results of the site characterization in the area indicates that the free product occurs as (1) free-flowing, black, viscous product, (2) a thin layer of black, viscous product, (3) a discontinuous layer of product, and (4) a petroleum

hydrocarbon sheen. The free product is readily apparent through visual and olfactory observations.

The distribution of free product in the IDM has not been completely defined and could be encountered during any subsurface activities. Free product recovery will be required where possible and practicable.

15.1 Free Product Management

If excavation occurs, to the depth of the capillary fringe of the water table at approximately 4 to 7 feet bgs free product may be encountered. However, anticipated problems associated with free product can be mitigated by the tasks described in this plan.

Should free product be encountered during excavation, appropriate response actions will be taken and the actions will conform with DOH and EPA regulatory guidelines. The response actions include ensuring that workers have the appropriate level of PPE and that free product is managed properly. The anticipated tasks associated with managing free product are summarized below.

- If free product is encountered during construction excavation activities, field oversight should be provided to identify free product, recover the product to the extent practicable using absorbent pads/booms, oil-water seperators, and/or vacuum trucks to skim free product off the water table and provide health and safety guidance related to the potential exposure of workers to the product. Following the completion of product recovery, the absorbents PPE and plastic sheeting will be allowed to dry and must be disposed of properly.

- Dewatering is not anticipated during future construction. However, should dewatering become necessary and there is free product floating on the water in the on-site infiltration pit(s), the product will be recovered to the extent practicable any absorbant material such as absorbent pads will be disposed of properly.

15.2 Engineering and Administrative Controls

There is a potential (however slight) that free product could generate explosive vapors. If generated, such vapors increase the risk of fire and/or

explosion. Accordingly, if free product is encountered, the workspace atmosphere will be monitored with a cumbustable gas indicator for Lower Explosive Limit [LEL].

Vapor control methods (e.g., vapor suppressants) may be necessary during construction-related work in which free product is encountered. It is anticipated that Level D PPE will be appropriate for workers. Should site conditions warrant, the PPE will be upgraded to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 9.4).

15.3 Periodic Inspections and Preventive Maintenance

A key component of the plan is routine inspections. Accordingly, all locations where there is a possibility that on-site workers could be exposed to free product (e.g., open excavations, dewatering pits,hoses, pumps, tanks, or spills, spills from any of these sources) will be inspected daily or more frequently as appropriate. In addition, daily inspections of the security fence and locked gates will be performed during construction activities where free product is encountered. PPE will be inspected for damage and defects before donning. If respiratory protection is required, a daily positive pressure respirator fit test will be performed at the start of each day and filter cartridges will be replaced regularly as described in the site specific health and safety plan.

Excavations, including infiltration pit(s) should on-site dewatering be performed, will be inspected daily to ensure that there is no free product present on the water. If present, an attempt will be made to remove the product using absorbent pads, skimmimg with a vacuum truck or other means such as processing through an oil water seperator.

15.4 Record Keeping and Reporting

Detailed records of workspace monitoring (including LEL measurements), product recovery, and response activities will be maintained. Significant issues will be communicated to site workers on a regular basis. Minor deviations from the EHE/EHMP are acceptable based on field discretion. Major deviations should be approved by HDOH in advance of implementation. All deviations should be explained and documented in the Appendix. Complete Appendix B.7 for your records and send a copy to HDOH.

Section 16.0 – Vapor Management Plan

The purpose of the Vapor Management Plan is to identify VOC vapors that could adversely affect air quality during construction activities in the area covered by this document. The principal hazards posed by VOC vapors at levels below LELs are direct exposure and gross contamination. The areas in which these hazards potentially pose the greatest concern are those where contaminated soil, contaminated groundwater, and free product have been previously encountered.

The results of past site characterizations in the IDM indicate that soil vapor across the majority of the area has been impacted by one or more COCs. Soil vapor contamination is readily apparent throughout much of IDM because the vapor has a petroleum hydrocarbon odor. The principal sources of contaminated soil vapor at the IDM are PCS, contaminated groundwater, and free product.

This plan describes the necessary controls for minimizing the exposure of on-site workers to hazardous vapors. It also describes measures for minimizing the exposure of off-site human populations (i.e., the general public) to hazardous vapors created as a result of construction activities. Included are procedures for identifying and mitigating potential physical hazards posed by the generation of explosive vapors. It is important to note that this plan describes general procedures for monitoring hazaedous vapors during field activities. The Plan should be considered a companion document to the site-specific Health and Safety Plan, which should describe in detail procedures and equipment for monitoring hazardous vapor concentrations, as well as PPE and engineering controls, rather than a stand-alone documentto address vapor issues.

16.1 Vapor Management

Should VOC vapors be encountered during excavation, appropriate response actions will be taken and the actions will conform with DOH and EPA regulatory guidelines. The response actions include ensuring that on-site workers have the appropriate level of PPE and the general public is not affected adversely. The anticipated tasks associated with managing VOC vapor exposure are summarized below.

- If VOC vapors below LELs are encountered during excavation activities, field oversight must be provided to identify VOC vapors and provide

health and safety guidance related to the potential exposure of workers to COCs.

- Air monitoring will be conducted during excavation associated with future construction activities. Air monitoring will also be conducted when workers are required to enter excavations regardless of wheter PCS or free product are present. The monitoring will include both workspace (on-site) and perimeter measurements of VOC vapors.

- If warranted by the air monitoring results, on-site workers will be notified of the need to upgrade PPE to include respiratory protection.

- Air monitoring required for confined space entry (if required) will be conducted by the contractor responsible for construction. Confined space entry and associated air monitoring requirements will be described in the site specific health and safety plan for construction.

16.2 Exposure Monitoring

To assess the potential exposure of on-site workers to hazardous VOC vapors and determine the level of PPE that might be required, a baseline exposure assessment will be required. To conduct the assessment, both total VOC concentrations and benzene concentrations must be measured during excavation of a trench. Both the workspace atmosphere and perimeter (off-site) measurements are required.

Based on the results of the exposure assessment, exposure limits must be established for workers performing remedial excavation. The exposure limits are based on Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs). The exposure monitoring plan is summarized below.

- Level D PPE will be appropriate for on-site workers under normal working conditions.

- Both workspace (on-site) and perimeter (off-site) air monitoring will be conducted.

- Air monitoring will be conducted using a conventional photo-ionization detector (PID) to determine VOC vapor concentrations and an Ultra-Rae PID, which is benzene-specific, to determine benzene concentrations.

- If VOC vapor concentrations in the workspace atmosphere exceed an 8-hour time-weighted average (TWA) of 20 parts per million [ppm] or a 15-minute short-term exposure limit (STEL) of 100 ppm, PPE requirements will be upgraded to Level C and it may be necessary to implement a modified work schedule. These levels are based on a maximum benzene concentration in gasoline of 5 percent by volume.

- On-site workers will be notified immediately if benzene is detected in the workspace atmosphere at a concentration exceeding 0.5 ppm, and the wearing of respirators with organic vapor cartridges will be recommended (i.e., it will be recommended that respiratory protection be upgraded to Level C).

- If benzene concentrations in the workspace atmosphere exceed the 8-hour TWA PEL (1 ppm) or the OSHA 15-minute STEL (5 ppm), PPE requirements will be upgraded to Level C and it may be necessary to implement a modified work schedule.

- If benzene concentrations in the workspace atmosphere exceed the TWA PEL (1 ppm), short-term exposure monitoring will be conducted. To determine short-term exposure, a minimum of five samples will be collected within a 15-minute period.

- If daily average benzene concentrations in the workspace atmosphere exceed the OSHA STEL (5 ppm) or benzene concentrations exceed the OSHA acceptable ceiling concentration (25 ppm), PPE will be upgraded to Level C, with either full-face respirators or powered air-purifying respirators and protective goggles.

- If benzene concentrations in the workspace atmosphere exceed the OSHA 8-hour TWA for a 40-hour work week (10 ppm) or benzene concentrations exceed the OSHA acceptable maximum peak for an 8-hour shift (50 ppm), work will be stopped immediately, the on-site representative will be notified, and workers will be requested to leave the work zone.

- If benzene concentrations along the site perimeter (off-site) exceed the 15-minute STEL (5 ppm) or the TWA PEL (1 ppm), the exclusion zone will be extended beyond the Property boundary.

- If benzene concentrations along the site perimeter (off-site) exceed the OSHA acceptable ceiling concentration (25 ppm), work will be stopped immediately and the project on-site representative will be notified.

16.3 Engineering and Administrative Controls

Vapor control methods may be necessary during construction-related work in which VOC vapors are encountered. These controls include the use of plastic sheeting on soil stockpiles, vapor suppressants and supplied ventilation.

It is anticipated that Level D PPE will be appropriate for workers during future construction. Should site conditions warrant, as described above, the PPE will be upgraded to Level C.

In addition to respiratory protection practices, engineering controls and safe work practices will be employed. Engineering controls include barriers that prevent workers from unnecessarily entering work zones and the use of recycled air conditioning in mobile equipment cabs. Safe work practices include monitoring wind direction and having workers stand upwind of VOC vapor sources whenever possible, or instituting a modified work schedule.

A natural control is that vapors originating at the Properties normally will be diluted by the prevailing northeasterly trade winds. If left undisturbed, surface soil (0 to 2 feet bgs) not impacted by VOCs provides a natural barrier, covering VOC-contaminated subsurface soil and groundwater, thereby reducing potential vapor emissions.

16.4 Periodic Inspections and Preventive Maintenance

A key component of the plan is routine inspections and air monitoring. Accordingly, air monitoring will be conducted at all locations where there is a possibility that on-site workers could be exposed to hazardous vapors (e.g., open excavations, soil stockpiles) and those areas will be inspected daily or more frequently if appropriate. PPE will be inspected for damage and defects before donning. If respiratory protection is required, a daily positive pressure respirator fit test will be performed at the start of each day and filter cartridges will be replaced regularly.

Both the conventional PID and the benzene-specific Ultra-Rae PID require daily calibration. The conventional PID will be calibrated using a 100 ppm isobutylene standard. The Ultra-Rae PID will be calibrated using a 5 ppm benzene standard, and measurements of the standard will be made as

needed to confirm that the calibration is maintained. Records of the recalibrations will be maintained.

16.5 Record Keeping and Reporting

Detailed records of workspace monitoring and changes to PPE requirements will be maintained. Daily monitoring results and sampling locations will be documented on field logs. Significant issues will be communicated to site workers on a regular basis. Minor deviations from the EHE/EHMP are acceptable based on field discretion. Major deviations should be approved by HDOH in advance of implementation. All deviations should be explained and documented in the Appendix. Complete Appendix B.8 for your records and send a copy to HDOH.

17.0 – Storm Water Management Plan

The purpose of the storm water management plan is to provide procedures to prevent storm water runoff from coming into contact with contaminated soil or groundwater and to provide contingencies in the event that such contact does occur. The principal hazards posed by storm water runoff are direct exposure, gross contamination, and aquatic eco-toxicity. If contaminated storm water is allowed to leave the construction site, down gradient human populations (the general public) and ecological receptors (marine flora and fauna in Honolulu Harbor) could be exposed to COCs. The areas in which these hazards potentially pose the greatest concern are those where contaminated soil, contaminated groundwater, and free product have been encountered.

This plan describes the necessary measures for controlling storm water in the area covered by this document during construction activities. Preventing storm water from coming into contact with contaminated media is the principal concern during future construction activities. Construction activities have the potential for exposing storm water runoff to contaminated media includes the following.

- Subsurface excavation could expose contaminated subsurface soil and/or groundwater.

- Excavated PCS may be stored temporarily in stockpiles.

- Although not anticipated, if dewatering is conducted that utilizes an on-site infiltration pit, contaminated groundwater could be exposed.

17.1 Storm Water Management

Should contaminated soil or groundwater be encountered during excavation, appropriate response actions will be taken and the actions will conform with DOH and EPA regulatory guidelines. The response actions include ensuring that these media are not exposed to storm water. The anticipated tasks associated with managing storm water are summarized below.

- Field oversight will be provided during excavation activities conducted as part of construction. The purpose of the oversight is to identify contaminated media that could be exposed to storm water runoff and provide guidance related to controlling storm water on the Property. In addition, the weather will be monitored throughout each work day for signs of approaching storms and/or heavy rains.

- Inspections of engineering storm water controls will be performed each day to ensure that contaminated media will not be exposed to storm water runoff and that contaminated storm water will not leave the construction site.

- All construction including clearing, grading, and excavation,that results in disrutbance of one ore more acres of total land area will be performed in accordance with the conditions of a DOH-approved NPDES Notice of Intent (NOI) permit for storm water discharge associated with construction activity. Conditions of the permit include preparation of a *Construction Site Best Management Practices (BMP)Plan*. For projects involving disturbance of less than one acre of land a NPDES permit is not required; however the City and County of Honolulu Department of Planning and Permitting requires erosion controls or Best Management Practices zt all disturbed areas.

17.2 Engineering and Administrative Controls Open Excavations.

In the absence of engineering and administrative controls, PCS and/or groundwater exposed in open excavations could come into contact with storm water, thus potentially contaminating the storm water with COCs. To prevent this from occurring, the following activities will be performed.

→ Where possible, excavations will be backfilled as soon as practicable to limit the time they are open and potentially exposed to storm water runoff and direct precipitation.

→ Where possible, the edges of excavations will be bermed, thus preventing storm water runoff from entering.

→ Open excavations will be inspected each day to ensure that there is no potential for direct precipitation to cause the excavation to overflow.

Soil Stockpiles. In the absence of engineering and administrative controls, excavated PCS stored in stockpiles could come into contact with storm water, thus potentially contaminating the storm water with COCs. To prevent this from occurring, the following activities will be performed.

→ Soil stockpiles will be placed on plastic sheeting and the sheeting will be bermed at the edges, thus preventing contact with storm water runoff.

→ At the end of each day, or in the event of a storm, the soil stockpiles will be covered with plastic sheeting, thus preventing contact with direct precipitation.

→ The soil stockpiles will be inspected each day to ensure that the plastic sheeting is intact.

Dewatering Infiltration Pits. In the absence of engineering and administrative controls, the water in infiltration pits used for on-site dewatering could come into contact with storm water. To prevent this from occurring, the following activities will be performed.

→ Where possible, infiltration pits will be backfilled as soon as practicable to limit the time they are open and potentially exposed to storm water runoff and direct precipitation.

→ Where possible, the edges of infiltration pits will be bermed, thus preventing storm water runoff from entering.

→ Infiltration pits will be inspected each day or more frequently as appropriate to ensure that there is no potential for direct precipitation to cause the pit to overflow.

Erosion and sediment control measures will be in place and functional before construction activities commence. These measures will be

maintained throughout the construction period. In the event that storm water discharge from the site is anticipated, the following preventive measures may be taken.

- Storm water flowing towards active construction areas will be diverted using appropriate control measures, as practicable.
- Erosion control measures will be designed to handle the size of the disturbed or drainage area in order to detain runoff and trap sediment.
- The height of the Property boundary can be increased using sandbags.
- Additional silt fencing will be added to affected Property boundaries, if warranted.
- The berms surrounding soil stockpiles will be increased as necessary.
- Moveable booms will be available to contain spills.
- Absorbent pads will be employed if free product is observed in storm water runoff.

17.3 Inspection and Preventive Maintenance

A key component of the plan is routine inspections. Accordingly, all locations where there is a possibility that storm water could come into contact with contaminated media (e.g., open excavations, soil stockpiles, dewatering pits) will be inspected daily. During storm events, inspections will be conducted to ensure that storm water runoff and direct precipitation do not come into contact with soil stockpiles and that storm water runoff does not enter open excavations or (if present) infiltration pits. If storm water run-on occurs, accumulated water on the site will be inspected for visual and olfactory evidence of contamination (e.g., petroleum hydrocarbon sheen, discoloration, free product, petroleum hydrocarbon odors).

Storage containers, vehicles, and heavy equipment that potentially could come into contact with storm water will be stored in one area and will be inspected on a regular basis to ensure proper functioning. Signs of deterioration or leaks that could lead to an unanticipated release of petroleum-based products or hazardous substances will be reported immediately, and corrective measures will be taken.

General site inspections will be performed periodically and documented. Engineering controls will be inspected and repaired as necessary. During prolonged rainfall, daily inspections may be necessary. Accumulated sediment at the silt fence will be removed once it has accumulated up to one-third the height of the fence. If damaged, the silt fence will be repaired or replaced within 24 hours. During storm events, storm water runoff will be inspected to assess whether it has been impacted by COCs or by contaminants associated with construction activities.

17.4 Record Keeping and Reporting

Detailed records of storm events, inspections of engineering controls, and response activities will be maintained. Significant issues will be communicated to site workers and the project on-site representative on a regular basis. The reporting requirements of the NPDES storm water discharge permit will be followed strictly. Minor deviations from the EHE/EHMP are acceptable based on field discretion. Major deviations should be approved by HDOH in advance of implementation. All deviations should be explained and documented in the Appendix.
Complete Appendix B.9 for your records and send a copy to HDOH.

SECTION 18.0 – Exposure Contingency Plans

The purpose of the exposure contingency plan is to provide guidelines for the actions to be taken when engineering controls, administrative controls, or PPE fail to function as designed. The plan consists of several individual plans, each addressing specific potential contaminants of concern listed in Section 8.0. The individual plans include the following.

- Soil Contingency Plan
- Groundwater Contingency Plan
- Free Product Contingency Plan
- Vapor Contingency Plan
- Storm Water Contingency Plan
- Site Specific Health and Safety Plan

Prior to the initiation of construction work, on-site workers will be informed about these contingencies. In the event of a failed engineering control, administrative control, or PPE, the first priority is to provide health and safety assistance and (if needed) first aid. Once safety concerns (if present) have been addressed, immediate action will be taken to

implement the appropriate contingency. Personnel should not enter into a situation involving imminent risk to human health or life. In all instances, common sense, good judgment, training, and experience should prevail. The implementation of a contingency plan will be recorded in a field log book and reported to the appropriate personnel.

18.1 Contingency Information and Notification

An emergency notification list identifying the on-site personnel to whom failed engineering controls, administrative controls, or PPE must be reported will be posted at a designated location(s). In addition, a map showing the layout of the construction site and the anticipated locations of COCs and hazardous substances will be posted at all locations where such materials are stored. Information on hazardous substances at the construction site also will be posted. This information will include a list of hazardous substances and the location of MSDSs maintained on-site. Information contained in the MSDSs includes physical properties pertinent to safety, required PPE, and emergency medical information. The map will include the locations of emergency medical supplies and spill response equipment.

18.2 Soil Contingency Plan

The Soil Contingency Plan provides guidelines for the actions to be taken when engineering controls, administrative controls, or PPE fail and there is an imminent risk of exposure to PCS.

18.2.1 Open Excavations

During construction activities, subsurface PCS could be exposed in excavations used to install utility corridors or other subsurface structures. If PCS is encountered that is more contaminated than anticipated and that could pose a direct exposure hazard to on-site workers, the following actions may be taken.

- Should site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 9.4) and the Site-Specific Health and Safety Plan.

- If warranted, the PCS will be excavated and properly stockpiled prior to the continuance of work. The stockpiling procedures are described in the Soil Management Plan (Section 9.1).

- If airborne dust generated from PCS becomes significant, additional dust control measures will be implemented. This may require more frequent use of or an increased volume of applied water. Also, the dust screen cloth on the site boundary fence will be inspected for damage and repaired as necessary.

18.2.2 Soil Stockpiles

During construction activities, the plastic sheeting used to berm and cover soil stockpiles could be damaged by strong winds or punctured by debris or other sharp objects. Such damage could allow on-site workers to come into contact with PCS. To prevent that from occurring, the following actions may be taken.

- Damaged sections of plastic sheeting will be replaced promptly.

- Damaged sections of the berm will be repaired promptly.

18.3 Groundwater Contingency Plan

The Groundwater Contingency Plan provides guidelines for the actions to be taken when engineering controls, administrative controls, or PPE fail and there is an imminent risk of exposure to contaminated groundwater.

18.3.1 Open Excavations

During construction activities, contaminated groundwater could be exposed in excavations used to install utility corridors or other subsurface structures. If contaminated groundwater is encountered that could pose a direct exposure hazard to on-site workers, the following actions may be taken.

- Should site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 9.4) and Site-Specific Health and Safety Plan.

- If appropriate, the excavation will be backfilled using appropriate materials (e.g., gravel, select borrow) to a level above the groundwater prior to the continuance of work.

- If it becomes necessary to remove contaminated groundwater from the excavation, the groundwater will be stored on-site in appropriate containers (e.g., 55-gallon drums), sampled, analyzed for the

appropriate COCs to determine the disposal options, and disposed of properly.

18.3.2 Dewatering Pits

Dewatering is not anticipated during future construction. However, if dewatering is conducted and contaminated dewatering water is encountered that could pose a direct exposure hazard to on-site workers, the following actions may be taken.

- Should site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 9.4).

- If appropriate, dewatering will be discontinued until such time that contaminants at the source of the dewater (i.e., an open excavation) can be mitigated.

- If it becomes necessary to discharge contaminated groundwater from a dewatering pit, such discharge will be conducted in full compliance with the conditions of any required NPDES permit.

18.4 Free Product Contingency Plan

The Free Product Contingency Plan provides guidelines for the actions to be taken when engineering controls, administrative controls, or PPE fail and there is an imminent risk of exposure to free product.

18.4.1 Open Excavations

During construction activities, free product could be encountered on groundwater in excavations used to install utility corridors or other subsurface structures. If free product is encountered that could pose a direct exposure hazard to on-site workers, the following actions may be taken.

- Should site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 6.4).

- If the volume of free product encountered is too great for absorbent pads to handle effectively, a vacuum truck will be used to pump

product out of the excavation, and the product will be disposed of properly.

- If appropriate, following the removal of free product, the excavation will be backfilled using appropriate materials (e.g., gravel, select borrow) to a level above the groundwater prior to the continuance of work.

18.4.2 Dewatering Pits

Dewatering is not anticipated during future construction. However, if dewatering is conducted and free product is encountered that could pose a direct exposure hazard to on-site workers, the following actions may be taken.

- Should site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 6.4).

- If the volume of free product encountered is too great for absorbent pads to handle effectively, a vacuum truck will be used to pump product out of the dewatering pit, and the product will be disposed of properly.

- If appropriate, dewatering will be discontinued until such time that the free product can be recovered.

- Under no circumstances will water contaminated with free product be discharged from a dewatering pit.

18.5 Vapor Contingency Plan

The Vapor Contingency Plan provides guidelines for the actions to be taken when engineering controls, administrative controls, or PPE fail and there is an imminent risk of exposure to significant concentrations of hazardous vapors.

The Vapor Management Plan (Section 17) includes most of the contingencies in the Vapor Contingency Plan. If hazardous vapors are encountered at higher levels than anticipated and that could pose a direct exposure hazard to on-site workers, the following actions and/or other actions as described in the site-specific Health and Safety Plan may be taken.

- If benzene concentrations in the workspace atmosphere exceed the 8-hour TWA PEL (1 ppm) or the 15-minute STEL (5 ppm), PPE requirements will be upgraded to Level C.

- If benzene concentrations in the workspace atmosphere exceed the TWA PEL (1 ppm), short-term exposure monitoring will be conducted. To determine short-term exposure, a minimum of five samples will be collected within a 15-minute period. Based on the results, it may be necessary to implement a modified work schedule.

- If daily average benzene concentrations in the workspace atmosphere exceed the STEL (5 ppm) or benzene concentrations exceed the OSHA acceptable ceiling concentration (25 ppm), PPE will be upgraded to Level C, with either full-face respirators or powered air-purifying respirators and protective goggles.

- If benzene concentrations in the workspace atmosphere exceed the 8-hour TWA for a 40-hour work week (10 ppm) or benzene concentrations exceed the OSHA acceptable maximum peak for an 8-hour shift (50 ppm), work will be stopped immediately, the project on-site representative will be notified, and workers will be requested to leave the work zone.

- If benzene concentrations along the Property perimeter (off-site) exceed the 15-minute STEL (5 ppm) or the TWA PEL (1 ppm), the exclusion zone will be extended beyond the Property boundary.

- If benzene concentrations along the Property perimeter (off-site) exceed the OSHA acceptable ceiling concentration (25 ppm), work will be stopped immediately and the Lowe's HIW on-site representative will be notified.

Should the potential off-site exposure to benzene require that one of the contingencies above be implemented, additional administrative or engineering controls will be considered. These include the following.

- The height of the perimeter fence may be increased.

- Access around the Property boundary may be restricted through the use of additional barriers.

- Blowers may be used to redirect vapors away from the perimeter fence closest to the area of concern.

- Construction activities requiring active excavation may be conducted at night. Working at night should result in less evaporation and therefore a reduction in the release of hazardous vapors. In addition, nearby stores and businesses (e.g., Home Depot, BEI Hawaii, Costco, Best Buy) will be closed, thus reducing the possibility that the general public will be affected.

18.6 Storm Water Contingency Plan

The Storm Water Contingency Plan provides guidelines for the actions to be taken when engineering or administrative controls fail and there is an imminent risk of storm water becoming contaminated by COCs or of contaminated storm water discharging off-site.

18.6.1 Open Excavations

During construction activities, storm water could come into contact with contaminated soil or groundwater exposed in excavations used to install utility corridors or other subsurface structures. If there is a storm event more severe than anticipated and that could result in storm water runoff entering an excavation or water overflowing an excavation, the following actions may be taken.

- The height of the berm along the edges of the excavation may be increased to prevent storm water runoff from entering the excavation.

- If feasible, storm water runoff may be diverted away from the excavation.

- The excavation may be covered with plastic sheeting to prevent direct precipitation or storm water runoff from entering.

18.6.2 Soil Stockpiles

During construction activities, storm water could come into contact with PCS stored in stockpiles. If there is a storm event more severe than anticipated and that could result in storm water runoff coming into contact

with stockpiled soil or in damage to the plastic covering the stockpile, the following actions may be taken.

- Berms surrounding soil stockpiles that are damaged by a storm will be repaired. Additional plastic sheeting may be necessary.

- The height of the berm surrounding the stockpile may be increased.

- If feasible, storm water runoff may be diverted away from soil stockpiles.

- Plastic sheeting covering soil stockpiles that is damaged by a storm will be repaired or replaced. Additional plastic sheeting may be necessary.

18.6.3 Dewatering Pits

During construction activities, storm water could come into contact with contaminated groundwater exposed in dewatering pits, should dewatering become necessary (which is not anticipated). If there is a storm event more severe than anticipated (i.e., capable of overcoming engineering controls) and that could result in storm water runoff entering a dewatering pit or water overflowing a dewatering pit, the following actions may be taken.

- The height of the berm along the edges of the dewatering pit may be increased to prevent storm water runoff from entering the excavation.

- If feasible, storm water runoff may be diverted away from the dewatering pit.

18.6.4 Storm Water Run-On

During construction activities, storm water run-on could enter the Property and come into contact with contaminated soil or groundwater. If there is a storm event more severe than anticipated and that could result in storm water run-on entering the Property, the following action may be taken.

- The height of the Property boundary can be increased using sandbags.

18.6.5 Off-Site Discharge of Contaminated Storm Water

If, during construction activities, storm water comes into contact with contaminated soil or groundwater and that storm water is not contained,

contaminated storm water could discharge off-site. If there is a storm event more severe than anticipated and that could result in contaminated storm water discharging off-site, the following actions may be taken.

- The height of the Property boundary can be increased using sandbags.
- If feasible, storm water runoff may be diverted away from the Property boundary.
- Additional silt fencing may be added to the affected Property boundaries.
- Moveable petroleum-absorbent booms may be deployed along the affected Property boundary.
- Absorbent pads may be used if free product is observed on storm water runoff.
- Moveable petroleum-absorbent booms may be deployed in front of off-site storm drain entrances in the immediate vicinity of the Property.

18.7 Spills and Releases During Construction Activities

During future construction, spills of petroleum products (or other potentially harmful products) could occur at the Properties. Examples include leaks from heavy equipment or vehicles and overturned or damaged storage containers. If a spill occurs, the following actions may be taken.

- Identify what was spilled, the source of the spill, the quantity of the spill, the severity of the spill, and if immediate emergency response actions are necessary. Immediate emergency response actions will be necessary in the event of an injury, an imminent threat to human health, or a threat of potential impacts to sensitive ecological receptors.
- If immediate emergency response actions are unnecessary, the source of the spill will be eliminated to the extent practicable (e.g., shutting off a valve, turning off an engine, righting an overturned container).

- If the spill is of a volatile, flammable, or combustible liquid (e.g., gasoline, diesel fuel), possible ignition sources will be eliminated and workers will be directed to remain upwind. In addition, an LEL meter will be used to monitor for explosive vapors.

- If there is a fire or significant chance of fire resulting from the spill, the Honolulu Fire Department will be notified. A 20-pound ABC-rated fire extinguisher will be maintained on-site.

- Response actions and reporting will be conducted in full conformance with the *State Contingency Plan* (Hawaii Administrative Rules 11-451).

- If the spill is minor, initial release response activities can be conducted by trained on-site personnel wearing the appropriate PPE. Initial response activities include containing the spill to as small an area as possible, preventing the spill from leaving the Property, and cleaning up the spill using absorbent materials. Follow-up response actions (e.g., assessment, final cleanup, reporting), if required, will be conducted by designated personnel.

- If the spill is major, designated release response personnel will be contacted and mobilized to the Property. To the extent possible and practicable, on-site personnel will attempt to contain the spill, prevent the spill from leaving the Property, and apply absorbent materials to the spill. Once on-site, designated release response personnel will complete the response actions (e.g., containment, initial cleanup) and will perform the follow-up response actions (e.g., assessment, final cleanup, reporting).

- If there is contaminated media that requires removal as part of response activities, that material will be characterized and disposed of in accordance with state and federal regulations.

- Required reporting will be completed and submitted to the appropriate agency. Possible reporting to the DOH HEER Office includes the initial release report (typically, a phone call made within 24 hours of the spill), the confirmed release notification form, and a release response report.

18.8 Record Keeping and Reporting

A detailed record of events, including contingencies, storm water control actions, and response activities, will be maintained in a field log book. As part of the contingency response, the DOH will be notified of storm water control failures and storm water discharges containing COC. Minor deviations from the EHE/EHMP are acceptable based on field discretion. Major deviations should be approved by HDOH in advance of implementation. All deviations should be explained and documented; complete Appendix B.10 for your records and send a copy to HDOH.

Appendix A

Environmental Hazard Management Plan

GUIDELINES FOR LANDOWNERS, TENANTS, UTILITIES COMPANIES AND CONSTRUCTION CONTRACTORS

Environmental Hazard Evaluation

Environmental Hazard Management Plan

North Iwilei Area

GUIDELINES FOR LANDOWNERS, TENNENTS

UTILITIES COMPANIES AND CONSTRUCTION CONTRACTORS

Prepared by

HDOH

Version 1

November, 2012

These guidelines are for landowners, tenants, utility companies and construction contractors involved in construction projects in the North Iwilei Area of Honolulu,(mauka of North Nimitz Hwy) which is described in more detail below. They describe controls that provide protection from oil, oily soil and water, and soil vapors. They will guide you through three steps on how to:

(1) Determine if your project is located in the area covered by the guidelines (see page A-5);
(2) Determine if you should consider these guidelines; and if you do,
(3) Use them as an aid in determining the controls you need to conduct your specific project safely and protect the environment.

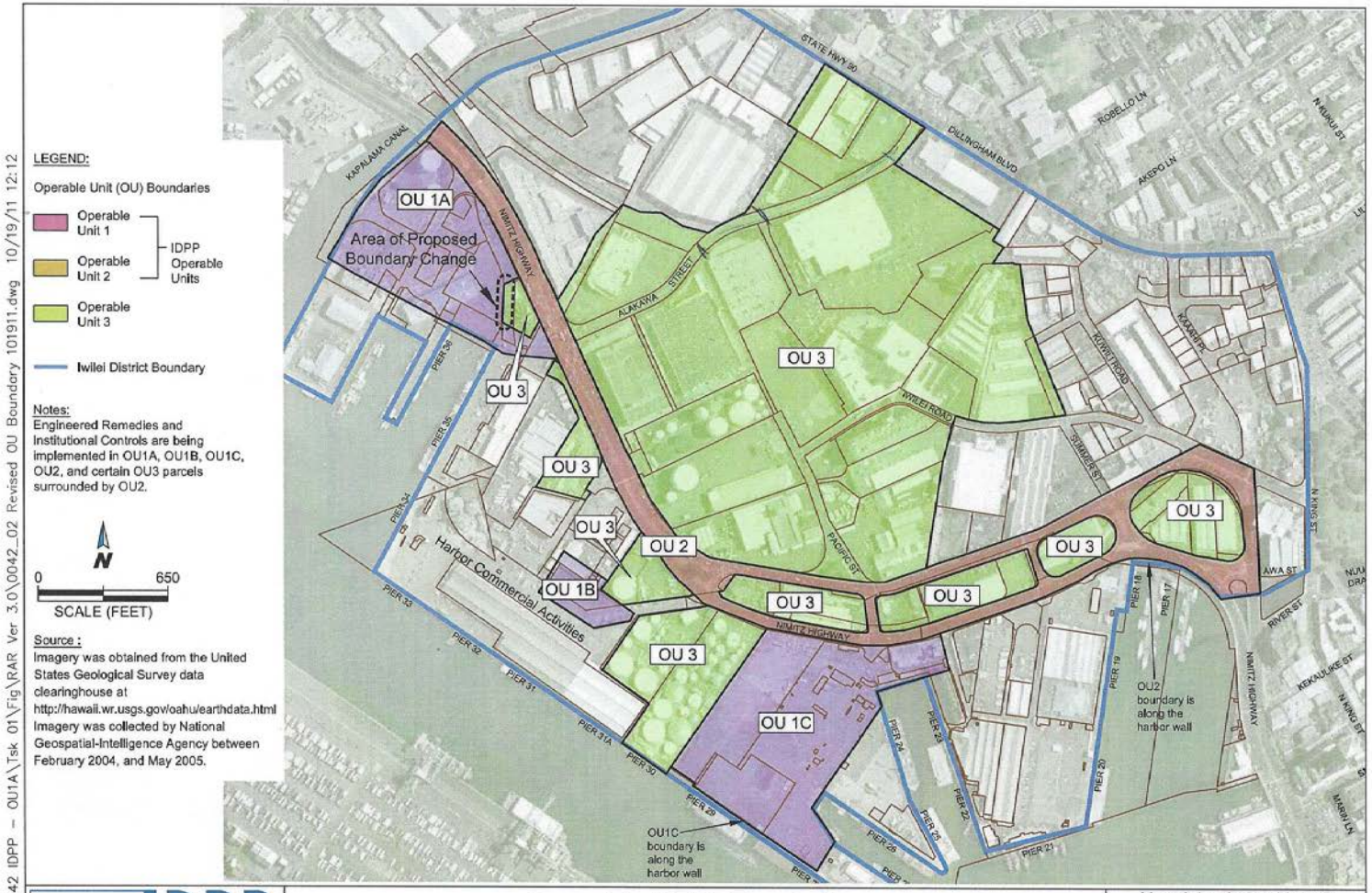
Soil and groundwater in the Iwilei District North of Nimitz Highway have been impacted by oil released from historic tanks and buried pipelines. This area is called the Iwilei District Mauka (IDM) and is shown in the map on page A-5.

Remediation has been undertaken on many of the properties in the IDM area. Since the remedial activities did not remove all of the oil or oily soil and groundwater, appropriate precautions must be taken so that workers involved in excavating in the area are not exposed to risks related to the remaining petroleum product released on site. Vapor barriers or other mitigation measures may also need to be installed to prevent methane, a flammable gas, or other harmful soil vapors from entering buildings, vaults or other structures.

These guidelines explain how parties performing construction work in the Iwilei area shown on the map on page 4 can provide protection for those who may be exposed to oil, or oily soil and groundwater.

DISCLAIMER

The procedures, information, guidelines and sample hazard management plans referred to herein are not intended to be a comprehensive description of all of the rules, regulations, laws and other requirements applicable to a construction project. They are only intended to provide general information and should not be used in place of appropriately qualified personnel. Each landowner, tenant, and construction contractor is responsible for complying with all applicable rules, regulations, laws and other requirements and for preparing their own hazard management plans for their own site-specific project.


LEGEND:
Operable Unit (OU) Boundaries
Operable Unit 1
Operable Unit 2
IDPP Operable Units
Operable Unit 3
Iwilei District Boundary
Notes:
Engineered Remedies and Institutional Controls are being implemented in OU1A, OU1B, OU1C, OU2, and certain OU3 parcels surrounded by OU2.
N
0
650
SCALE (FEET)
Source :
Imagery was obtained from the United States Geological Survey data clearinghouse at http://hawaii.wr.usgs.gov/oahu/earthdata.html
Imagery was collected by National Geospatial-Intelligence Agency between February 2004, and May 2005.
OU 1A
Area of Proposed Boundary Change
OU 3
OU 2
OU 1B
OU 1C
Harbor Commercial Activities
OU1C boundary is along the harbor wall
OU2 boundary is along the harbor wall
KAPALAMA CANAL
NIMITZ HIGHWAY
ALAKAWA STREET
IWILEI ROAD
PACIFIC ST
SUMNER ST
STATE HWY 90
DILLINGHAM BLVD
ROBELLO LN
AKEPO LN
KOHEL ROAD
KAAHUPE
N KUKUI ST
N KING ST
AWA ST
RIVER ST
KEKAULIKE ST
MABIN LN
PIER 34
PIER 33
PIER 32
PIER 31
PIER 31A
PIER 30
PIER 29
PIER 28
PIER 27
PIER 26
PIER 25
PIER 24
PIER 23
PIER 22
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PIER 20
PIER 19
PIER 18
PIER 17
P:\CAD\0042 IDPP – OU1A\Tsk 01\Fig\RAR Ver 3.0\0042_02 Revised OU Boundary 101911.dwg 10/19/11 12:12
IDPP
IWILEI DISTRICT Participating Parties, LLC
Operable Unit Boundaries
October 19, 2011
Honolulu, Oahu, Hawaii
Attachment A -
Amendment No. 3 to
Enforceable Agreement

Determine if you should Consider These Guidelines for work in the IDM.

-If you are landscaping, paving or excavating to a depth of less than 3 feet you probably do not need to consider these guidelines. However, be vigilant for any evidence of oil, oily soil, of oily water or soil containing debris and consult with the HEER Office if you encounter any of these materials.

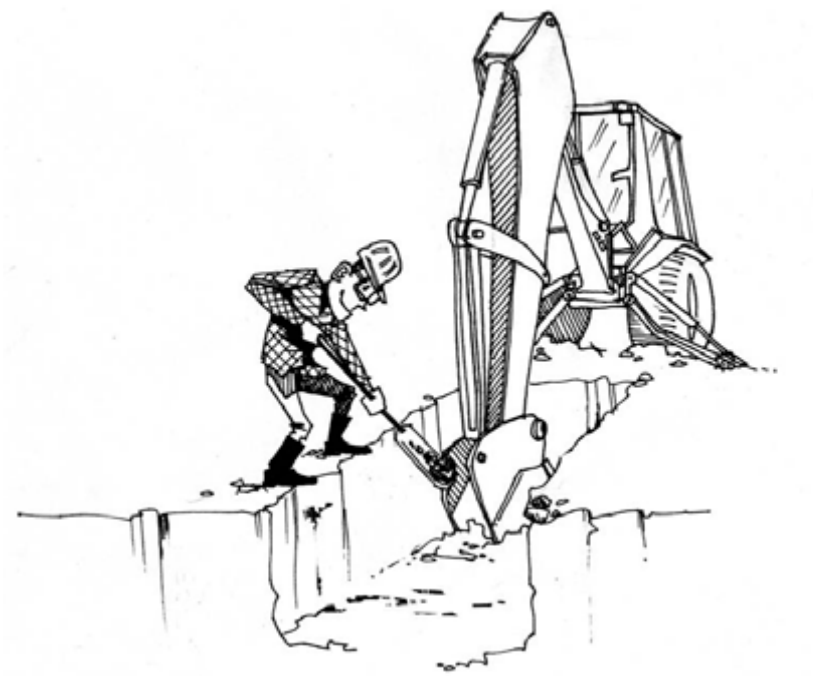
-If you are excavating deeper than 3 feet, replacing or repairing below ground utilities, consider these guidelines when implementing proper procedures to protect construction workers, tenants, visitors or customers from hazards related to historical oil releases. Check with the HEER Office for information and support.

If you are replacing floor slabs, replacing or substantially modifying foundations, or constructing new buildings contact the HEER Office to determine whether a site specific assessment is required.

Some of the potential hazards that can occur during excavation and how they can be prevented are described below:

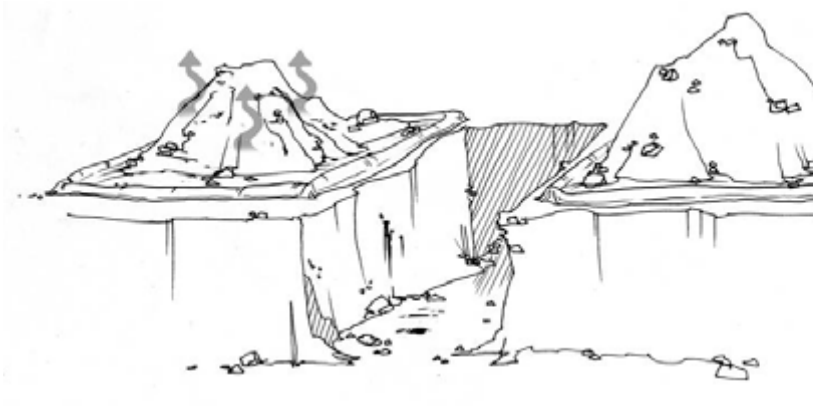
During excavations, workers may be exposed to oil remaining in the soil or on groundwater. Site-Specific **Health and Safety Plans** (which require appropriate protective clothing, equipment and training) may be needed.

Backhoe excavation in the North Iwilei Area.



Backhoe Excavation

Oil might seep from the side of an excavation and cause an oil sheen. It may be necessary to manage the oily water.



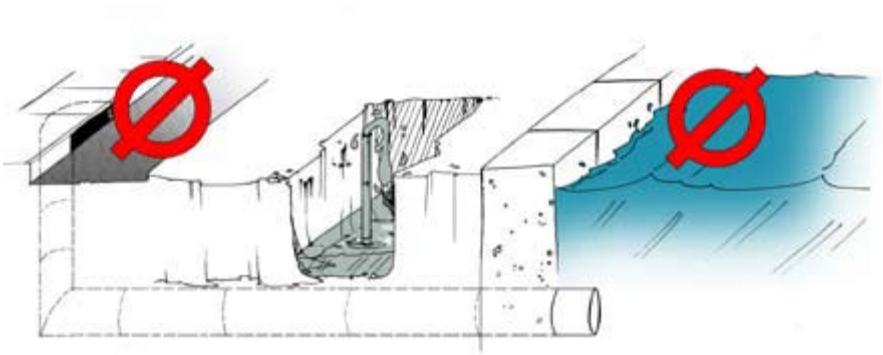
Oily soil may be inadvertently spread around the work area. Also, clean and oily soil could be mixed, increasing the volume of soil that must be disposed of.

Site Specific EHMPs with a Soil Management Plan approved by the HEER Office may be needed to prevent spreading oily soil (Appendix B.4). Separate clean from oily soil. Always cover the oily soil stockpile with plastic sheeting.

Oil might seep from the side of an excavation and cause oil sheen. It may be necessary to manage the oily water.

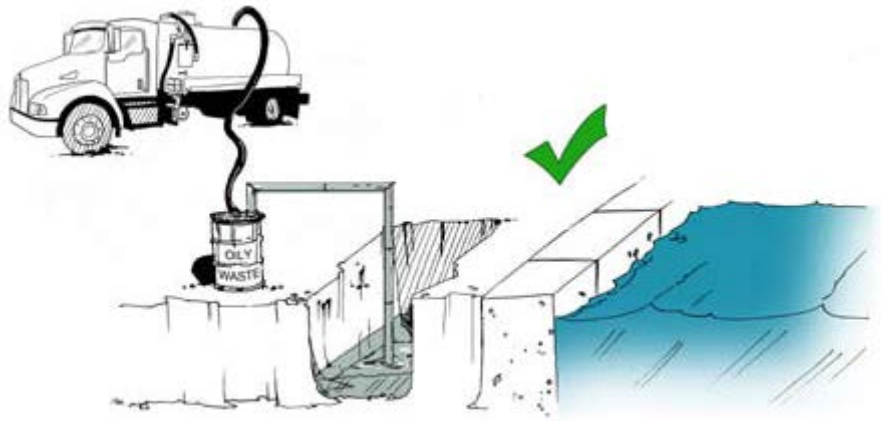
Oil or oily water extracted from excavations could be released and reach surface waters, including the ocean. Releasing any oil to surface waters, storm drains, or the harbor or the ocean is illegal.

Do not discharge extracted groundwater unless it meets the requirements of,
or is approved by the HEER Office and other applicable government agencies. Prepare and follow a **Groundwater Management Plan (Appendix B.5)** and obtain necessary permits or approvals from the HEER Office and other applicable government agencies to appropriately manage any oil and oily water that is encountered.



IN SOME INSTANCES, Oil Y WATER MUST BE REMOVED FROM EXCAVATIONS.
DO NOT DISCHARGE TO THE OCEAN OR STORM DRAINS

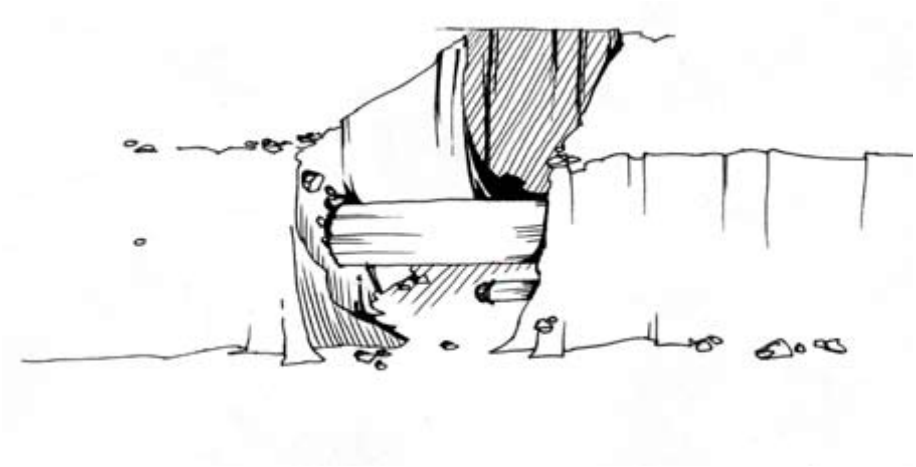
UPON OBTAINING APPLICABLE GOVERNMENT APPROVAL, OILY WATER CAN BE DISCHARGED INTO A NEWLY EXCAVATED PIT/TRENCH WITHIN THE IMPACTED AREA



UPON OBTAINING APPLICABLE GOVERNMENT APPROVAL, OILY WATER CAN BE HAULED FOR OFF-SITE DISPOSAL

Abandoned petroleum product pipelines may be discovered in excavations. If discovered, contact HEER Office. If you need to remove a segment of an abandoned pipeline, develop an Inactive Pipeline Removal Plan (Appendix B.3) tap, drain, cut and cap the pipeline in accordance with the plan. Obtain HEER Office approval if you undertake removal.

Exposed abandoned pipelines in the harbor area.



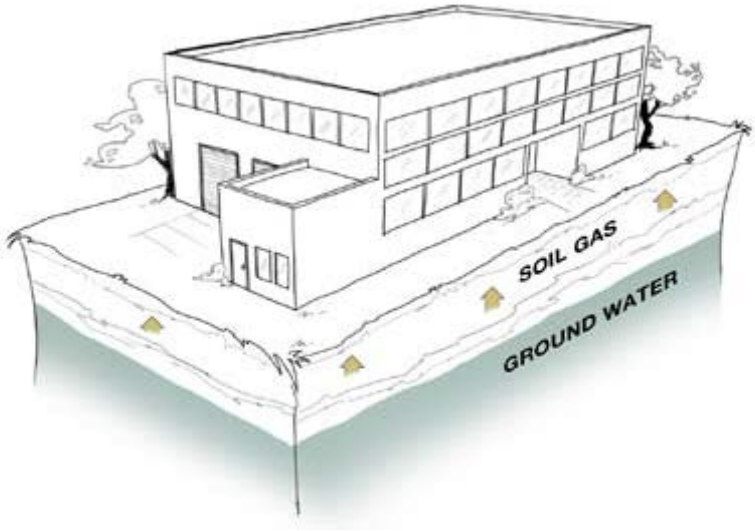
Exposed abandoned pipelines.

Workers tapping and draining abandoned pipelines.

Methane or other soil vapors can intrude into buildings. Vapor intrusion can occur when the floors are modified or major structural changes are made to buildings, resulting in the need for vapor barriers. New buildings may also need vapor barriers to meet current HEER Office requirements.

If you are modifying floors, building a new building, or making major structural changes to existing buildings, you may need to conduct a soil gas investigation and if appropriate, install control measures such as floor vapor barriers. This will require site specific oversight by HEER.

When modifying floors be alert for evidence of existing vapor barriers or vapor mitigation systems. Do not compromise systems without prior consultation with HEER.



Soil Vapor Figure.

Large-scale excavations may emit vapors and odors.

An **Air Monitoring Plan** may be required for large-scale excavations. Contact the HEER Office for site specific oversight to determine requirements and obtain any needed approvals.

Large-scale excavation in the harbor area.

Emergency responses to releases of oily soil or water.

Accidental releases of oil, oily soil, or oily water can occur during construction. Sudden releases can also occur should a water line or other utility fail. Develop a Construction Activities Release Response Plan (Appendix B-2) that describes how to deal with an accidental release of oil, oily soil, or oily water during construction.

Emergency responses to releases of oily soil or water.

HOW TO PROCEED

Planned Projects:
Determine whether your project falls under these guidelines. If you have any questions, contact The HEER Office. (See Contacts on page 14). If your project does fall under these guidelines complete the following steps:

• Notify the HEER Office as soon as possible about your project. HEER can provide information and support.

• Determine whether you need the support of an environmental consultant.

• You are encouraged to read the attached "Project Implementation Form" as it provides a useful checklist of the items you should consider. Filling out the form will help HEER determine how to support you. If necessary, have HEER assist you in completing the form.

• Consult with the HEER Office as needed.

• Determine what steps you should take to protect your workers and the environment during construction and have a qualified environmental consultant complete the needed hazard management plan forms. Specific types of plans are listed on pages 4 through 7. Sample plans that can be considered by your environmental consultant can be found at the back of these guidelines.

• Proceed with your Project.

• As appropriate, keep the HEER Office.

Unplanned Release Responses:

For any releases that are associated with your project you should act in accordance with your Construction Activities Release Response Plan. In the event you discover a release of oil, oily soil, or oily water within the property you are working on, please do the following:

- Review release reporting requirements (described in the HEER Technical Guidance Manual) and if the release is determined to be reportable, notify the HEER Office immediately; and

- Notify the landowner or tenant you are working for.

HEER Office Contact :

HEER Office: Steve Mow
Honolulu Harbor/Iwilei District Project Manager
e-mail: steve.mow@doh.hawaii.gov
phone: (808) 586-4249
The HEER web-site for Spill Reporting and Emergency Response is:
http://hawaii.gov/health/environmental/hazard/spill.html

DISCLAIMER:

The procedures described herein are not intended to be a comprehensive description of all the requirements (e.g. Federal, State and local) that landowners/tenants and others need to comply with while undertaking a construction project.

Filling out this form will help HEER determine what support to provide
.

PROJECT IMPLEMENTATION FORM:

Project:……
.
Project Owner:
.....

Location: .....

Project
Description.....
.....

Completed By (Name):
……...

Title/company:.....

Phone number: .....e-mail……

Expected Date of Construction: .....Date Form Completed:……

Are you considering land use other than Commercial or Industrial?:
YES…… NO ……..

IF YES,
EXPLAIN:……
……..

Are you considering Excavation below 3 Feet ?: YES…..NO…..

Do you need the support of an environmental company?: YES…..NO…..

If yes, who do you intend to use?.....
.....

Other Comments:.....
.....
.....
.....

Questions continued on next page

QUESTIONS	ANSWERS YES	NO	USEFULL REMARKS by HEER AND/OR TENNANT/CONTRACTOR
Have you reviewed the site background information available in the public record maintained by the HEER Office: • **Site Characterization Reports?** • **Environmental Hazard Management Plan?** • **Monitoring Reports?** • **Appropriate As-built Reports describing past cleanup and construction reports?**	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	**Describe reports and information sources that may be useful** ……..... …….. …….. …….. ……..
Have you determined if your project may result in exposure to oily soil or potentially harmful soil gases: • **During Construction?** • **At the completion of construction (of a new building for example)?**	☐ ☐	☐ ☐	**Further describe the hazards that may be encountered during construction.** …….. …….. ……..
Do you understand potential hazards to: • **Construction Workers?** • **Building Occupants?** • **Visitors or customers?** • **Ocean water, storm drains, etc.?** • **Do you understand the requirements and your responsibilities to prevent hazards from occurring?**	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	**Refer to Environmental Hazard Management Plan, as necessary, for more details.** …….. …….. …… ……..
Are you preparing appropriate plans or documents[2] as detailed in Appendix B: • **Site-specific Health and Safety Plan?** • **Free Product Management Plan** • **Construction Activities Release Response Plan?** • **Inactive Pipeline Removal Plan?** • **Air Monitoring Plan?** • **Soil Management Plan?** • **Groundwater Management Plan?**	☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐	**What HEER support do you need in preparing the Plans?** …… …… …… …… ……

QUESTIONS	**ANSWERS** **YES NO**	**USEFULL REMARKS by HEER AND/OR TENNANT/CONTRACTOR**
Are you undertaking additional environmental investigations for the project planning or implementation purposes: • **Soil and groundwater?** • **Soil gas?**	☐ ☐ ☐ ☐	**What HEER support do you need in undertaking investigations?** **……** **……**
Based on soil gas investigation results, are you preparing designs for soil gas controls for buildings?	☐ ☐	**What HEER support do you need in preparing designs?**
Are you complying with: • **Landowner's environmental requirements? (These may be included in lease agreements or other legal documents)**	☐ ☐	**Remarks** **……** **……** **……**
Are the construction workers that may encounter contaminated soil or groundwater 40 hour HAZWOPER trained?	☐ ☐	**Remarks** **……**

1 Either NO or NOT NEEDED.
2 Routine air monitoring is included in the Health and Safety Plan. This plan is intended for large-scale excavations (i.e., down to five feet or deeper and over an area exceeding one half acre, or as required by the HEER Office).
3 See sample plans at the back of these guidelines.

What is HEER's role?

For Planned Projects, HEER may be able to:

- Provide oversight and technical support for dealing with oil, oily soil and water, and soil vapors and implementing the Environmental Hazard Management Plan.

- Suggest reimbursement of reasonable incremental environmental costs from known responsible parties.

- Develop guidelines for consideration when implementing the Environmental Hazard Management Plan.

- Monitor the effectiveness of the EHMP in properly dealing with environmental issues during subsurface construction. This may require HEER to access monitoring points on your parcel.

In the event there is an accidental release of oil, oily soil and oily water, HEER may be able to:

- Participate as a member of the emergency response team.

- Assist in providing the appropriate method(s) for the proper management of oil, oily soil and oily water.

What type of HEER technical and logistical support can I expect?

- HEER's Project Manager is available to provide general guidance on how to comply with the Environmental Hazard Management Plan and to assist with the logistics of addressing oil, oily soil and water, and soil vapors.

- HEER will provide sample plans that can be considered by your environmental consultant in preparing plans that may be required for your specific project.

- HEER can help identify, environmental companies that can perform support services. The landowner or tenant and utilities companies are responsible for directing the work of the professional.

What are the responsibilities of the Landowners

The landowner is responsible for the following:

• Complying with applicable Federal, State and local laws and regulations.

- Evaluate and identify if the historical activities at the site may have resulted in the release of possible non-petroleum and/or petroleum COCs

- Verify that the site has been adequately characterized with respect to the identification of the nature and extent of contamination.

- Identify any site conditionsrequiring appropriate protection of human health and the environment that need to be added plan template of this EHMP

• Complying with the requirements of the Environmental Hazard Management Plan and considering these guidelines.

• Communicating the requirements of the Environmental Hazard Management Plan and these guidelines to whoever is undertaking construction work (e.g., excavation, building construction, etc.).

• Notifying HEER about construction project plans in the Iwilei district Mauka Area, contacting HEER for support to help address requirements of the Environmental Hazard Management Plan and cooperating with HEER by providing timely information and site access.

• Ensuring appropriate hazard management plans are prepared and implemented and providing appropriate documentation to the HEER Office.

• Keeping the HEER Office informed of construction work.

• Notifying the HEER Office of any accidental release of oil, oily soil or oily water.

What is the Tenant's responsibility?

Any tenant undertaking excavation, building re-construction, or new construction should coordinate with the landowner, comply with applicable Federal, State and local laws and regulations, and ensure that the Environmental Hazard Management Plan is adhered to and these guidelines are considered.

What are the responsibilities of the Utilities Companies and Construction Contractor's responsibility?

The Utilities Companies and Construction Contractors undertaking excavation, building reconstruction or new construction work should (as appropriate to the size and nature of each project) operate under the appropriate Health and Safety Plans,implement air monitoring, and manage soil and groundwater in accordance with the Environmental Hazard Management Plan and consider these guidelines. Utilities Companies and Contractors need to identify tasks/actions not already covered in the plan templates included in the EHMP. The Contractor should request that the landowner make appropriate changes to the plan(s) prior to commencement of site work.

CONTACTS :

HEER Office: Steve Mow
Honolulu Harbor/Iwilei District Project Manager
e-mail: steve.mow@doh.hawaii.gov
phone: (808) 586-4249
The HEER web-site for Spill Reporting and Emergency Response is:
http://hawaii.gov/health/environmental/hazard/spill.html

Environmental STATUTES AND GUIDELINES

The following environmental statutes, regulations, and guidance documents, or any recent updates to these, may apply:

- The Hawaii Environmental Response Law (Hawaii Revised Statutes Chapter 128D) and the State Contingency Plan (HAR 11 451 1 through 11 451 24): Outlines the legal requirements for protecting human health and the environment from releases or threatened releases of hazardous substances, including oil.

- The Hazard Evaluation and Emergency Response Office Technical Guidance Manual for implementation of the State Contingency Plan (Interim Final, June 21, 2009): Provides many helpful guidelines and procedures to comply with the Hawaii Environmental Response Law and the State Contingency Plan.

- Hawaii Water Quality Standards (HAR Title 11, Chapter 54): Sets standards for water quality discharge.

- Hawaii Ambient Air Quality Standards (HAR Title 11, Chapter 59): Sets air quality standards. Specific standards may apply during soil excavation, remediation and construction, or other activities.

• Hawaii Occupational Safety and Health Standards (HAR Title 12, Chapter 99): Sets health and safety requirements during remedial work and construction.

In addition to the Technical Guidance Manual, current technical guidance issued by the HEER Office to define how it can enforce the requirements of the Environmental Hazard Management Plan includes the following (Contact the HEER Office if you are interested in the latest version of these documents):

• Screening Environmental Hazards at Sites with Contaminated Soil and Groundwater (December 2011).
• Guidance Fact Sheet for use when Petroleum Contamination is Encountered During Subsurface Soil Excavation (Interim Final, November 2008).
• Long-term Management of Petroleum Contaminated Soil and Groundwater (June 2007).

- EAL Surfer, Fall 2011.

Appendix B

Reporting Forms

B.1 Written Follow-Up Notification Form
B.2 Health and Safety Plan-Oil Hazards
B.3 Construction Activities Release Response Plan
B.4 Inactive Pipeline Removal Plan
B.5 Soil Management Plan
B.6 Groundwater Management Plan
B.7 Free Product Management Plan
B.8 Vapor Management Plan
B.9 Storm Water Management Plan
B.10 Contingency Plans

B.1
Hawaii Hazardous Substance Written Follow-Up Notification Form

PLEASE PROVIDE THE FOLLOWING INFORMATION

Incident Case No.: — — — — — — — — —

Contact Information

Caller's Information

Name: _____

Address: — — — — — — — —

Hazardous Substance Released:

Name (trade and chemical) of the hazardous substance which has been released: _____

_____

Chemical Abstract Service (CAS) Number (if applicable): _____

Approximate quantity of the hazardous substance released: _____

Incident Information

Location of the release: _____

_____

A brief description of the release: _____

_____

Media into which the release occurred or is likely to occur (Indicate all those that apply):

O Air O Soil O Groundwater O Concrete O Asphalt O Stream O Ocean O Other

Cause of the release: _____

_____

Date of the release: _____

Time of the release: _____

Duration of the release: _____

Date: _____

Time that the person in charge of the construction where the release occurred obtained knowledge of release:

_____

Source of the release: _____

_____

Response Information

Response measures taken thus far: _____

_____

Any appropriate information relating to the ability of the owner or operator of the facility or vessel where the release has occurred to pay for or perform any proposed or required response actions:

_____

_____

The names of other federal, state, or local government agencies that have been notified of the release: _____

_____

Health Information

Known or anticipated acute health risks: _____

_____

Known or anticipated chronic health risks: _____ Advice

_____

regarding medical attention necessary for exposed individuals: _____ Potential

_____

impacts to public health or welfare: _____ Potential impacts

_____

to the environment: _____

_____

"I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the submitted info is true accurate and complete."

Signature: _____ Date----------

Printed Name: _____

Title: _____

Company: _____

Appendix B.2

Prepared by	HEALTH AND SAFETY PLAN - OIL HAZARDS		
Organization	Environmental Hazard Management Plan Iwilei District Mauka		
Name: _____			
Signature:	Version:	Reference:	Date:

Project Name: _____

Project Location: _____

Parties may use this sample as a basis for preparing their own site-specific plan.

REVISE THIS SAMPLE PLAN BY:

1. *Completing Table 2 with names and telephone numbers.*
2. *Attaching a Figure 1 map to show the location of the work site and the nearest medical facilities and hospitals. Alternatively, make sure the on-site workers know where the closest medical facilities are.*
3. *Reviewing the Occupational Safety and Health Administration (OSHA) regulations to make sure the hazard levels described in Table 1 are still current.*
4. *Including any additional specific instructions.*

IMPLEMENT THIS PLAN BY:

5. *Warning on-site workers that they may encounter oil, oily water and oil-impacted soil in below ground excavations.*
6. *Making the on-site workers aware of the need for proper safety procedures and familiarizing them with the contents of this plan.*
7. *Making sure a copy of this completed plan is located at the construction site.*

NOTE: IF YOU ARE DEALING WITH HAZARDOUS CHEMICALS OTHER THAN OIL, OILY WATER AND OIL-IMPACTED SOIL. YOU MAY NEED ADDITIONAL HAZARDOUS CHEMICAL RESPONSE PLANS AND PROCEDURES THAT ARE NOT COVERED IN THIS PLAN.

DELETE THIS BOX AFTER COMPLETING This PLAN.

1. INTRODUCTION

Oil, oily water and oil-impacted soil may be encountered during excavation projects. This Health and Safety Plan (HSP) provides information on the potential hazards that may be encountered and describes what protective measures and monitoring needs to be conducted, and also provides emergency contact information.

2. WORKER AWARENESS

- On-site workers who may be exposed to oil, oily water and oil-impacted soil should have the appropriate and current level of Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) (29 CFR 1910.120) training.

- A daily on-site tailgate safety meeting should be conducted. These meetings should include a discussion of the day's work and an analysis of hazards that may be encountered.
- If site or work conditions change, this HSP may have to be amended accordingly. Apprise on-site workers of any change

3. SITE CONTROL AND GENERAL HEALTH AND SAFETY REQUIREMENTS

- Minimize exposure of workers and others to potential hazards by restricting workplace access.
- Do not smoke, eat, or drink during and after entering the work zone. Conduct these activities upwind au outside of the work zone after first washing hands.
- Avoid skin contact with oil, oily water and oil-impacted soil and avoid inhalation of dust particles.

4. WORKSPACE AIR MONITORING AND ACTION THRESHOLDS

- Monitor workspace air conditions during work activities to verify that safe conditions are maintained by comparing measurements to the action levels in Table 1.
- If action levels are exceeded, take the actions listed in Table 1 or others, if necessary.

Use the field monitoring devices listed in Table I, or equivalent, to monitor workspace air conditions.

Table 1: Action Levels

Contaminant	Medium/Hazard	Monitoring Instrument (See HEER, 2009 for more information)	Monitoring Instructions	Action Levels and Applicable Actions (See OSHA for more information)
Methane	Air/Flammability	Combustible gas indicator	Collect readings in excavations while work is ongoing to determine if flammable vapors are present.	<10% Lower Explosive Limit (LEL): No explosive hazard. Proceed with caution. >10% LEL: Potential explosion hazard Exit area immediately. Contact Health and Safety Manager (Table 2) for further direction.
TPHgasoline TPH diesel TPHresidual Benzene Toluene Xylenes Naphthalene	Air/Inhalation	Photoionization detector(PID) with10.6 eV Lamp	Monitor breathing zone while work is ongoing. Compare action thresholds to time averaged breathing zone measurements.	<0.5 ppmv: Proceed with caution. 0.5 to 10 ppmv: Level D, use benzene- specific detector (see below). >10 ppmv: Exit area and contact Health and Safety Manager (Table 2) for further direction.
		Draeger Benzene-specific detector tube (if necessary; see above)	Deploy benzene specific detector tube for benzene if PID levels exceed 0.5 ppmv.	<0.5 ppmv: Level D PPE >0.5 ppmv: Exit area and consult Health and Safety Manger (Table 2) for further direction.
	Soil(dust)/ Inhalation	None (visual) – inspect workspace air for fugitive dust caused by work activities or high winds.		Evacuate area if visible fugitive dust is observed and cannot be readily mitigated. Contact Health and Safety Manger (Table 2) for further direction.

Acute exposure to elevated concentrations of these constituents listed in Table I may cause the following symptoms, amongst others:

- **Abnormal eye and nose irritation**
- **Headache**
- **Giddiness**
- **Nausea**
- **Abnormal fatigue**

In the event workers experience any of the above symptoms while conducting work involving exposure to oil, oily water and oil-impacted soil, they should stop work, leave the work area, and consult the Health and Safety Manager (Table 2).

5. PROTECTIVE CLOTHING

A minimum of OSHA Level D Personal Protective Equipment (PPE) should be used for activities involving disturbance, movement, sampling, or management of oil, oily water and oil-impacted soil. Level D PPE consists of the following:

- **Safety Glasses**
- **Hard hat**
- **Surgical (rubber or nitrile) gloves**
- **Coveralls or full-length pants**
- **Boots with chemical resistant steel toe and shank**

Additional PPE may be required in response to project-specific hazards or unusual conditions, such as workers who could potentially come into close contact with oil seeping from soils or floating on groundwater.

6. EMERGENCY CONTACTS

Table 2: Emergency Contacts

Organization	Purpose	Phone
Contractor-designated Health and Safety Manager Name:	Hazardous work conditions	(...) --- -----
For emergencies: Fire, Ambulance, or Police	Fire danger or workplace injury	911

7. REFERENCES

State of Hawaii Department of Health (HEER), 2009. *Technical Guidance Manual for the Implementation of the Hawai'i State Contingency Plan, Interim Final.* June 21.

Occupational Safety and Health Administration (OSHA), 29 CFR Sections 1910 and 1915.12 (b)(3).

Figure 1

Site and Hospital Map

Insert appropriate map

Appendix B.3

Prepared by: **Organization:**_____ **Name:** _____ **Signature:**	**CONSTRUCTION ACTIVITIES RELEASE RESPONSE PLAN** **Environmental Hazard Management Plan** **Iwilei District Mauka** **Version:** **Reference:** **Date:**

Project Name:_____

Project Location:_____

Parties may use this sample as a basis for preparing their own site-specific plan.

REVISE THIS SAMPLE PLAN BY:

1. *Completing Tables 1 through 3.*
2. *Checking to make sure the Section 7.1 notification requirements are current.*
3. *Including any additional specific instructions.*
4. *Submit a copy of this form to HEER Office if contamination is encountered during subsurface activities.*

IMPLEMENT THIS PLAN BY:

5. *Warning on-site workers that they may encounter oil, oily water and oil-impacted soil in below ground* ***excavations.***
6. *Making the on-site workers aware of proper response procedures and familiarizing them with the contents of this plan.*
7. *Making sure a copy of the completed plan is located at the construction site.*
8. *Ensuring on-site workers are familiar with surface drainage patterns, presence and flow directions of storm drains that could direct releases to harbor waters, locations of storm drain outlets to the harbor that may need to be protected with oil booms or other measures, potential locations for emergency storage tanks, etc. Obtain further information on these conditions from HEER, if necessary.*
9. Additional details for completing this form can be found in sections 8 and 9 of the EHMP.

   NOTE: IF YOU ARE DEALING WITH HAZARDOUS CHEMICALS OTHER THAN OIL, OILY WATER AND OIL-IMPACTED SOIL, YOU MAY NEED ADDITIONAL HAZARDOUS CHEMICAL RESPONSE PLANS AND PROCEDURES THAT ARE NOT COVERED IN THIS PLAN

DELETE THIS BOX AFTER COMPLETING THIS PLAN

1. INTRODUCTION

This Construction Activities Release Response Plan (Plan) describes what to do in the event of an unplanned or accidental release of oil, oily water or oil-impacted soil.

On-site workers need to minimize the possibility of spills and releases of oil, oily water and oil-impacted soil during excavation by;

- familiarizing themselves with the site conditions;
- implementing appropriate **Health and Safety, Soil** and **Groundwater Management Plans;** and
- at all times, being prepared to encounter and manage oil, oily water and oil-impacted soils.

Nevertheless, there is the potential that uncontrolled releases or spills of oil, oily water and oil-impacted soil can occur. Such releases can pose a hazard to human health and/or the environment and require an emergency response and/or regulatory agency notification. Human health concerns include human contact with oil, oily water and oil-impacted soil, explosive or fire hazards, and disruptions to the normal operations in the area around the construction site, particularly disruptions to traffic flow. Environmental impacts of concern are the discharge"' of oil or oily water to the harbor water either directly or via storm drains.

The responses described here are applicable to incidents that may occur during construction activities and that can be controlled by the on-site workers undertaking the construction work. **However, in the event parties undertaking the work are not able to deal with the release, then the Incident Action Plan (lAP) for the Hazard Management Areas should be immediately activated.** The lAP can be implemented by notifying the State HEER Office Emergency Response Team (See first entry in Table 3).

2. TYPICAL RELEASES

The releases described below can occur during the repair or replacement of deep[1] utilities (water, sewer, electric, and fuel and communications lines) and new construction of buildings and buried utilities that require excavation and the removal of oil, oily water and oil-impacted soil.

Small incidental releases, that do not spread and that do not interfere with construction activities should be cleaned up as part of the normal activities of the construction team.

For the following types of more significant release, respond immediately as outlined in this plan.

- Surface spillage of oil, oily water and oil-impacted soil from excavations that actually spills, or threatens to spill, beyond the boundaries of the construction site.
- Breakages or other malfunctions of pipelines, storage facilities, groundwater treatment systems, or re-infiltration galleries/trenches used for below ground construction dewatering that continue to release oil or oily water.
- Oil-impacted soils temporarily stockpiled on the ground surface that are eroded or washed away by rain and which continue to spread under the action of rain or other causes such as water from a water supply pipeline break.
- Spillage outside of the construction site during the handling and disposing of oil, oily water and oil-impacted soils removed from excavations.
- Release of oil from abandoned or active oil pipelines encountered and damaged during the construction activities that threaten to, or actually, spill out of the excavation.

3. RELEASE RESPONSE TEAM

In the event of a release, the following team will determine the necessary response, make proper notifications and perform the response.

Table 1: Contractor Release Response Team

Name	Phone
Internal Contacts	
Contractor-designated Release Response Coordinator **Name:**	(...) --- -----
Contractor-designated Health and Safety Manager **Name:**	(...) --- -----
On-site Construction Superintendent **Name:**	(...) --- -----
Landowner Contact **Name:**	(...) --- -----

4. RESPONSE PROCEDURES

4.1 General

The first priority of response action is protection of human health. The second priority is to ensure that there is no impact to the harbor water, or impact to the environment. **Immediate action is required.** Do not delay prudent **response action.**

In the event of a release:

- Notify the response coordinator (Table 1).
- Take immediate action to contain the release (do not wait if Release Response Coordinator is unavailable).
- In dangerous circumstances, give notice to evacuate the work area and notify persons in Table 1. In the event no persons listed in Table 1 are available obtain assistance as necessary by contacting appropriate persons listed on Table 3.

Other general responses include:

- Use appropriate personal protective equipment.
- Eliminate or contain the source of the release.
- Put up signs or caution tape to let other workers know that there was a release and to stay away.
- Place barriers or absorbents around the release to prevent contamination from spreading.
- Secure impacted soil stockpiles by covering, repairing or constructing containment berms around the stockpile, etc.
- Remove released material and clean all surfaces.
- Dispose of the released material as appropriate (see **Soil and Groundwater Management Plan)**

- Monitor air quality in the location of the release to assess the vapor hazards as defined in the **Health and Safety Plan.** Take appropriate action if hazardous conditions exist as required by the **Health and Safety Plan.**
- In the event the release takes place indoors, perform the following:

  Close off vents and air ducts leading from the release area to other parts of the building.

  Open windows and doors to the outside so that vapors can escape and safely dissipate in the outdoor air.
- In the event there is electrical equipment operating in the vicinity of the release an hydrocarbon vapo' are detected near the explosivity limits (see Health and Safety Plan):
- Tum off the equipment, preferably at the main breaker, to avoid sparking.
- If necessary, protect nearby storm drains by use of adsorbent, booms or drain covers; and protect potentially affected harbor water and storm drain outlets to the harbor by the placement of floating oil booms on the water.

5. RESPONSE EQUIPMENT AND MATERIALS

In order to deal with either the incidental or more significant releases, the equipment and materials listed in Table 2 are available either at the construction site or are stored nearby.

Table 2: Response Equipment and Materials

Equipment and Materials	Purpose	Source of Equipment and Materials
Spill kits	Cleanup of small releases to land	
Trucks and loading equipment	Excavating and transporting oil-impacted soil	
Steel roll-off bins	Temporary storage of oil-impacted soil pending waste profiling or on-site relocation	
Pumps, piping, storage tanks	Transfer of impacted water and oil to on-site tanks or approved disposal trenches	
Plastic sheeting	Covering and securing soil stockpiles	
Hay bales, silt fences, wattles	Erosion control and containment materials	
Oil absorbent pads	Absorption and containment of oil or fluids released to land or within excavations	
Sand bags or equivalent	Construct a small dike along areas of the release to prevent releases from spreading or entering storm drains.	
Floating oil booms	Absorption and containment of oils released to harbor waters	

Sediment and oil filters	Connected to the end of an excavation dewatering hose, these filter out sediment and oil	

6. NOTIFICATION INFORMATION

If the release meets the Section 7.I notification requirements:

- Notify the person in the first entry in Table 3.
- If utilities are involved, notify the affected utility in Table 3.
- Notify the landowner in Table 2.

Table 3: Other Potential Contacts

Organization	Purpose	Phone
State Agency Contacts		
Hawaii State Emergency Response Commission/the HEER Office	Any required release reporting	(808) 586-4249 (808) 247-2191 (after hours)
Fire, Ambulance, or Police	Required in the event of fire danger or injury	911
Underground Utility Contacts		
Gas Utility Name:	Notification of any gas utility damage or break	(...) --- -----
Electric Utility Name:	Notification of any electric utility damage or break	(...) --- -----
Water Utility Name:	Notification of any water utility damage or break	(...) --- -----
Landowner Contact		
Landowner Name:	Notification of any significant release	(...) --- -----
Federal Contact U.S. Coast Guard Name: _____	Notification of any sheens on harbor waters	(...) --- -----

7. RELEASE COMMUNICATIONS AND AGENCY REPORTING REQUIREMENTS

7.1 Circumstances under which agency notification is required

Pursuant to Title II, Chapter 451, Hawaii Administrative Rules § 11-451-7, releases meeting any of the following criteria must be reported to the first agency contact appearing in Table 2 within 24 hours of first occurrence or observance.

- Any release causing surface water to exhibit sheen.
- Any release of petroleum or hazardous substances to navigable waters (e.g. the ocean and local canals and streams).
- Any release of oil to the environment greater than 25 gallons.
- Any release of oil less than 25 gallons that is not cleaned up within 72 hours.
- In addition, any sheens or oil or oily water releases to storm drains that have open connections to the harbor, even if contained within project boundaries and not yet impacting the harbor water.
- Sheen and oil observed in the harbor or in a storm drain should be reported to the U.S. Coast Guard and HEER Office in Table 3.
- Releases to other waters of the United States require reporting to the U.S. Coast Guard.

Report the following information to agencies when notifying of a reportable release:

- Name of the person making the notification.
- Location of the release.
- Time and date of discovery.
- Characteristics of the oil observed (color, viscosity, etc.)
- How the release occurred.
- Removal actions taken and volume removed.
- Whether the release poses an immediate threat to human health or the environment.
- Other agencies that have been notified of the spill.
- Known injuries resulting from the spill.

Provide details of actions taken consistent with Section 11 to deal with Construction Activities Release Response.

Appendix B.4

Prepared by: Organization:_____ Name: _____ Signature:_____	INACTIVE Petroleum PIPELINE Management PLAN Environmental Hazard Management Plan Iwilei District Mauka		
	Version:_____	Reference:_____	Date: _____

Project Name:_____

Project Location:_____

Parties may use this sample as a basis for preparing their own site-specific plan.

REVISE THIS SAMPLE PLAN BY:

1. *Reviewing the requirements of this sample plan to ensure the construction workers can comply with its requirements and modifying the plan, if necessary.*

IMPLEMENT TIDS PLAN BY:

2. *Making sure on-site workers are aware that there is a plan for dealing with inactive pipelines.*
3. *Making sure a copy of the completed plan is located at the construction site.*
4. *Additional guidance for completing this form can be found in Section11 of the EHMP*
5. *Keep a copy for your records and sent a copy to the HEER Office.*

DELETE THIS BOX AFTER COMPLETING THIS PLAN.

1. INTRODUCTION

Inactive pipelines may be encountered during excavation (activities) within the Northern Iwilei Area. This Plan provides procedures and guidelines for dealing with these inactive pipelines should they be encountered.

2. PREPARATORY WORK

Prior to starting any belowground construction work, undertake the following:

- Contact Hawaii One Call at (866) 423-7287 to notify them of proposed excavation activities. Underground facilities owners must be notified to mark any of their underground utilities near the proposed excavation.
- Conduct an underground utility survey using geophysical surveying equipment (e.g., toning/metal detection, ground penetrating radar) before excavation begins.

In addition to the above, identify the location of any inactive pipelines that may not be included in the above referenced informationon. To do this:

- Review the most recent available reports including the Environmental Hazard Management Plan (EHMP) to determine if pipelines could be present in the work area. Contact the Hazard Evaluation and Emergency Response (HEER) Office at (808) 586-4249 for assistance in obtaining the most current pipeline information.

3. NOTIFICATION REQUIREMENTS

If unanticipated inactive pipelines are discovered during construction activities, notify as follows:

- Contact the HEER Office via telephone within 24 hours after encountering the unanticipated petroleum pipelines.

4. PIPELINE TAPPING AND DRAINING

Inactive piping may contain residual petroleum product and may be under pressure. This could present a possible safety and spill hazard in the event the line is cut without first taking appropriate measures. If, through the notification process described in Section 3, the nature and use of the piping cannot be determined, tapping may be required to determine if fluids are present, or if the piping is pressurized, and to provide a means to drain residual product.

If you are performing the work, follow the procedures in Sections 5.0 through 8.0 below.

5. PIPELINE CUTIING AND CAPPING

Follow these general procedures for cutting and capping the pipelines:

- Tap the pipeline using non-sparking tools and drain the contents of the pipeline to the extent practical and possible, prior to cutting.
- Cover the area below and adjacent to the cutting location with plastic sheeting and absorbent material and place a catch basin beneath the location of the cut. Use these devices to collect residual fluid that may drain from the pipeline during and after cutting.
- Use precautionary measures to prevent explosive hazards. For example, cut the pipeline using non-sparking tools and remove the pipeline segment.
- Cap the cut-off ends of remaining pipeline segments to prevent any potential future leakage. Suitable capping methods include concrete plugs, blind flanges, cement plugs with rebar, or other methods that do not involve hot welding. Hot work including welding, is not considered appropriate due to the potentially explosive nature of SPH and associated vapors.
    - Consider the need to have a vacuum truck on standby during pipeline cutting and capping.

6. PRODUCT SAMPLING

Sample the residual product that has been drained and collected during this process and have it analyzed by a laboratory to enable proper profiling and off-site disposal.

7. INVESTIGATION-DERIVED WASTE DISPOSAL

Dispose of petroleum and other wastes in accordance with applicable laws and regulations.

8. HEALTH AND SAFETY

Comply with the following Health and Safety measures whether or not they are included in the **Health and Safety Plan.**

- Personnel conducting post-discovery work on abandoned petroleum pipelines should have current 40/24-hour Hazardous Waste Operations and Emergency Response training and air-purifying respirator fit test certifications. At least one on-site worker with the potential for exposure to chemical or physical hazards should have basic first aid and CPR training.
- Select air-purifying respirators based on the type of contaminant encountered (i.e., petroleum).
- Conduct air monitoring to monitor potential hazardous vapors and worker exposure. If petroleum is encountered, air monitoring typically includes organic vapors for potential inhalation hazards, and methane and oxygen/combustible gas indicator for potential explosive hazards.

9. DOCUMENTATION ACTIVITIES

Provide HEER with the following information:

- A description of where the pipeline was encountered (GPS coordinates or location relative to prominent landmarks), number and lineal footage of pipelines encountered, size of pipelines, depth of pipelines, condition of pipelines, and actions taken following pipeline discovery, such as cutting or petroleum removal.
- A location map that shows where the pipeline was encountered. The map must include a north arrow and a scale.
- Photographs of the exposed portion of the pipeline in the excavation.
    - Analytical laboratory reports for product recovered from the pipeline.

Provide Details of pipeline removal activities consistent with Section 12 of the EHMP.

-

Appendix B.5

Prepared by: **Organization:**_____ **Name:** _____ **Signature:**_____	**SOIL MANAGEMENT PLAN** **Environmental Hazard Management Plan** Iwilei District Mauka		
	Version:_____	**Reference:**_____	**Date:** _____

Project Name:_____

Project Location:_____

Parties may use this sample as a basis for preparing their own site-specific plan.

REVISE THIS SAMPLE PLAN BY:

1. *Reviewing the requirements of this sample plan to ensure the construction worker can comply with its requirements and modifying the plan, if necessary.*

IMPLEMENT THIS PLAN BY:

2. *Making sure on-site workers are aware of this plan and that they follow this plan.*
3. *Making sure a copy of the completed plan is located at the construction site.*
4. *Additional guidance for completing this form can be found in Section11 of the EHMP*
5. *Keep a copy for your records and sent a copy to the HEER Office.*

DELETE THIS BOX AFTER COMPLETING THIS PLAN.

1. INTRODUCTION

These procedures are intended to protect construction workers, the environment, and tenants in buildings from contact with oil-impacted soil where such soils are known to exist, or where people may potentially be exposed. They also provide requirements for excavating, stockpiling, re-using and disposing of oil-impacted soils.

2. SOIL EXCAVATION AND STOCKPILING

If you encounter oil or oil-impacted soils, do the following:

- If the amount of excavated soil is less than one cubic yard (equivalent to about three 55-gallon drums), it can be replaced in the excavation upon completion of the work without further evaluation.
- For excavation volumes greater than one cubic yard, segregate un-impacted soil from the oil-impacted soil and stockpile these separately.
- Have a qualified environmental professional direct any necessary collection of soil samples, direct testing of the samples in the field or at an off-site laboratory, and direct segregation of oil-impacted soils from non-impacted soils.
- Oil-impacted stockpiled soils should be placed in containers (such as 20-yard steel roll-off bins, super sacks, tri wall boxes or drums) or lined containment areas (i.e., underlain by plastic sheeting). Drain any liquid-phase oil or fuel product, associated with the soil prior to stockpiling. Remove and properly dispose of any oil observed in the excavation.
- Cover stockpiles of impacted soils and containerized soil with plastic sheeting or tarps.
- Soil must be stockpiled near the project area prior to reuse.

3. RE-USE OF EXCAVATED SOILS

This plan provides general guidelines. For more details, consult Section XXX of this Document. Un-impacted soils can be used as backfill.

Excavated oil-impacted soils can only be used as backfill if they meets the following requirements:

- Oil-impacted soil can be used as backfill provided it does not contain any free oil, oil sheens, oil stains or total petroleum hydrocarbon (TPH) concentrations greater than 5000 ppm (parts per million).

  Measure the TPH concentration either by an off-site laboratory, or through use of a field test such as the paper towel or glove test describe in Section 13.

- Excavated soils can also be used to backfill other excavations located within the proximity of the excavations with the approval of HEER Office. While backfilling, the more highly impacted soil should be placed in the bottom of the excavation and the cleanest soil at the top.
- In the event the surface will not be paved, at least one foot of non-impacted soil must be placed as the final backfill.

In some cases oil samples and analyses may need to be performed to determine whether soils are suitable and when they can be used as backfill. The HEER Office will determine when sampling is required. If necessary, the following number of samples should be collected:

Less than 20 cubic yards: 1 sample.

Larger than 20 cubic yards: 1 sample for each 20 cubic yards up to the first 100 cubic yards.

Larger than 100 cubic yards of soil: 1 sample for every additional 100 cubic yards.

For further description of soil stockpile characterization, review the current HEER Office guidelines at *www.hawaiidoh.org/tgm.aspx*.

4. OFFSITE DISPOSAL

If you intend to transport the excavated soil to an off-site disposal facility, confirm with the disposal facility the number of soil samples needed for laboratory testing, as well as the standards for disposal.

5. EQUIPMENT DECONTAMINATION

Equipment used in contaminated areas must be decontaminated before use *in* non-contaminated areas. All liquid and solid waste resulting from on-site decontamination must be collected and appropriately disposed of.

6. NOTIFICATIONS AND APPROVALS

The HEER Office should be notified in the event oil-impacted soils arc excavated, segregated and either backfilled or disposed of off-site. In some instances the HEER Office may require that you obtain its approval for how excavated soils are managed, backfilled or disposed of.

Excavated oil-impacted soils can only be used as backfill if they meets the following requirements:

- Excavated soils can also be used to backfill other excavations located within the proximity of the excavations with the approval of HEER Office. While backfilling, the more highly impacted soil should be placed in the bottom of the excavation and the cleanest soil at the top.
- In the event the surface will not be paved, at least one foot of non-impacted soil must be placed as the fin al backfill.

In some cases oil samples and analyses may need to be performed to determine whether soils are suitable and when they can be used as backfill. The HEER Office will determine when sampling is required. If necessary, the following number of samples should be collected:

Less than 20 cubic yards: 1 sample.

Larger than 20 cubic yards: 1 sample for each 20 cubic yards up to the first 100 cubic yards.

Larger than 100 cubic yards of soil: 1 sample for every additional 100 cubic yards.

For further description of soil stockpile characterization, review the current HEER Office guidelines at *www.hawaiidoh.org/tgm.aspx*.

4. OFFSITE DISPOSAL

If you intend to transport the excavated soil to an off-site disposal facility, confirm with the disposal facility the number of soil samples needed for laboratory testing, as well as the standards for disposal.

5. EQUIPMENT DECONTAMINATION

Equipment used in contaminated areas must be decontaminated before use *in* non-contaminated areas. All liquid and solid waste resulting from on-site decontamination must be collected and appropriately disposed of.

6. NOTIFICATIONS AND APPROVALS

The HEER Office should be notified in the event oil-impacted soils arc excavated, segregated and either backfilled or disposed of off-site. In some instances the HEER Office may require that you obtain its approval for how excavated soils are managed, backfilled or disposed of.

7 Provide 7.Provide details of how PCS was handled consistent with Section 13 of the EHMP

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Prepared by: **Organization:**_____ **Name:**_____ **Signature:**_____	**GROUNDWATER MANAGEMENT PLAN** **Environmental Hazard Management Plan** **Iwilei Distric Mauka**		
	Version:_____	**Reference:**_____	**Date:** _____

Project Name: _____

Project Location:_____

REVISE THIS SAMPLE PLAN BY:

1. *If you intend to place excavated groundwater back into an excavation or trench, contacting the Hazard Evaluation and Emergency Response (HEER) Office at (808) 586-4249 to obtain an appropriate disposal location.*
2. *If you intend to discharge extracted water to local surfaces (including storm drains), contacting the HEER Office to obtain all applicable permits and approvals ahead of time because authorizations could take weeks or months,*
3. *If you intend to discharge extracted water to a local sanitary sewer, contacting the City and County for approval to dispose into a sanitary sewer. Water discharged to a sanitary sewer or storm drain may be required to meet Water Quality Standards. These standards are contained in the Environmental Hazard Management Plan (EHMP) and are available from the HEER Office.*
4. *Reviewing the requirements of this sample plan to ensure the construction workers can handle groundwater, possibly impacted by petroleum hydrocarbons, which may be encountered during soil excavation.*
5. *Consulting HEER office with any questions.*
6. *Preparing your own site-specific plan.*
7. *Additional guidance for completing this form can be found in Section12 of the EHMP*
8. *Keep a copy of the completed Form for your records and sent a copy to the HEER Office.*

IMPLEMENT THIS PLAN BY:

9. *Ensuring that on-site workers are aware of this plan and that they follow it.*

NOTE: IF YOU ARE DEALING WITH HAZARDOUS CHEMICALS OTHER THAN OIL, OILY WATER AND OIL-IMPACTED SOIL, YOU MAY NEED ADDITIONAL HAZARDOUS CHEMICAL RESPONSE PLANS AND PROCEDURES THAT ARE NOT COVERED IN THIS PLAN.

DELETE THIS BOX AFTER COMPLETING THIS PLAN.

1. INTRODUCTION

These procedures are for handling groundwater encountered during excavation activities. Soil and groundwater may be impacted by petroleum hydrocarbons and may be encountered during soil excavation. The purpose of these procedures is to: (1) protect construction workers from contact with petroleum hydrocarbons and inhalation of associated vapors; and (2) protect the quality of the surface waters.

2. GROUNDWATER MANAGEMENT PROCEDURES

The following requirements apply to oil or oily water encountered in an excavation.

- If petroleum is present in the extracted groundwater, it must be separated from groundwater and disposed at an appropriate off-site facility prior to the groundwater being transferred into a nearby trench or excavation.
- At least once daily, remove oil observed floating on the groundwater during excavation activities using a vacuum truck, absorbent pads, or other methods approved by the HEER Office. Excavations should not be backfilled until the floating oil is removed to the extent practicable, which is when further use of vacuum trucks or absorbent pads, or other approved methods do not result in further floating oil removal.
- If you intend to dispose of the groundwater off-site, collect and analyze water samples as required by the disposal facility.
- **CAUTION:** Avoid releases of affected groundwater to surface water bodies or areas beyond the work area.
- If you are disposing of treated or untreated groundwater in accordance with a method approved by the HEER Office or by the City or County, provide the necessary notifications and record the information.

Provide information consistent with Section 14 on the handling of contaminated groundwater.

Appendix B.7

Free Product Management Plan

Prepared by: **Organization:**_____ **Name:** _____ **Signature:**_____	**FREE PRODUCT MANAGEMENT PLAN** **Environmental Hazard Management Plan** **Iwilei District Mauka**		
	Version:_____	**Reference:**_____	**Date:** _____

Parties may use this sample as a basis for preparing their own site-specific Free Product Management Plan.

REVISE THIS SAMPLE PLAN BY:

1. *Reviewing the requirements of this sample plan to ensure the construction worker can comply with its requirements and modifying the plan, if necessary.*

IMPLEMENT THIS PLAN BY:

2. *Making sure on-site workers are aware of this plan and that they follow it.*
3. *Making sure a copy of the completed plan is located at the construction site.*
4. *Additional guidance for completing this form can be found in Section13 of the EHMP*
6. *Keep a copy of the completed Form for your records and sent a copy to the HEER Office.*

DELETE THIS BOX AFTER COMPLETING THIS PLAN.

1. INTRODUCTION

These procedures are for handling free product encountered during excavation activities. Soil and groundwater may be impacted by petroleum hydrocarbons and may be encountered during soil excavation. Normally free product is found floating on groundwater however it can also be found in oil saturated soils. The purpose of these procedures is to: (1) protect construction workers from contact with petroleum hydrocarbons and inhalation of associated vapors; and (2) protect the quality of surface water (3) provide guidance in the handling and disposal of free product.

FREE PRODUCT MANAGEMENT PROCEDURES

The following requirements apply to free product in soil or floating on groundwater oil encountered in an excavation.

- If free product is present in the extracted groundwater, it must be separated from groundwater and disposed at an appropriate off-site facility prior to the groundwater being transferred into a nearby trench or excavation.
- At least once daily, remove oil observed floating on the groundwater during excavation activities using a vacuum truck, absorbent pads, or other methods approved by the HEER Office. Excavations should not be backfilled until the floating oil is removed to the extent practicable, which is when further use of vacuum trucks or absorbent pads, or other approved methods do not result in further floating oil removal.
- If free product is encountered in excavated soil it must be separated from clean or moderately contaminated fill, profiled and disposed of at an approved recycling/disposal site .
- Soil contaminated with free product cannot be used for backfill
- **CAUTION:** Avoid releases of free product to the harbor or areas beyond the work area.

Provide details of how free product was managed (consistent with Section 15 of the EHMP) when encountered on floating on groundwater or in soils.

Appendix B.8
Vapor Management Plan

Soil Vapor Management Plan

Prepared by: **Organization:**_____ **Name:** _____ **Signature:**_____	**VAPOR MANAGEMENT PLAN** **Environmental Hazard Management Plan** **Iwilei District Mauka**		
	Version:_____	**Reference:**_____	**Date:** _____

Parties may use this sample as a basis for preparing their own site-specific Vapor Management Plan.

REVISE THIS SAMPLE PLAN BY:

1. *Reviewing the requirements of this sample plan to ensure the construction worker can comply with its requirements and modifying the plan, if necessary.*

IMPLEMENT THIS PLAN BY:

2. *Making sure on-site workers are aware of this plan and and the site-specific Health and Safety Planand that they follow both documents.*
3. *Making sure a copy of the completed plan is located at the construction site.*
4. *Additional guidance for completing this form can be found in Section15 of the EHMP*
5. *Keep a copy of the completed Form for your records and sent a copy to the HEER Office.*

DELETE THIS BOX AFTER COMPLETING THIS PLAN.

1. INTRODUCTION

These procedures are for handling petroleum vapors encountered during excavation activities. Soil and groundwater may be impacted by petroleum hydrocarbons and may be encountered during soil excavation. This type of contamination may produce soil vapor that must be properly handled during and after construction activities. The purpose of these procedures is to: (1) protect construction workers from contact with petroleum hydrocarbons and inhalation of associated vapors; and (2) protect the quality of the surface water (3) provide guidance in the handling soil vapors.

2 VAPOR MANAGEMENT PROCEDURES

Should VOC vapors be encountered during excavation, appropriate response actions will be taken and the actions will be in conformance with DOH and EPA regulatory guidelines. The response actions include ensuring that on-site workers have the appropriate level of PPE and the general public is not affected adversely. The anticipated tasks associated with managing VOC vapor exposure are summarized below.

If VOC vapors are encountered during excavation activities, field oversight must be provided to identify VOC vapors and provide health and safety guidance related to the potential exposure of workers to COCs.

- Air monitoring will be conducted during excavation associated with future construction activities. Air monitoring will also be conducted when workers are required to enter excavations where PCS or free product is present. The monitoring will include both workspace (on-site) and perimeter measurements of VOC vapors.
- If warranted by the air monitoring results, on-site workers will be notified of the need to upgrade PPE to include respiratory protection.

- Air monitoring required for confined space entry (if required) will be conducted by the contractor responsible for construction. Confined space entry and associated air monitoring requirements will be described in the site specific health and safety plan for construction.

3 Exposure Management Procedures

- Level D PPE will be appropriate for on-site workers under normal working conditions.
- Both workspace (on-site) and perimeter (off-site) air monitoring will be conducted.
- Air monitoring will be conducted using a conventional photo-ionization detector [PID] to determine VOC vapor concentrations and an Ultra-Rae PID, which is benzene-specific, to determine benzene concentrations.
- If VOC vapor concentrations in the workspace atmosphere exceed an 8-hour time-weighted average [TWA] of 20 parts per million [ppm] or a 15-minute short-term exposure limit [STEL] of 100 ppm, PPE requirements will be upgraded to Level C and it may be necessary to implement a modified work schedule. These levels are based on a maximum benzene concentration in gasoline of 5 percent by volume.
- On-site workers will be notified immediately if benzene is detected in the workspace atmosphere at a concentration exceeding 0.5 ppm, and the wearing of respirators with organic vapor cartridges will be recommended (i.e., it will be recommended that respiratory protection be upgraded to Level C).
- If benzene concentrations in the workspace atmosphere exceed the 8-hour TWA PEL (1 ppm) or the OSHA 15-minute STEL (5 ppm), PPE requirements will be upgraded to Level C and it may be necessary to implement a modified work schedule.
- If benzene concentrations in the workspace atmosphere exceed the TWA PEL (1 ppm), short-term exposure monitoring will be conducted. To determine short-term exposure, a minimum of five samples will be collected within a 15-minute period.
- If daily average benzene concentrations in the workspace atmosphere exceed the OSHA STEL (5 ppm) or benzene concentrations exceed the OSHA acceptable ceiling concentration (25 ppm), PPE will be upgraded to Level C, with either full-face respirators or powered air-purifying respirators and protective goggles.
- If benzene concentrations in the workspace atmosphere exceed the OSHA 8-hour TWA for a 40-hour work week (10 ppm) or benzene concentrations exceed the OSHA acceptable maximum peak for an 8-hour shift (50 ppm), work will be stopped immediately, the Lowe's HIW on-site representative will be notified, and workers will be requested to leave the work zone.
- If benzene concentrations along the site perimeter (off-site) exceed the 15-minute STEL (5 ppm) or the TWA PEL (1 ppm), the exclusion zone will be extended beyond the Property boundary.
- If benzene concentrations along the site perimeter (off-site) exceed the OSHA acceptable ceiling concentration (25 ppm), work will be stopped immediately and the project on-site representative will be notified.

Provide details of how soil vapor was managed (consistent with Section 16 of the EHMP) when encountered in groundwater or in soils.

Appendix B.9

Storm Water Management

Prepared by: **Organization:**_____ **Name:** _____ **Signature:**_____	**STORM WATER MANAGEMENT PLAN** **Environmental Hazard Management Plan** **Iwilei District Mauka**		
	Version:_____	**Reference:**_____	**Date:** _____

Parties may use this sample as a basis for preparing their own site-specific Vapor Management Plan.

REVISE THIS SAMPLE PLAN BY:

1. *Reviewing the requirements of this sample plan to ensure the construction worker can comply with its requirements and modifying the plan, if necessary.*

IMPLEMENT THIS PLAN BY:

2. *Making sure on-site workers are aware of this plan and that they follow it.*
3. *Making sure a copy of the completed plan is located at the construction site.*
4. *Additional guidance for completing this form can be found in Section16 of the EHMP*
5. *Keep a copy of the completed Form for your records and sent a copy to the HEER Office.*

DELETE THIS BOX AFTER COMPLETING THIS PLAN.

1 Introduction Storm Water Management

Should contaminated soil or groundwater be encountered during excavation, appropriate response actions will be taken and the actions will be in conformance with DOH and EPA regulatory guidelines. The response actions include ensuring that these media are not exposed to storm water. The anticipated tasks associated with managing storm water are summarized below.

2 Storm Water Management Procedures

- Field oversight will be provided during excavation activities conducted as part of construction. The purpose of the oversight is to identify contaminated media that could be exposed to storm water runoff and provide guidance related to controlling storm water on the Property. In addition, the weather will be monitored throughout each work day for signs of approaching storms and/or heavy rains.
- Inspections of engineering storm water controls will be performed each day to ensure that contaminated media will not be exposed to storm water runoff and that contaminated storm water will not leave the construction site.
- All construction will be performed in accordance with the conditions of a DOH-approved NPDES permit for storm water discharge associated with construction activity. Conditions of the permit include preparation of a *Construction Site Best Management Practices Plan*.

3 Open Excavations.

In the absence of engineering and administrative controls, PCS and/or groundwater exposed in open excavations could come into contact with storm water, thus potentially contaminating the storm water with COCs. To prevent this from occurring, the following activities will be performed.

- → Where possible, excavations will be backfilled as soon as practicable to limit the time they are open and potentially exposed to storm water runoff and direct precipitation.
- → Where possible, the edges of excavations will be bermed, thus preventing storm water runoff from entering.
- → Open excavations will be inspected each day to ensure that there is no potential for direct precipitation to cause the excavation to overflow.

4 Soil Stockpiles. In the absence of engineering and administrative controls, excavated PCS stored in stockpiles could come into contact with storm water, thus potentially contaminating the storm water with COCs. To prevent this from occurring, the following activities will be performed.

- → Soil stockpiles will be placed on plastic sheeting and the sheeting will be bermed at the edges, thus preventing contact with storm water runoff.
- → At the end of each day, or in the event of a storm, the soil stockpiles will be covered with plastic sheeting, thus preventing contact with direct precipitation.
- → The soil stockpiles will be inspected each day to ensure that the plastic sheeting is intact.

5 Dewatering Infiltration Pits. In the absence of engineering and administrative controls, the water in infiltration pits used for on-site dewatering could come into contact with storm water. To prevent this from occurring, the following activities will be performed.

- → Where possible, infiltration pits will be backfilled as soon as practicable to limit the time they are open and potentially exposed to storm water runoff and direct precipitation.
- → Where possible, the edges of infiltration pits will be bermed, thus preventing storm water runoff from entering.
- → Infiltration pits will be inspected each day to ensure that there is no potential for direct precipitation to cause the pit to overflow.

Erosion and sediment control measures will be in place and functional before construction activities commence. These measures will be maintained throughout the construction period. In the event that storm water discharge from the site is anticipated, the following preventive measures may be taken.

- ♦ Storm water flowing towards active construction areas will be diverted using appropriate control measures, as practicable.
- ♦ Erosion control measures will be designed to handle the size of the disturbed or drainage area in order to detain runoff and trap sediment.
- ♦ The height of the Property boundary can be increased using sandbags.
- ♦ Additional silt fencing will be added to affected Property boundaries, if warranted.
- ♦ The berms surrounding soil stockpiles will be increased as necessary.
- ♦ Moveable booms will be available to contain spills.
- ♦ Absorbent pads will be employed if free product is observed in storm water runoff.

Provide details of how storm water was managed (consistent with Section 17 of the EHMP) when a significant storm event occurs during construction.

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Appendix B.10
Contingency Plans

Prepared by: **Organization:**_____ **Name:** _____ **Signature:**_____	**EXPOSURE CONTINGENCY PLANS** **Environmental Hazard Management Plan** **Iwilei District Mauka**		
	Version:_____	**Reference:**_____	**Date:** _____

Parties may use this sample as a basis for preparing their own site-specific Vapor Management Plan.

REVISE THIS SAMPLE PLAN BY:

1. *Reviewing the requirements of this sample plan to ensure the construction worker can comply with its requirements and modifying the plan, if necessary.*

IMPLEMENT THIS PLAN BY:

3. *Making sure on-site workers are aware of this plan and that they follow it.*
4. *Making sure a copy of the completed plan is located at the construction site.*
5. *Additional guidance for completing this form can be found in Section17 of the EHMP*
6. *Keep a copy of the completed Form for your records and send a copy to the HEER Office.*

1 Introduction Contingency Plans

The purpose of the exposure contingency plan is to provide guidelines for the actions to be taken when engineering controls, administrative controls, or PPE fail to function as designed. The plan consists of several individual plans, each addressing specific potential contaminants of concern listed in Section 8.0. The individual plans include the following.

2 Contingency Plan Procedures

Section 17 of the EHMP provides detailed procedures for dealing with exposure contingency for the following situations; Soil Contingency Plan, Groundwater Contingency Plan, Free Product Contingency Plan, Vapor Contingency Plan, Storm Water Contingency Plan. If exposure contingencies are anticipated fill out the appropriate exposure contingency (ies) plans in advance of construction. If contingencies occur during construction fill out the section below.

Provide details of how exposure contingencies were managed (consistent with Section 18 of the EHMP) when engineering controls, administrative controls, or PPE fail to function as designed.

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