Programmatic Environmental Hazard Evaluation & Environmental Hazard Management Plan

MĀLAMA I KA WAI
DOT - AIRPORTS

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DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

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List of Acronyms

AIR-EE	Airports Engineering Branch, Environmental Section
AFFF	Aqueous Film-Forming Foam
ARFF	Aircraft Rescue and Firefighting
bgs	Below ground surface
BMP	Best Management Practice
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CAA	Civil Aeronautics Administration
C-EHMP	Construction Environmental Hazard Management Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CONRAC	Consolidated Rental Car Facility
COPC	Contaminant of potential concern
DOH	State of Hawaii, Department of Health
DOH-CWB	State of Hawaii, Department of Health, Clean Water Branch
DOH-HEER	State of Hawaii, Department of Health, Hazard Evaluation and Emergency Response
DOH-SDWB	State of Hawaii, Department of Health, Safe Drinking Water Branch
DOH-SHWB	State of Hawaii, Department of Health, Solid and Hazardous Waste Branch
DOTA	State of Hawaii, Department of Transportation, Airports
EAL	Environmental action level
EHE	Environmental Hazard Evaluation
EHMP	Environmental Hazard Management Plan
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
GPS	Global Positioning System
HAR	Hawaii Administrative Rules
HASP	Health and Safety Plan
HDH	Kawaihapai Airfield
HDOT	State of Hawaii, Department of Transportation
HIOSH	Hawaii Occupational Safety and Health
HNL	Daniel K. Inouye International Airport
HNM	Hana Airport
ITO	Hilo International Airport
JHM	Kapalua Airport
JRF	Kalaeloa Airport
KOA	Ellison Onizuka Kona International Airport at Keahole
LEL	lower explosive limit
LIH	Lihue Airport
LNY	Lanai Airport
LUP	Kalaupapa Airport
mil	thousandths of an inch
MKK	Molokai Airport
MUE	Waimea-Kohala Airport
NAS	Naval Air Station
NOI	Notice of Intent

NPDES	National Pollutant Discharge Elimination System
OGG	Kahului Airport
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic aromatic hydrocarbon
PAK	Port Allen Airport
PBMP	Post-Construction or Permanent Best Management Practices
PCB	Polychlorinated biphenyl
PCS	Petroleum-contaminated soil
PEL	permissible exposure limit
PFAS	Per- and polyfluoroalkyl substances
PID	Photoionization detector
PPE	Personal protective equipment
QEP	Qualified Environmental Professional
SOSC	State On-Scene Coordinator, State of Hawaii, Department of Health
TAC	Territorial Aeronautical Commission
TGM	Technical Guidance Manual
TPH	Total petroleum hydrocarbon
TPH-d	Total petroleum hydrocarbons as diesel
TPH-g	Total petroleum hydrocarbons as gasoline
TPH-o	Total petroleum hydrocarbons as oil
UIC	Underground injection control
UPP	Upolu Airport
U.S.	United States
UST	Underground Storage Tank
VOC	Volatile organic compound

1 Introduction and Purpose

This Programmatic EHE-EHMP is an overall general plan that identifies associated human health and environmental hazards posed by contaminated media (i.e., contaminated soil, groundwater, and soil vapor) that may be encountered during subsurface work at the 15 airports, owned and/or operated by DOTA, herein referred to as "the Airports." This plan provides a framework for the general management and handling of contaminated media that may be encountered based on the current industrial use and historical operations at the Airports. See Section 2 for general location and historical descriptions of each airport. This plan is not for use at sites where a Site-Specific EHMP is already in place.

This Programmatic EHE-EHMP follows State of Hawaii environmental regulations, including the State Contingency Plan, HAR, and DOH-HEER Office guidance documents (see Section 15 References). The latest versions of referenced documents shall be used.

1.1 PURPOSE

The purpose of this Programmatic EHE-EHMP is to provide instructions for the proper handling and management of contaminated media that may be encountered during subsurface work at the Airports. This Programmatic EHE-EHMP is applicable to all Airports.

In addition to the Programmatic EHE-EHMP, a C-EHMP Addendum or Site-Specific C-EHMP shall be prepared and implemented for projects that involve either subsurface work in known contaminated areas that disturbs more than 15 cubic yards of soil, are in areas where an environmental control exists, or if groundwater will be encountered. This Programmatic EHE-EHMP may be used for work at small sites (i.e. utility repairs, installation of footings, small concrete pads, installation of septic tanks, etc.) in which the presence of contamination is unknown, or medium to large size construction projects, where a Phase II ESA to characterize the site was completed prior to construction and contamination was not identified. For long-term management of known and heavily contaminated sites, a Site-Specific EHMP will be required.

Implementation of this Programmatic EHE-EHMP is intended to help DOTA, tenants, and contractors identify releases and contamination that may be encountered during subsurface work, control contaminant migration and dispersion, and control the human health and environmental hazards posed by contaminated media. Typical construction and maintenance activities at the Airports that may involve subsurface work include but are not limited to (1) landscaping; (2) demolition/removal of existing structures, pavement, and infrastructure; (3) construction of new facilities; (4) subsurface work to relocate, repair, or install new utilities (e.g., water, natural gas, electricity, telephone, cable, and stormwater systems); and (5) redevelopment.

DOTA, tenants, and contractors shall use the information presented in this document to:

- Understand the roles and responsibilities of DOTA personnel, tenants, and contractors responsible for managing contaminated media.
- Identify contamination and potential risk to human health or the environment.
- Understand how to appropriately manage contaminated soil and groundwater, light non-aqueous phase liquid (commonly referred to as free product), and/or other media, if encountered.

- Understand how to identify and report a release.
- Appropriately manage site activities to prevent worker exposure to contaminated media.

2 Areas Covered and Background

The area covered by this document includes the Airports (HNL, HDH, JRF, OGG, JHM, LNY, MKK, HNM, LUP, LIH, PAK, ITO, KOA, MUE, and UPP), as shown in Figures 1 through 16 and described below in Section 2.1.

Previous environmental investigations (including Modified Phase I ESAs completed for each airport between 2020 and 2022 and numerous Phase II subsurface investigations) have been conducted at all airports and have identified COPCs in soil, groundwater, and soil vapor that pose potential human health and environmental hazards if disturbed and exposed. The COPCs, contaminated media, and potential hazards identified are further described in Section 4 of this document.

For certain areas within the Airports, Site-Specific EHMPs have been prepared and implemented by DOTA or airport tenants. AIR-EE tracks sites with Site-Specific EHMPs, known, suspected, or historical contamination areas, and sites with environmental reports (Phase I or Phase II ESAs, EHEs, etc.) using an electronic database system, Veoci. The database is updated on a regular basis as new information becomes available. The database includes the following site-specific information for each airport:

- Modified Phase I Reports for all airports (which include a detailed history)
- COPCs
- Areas of known, suspected, or historical contamination
- Environmental reports that include but are not limited to Phase I and II ESA reports, EHEs, Site-Specific EHMPs, and Site-Specific C-EHMPs

DOTA requires that a *Contaminated Soil and Groundwater Review Form*[1] is completed for all projects with ground disturbance in order to obtain data tracked by AIR-EE as well as updated data from DOH-HEER office files.

2.1 PROPERTY LOCATION, SETTING, AND HISTORY

2.1.1 HNL

HNL is located on the southern coast of Oahu, three miles northwest of Honolulu's central business district, within a commercial and light industrial area (Figure 2). In general, the airport is bordered to the north by commercial and industrial properties and North Nimitz Highway, to the east by Keehi Lagoon Park and commercial and industrial properties, to the south by the Pacific Ocean, and to the west by Joint Base Pearl Harbor-Hickam. However, a portion of Joint Base Pearl Harbor-Hickam is situated within HNL Boundaries, bound on all sides by the airport. The nearest major bodies of surface water are Keehi Lagoon to the east, Mamala Bay to the west, and the Pacific Ocean on the south side of the airport (Figure 2). There are also several drainage canals within the airport.

Prior to its use as an airport, HNL consisted of fish ponds at the Honolulu Plantation. The airport opened on March 27, 1927 as John Rodgers Airport. In 2017, Honolulu International Airport was renamed Daniel K. Inouye International Airport. The original airport consisted of 119.3 acres of land and 766 acres

[1] https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program/dota_contamination_review_form/

underwater. The configuration was much different from the current one, with the airport terminal located off Lagoon Drive. In the 1930s, numerous improvements were made, including land clearing, grading, filling, and the construction of roadways, runways, aprons, hangars, utilities, an administration building, and fencing. In 1936, 66.22 acres were procured to enlarge the airport and provide two runways. Additionally, the U.S. Army turned over 91.133 acres at Hickam Field to develop HNL.

From 1939 to 1943, the adjacent Keehi Lagoon was dredged for use by seaplanes, and the dredged soil was moved to HNL to expand the airport. After the attack on Pearl Harbor in December 1941, the U.S. military took control of the airport, and it was designated as NAS Honolulu. John Rodgers Airport was returned to the Territory of Hawaii in October 1946. In 1946, John Rodgers Airport was one of the largest airports in the U.S. and comprised a total area of 4,019 acres, with four paved land runways and three seaplane runways. The buildings and other facilities at HNL in 1947 were all of a temporary nature, having been constructed by the U.S. Navy during the War.

John Rodgers Airport was renamed Honolulu Airport in 1947, and "International" was added to the name in 1951. A connection from Runway 8-26 to the abutting Hickam Airfield was completed. In the 1950s, various military buildings were historically located in the current locations of HNL facilities, including repair shops, an engine testing room, aircraft parts cleaning, and a greasing room, all in the vicinity of the current airport terminal. In 1959, to accommodate jet aircraft, the airport configuration changed for the construction of the new John Rodgers Terminal. The south ramp, where the original terminal existed, became the new location for cargo, general aviation, and aircraft maintenance operations. In the early 1960s, the fuel storage facility at Sand Island was constructed, underground fuel hydrant lines at HNL were installed, and the current fuel farm was constructed. Underground fuel hydrant lines have been moved, installed, and replaced at various locations at the airport throughout the airport’s history.

By 1968, the airport fuel farm construction was complete, and the underground hydrant system was in place. The Reef Runway began construction in the late 1960s, which included the use of fill material to construct the runway. The expansion of HNL continued in the 1970s and included the construction of new buildings, roadways, terminal expansion/renovations, and many other projects. ARFF Station #2, formerly Reef Runway Fire Station, was constructed in 1977. The Reef Runway was completed in 1978, measuring 12,000 feet by 200 feet.

In the 1980s, Lagoon Drive was realigned for expansion of the south ramp. The Diamond Head concourse, Terminal 2, was extended in 1986. A new commuter terminal was completed in June 1988, and a new interisland terminal, Terminal 1, was completed in 1993. Other notable projects completed in the 1990s included further expansion of buildings/facilities on the south ramp, installation of the underground fuel hydrant system on the south ramp, expansion of the airport baseyard facility, the construction of the ARFF Training Pit and boat house, relocation of ARFF Station #1 to its current location on the North Ramp, construction of an aircraft maintenance facility on the South Ramp, and a cargo facility.

Since the early 2000s, the airport has undergone many renovations along with the demolition of the Commuter Terminal and extension of Terminal 1, the movement of the commuter terminal, Terminal 3, off of Aolele Street, the construction of CONRAC, the demolition of old maintenance/cargo hangars, the construction of a new maintenance facility, and taxiway and runway improvements. Many future redevelopment and renovation projects are planned for HNL.

2.1.2 HDH

HDH is located in a residential and agricultural area on the northern coast of Oahu, approximately three miles west of Waialua (Figure 3). In general, the airport is bordered to the north by Farrington Highway, across which are the Pacific Ocean, Mokuleia Beach Park, and residences; to the east and southeast by agricultural land and associated structures; to the south by a military reservation, beyond which are the Waianae Mountains; and to the west by historical homes and land designated for preservation (Figure 3). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 3). There is also a drainage canal that intersects the east end of the airport, several culverted drainage canals that run beneath the airport along the extent of the runway from south to north, and an unnamed stream located approximately 0.25 miles east of the airport.

U.S. Army use of 67 acres of land just south of the Oahu Railroad & Land Company railway in Mokuleia began in 1922 with the establishment of Camp Kawaihapai as a communications station. In the 1920s and 1930s, the site served as a deployment site for mobile coast artillery, which was transported by railroad. By December 7, 1941, a fighter airstrip had been established on additional leased land, establishing Mokuleia Airstrip. From 1942 to 1945, Mokuleia Airfield was improved to include a 9,000-foot by 75-foot paved runway, a crosswind runway, and many aircraft revetments.

In 1946, the U.S. Army acquired the additional 583 acres of leased land by condemnation with compensation. In late 1946, the U.S. Army Air Force became the U.S. Air Force by order of President Truman. As such, Mokuleia Airfield became an Air Force installation. In 1948, the airfield was inactivated and renamed Dillingham Air Force Base in memory of Captain Henry Gaylord Dillingham. In the 1950s, a Nike Air Defense site was added near Mokuleia Beach Park but was obsolete by 1970.

The state leased Dillingham from the U.S. Air Force in 1962 for general aviation use on a short-term basis. In about 1974, the U.S. Air Force transferred the base back to the U.S. Army. The state acquired a longer-term lease from the U.S. Army in 1974 and, in 1983, signed a 25-year lease. From 1985 to 1986, hangars for fixed-wing aircraft and gliders, bathrooms, and an Airport Control Tower were added. The Defense Authorization Act of 1990 provided that the 67 acres of ceded land of old Camp Kawaihapai be transferred to the state after an agreement on the future joint use of the airfield was reached.

The 2001 Legislature passed Act 276, which changed the official name of the airfield to Kawaihapai Airfield. Since the 1960s, DOTA has operated HDH as a general aviation airport under long-term leases with the U.S. Army. The lease includes 272 acres of the 650-acre Dillingham Military Reservation and a 5,000-foot runway primarily for commercial glider and skydiving operations.

2.1.3 JRF

JRF is located on the southwestern coast of Oahu, just south of Kapolei (Figure 4). In general, the airport is bordered to the north by commercial and industrial businesses and the Hawaii Army National Guard, to the east by vacant land and a solar farm to the southeast, to the south by the U.S. Coast Guard Air Station and the Pacific Ocean, and to the west by Kalaeloa Hawaiian Home Land, vacant land and Pearl Harbor National Wildlife Refuge to the southwest (Figure 4). The nearest major body of surface water is the Pacific Ocean, located adjacent to the south side of the airport. There is also a drainage canal approximately 0.2 miles west of the airport.

NAS Barbers Point was developed by the U.S. Navy in 1939 as a mooring station for airships. During World War II, Ewa Marine Corps Air Station and NAS Barbers Point operated from the 3,709 acres. It was also the home of the Barbers Point Coast Guard Station. Kalaeloa (long point) is the original name for the southwestern tip of Oahu and was given to the airport by the HDOT and the Barbers Point Redevelopment Commission in the mid-1990s.

The state accepted 757 acres of surplus land at NAS Barbers Point as Kalaeloa Airport on July 1, 1999, for general aviation aircraft to practice pilot training that was formerly conducted at Ford Island and Honolulu International Airport. Governor's Executive Order No. 3861, dated March 15, 2001 set aside 752.24 acres at the former NAS Barbers Point for Kalaeloa Airport.

Kalaeloa Airport provides a launch site for Coast Guard Search and Rescue operations, a training base for general aviation, an emergency response platform, an alternate landing site for airlines and the military, and an extension of the capacity of HNL.

Since 2017, various improvements have been made and continue to be made to the airport, including the construction of new T-hangars, a fuel farm, and improvements to the airport traffic control tower and airfield.

2.1.4 OGG

OGG is located on the northern coast of Maui, just east of Kahului (Figure 5). In general, the airport is bordered to the north by the Pacific Ocean and Kanaha Beach Park, to the east and south by vacant land and agricultural land, and to the west/southwest by commercial and industrial businesses (Figure 5). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 5). A drainage canal also intersects the west end of the airport.

In 1942, construction started on NAS Kahului. After the war, extensive negotiations between the Territory of Hawaii and the U.S. Navy resulted in the airbase being turned over to the Hawaii Aeronautics Commission. A program of modernization was immediately undertaken. OGG began commercial airline operations in June 1952.

In 1955, the airport consisted of 1,341 acres and had three paved runways: Runway 2-20 was 200 feet wide and 7,000 feet long, Runway 5-23 was 300 feet wide and 5,000 feet long, and Runway 17-35 was 200 feet wide and 5,000 feet long. Facilities included a joint passenger terminal building, restaurant, freight terminal building, ground transportation services, paved taxiways and apron, small plane shelters, field maintenance, and crash and fire protection. A new airport control tower was completed in October 1958.

A new terminal building was constructed in 1965. In 1978, a new 2,900-square-foot holding wing was dedicated. In 1979, a new airport maintenance building and baseyard were constructed, replacing a building converted from a warehouse after World War II.

The design of a new Airport Terminal Complex began in 1985. Work included additions and alterations to existing structures, roads, parking areas, aprons, a new terminal, taxiways, runways, landscaping, a cargo terminal, and relocation of the FAA tower. Support facilities included a new helipad and cargo terminal. The new Airport Terminal Building was dedicated on October 17, 1990.

By the end of the 1990s, OGG contained 1,391 acres of land, including the Kanaha Pond National Natural Landmark, which was managed by the Fish and Wildlife Division of the Hawaii Department of Land and Natural Resources.

A CONRAC was constructed in late 2019. Airport improvements planned or completed since 2019 include runway improvement and reconstruction projects, a new water scalping plant, a new south

Transportation Security Administration checkpoint, terminal and gate improvements, and replacement of the ARFF Training Pit.

2.1.5 JHM

JHM is located on the western coast of Maui, approximately 0.3 miles east of Napili-Honokawai (Figure 6). The airport is surrounded by vacant agricultural land to the east and vacant residential zoned land (former agricultural land) to the north, west, and south (Figure 6). The nearest major body of surface water is the Pacific Ocean, located approximately 0.5 miles west of the airport.

JHM, developed and constructed by Hawaiian Airlines, opened on March 1, 1987. The airport consisted of a single non-precision and visual 3,000-foot runway, passenger terminal, ARFF station, Universal Communications Tower, and a 500-gallon fuel storage tank.

HDOT purchased JHM from Hawaiian Airlines in October 1992. The airport began operating under the ownership of DOTA on April 1, 1993. An extension to the ARFF building was completed in February 2003.

JHM currently consists of an airport terminal building, ARFF station, baseyard building with a covered fueling area, a paved ramp area, Runway 2-20, and parking facilities.

2.1.6 LNY

LNY is located on the southwest side of the island of Lanai, approximately 2.5 miles southwest of Lanai City (Figure 7). The airport is surrounded by vacant and agricultural land (Figure 7). The nearest major body of surface water is the Pacific Ocean, located approximately 2 miles west of the airport.

An emergency landing strip was established on Lanai in 1919. Small commercial airline operations began in 1930. The landing field was originally sod and was owned by the Hawaiian Pineapple Company. Shortly after the start of World War II, air service to Lanai came to a halt because the field was not big enough to accommodate the larger planes that were being used by commercial airlines. Operations resumed in September 1946.

In April 1948, work was completed on the reconstruction of LNY, the first Territorial airport to be completed under the Federal Airport Act of 1946. The airport was officially dedicated on July 12, 1948 by the Hawaii Aeronautics Commission and the CAA. The airport consisted of one paved runway 80 feet wide by 3,700 feet long, with necessary taxiways and parking aprons. The graded area was 400 feet in width and 3,900 feet in length. By 1955, the airport consisted of 59 acres of land. It included a passenger terminal building, a freight terminal building, a paved runway and warm-up areas, a paved taxiway and apron, field maintenance, and crash and fire protection.

In 1966, the extension of the runway and a new terminal building project were completed. Between 1992 and 1994, major improvements were made to the airport, and a new airport terminal building was constructed. Improvements to LNY since 2010 include a new ARFF Station, terminal renovations, and improvements to the runway.

2.1.7 MKK

MKK is located in the central area of the island of Molokai, approximately six miles northwest of Kaunakakai (Figure 8). The airport is surrounded by vacant and agricultural land on all sides and two residences to the north (Figure 8). The nearest major body of surface water is the Pacific Ocean, located approximately 2.5 miles north of the airport.

On December 15, 1927 the Territorial Governor signed Executive Order No. 307, setting aside an area of 204.8 acres of Territorial land for an airport at Hoolehua, Molokai. The airport was originally named Hoolehua Airport, was placed under the control and management of the TAC, and was the only public landing field on Molokai. Interisland air service began from Honolulu to Molokai in November 1929.

In July 1930, the name was officially changed to Molokai Airport. By 1937, MKK consisted of three runways – 1,000, 2,600, 2,600 feet long, and 300 feet wide, with 100 feet of grading on each side. Throughout the 1930s, the U.S. Army used the field and had several small buildings. There was one small building related to interisland air travel.

On December 7, 1941, the U.S. Army and Navy took over the airport and retained responsibility for airport services until 1947. Act 32 of the 1947 Legislature, placed Molokai Airport under the management of the Hawaii Aeronautics Commission effective July 1, 1947. Commercial aviation activity increased considerably during 1950. A new MKK Terminal was constructed in 1957 and the terminal was expanded in 1969. The FAA dedicated a new air traffic control tower in 1978, a new baseyard facility in June 1992, and the renovated passenger terminal and support facilities in October 1994.

Improvements to the airport since 2010 include a new ARFF station, sewer replacement, terminal renovations, and runway improvements.

2.1.8 HNM

HNM is located on the northeastern coast of Maui, approximately three miles northwest of Hana (Figure 9). The airport is surrounded by vacant land on all sides, a few residences to the southwest, and bordered to the north by the Pacific Ocean (Figure 9). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 9).

Construction of the Hana Airport began on November 16, 1948. In 1949, a small passenger terminal and a separate freight terminal were constructed out of surplus materials taken from Maui Airport, and a 100-foot-wide by 3,600-foot-long runway was graded. The new airport was officially opened on November 11, 1950. A Jeep crash fire truck was put into operation at HNM in 1951. Runway 8-26 was paved in 1951, and by 1955, the airport included a passenger terminal, freight terminal, maintenance shop, and firehouse. In 1957, 19.8 acres of land adjacent to the airport were purchased, allowing airport expansion.

By 1975, HNM was serviced by nonscheduled small aircraft only. The airport runway was eventually expanded to 3,605 feet long. By the 1990s, there were three taxiways, each approximately 40 feet wide, an apron area, helicopter parking on grass areas, a maintenance building, and a terminal building. Crash fire operations ceased around the early 1990s, and the firehouse was removed. HNM currently includes a terminal building, maintenance building and office, hangar, paved ramp area with tie downs, three taxi lanes, and Runway 8-26.

2.1.9 LUP

LUP is located on the Kalaupapa Peninsula on the northern coast of the island of Molokai (Figure 10). The airport is bordered to the south by vacant land and Kalaupapa National Historical Park. It is bordered to the north, east, and west by the Pacific Ocean (Figure 10). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 10).

Kalaupapa Airport was opened for operations in 1934. During World War II, Gambo Flying Service was authorized by the military to furnish emergency transportation of medical supplies directly to Kalaupapa. After the war, Andrew Flying Service and Cockett Airlines began serving Kalaupapa daily with Beechcraft and Cessna planes.

In 1951, a small passenger terminal with a rest house was completed. At that time, there were no passenger facilities available, and the airfield was composed of sod. In 1954, a paved runway was completed. In 1955, the airport consisted of 17 acres and had one paved runway, which was 50 feet wide and 1,658 feet long. In 1970, the runway was extended from 1,658 feet to 2,760 feet. Currently, facilities at LUP include a passenger terminal building, a paved runway, and maintenance buildings.

2.1.10 LIH

LIH is located on the eastern coast of Kauai, just east of Lihue (Figure 11). In general, the airport is bordered to the north, east, and southeast by the Pacific Ocean, to the west by agricultural land, to the southwest by commercial businesses, to the south by a resort and golf club, and to the southeast by industrial properties (Figure 11). The nearest major body of surface water is the Pacific Ocean, located adjacent to the east side of the airport (Figure 11). There are two drainage canals within the northern portion of the airport.

A proposed airport at Lihue was approved by the CAA as part of the 1947 National Airport Plan as submitted by the Territory on February 26, 1947. Ground breaking ceremonies were held on October 28, 1948, and construction began on November 4, 1948. The runway was finished in October 1949. From this date, the airport was opened to non-scheduled air carriers and air freight operators, pending the completion of radio and terminal facilities necessary to operate scheduled air carriers. The terminal was built and dedicated on January 8, 1950. A crash fire truck was put into service in 1951.

During the 1950s, construction projects completed at LIH included the construction of parallel taxiways, additional aircraft parking apron, vehicle parking facilities, relocation of Ahukini Road, a new freight terminal building, an emergency generator facility, extension of the runway, new T-hangars, and additions and alterations to the terminal building.

Major construction projects completed since the 1960s include the construction of a new Ground Transportation Building and additional plane and auto parking, completed in September 1962. The construction of new T-hangars was completed in 1963, and a new fire station was dedicated on September 22, 1978. A new 6,500-foot runway was dedicated on April 26, 1984, followed by the dedication of the new Lihue Airport Terminal Complex on February 25, 1987. An expanded roadway system, parking lot and utility systems, and new maintenance baseyard were completed in 1987. A dedication was held for a new 30,000-square-foot cargo building and a 4,800-square-foot Commuter Terminal on March 14, 1991, including aprons and taxiways for the two facilities. A new ARFF station was dedicated on March 17, 1995, replacing the 1978 facility. The realignment of Ahukini Road for tenant space expansion was completed in 2001, and an addition to the maintenance baseyard was completed in 2003. The construction of a heliport and the removal of the ARFF Training Pit was completed in 2006, and the construction of an emergency staging and storage facility was completed in 2022. In 2024, LIH started a project to relocate Runway 3-21, along with other planned renovations and redevelopment activities.

2.1.11 PAK

PAK is located on the southern coast of Kauai, approximately 0.7 miles southwest of the town of Eleele (Figure 12). The airport is situated on a peninsula surrounded on three sides by the Pacific Ocean and to the northwest by Salt Pond Park (Figure 12). Vacant land borders the north side of the airport. The airport property also includes cultural salt ponds located on the northwestern corner.

In the early 1920s, the U.S. Signal Corps and U.S. Army Air Corps used a portion of land near Port Allen as a landing strip, designated as Burns Field. The 1928 Legislature appropriated funding to purchase land at Port Allen to establish an airport. The Territory purchased 29.35 acres of land in Port Allen for this purpose. The land was adjacent to the U.S. Army's Burns Field, which occupied 67 acres. Executive Order No. 330 conveyed the land to the TAC, dated April 24, 1928.

Through the cooperation of the U.S. Army, the War Department granted use of the Army section of the field for commercial aviation on April 27, 1929. The first passenger air service to Kauai was inaugurated on November 11, 1929. The Army maintained barracks on the field. PAK consisted of two runways, 3,600 feet and 2,600 feet long, consisting of dirt and sod.

At the outbreak of World War II, PAK was taken over by the military, and, as a safety precaution, the runways were plowed up to prevent possible use by the enemy. Upon termination of hostilities, the field was regraded and opened to small aircraft operations. In 1947, the U.S. Army and the Territory provided funding for paving the field and developing it into a suitable field for charter or privately owned aircraft use. Only minimum facilities for the convenience of operators and passengers were available. In May 1948, work was completed, including paving a 2,500-foot-long runway, an aircraft parking apron, and a connecting taxiway. Other than the landing areas and a public waiting room with toilet facilities, the physical improvements by 1955 included three privately owned hangars and an office building.

Helicopter operations began at the airport in November 1997. By 2006, three helicopter operators used the airport, as well as an ultra-light airplane. Occasionally, general aviation aircraft, military aircraft, and other helicopter operators use the airport. Since the mid-2010s, only two general aviation operations, a skydiving company and a helicopter company, have occupied the airport.

2.1.12 ITO

ITO is located on the eastern coast of the Big Island of Hawaii, just east of Hilo (Figure 13). In general, the airport is bordered to the north and west by commercial and industrial businesses and residences, to the east by vacant land, and to the south by commercial businesses and vacant land (Figure 13). The nearest major body of surface water is the Pacific Ocean, located less than 0.1 miles northwest of the airport (Figure 13). There is also a drainage canal on the airport property, located east of the terminal gates.

Governor's Executive Order No. 186, dated April 2, 1925 set aside 100 acres of land in Keaukaha, Waiakea, South Hilo for an aviation landing field under the control and management of the Board of Supervisors of the County of Hawaii. Work on clearing land and bringing in coral fill from Hilo Wharf began July 17, 1925. As of February 1929, the runway was constructed to 2,500 feet long with an average width of 300 feet, and regularly scheduled passenger service between the islands began on November 11, 1929. The airport terminal was dedicated on March 22, 1930.

By 1938, ITO consisted of three runways, and a dedication ceremony for the renovated airport was held on May 2, 1941. At the outbreak of World War II, Hilo Airport was taken over by the U.S. Army

Engineers, and an Air Corps fighter squadron was stationed there. U.S. Army Engineers constructed military installations and continued the expansion of runways, taxiways, and parking aprons. In 1943, the U.S. Navy moved onto the field under an agreement with the U.S. Army and began the construction of a Naval Air Station. The name of Hilo Airport was changed to General Lyman Field on April 19, 1943. During military use of the airfield, improvements included: three runways, hangars, the storage of 485,000 gallons of gasoline, training facilities and living quarters, storage facilities for ammunition and other supplies, and other miscellaneous structures.

After the war, military operations at ITO steadily decreased. The U.S. Army ceased operations at Hilo Airport on October 1, 1948. On November 1, 1948, the U.S. Air Force ceased operating the Airport Crash Station and Control Tower. Several construction and renovation projects were completed between 1949 and 1950. In 1951, extensive improvements to the main entrance and access road to the Hilo Airport terminal area were completed, and a Jeep crash fire truck was put into operation. On April 8, 1952, the airport was returned to civilian control by surrendering leases, easements, licenses, and permits. Improvements were transferred to the Territory by the Federal government. A groundbreaking ceremony for a new passenger terminal was held on July 16, 1952. A new maintenance area, consisting of five buildings and a large maintenance yard, was also constructed.

By June 1954, the airport included a passenger terminal, freight terminal, and parking area. It had paved runways, taxiways and parking aprons; a fuel truck; and a Communications and Control Tower. A separate passenger terminal for military traffic was completed in 1957. In April 1963, grading for a new 9,800-foot jet runway extension was completed to accommodate overseas service. In 1965, work was completed on a fire and rescue equipment building to house State-owned and U.S. Air Force aircraft fire fighting units. A new passenger terminal was dedicated and opened on April 30, 1976.

In July 1989, the airport's name was changed to Hilo International Airport. In the 1990s, construction projects completed included a new ARFF Training Facility, eight general aviation T-hangars, renovations to the terminal building and airfield, a pilot training center, an Army Aviation Support Facility, and a sewer treatment plant. From the 2000s to the present, airport improvements have included the construction of a fuel farm, cargo facilities, car rental facilities, a new air traffic control tower, multiple aircraft support facilities, a heliport, a rock quarry, and new T-hangars. Airport improvements ongoing or completed include improvements to drainage, fuel farm replacement, renovations and improvements to the terminal building and other facilities, and renovating the west ramp of the airport, including installing new T-hangars.

2.1.13 KOA

KOA is located on the western coast of the Big Island of Hawaii, approximately 10 miles north of Kailua Kona (Figure 14). In general, the airport is bordered to the west by the Pacific Ocean, to the south/southwest by the Natural Energy Laboratory of Hawaii Authority Industrial Park, to the south by West Hawaii Exploratory Academy, to the north by Kona Coast State Park (conservation land), and to the east by Queen Kaahumanu Highway, beyond which is an agricultural park and vacant land (Figure 14). The nearest major body of surface water is the Pacific Ocean, located adjacent to the west side of the airport (Figure 14).

Ceremonial dynamite charges signaled the start of work for a new airport at Keahole in West Hawaii on May 27, 1969. The airport was constructed in 13 months and included a 6,500-foot runway and parallel taxiway, a control tower, aircraft parking, terminal buildings, and automobile parking areas. Keahole Airport was dedicated on July 1, 1970.

A quick response rescue vehicle was purchased for KOA in 1972. Improvements completed in the 1980s included a crash fire station, numerous additions and renovations to the terminal building, as well as improvements to the airfield, T-hangars, aircraft aprons, cargo facilities, an administration building, storage facility, emergency generators, general aviation areas on the north ramp, and the construction of the Civil Air Patrol Hangar. In the early 1990s, the terminal, gates, north ramp, and runway were expanded to accommodate more air traffic and flights to the mainland. Construction in the 1990s included a temporary commuter terminal and a cargo building, an overseas domestic and international terminal, a heliport, a new wastewater treatment plant, a general aviation fuel storage facility, parking facilities, and a new ARFF training facility.

In April 1993, the airport's name was changed from Keahole Airport to Keahole-Kona International Airport. Keahole-Kona International Airport was renamed Kona International Airport at Keahole on June 16, 1997, by the Hawaii State Legislature.

In 2002, the sewage treatment plant was replaced, and a postal facility was constructed. The existing general aviation facilities were relocated in 2003, and a new general aviation fuel storage system was constructed. A temporary structure for ARFF vehicles, an air traffic control tower, and car rental facilities were constructed. In 2013, a fuel facility was constructed.

The airport name was changed to Ellison Onizuka Kona International Airport at Keahole in July 2017. Since 2017, improvements completed or to be completed include a Federal Inspection Services Facility, a USDA Inspection Building, and rehabilitation and renovations to the terminal, runway, taxiways, ramps, and apron.

2.1.14 MUE

MUE is located on the northern side of the Big Island of Hawaii, approximately 1.3 miles south of Waimea (Figure 15). The airport is bordered by vacant agricultural land (Figure 15). No major bodies of surface water are within one mile of the airport.

On May 12, 1928, the Governor set aside 550.46 acres of land in Mana, Waimea, Kona, for a Territorial airport by Executive Order 331. It was the Kamuela Airport from 1946 to 1957. Kamuela was the site of one of the largest training camps of the Fleet Marine Force, the Pacific Fleet. Incidental to the training program, an airstrip was constructed for small planes. By action of the land owner, the airport was closed.

A new site was sought when Bordelon Field/Kamuela Airport was deemed unsuitable for development as a modern airport because of its terrain. Construction began in February 1952 on the new Kamuela Airport, including a 5,100-foot paved runway, water main, and fencing. The airport was dedicated on August 30, 1953, and a one-story, wood-frame passenger and freight terminal building was completed in October 1953.

A 1969 legislative resolution requested that the airport be designated as Waimea-Kohala Airport to prevent confusion with Waimea, Kauai. In 1972, a quick response rescue and fire fighting vehicle was purchased for the airport, and expansions to the terminal building were completed.

Improvements to the airport from 2000 to 2020 included constructing helicopter lots, adding a taxiway, renovating the terminal building, access road, and a parking facility.

2.1.15 UPP

UPP is located on the northern coast of the Big Island of Hawaii, approximately 3 miles northwest of Hawi (Figure 16). The airport is bordered to the north by the Pacific Ocean and to the east, south, and west by vacant agricultural land (Figure 16). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 16).

On June 25, 1927, Executive Order No. 287 set aside 37.9 acres within the ahupuaa (ancient Hawaiian land division system) of Kealahewa for an airplane landing field for the U.S. Air Service to be under the control and management of the War Department and known as Suiter Field. On June 26, 1929, Governor’s Executive Order No. 363 added 57.2 acres to Upolu Airport Landing Field to be under the control and management of the War Department. In January 1930, the War Department granted the Territory concurrent use of the U.S. Army landing field for official and commercial aviation use for five years. Seven months later, about 97 percent of the land set aside for the military reservation was restored to the Territory. On September 25, 1930, the TAC received Executive Order No. 432, setting aside land to be known as the Upolu Airport under the control and management of the TAC.

In 1935, the Upolu Airport was being maintained by Federal Emergency Relief Administration labor. The landing field was grass on sandy soil and partially graded. The U.S. Army maintained a barracks and radio station at the landing field on Federal property. The landing field consisted of one large runway, 3,500 feet long and in the shape of an hour glass. By 1939, the field was completed to the minimum requirements of the CAA and opened for traffic. The field consisted of one runway, 2,800 feet long by 300 feet wide, and was paved 2,500 feet long by 100 feet wide.

During World War II, the U.S. Navy occupied Upolu Airport, where a weather and communication station was established. The facility was used as an auxiliary field for the Naval Air Station, Hilo, for field-carrier-landing practice and other training of carrier pilots. The runway was extended to 4,000 feet, and the U.S. Navy provided housing for military personnel operating the airport.

The Territory granted the U.S. Government occupancy of the airport from July 1944 to May 1947 for the exclusive use of naval and other military purposes. The U.S. Government occupied the airport until November 1952, when all remaining lands were restored to the Territory. Buildings formerly occupied by the U.S. Navy were rehabilitated for use as a terminal and other purposes.

Repair and resurfacing of the runway at Upolu Airport started in December 1950. A new joint passenger terminal was completed at Upolu Airport in June 1951. The runway was strengthened, and other airfield improvements were completed in May 1975.

Projects completed since the 1970s include airfield improvements, the construction of a passenger and maintenance shelter, and terminal renovations.

3 How to Use This Document

Prior to performing subsurface work at the Airports, complete the following:

- Consult with AIR-EE to identify known or suspected contaminated media in the work area by submitting the *Contaminated Soil and Groundwater Review Form* and reviewing the data provided to determine known or suspect areas of contamination.
- Review the EHE section (Section 4) of this document to familiarize yourself with potential hazards associated with contaminated soil, groundwater, and soil vapor, the COPCs that might apply, and how to assess if COPCs are present.
- Review the EHMP individual plans (Sections 6 to 13), each addressing a specific potential source of COPCs, to become familiar with managing contamination.
- Develop a site-specific HASP.

Alternatively, with approval from the DOH-HEER Office and AIR-EE, the contractor may prepare a C-EHMP Addendum rather than follow this Programmatic EHE-EHMP.

During subsurface work, if contaminated media, inactive pipelines, or USTs are encountered, take the necessary steps as applicable:

- Report any contaminated soil, groundwater, or soil vapor to AIR-EE and the DOH-HEER Office (Section 6) as required by law. Depending on the magnitude and extent of contamination, the DOH SOSC may require additional steps be taken.
- Follow the Release Response and Reporting Plan (Section 6).
- If inactive pipelines or USTs are encountered, follow the Inactive Pipeline and UST Management Plan (Section 8).
- If contaminated soil is encountered, follow the Soil Management Plan (Section 9).
- If contaminated groundwater is encountered, follow the Groundwater Management Plan (Section 10).
- If free product is encountered, follow the Free Product Management Plan (Section 11).
- If noxious soil vapor is encountered, follow the Vapor Management Plan (Section 12).
- If contaminated soil and/or groundwater is in or could be in contact with stormwater, follow the Stormwater Management Plan (Section 13).

If contractors and maintenance personnel performing subsurface work at the Airports do not follow this Programmatic EHE-EHMP, a C-EHMP Addendum, or a Site-Specific C-EHMP, then enforcement actions can include halting subsurface work when contamination is discovered, reporting the release in accordance with Section 6 of this document, and/or waiting for an inspection by a DOH SOSC prior to re-commencing subsurface work. Failure to report a release could result in fines from various regulatory agencies and liquidated damages may be imposed by DOTA for DOTA projects or other enforcement actions for tenant improvement projects.

Disclaimer: The procedures, information, instructions, and hazard management plans referred to herein are not intended to be a comprehensive description of all laws, rules, regulations, and guidelines. They are only intended to provide general information and should not be used in place of applicable laws, *rules, regulations, and guidelines. Contractors are responsible for complying with all applicable laws, rules, regulations and guidelines, and for preparing their own hazard management and safety plans.*

4 Environmental Hazard Evaluation

The EHE summarizes COPCs associated with known releases or potential releases of hazardous substances at the Airports. Potential exposure points, potential exposure pathways, and potential receptors at the Airports are also defined in this section.

4.1 CONTAMINANTS OF POTENTIAL CONCERN

Information about past activities and historical releases at the Airports was obtained from DOTA, DOH, and other sources, and are included in AIR-EE's records. Due to former and current operations at the Airports, COPCs may be encountered in soil, groundwater, and soil vapor during construction activities at multiple locations within the Airports. Potential sources of COPCs include airport operations and maintenance facilities; areas where AFFF may have been used or stored (e.g., ARFF training areas, AFFF storage areas, AFFF discharge areas for historical testing and emergency fire response); airport operations involving petroleum or hazardous material storage (above or below ground); fueling operations, maintenance operations, and other industrial activities (i.e. rental car operations, fuel farms, fueling stations, fuel loading stations, auto body/repair shops, aircraft maintenance facilities); fuel pipelines; historical agricultural uses (e.g., pesticides/herbicides); areas where historical pest treatments were applied; and former military operations. Based on past releases and environmental investigations conducted at the Airports, the following are the common COPCs that may be encountered in soil and groundwater:

- Petroleum-related Hydrocarbons
  - TPH-g, TPH-d, and TPH-o
  - BTEX
  - PAHs
- Constituents of light distillate fuels and/or Chlorinated Solvents
  - VOCs
- PCBs (as Aroclor mixtures)
- Pesticides
  - Organochlorine pesticides, including technical chlordane
- Heavy metals
  - Arsenic
  - Barium
  - Cadmium
  - Total Chromium
  - Lead
  - Mercury
  - Selenium
  - Silver

- PFAS/Emerging Contaminants

Soil vapor may be present from volatile COPCs present in subsurface soil or groundwater. In addition, free petroleum product (e.g., gasoline, aviation gasoline, diesel fuel, jet fuel, motor oils, lubricating oils) may be encountered in soil or groundwater in areas of previous petroleum releases.

Careful planning of subsurface work is necessary to prevent the release or spreading of COPCs in soil or groundwater and potential effects on site workers, the public, and the environment. This planning is particularly important because, although some contaminants may be identifiable by sight, smell, or field screening instruments, others such as pesticides, PFAS, or metals in soil or groundwater may not be readily identified in the field.

4.2 ENVIRONMENTAL ACTION LEVELS

Decisions for managing contaminated soil, groundwater, and soil vapor shall be based on regulatory guidance and published action levels. The DOH-HEER Office has developed health-conservative Tier 1 EALs to quickly screen soil, groundwater, and soil vapor data for potential environmental hazards. The Tier 1 EALs are for unrestricted land use and represent the concentration of a contaminant in the respective medium below which the threat to human health or the environment is considered to be insignificant under any site condition. The Tier 1 EALs are not to be considered required, regulatory cleanup standards. The Tier 1 EALs for unrestricted land use assume that there are no restrictions on the current or future use of the property, including potential use as residential housing, schools, day care, and health care. As a result, exceeding the Tier 1 EAL for unrestricted land use for a specific chemical does not necessarily indicate that the contamination poses a significant threat to human health or the environment, but only that additional evaluation may be warranted. If COPC concentrations exceed the Tier 1 EALs, the results shall be reported to the DOH-HEER Office, and DOH requirements shall be followed.

The DOH-HEER Office has developed alternative action levels for commercial/industrial land use for sites restricted to commercial/industrial use only. These alternative action levels are no longer considered Tier 1 EALs, since a land use restriction or control on the use of the property might be required, such as a formal covenant to the deed to restrict future use of the property to commercial/industrial use only.

The Tier 1 EALs for unrestricted land use shall be used as an initial screening for all COPCs that may be encountered in soil and groundwater during construction and maintenance activities. All soil or groundwater with COPCs present at concentrations below the Tier 1 EALs for unrestricted land use shall be eliminated from further concern. **In accordance with DOTA policy, no soil from airport property shall be reused offsite, even if COPC concentrations are below Tier 1 EALs for unrestricted land use.** However, in unique circumstances, approval may be granted by AIR-EE, depending on testing results, to transfer soil offsite for reuse at commercial/industrial locations. A request shall be made in writing to DOTA and shall be approved prior to the transfer of soil offsite. At no time shall soil be reused offsite at residential properties or locations with sensitive receptors (i.e. schools, recreational areas, etc.). Offsite disposal of soil at a landfill is subject to the respective landfill's requirements.

Soil with COPCs present at concentrations exceeding the Tier 1 EALs for unrestricted land use shall be further evaluated using the alternative action levels for commercial/industrial land use. Contaminant concentrations could be significantly higher than the Tier 1 EALs for unrestricted land use and still be protective of human health and the environment for a specific site scenario. Site-specific EALs may apply to reuse of soil in the same area from which it was generated, depending on the location of the site and site use. Additionally, environmental controls might be required depending on the concentrations of COPCs.

Table 1 and Table 2 describe the applicability of the DOH-HEER Office EALs to soil management and groundwater management, respectively. A QEP shall be hired to ensure that the DOH TGM and supporting documents are followed, collect representative samples and submit for laboratory analysis, and evaluate the data compared to DOH Tier 1 unrestricted EALs. All laboratory data collected during in situ or stockpile sampling shall comply with the DOH TGM, be summarized in a report, immediately be provided to AIR-EE for review, and be included in the Close-out Report (Section 14).

DOH provides separate EALs to address the following environmental hazards for soil and groundwater:

4.2.1 Soil

- Direct exposure threats to human health
- Intrusion of subsurface vapors into buildings (i.e., vapor intrusion)
- Leaching and subsequent threats to groundwater resources
- Gross contamination and general resource degradation concerns
- Threats to ecological receptors

4.2.2 Groundwater

- Threats to drinking water resources
- Threats to aquatic organisms
- Intrusion of subsurface vapors into buildings
- Gross contamination and general resource degradation concerns

The DOH-HEER Office has developed EAL lookup tables organized to reflect four default types of contaminated sites in Hawaii, based on groundwater utility and proximity to a surface water body. If shallow groundwater beneath a site is not considered a current or potential source of drinking water and is located seaward (makai) of the UIC line (aquifers makai from the UIC line are not a drinking water source in accordance with HAR §11-23-05), the soil and groundwater analytical results shall be compared to Tier 1 EALs where no drinking water source is threatened. Additionally, if a site is within 150 meters of a surface water body, groundwater concentrations shall be compared to Tier 1 EALs that account for aquatic toxicity considerations. Due to the various locations and land areas of the Airports, some work sites may be above a drinking water aquifer, within 150 meters of a surface water body, or near a discharge point that drains to the Pacific Ocean. Therefore, threats to drinking water and aquatic habitats shall be evaluated case-by-case.

The most current DOH-HEER Office EAL tables are on the DOH-HEER Office website at https://health.hawaii.gov/heer/guidance/ehe-and-eals/. The U.S. EPA and DOH-HEER Office have created additional action levels for substances and potential exposure scenarios that might need to be considered if unanticipated contamination is discovered or if additional pathways for exposure, other than the EAL defaults, or potential environmental effects are identified. Additional action levels might also need to be considered where proprietary chemical formulations with no published toxicological data are released.

4.3 SOURCES, RECEPTORS, AND PATHWAYS FOR CONTAMINANTS OF POTENTIAL CONCERN

For COPCs to affect human health or the environment, all of the following components must be present:

- Source of COPCs above harmful concentrations (Section 4.3.1)
- Mechanism of chemical release and transport (Section 4.3.2)
- Environmental transport medium (Section 4.3.2)
- Exposure point (Section 4.3.2)
- Exposure route (Section 4.3.3)
- Receptor or exposed population (Section 4.3.4)

4.3.1 Sources of Contaminants of Potential Concern

The source of contamination within the Airports is existing contamination from historical or possibly current releases. This contamination may be a delineated plume in soil or groundwater, dissolved-phase contamination, vapors, or free product. Contaminated surface and subsurface soil, groundwater, and soil vapor are the most common current sources of COPCs within the Airports. If not properly managed, pumped groundwater and excavated soils could come into contact with potential human and/or ecological receptors. If soil is moved offsite before historical research or sampling is conducted, potential receptors may include human and/or ecological receptors in offsite locations.

4.3.2 Potential Pathways of Exposure

The exposure pathway evaluation presents potentially complete exposure pathways for human and ecological receptors, both onsite and offsite. Figure 17 summarizes the conceptual site model exposure pathway evaluation and depicts the possible exposure pathways available for the transport of COPCs and their relative likelihood of reaching human and ecological receptors during construction activities at the Airports. Typical subsurface activities that may lead to potential receptor exposure to contaminated soil, groundwater, and air include:

- Geotechnical work
- Trenching for utility relocation/installation
- Potholing
- Clearing/grubbing
- Grading
- Footings/foundation work
- Landscaping

Given these typical activities, the following potential pathways of migration and exposure are identified:

- **Direct Contact Onsite.** Workers and visitors could have direct contact with contaminated soil during subsurface work including but not limited to excavation, trenching, drilling, grading, grubbing, and landscaping.

- **Runoff.** Contaminated soil could be washed from newly exposed ground surfaces or stockpiled soil during rain events and enter storm sewers and waterways as particulate matter, impacting aquatic organisms.
- **Infiltration.** Stormwater could infiltrate stockpiled soils, leach from the stockpiles, and flow to surface water and onto adjacent surfaces and properties. Stormwater infiltrating uncontained stockpiled soil could leach COPCs and transport them into underlying soils and groundwater. The irrigation of planted areas could increase the transport of COPCs from soil into underlying groundwater.
- **Volatilization.** Volatile COPCs could become airborne and be inhaled by workers and visitors or accumulate in sealed structures constructed above areas with contaminated soil or groundwater where free product or volatile COPCs are present. Volatile COPCs in drill cuttings could become airborne and be inhaled by workers and visitors.
- **Dust Emission.** Dry contaminated soil could become airborne and inhaled as particulate matter by workers and visitors. Soil preparation before landscaping or soil stockpiling could generate dust containing COPCs.
- **Offsite Transport.** Excess contaminated soils generated during subsurface work that are transported to a new location can create new environmental exposure risks at the storage and disposal locations. Workers and visitors in the area could be exposed to COPCs while coming into contact with surface soils.

In addition to the above pathways, activities may inadvertently spread contamination if contaminated groundwater is discharged to storm drains or surface water, reinfiltrated in a clean area, or if contaminated soil is reused inappropriately. Moreover, if excavated soils are contaminated, construction actions such as stockpiling, grading, or backfilling could change the environmental conditions of the areas where the soils are stockpiled or ultimately placed. Utility maintenance workers could disturb shallow or deep contaminated soil or groundwater remaining after construction and bring these materials to the surface for further movement via other pathways to workers and visitors, or aquatic organisms.

4.3.3 Potential Exposure Routes

An exposure route is the way in which a receptor comes into contact with a COPC such that it may become absorbed into the body. The potential routes through which humans or other organisms could be exposed to hazardous substances include ingestion, inhalation, and dermal contact. These are described briefly below. Although not discussed here, injection is also a possible exposure route, especially during construction, and occurs as a result of injuries such as impalement, punctures, cuts, etc.

4.3.3.1 Ingestion

Ingestion is the oral intake of a solid or liquid material. Ingesting contaminated soil or groundwater is a human health risk and a direct exposure hazard. Incidental ingestion of contaminated soil or groundwater could occur during construction activities where contaminated soil and groundwater are exposed. Ingestion of COPCs is most likely to occur when workers fail to clean their hands before eating and smoking.

4.3.3.2 Inhalation

Inhalation is the action of inhaling or breathing in air, other gases, vapors, fumes, smoke, dust, or mists into the lungs. Inhalation of contaminated soil as dust is a human health risk and a direct exposure hazard. Some chemicals in contaminated soil and groundwater could volatilize when the soil and or groundwater is exposed. During subsurface work, contaminated subsurface soils may be disturbed, thus increasing the potential release of dust and volatile compounds into the work area and the risk that COPCs could be inhaled. Some chemicals, for example hydrogen sulfide, can be immediately dangerous to life or health when inhaled.

4.3.3.3 Dermal Contact

Dermal contact is the direct exposure of skin to contaminated soil, groundwater, or vapor. Subsurface work in areas with contaminated soils and groundwater increase the potential for dermal contact. Upon contact, some substances have the potential to absorb directly into the body through the skin.

4.3.4 Potential Receptors

The potentially exposed receptors include the following individuals and organisms in the immediate vicinity and downstream of the work areas:

- Construction and maintenance workers
- Landscapers
- Airport occupants and their visitors
- Authorized visitors to construction areas
- General public
- Terrestrial organisms, including avifauna
- Freshwater organisms (in drainage canals/streams)
- Saltwater organisms (if near the ocean or other saltwater habitat)

5 EHMP Summary and General EHMP Requirements

The EHMP consists of eight individual plans, each addressing a specific potential source of COPCs (see Section 4.1) and methods of handling contaminated media. The individual plans include the following:

- Release Response and Reporting Plan (Section 6)
- HASP (Section 7)
- Inactive Pipeline and UST Management Plan (Section 8)
- Soil Management Plan (Section 9)
- Groundwater Management Plan (Section 10)
- Free Product Management Plan (Section 11)
- Vapor Management Plan (Section 12)
- Stormwater Management Plan (Section 13)

The plans include engineering and institutional controls, as well as requirements for PPE and a monitoring program. Prior to initiating subsurface work, onsite workers shall be informed and educated about potential hazards posed by COPCs and methods used to prevent exposure. Contractors shall obtain all permits necessary to complete the work as required by all applicable Federal, State, and local laws, regulations, and ordinances.

6 Release Response and Reporting Plan

6.1 DISCOVERY OF SUBSURFACE CONTAMINATION

Onsite workers shall familiarize themselves with site conditions and the potential presence of free product or other contaminants in the subsurface. Some contaminants, such as heavy metals, PCBs, PFAS, and pesticides, may not be detected through visual observations or by smell. Encountering suspected or confirmed contaminated soil or groundwater during subsurface work is considered a release and shall be reported to the DOH-HEER Office according to the notification procedures on their webpage: https://health.hawaii.gov/heer/reporting/how-to-report-a-release-spill/. Reporting requirements include immediate verbal notification and written follow-up notification no later than 30 days after the initial discovery of the release. The contractor shall also immediately notify the DOTA Project Manager or Tenant Representative and AIR-EE. It is not necessary to stop work if this document is followed. If significant contamination is found, the DOH-HEER Office may require site characterization before proceeding, especially if a building is to be constructed. The contractor shall provide copies of the written release notifications or reports to the DOTA Project Manager or Tenant Representative and AIR-EE.

A reportable release of hazardous substances or contaminated soil or groundwater may be indicated by any of the following:

- A petroleum sheen on the groundwater
- Any free product that appears on groundwater
- Visual or olfactory evidence of contamination (e.g., unusual discoloration, buried containers, fumes, unknown liquids)

If free product is encountered, the release shall be reported in accordance with HAR §11-451. Federal regulations require that any significant petroleum, oil, and lubricant release into a body of water or onto an adjoining shoreline be reported to the National Response Center at 1-800-424-8802 within 24 hours. Federal requirements under the CERCLA and the Oil Pollution Act, including releases of reportable quantities of CERCLA hazardous substances and releases of oil that cause a sheen on water, shall also be reported to the National Response Center at 1-800-424-8802. The spill reporting procedures outlined on the respective airport's DOTA Spill Reporting Fact Sheet shall be followed.

6.2 SPILLS/LEAKS RELATED TO CONSTRUCTION ACTIVITIES

Construction and maintenance workers shall operate under a site-specific spill/leak response plan applicable to the boundary of the immediate work area and specific to the planned activities. This plan provides instructions in the event of an unplanned or accidental spill associated with the activities and shall include descriptions of the types of potential spills, a list of names and contact information regarding the release response team and the parties that shall be notified, a list of available response equipment, descriptions of response procedures, and the spill reporting requirements.

Potential uncontrolled spills/releases of free product, soil or groundwater impacted with free product, or contaminated groundwater would result in human health and safety concerns including contact with the free product or other contaminants, exposure to fire hazards, disruptions to site activities, and environmental impacts of concern including discharges of contaminated groundwater, free product, or sheens to State waters, soil, and/or groundwater directly or via a storm drain or other type of surface water conveyance. Onsite workers shall minimize the probability of spills/leaks by implementing site-specific BMPs according to DOTA's Construction Activities BMP Manual.

All spills, leaks, and/or illicit discharges shall be reported to the proper airport personnel by reviewing the DOTA Spill Reporting Fact Sheet for the respective airport and report to AIR-EE via the on-line form: https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/spill-reporting-form/. Small spills of petroleum, oil, and lubricants (less than 25 gallons) that can be cleaned up within 72 hours and do not threaten ground or surface waters shall be cleaned up immediately, but do not need to be reported to the DOH-HEER Office. For spills that are reported to the DOH-HEER Office, the contractor shall provide copies of the written spill notifications or reports to the DOTA Project Manager or Tenant Representative and AIR-EE.

7 Health and Safety Plan

Contractors working at the Airports are required to prepare a HASP for employees performing construction and maintenance activities that may, or will, encounter contaminated or potentially contaminated media. The HASP should generally include the following:

- Requirements that workers be trained in dealing with petroleum hydrocarbons and chemical substances and hazards, including, but not limited to, use of appropriate PPE
- General site control and safety requirements such as site access controls, information on emergency medical facilities, and safe work practices
- Description of present and potential hazards, including COPC action levels and OSHA PELs, where appropriate
- Emergency contact information (24-hour emergency contact information for a minimum of two individuals posted at the work site)

A HASP is not a substitute for OSHA/HIOSH requirements. All employers are responsible for the health and safety of their employees and shall comply with all applicable OSHA/HIOSH requirements.

8 Inactive Pipeline and UST Management Plan

This section provides instructions on preparing for and managing underground inactive pipelines or USTs not previously located or otherwise exposed during excavation or other subsurface activities.

8.1 GENERAL

A QEP shall manage the removal of a pipeline or UST and soil from subsurface work (e.g., excavations) in accordance with the Soil Management Plan (Section 9). To the extent possible, inactive pipelines should be left in the ground if they extend beyond the required excavation. If a UST is discovered, approval from the DOH for removal shall first be received and the UST removed according to the DOH-SHWB UST regulations.

8.2 PREPARATORY WORK

Prior to performing any subsurface work, parties shall review historical documents and plans for information on inactive pipelines or USTs identified to date and contact the Hawaii One Call Center at 1-866-423-8287 or 811. However, the accuracy and completeness of this information are not guaranteed because historical pipeline information has not been well documented. In some instances, previously unknown inactive pipelines or USTs may be discovered during excavation or other subsurface activities. For documented USTs, refer to HAR §11-280.1.

Notify the DOH-HEER Office if any inactive pipelines are encountered or the DOH-SHWB (UST Section) if USTs are encountered.

Abandoned pipelines may be encountered in excavations.

8.3 UST/PIPELINE CUTTING, DRAINING, AND REMOVAL

If a pipeline or UST is discovered, attempt to identify the nature of the pipeline or UST and confirm that it is not active. Do not attempt to remove USTs or pipeline segments without first draining the UST or pipeline segment or determining that it is empty of liquids or flammable vapors. To the extent practicable, any drainable fluids shall be drained before cutting the pipeline or removing the UST. Petroleum fluids recovered shall be tested and recycled or disposed of in accordance with DOH solid waste regulations and all other applicable federal and state regulations.

Only personnel knowledgeable and trained in pipeline and UST removal shall cut, drain, and remove USTs and pipelines. The required pipeline segments are to be removed by cutting. If an explosion hazard is present, cutting shall be done with a wet saw or a non-sparking tool. If the pipelines are suspected to be asbestos-covered, the DOTA Hazardous Materials/Asbestos Manager shall be notified for evaluation. If asbestos is present, a qualified contractor shall direct this work and recommend appropriate procedures and PPE, including procedures for removal. Ensure the area below and adjacent to cutting locations is covered with plastic sheeting and absorbent material. In addition, secondary containment shall be placed directly beneath the cutting location. If pipelines are suspected to be under pressure, a vacuum truck should be onsite during cutting to recover any released fluids. Pipeline fluids collected in the secondary containment shall be properly removed and disposed of after testing.

If DOTA allows remaining pipeline segments to be left in the ground, the cut ends of the remaining segments shall be appropriately sealed or otherwise closed to prevent any potential leakage. Suitable seals include cement plugs, blind flanges, or other methods not involving hot work or welding. Welding is inappropriate due to the potentially explosive nature of free product and its associated vapors.

After draining, USTs shall be cleaned prior to removal from the ground. All cleaning fluids and rinsate shall be containerized and properly disposed of after testing.

8.4 REMOVED UST AND PIPE HANDLING

In many cases, sections of removed pipeline contain heavy, viscous petroleum products that appear 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 at the work site prior to disposal, the area shall be lined with polyethylene plastic sheeting, 20 mil or thicker, and bermed to contain any free product that may mobilize due to atmospheric heating. The waste pipe segments shall be drained of any residual product and stored on appropriate dunnage with the ends of the pipe sealed or covered to protect the interior of the pipe from contact with rainwater and wind. Removed USTs shall be inspected for corrosion, holes, or cracks that could indicate a potential release. All removed pipelines and USTs shall be properly disposed of or recycled.

8.5 SOIL ASSESSMENT

Following removal of USTs or pipelines, a soil assessment shall be performed in accordance with DOH regulations and sampling guidance.

8.6 RECORD KEEPING

Parties shall prepare a UST Closure Report documenting all closure activities and sampling results and submit the report to the DOH-SHWB UST Section. Pipeline closure activities shall be documented in the Close-out Report (Section 14) for the project; however, the DOH-HEER Office may request a separate Pipeline Closure Report. Closure reports for USTs or pipelines shall document field observations and closure activities, including the location of the UST or pipeline relative to fixed landmarks (including GPS coordinates); depth, diameter, length, and type of piping; dimensions and type of UST; conditions of piping/UST; volume and type of fuel or product recovered; photographs; sampling/testing results; and disposal documentation. This information is also required to be included in the Close-out Report (Section 14) to be provided to the DOTA Project Manager or Tenant Representative and AIR-EE.

9 Soil Management Plan

The purpose of the soil management plan is to ensure proper handling and management of PCS and soil impacted by other hazardous substances encountered during subsurface work. Principal hazards posed by contaminated soil are direct exposure, gross contamination, leaching to groundwater, and/or vapor intrusion into existing or future buildings. Soil cannot be reused offsite outside the airport property boundary without pre-approval from AIR-EE and laboratory testing and confirmation that testing results meet the most restrictive EALs. For the unique circumstance of reusing soil offsite, a request shall be made in writing to AIR-EE and approved prior to transfer of soil offsite. Soil cannot be reused at locations with sensitive receptors, such as residential, schools, recreational areas, etc. under any circumstance, even if testing results are below Tier 1 unrestricted EALs.

Contaminated soil falls into two categories: (1) moderately contaminated soil and (2) heavily contaminated soil. Moderately contaminated soil is defined as soil that contains COPCs at concentrations above the DOH-HEER Office Tier 1 unrestricted EALs but below the Commercial/Industrial EALs and does not exhibit any visual or olfactory evidence of contamination (e.g., no petroleum odor and no petroleum staining). Heavily contaminated soil is defined as soil that contains COPCs at concentrations above the DOH Commercial/Industrial EALs and/or exhibits signs of contamination (e.g., petroleum odor and/or petroleum staining).

For PCS, a field test such as the glove test and the paper towel test can be used to assess if PCS is considered moderately or heavily contaminated. The glove test consists of squeezing a handful of soil in a gloved hand. If oil droplets remain on the glove, assume the soil is heavily contaminated. The paper towel test consists of squeezing a handful of soil into a paper towel. If oil droplets appear on the paper towel, assume the soil is heavily contaminated. The soil used in the field tests shall be representative of the soil in the stockpile. If the soil contains free product, follow Section 11, Free Product Management Plan.

Contaminated soil or PCS shall be assessed during subsurface activities. Contractors and maintenance workers shall be notified if known contamination exists within the work area prior to mobilization so they can properly prepare for dealing with contaminated soil. If contaminated soil that is not previously known or anticipated is encountered, the DOTA Project Manager or Tenant Representative, AIR-EE, and the DOH-HEER Office shall be immediately notified of the discovery.

Anticipated tasks associated with managing contaminated soil are summarized as follows:

- Follow all BMPs listed in the DOTA Construction Activities BMP Manual, Section WM-7.
- If contaminated soil is observed during subsurface work, a QEP shall provide field oversight to direct the proper management, handling, and segregation of soil, specify appropriate use of soils (i.e., reuse onsite vs. offsite disposal; Table 1), and provide health and safety guidance for workers related to potential exposure to COPCs.
- Contaminated soil may not be stockpiled offsite.
- Contaminated soil shall be segregated and stockpiled separately. Refer to the DOH *Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material* guidance for appropriate stockpile sizing based on disposal options.
- Contaminated soil can also be placed in containers such as 20-yard steel rolloff bins, super sacks, tri-wall boxes, or drums. These containers shall be watertight and covered with plastic sheeting

or a lid or positioned under a roof when not in active use to prevent rain water from entering and contacting the soil.

- Drain any liquid-phase oil or free product from the contaminated soil prior to stockpiling. If feasible, the free product shall be separated from the soil, properly stored, profiled, and disposed of at an approved recycling or disposal facility.
- If oil/free product is observed in the excavation, adsorb and remove it to the extent practicable using absorbent pads, booms, or a vacuum truck and properly dispose of any oil/free product.
- Moderately contaminated soil (i.e., COPCs are above the DOH Tier 1 unrestricted EALs but below the DOH Commercial/Industrial EALs and no visual or olfactory evidence of contamination is observed) can be used as backfill within the construction site boundary, if the conditions in Table 1 are met. Any free product floating on the groundwater in an excavation shall be removed to the extent practicable prior to backfilling an excavation. Soils contaminated with volatile COPCs are not permitted to be reused beneath the footprint of a building structure. Moderately contaminated soil may not be reused outside of the work area.
- Heavily contaminated soil (i.e., COPCs are above the DOH Commercial/Industrial EALs and/or there is visual or olfactory evidence of gross contamination) shall be disposed of offsite at a facility permitted to accept the waste.
- In determining whether excavated soil can be used for backfill within the work area, its structural suitability should be considered, whether it meets the technical specifications for backfilling of utility trenches or other constructability requirements to support the foundation loading of a structure intended to be placed over backfilled and compacted soil. Soil not structurally suitable for reuse at the work site shall be profiled and taken offsite for appropriate disposal.
- Appropriately decontaminate equipment used in contaminated areas before using it in non-contaminated areas. All liquid and solid waste resulting from onsite decontamination shall be collected and appropriately disposed of at a permitted facility.
- All offsite disposal records shall be sent to AIR-EE.

9.1 SOIL SAMPLING AND TESTING

A QEP shall direct the soil sample collection and testing methods in accordance with the latest TGM guidelines. All soil generated during subsurface work shall be tested prior to reuse or disposal. Follow the latest DOH *Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material* guidance for stockpile sampling.

The QEP shall also determine if the soil is considered a hazardous waste in accordance with HAR §11-262. Hazardous waste regulations apply to soil that is classified as a hazardous waste.

The appropriate sampling frequency for soil reuse is dependent upon the COPCs and the final disposition of the soil (e.g., reuse site location, type of facility, land use, etc.). While soil can be tested in situ or ex situ (i.e., from soil stockpiles), soil testing for reuse is generally performed ex situ.

If soil is generated from an area where PFAS is a COPC, current sampling protocols shall be followed to avoid cross-contamination, including using PFAS-free products for all sampling equipment that comes in contact with soil during sampling.

Table 1: Soil Reuse and Disposal Options

Management Action	Applicable EALs and Conditions for Soil Reuse or Disposal Options
Onsite Soil Reuse within Construction Site Boundary (including areas with known contamination)	The contractor shall representatively test all soils designated for onsite reuse. Testing can occur either *in situ* prior to excavation or after excavation. Soil that does not exceed applicable DOH Tier 1 EALs for unrestricted land use may be reused onsite (within construction site boundaries) with AIR-EE approval. Soil with contaminants that exceed DOH Tier 1 EALs may be approved for onsite reuse within construction site boundaries with written approval from AIR-EE and when the following conditions are met: • Contaminant concentrations are less than DOH EALs for commercial/industrial use and less than hazardous waste criteria. • Contaminated soil is reused within other contaminated areas in the proximity of its original location for which a long-term EHE-EHMP has been established, which, if necessary, can be readily modified to include the new material and changes to site conditions. • Contaminated soil is reused no less than 150 meters from the nearest surface water or surface water inlet. • Contaminated soil is reused at an elevation above the tidally influenced high water table and at least one foot below the finish surface grade, with the most contaminated soil placed at the bottom of the excavation and the cleanest soil toward the ground surface. A minimum of one foot of clean soil shall comprise the final top backfill layer, and unless waived by AIR-EE and DOH, an impervious layer shall cap this top layer. • Contaminated soil is not reused within or beneath the footprint of a permanent building structure. • Contaminated soil to be reused cannot contain free oil, oil sheens, oil stains, or TPH concentrations exceeding 5,000 milligrams per kilogram.
Offsite Soil Reuse Within Airport Boundary (Outside Construction Site Boundary)	The following conditions apply: • The Contractor shall secure approval from AIR-EE for transport to the reuse location(s) prior to moving the soil. • Soil shall not be categorized as or contain a regulated hazardous waste. • Soil shall not exceed the DOH Tier 1 EALs for unrestricted land use.

Management Action	Applicable EALs and Conditions for Soil Reuse or Disposal Options
Offsite Soil Disposal/Reuse Outside Airport Property Boundary	The following conditions apply: • The Contractor shall confirm and comply with the disposal/receiving facility's testing requirements and their standards for disposal/reuse. • Soil that is a regulated hazardous waste shall be disposed of at an approved EPA-regulated facility. • Soil above the DOH EALs for commercial/industrial use, but not a regulated hazardous waste, shall be disposed of at a DOH or EPA-permitted disposal facility (i.e., landfill). • Soil below the DOH Tier 1 EALs for unrestricted land use may be reused at an appropriate location as approved by AIR-EE. • For any contaminated media removed from Airport property to an approved facility, the Contractor shall be responsible for its legal transport and disposal. All soil disposal receipts shall be included in the Close-out Report (Section 14).

9.2 ENGINEERING AND ADMINISTRATIVE CONTROLS

Dust and vapor control methods may be necessary during subsurface work. These controls include use of plastic sheeting on soil stockpiles, vapor control using vapor suppressants, dust suppression using applied water, and controlling dust emissions by not excavating/moving soil during high winds.

Level D PPE is anticipated to be appropriate for workers during construction and is the minimum protection required. Level D protection may be sufficient when the atmosphere contains no known hazard and work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals. Appropriate Level D protective equipment may include:

- gloves
- coveralls
- safety glasses
- face shield
- chemical-resistant, steel-toe boots or shoes

While these are guidelines for typical equipment to be used in general, other combinations of protective equipment may be more appropriate, depending on site-specific characteristics. 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.

9.3 SOIL CONTINGENCY PLAN

The Soil Contingency Plan provides the actions to be taken when engineering controls, administrative controls, or PPE fail, and the risk of exposure to contaminated soil is imminent.

If contaminated soil is encountered and could pose a direct exposure hazard to onsite workers, the following actions are required:

- Upgrade PPE as needed. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 12) and the Contractor's site-specific HASP.
- Upgrade dust control measures as needed if airborne dust generated from contaminated soil becomes significant. This may involve more frequent use of, or an increase of, applied water for dust control and upgrades to dust fencing.
- Stop work until appropriate measures are in place to prevent direct exposure.

9.3.1 Soil Stockpiles

During construction activities, the plastic sheeting used to berm and cover soil stockpiles and the sediment control devices surrounding the stockpile may become sun damaged, damaged by strong winds, or punctured by debris or other sharp objects. Such damage could allow onsite workers to come into contact with contaminated soil. To prevent that from occurring, the following actions are required:

- Replace damaged sections of plastic sheeting immediately
- Repair damaged sections of the berm immediately
- Replace damaged sediment control devices immediately

9.4 PERIODIC INSPECTIONS AND PREVENTATIVE MAINTENANCE

Routine inspections shall be completed and might be necessary at a higher frequency for contaminated soil where exposure to onsite workers is likely. The site shall be inspected prior to and following inclement weather and as determined based on site conditions. Immediate replacement and repairs to BMPs shall be completed after discovery.

9.5 RECORD KEEPING AND REPORTING

Detailed records of subsurface work shall be maintained, including workspace monitoring, contaminated soil excavation, soil stockpiling, soil testing, soil reuse and disposal, inspections, and maintenance and response activities. Significant issues shall be promptly communicated to site workers. Activities shall be described and well documented in a Close-out Report (Section 14) to be provided to the DOTA Project Manager or Tenant Representative and AIR-EE. A copy of the Close-out Report shall also be submitted to the DOH-HEER Office.

10 Groundwater Management Plan

The purpose of the groundwater management plan is to ensure the proper handling and management of contaminated groundwater encountered during subsurface work. Principal hazards posed by contaminated groundwater are gross contamination and aquatic ecotoxicity.

Depending on the airport location and elevation, groundwater may be encountered at depths as shallow as 5 feet bgs. Results of previous environmental investigations indicate that groundwater at the Airports can be impacted by COPCs. Groundwater contamination may be apparent through visual evidence or olfactory detection. Contaminated groundwater may have a measurable thickness of free product, emit petroleum hydrocarbon odor, or exhibit an oily sheen. Other contaminants, such as solvents, can be detected through olfactory observations. In some cases the contamination may not be identifiable through visual and/or olfactory observations (e.g., PCBs, PFAS, metals, etc.).

Contaminated groundwater has been encountered at the Airports during previous site investigations. Although it is unlikely that residual groundwater contamination is at a level warranting extensive response actions or disposal, there may be specific locations where additional precautions are necessary. Additional site characterization may be required depending on conditions encountered in the field.

10.1 GROUNDWATER MANAGEMENT

If contaminated groundwater is encountered during subsurface work, take appropriate response actions that conform to DOH-HEER Office requirements and guidelines. This includes ensuring that workers have the appropriate level of PPE and that contaminated groundwater and free product are managed properly if dewatering is conducted. Table 2 provides management options for contaminated groundwater.

Anticipated tasks associated with managing groundwater are summarized as follows:

- Follow all applicable BMPs listed in the DOTA *Construction Activities BMP Manual.*
- If groundwater is encountered, a QEP shall provide field oversight to identify contaminated groundwater, direct appropriate dewatering activities, manage the disposal of groundwater as needed, and provide health and safety guidance related to the potential exposure of workers to COPCs.
- Contaminated groundwater shall be tested, handled, and disposed of in accordance with all applicable Federal, State and Local Rules, Regulations, and Laws. Offsite disposal shall be at a facility permitted to accept the waste.
- If free product is encountered, follow the Free Product Management Plan (Section 11).
- If contaminated water is discovered at a previously unknown source or location, immediately notify the DOTA Project Manager or Tenant Representative, AIR-EE, and the DOH-HEER Office of its discovery.
- If dewatering is necessary, water shall be pumped into tanks, ponds, or infiltration pits at the work site, and shall not be discharged outside the project site. Groundwater shall only be reinfiltrated in the ground with the prior approval of AIR-EE and the DOH-HEER Office.

- Reinfiltration of groundwater shall be within 200 feet of the point of generation. Free product may not be moved from one excavation to another and engineering measures shall be taken to prevent the transfer of free product during dewatering (e.g., placing the pump intake below the free product layer, etc.). Water contaminated with free product shall not be discharged from a dewatering pit.
- If discharge is necessary outside of the infiltration pit, a NOI for NPDES coverage (Appendix G - Discharges Associated with Construction Activity Dewatering) shall be submitted to the DOH-CWB, after review and approval by AIR-EE. The NOI shall include a dewatering plan. Discharge is not allowed off of airport property. Prior to discharge into a storm sewer or aquatic habitat (e.g., stream or ditch within the Airports), the water shall be tested and, if necessary, treated to address free product and dissolved-phase contamination and toxicity. Water with contaminant concentrations exceeding DOH-HEER Office EALs for chronic aquatic toxicity shall not be discharged.
- If generation of groundwater requiring disposal is necessary, the groundwater shall be stored at the work site in appropriate containers (e.g., tanks or 55-gallon drums), sampled, analyzed for the appropriate COPCs to determine disposal options, and disposed of properly. The groundwater shall not be disposed of offsite without the approval of AIR-EE and written approval from the DOH-permitted facility receiving the groundwater indicating that they acknowledge the groundwater test results and provide AIR-EE their approval to dispose of the groundwater at their facility.
- If groundwater is generated from an area where PFAS is a potential COPC, current sampling protocols shall be followed to avoid cross-contamination, including using PFAS-free products for all sampling equipment that comes in contact with groundwater during sampling.
- With approval from AIR-EE and oversight from the QEP, small volumes of groundwater may be disposed of via evaporation from a constructed, lined pond or basin, with solid residuals properly tested and disposed of in accordance with the Soil Management Plan (Section 9).

10.2 VAPOR CONTROL

Vapor control methods (e.g., vapor suppressants) may be necessary during subsurface work in which contaminated groundwater is encountered. It is anticipated that Level D PPE shall generally be appropriate for workers. Should site conditions warrant, PPE shall be upgraded as needed. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 12).

10.3 PERIODIC INSPECTIONS AND PREVENTIVE MAINTENANCE

A key component of the Groundwater Management Plan is routine inspections. Accordingly, all locations where exposure of onsite workers to contaminated groundwater is possible (e.g., open excavations, dewatering pits) shall be inspected daily.

If groundwater requiring disposal is generated, the storage containers shall be inspected regularly for rust and other signs of deterioration while they remain onsite pending disposal. If onsite dewatering is conducted, the infiltration pit(s) shall be inspected daily to ensure that no accidental discharge occurs.

10.4 GROUNDWATER CONTINGENCY PLAN

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

10.4.1 Open Excavations

If contaminated groundwater is encountered during subsurface work (e.g., during excavation, trenching, and drilling) that could pose a direct exposure hazard to onsite workers, the following actions are required:

- If site conditions warrant, PPE shall be upgraded from Level D as needed. Follow the Vapor Management Plan (Section 12) and Contractor's site-specific HASP for respiratory protection and vapor monitoring.
- If appropriate, excavations may be backfilled using appropriate materials (e.g., gravel, select borrow) to a level above the high tide groundwater level prior to continuance of work.
- If free product is present on the groundwater in an excavation, it shall be removed to the extent feasible prior to backfilling.
- Contaminated groundwater must be tested, handled, and disposed of in accordance with all applicable Federal, State and Local Rules, Regulations, and Laws. Offsite disposal shall be at a facility permitted to accept the waste.
- If free product is present on the groundwater in an excavation, it must be removed to the extent feasible prior to backfilling.

10.4.2 Dewatering Pits

If contaminated dewatering water is encountered that could pose a direct exposure hazard to onsite workers, the following actions are required:

- If site conditions warrant, PPE shall be upgraded from Level D as needed. Follow the Vapor Management Plan (Section 12) and Contractor's site-specific HASP for respiratory protection and vapor monitoring.
- If appropriate, dewatering shall be discontinued until contaminants in the effluent water can be mitigated.

Dewatering shall be conducted in accordance with all applicable federal, state, and county requirements (including NPDES permit requirements) and/or disposed of in accordance with HAR §11-58.1 and 11-260.1.

10.5 RECORD KEEPING AND REPORTING

Detailed records shall be maintained of workspace monitoring, dewatering (if performed), groundwater disposal (if conducted), and response activities. Significant issues shall be communicated to site workers on a regular basis. Activities shall be described and well documented in the Close-out Report (Section 14) to be provided to the DOTA Project Manager or Tenant Representative and AIR-EE. A copy of the Close-out Report shall also be submitted to the DOH-HEER Office.

Table 2: Groundwater Reinfiltration or Disposal Options

Management Action	Groundwater Reinfiltration or Disposal Options
Reinfiltration or Reinjection within Immediate Work Area (including areas with known contamination)	Under many circumstances, contaminated groundwater can be reinfiltrated or reinjected within the work area (within 200 feet of the point of generation) as long as it will not contaminate previously unaffected areas. However, the hole, trench, or pit used for reinfiltration must not be deeper than it is wide, otherwise it is considered an injection well, which requires a UIC permit. DOTA will not allow reinfiltration if UIC permit is required. Groundwater shall only be reinfiltrated in the ground with the prior approval of AIR-EE and the DOH-HEER Office. The reinfiltration location shall be at least 150 meters away from surface water, drainage features, and drainage structures. The reinfiltration of groundwater into the aquifer within the work area where it was removed can be done pursuant to DOH regulations (TGM, Appendix 9-D). Water to be reinfiltrated/reinjected shall meet the following criteria: • Water is not considered a hazardous waste pursuant to federal or state law • Water does not contain any free product or other gross contaminants • Water can be reinfiltrated in a DOH-approved reinfiltration hole, trench, or pit • Advanced clearance from the DOH-SDWB if any portion of a reinfiltration trench is deeper than 10 feet. If construction of UIC wells is needed, DOH-SDWB permit requirements shall be met for well construction, placement, use, and closure. Water considered hazardous waste, regardless of its source, shall be managed offsite at an appropriately permitted facility or stored securely within the work area until remediation is completed.
Discharge to Sanitary Sewers / Disposal at Permitted Facility	For water that cannot be reinfiltrated or reinjected within the work area, alternative options currently include: • Discharge to the respective County sanitary sewer system, which requires appropriate permits and may require discharged water to meet Water Quality Standards • If discharge water was generated within contaminated areas, additional coordination with the DOH-HEER Office is required, and Aquatic Habitat Criteria (Chronic Toxicity) shall apply to discharge within these areas, in addition to any criteria applicable to NPDES (Appendix G – Discharges Associated with Construction Activity Dewatering) or pretreatment permit. • Transport for treatment and disposal at a DOH-permitted facility

11 Free Product Management Plan

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

Distribution of free product within the Airports has not been completely defined. Free product in the area may occur as free-flowing, black, viscous product, a thin layer of black, viscous product, a discontinuous layer of product, or a petroleum hydrocarbon sheen. Free product is generally confined to the general area of the capillary fringe of the shallow water table and is readily apparent visually and through olfactory detection.

Free product seeping from the side of an excavation.

11.1 FREE PRODUCT MANAGEMENT

If subsurface work extends to the depth of the capillary fringe of the water table, as shallow as 5 feet bgs depending on the location and elevation of the airport, free product may be encountered.

If free product is encountered during subsurface work, take appropriate response actions that conform to DOH and EPA regulatory requirements and guidelines. Anticipated tasks associated with managing free product are summarized as follows:

- Ensure that workers have the appropriate level of PPE
- Field oversight shall be provided by a QEP to identify free product, to recover the product to the extent practicable using absorbent pads/booms, oil-water separators, and/or vacuum trucks to skim free product off the water table, and to provide health and safety guidance related to potential exposure to the product to workers. Following completion of product recovery, the absorbents, PPE, and plastic sheeting may be allowed to dry prior to mandatory proper disposal.
- If dewatering is necessary and free product is floating on the water in the onsite infiltration pit(s), the free product shall be recovered to the extent practicable, and any absorbent material, such as absorbent pads, shall be disposed of properly. Free product may not be moved from one excavation to another and engineering measures shall be taken to prevent the transfer of free product during dewatering (e.g., placing the pump intake at a level below the free product layer, etc.).

- If free product produces vapors that could adversely affect air quality, follow the Vapor Management Plan (Section 12).

11.2 ENGINEERING AND ADMINISTRATIVE CONTROLS

The generation of explosive vapors from free product is possible. If generated, such vapors increase the risk of fire and/or explosion. Accordingly, if free product is encountered, the LEL of the workspace atmosphere shall be monitored using a combustible gas indicator. Typically, less than 10 percent of the LEL is a safe level to conduct activities unless toxic gases are present at levels of concern.

Vapor control methods (e.g., vapor suppressants) may be necessary during subsurface work when free product is encountered. If site conditions warrant, PPE shall be upgraded from Level D as needed. Follow the Vapor Management Plan (Section 12) and Contractor's site-specific HASP for respiratory protection and vapor monitoring.

11.3 PERIODIC INSPECTIONS AND PREVENTIVE MAINTENANCE

A key component of the plan is routine inspections. Locations where exposure of onsite workers to free product is possible (e.g., open excavations, dewatering pits, hoses, pumps, tanks, or spills from any of these sources) shall be inspected daily or more frequently as appropriate. In addition, daily inspections of the security fence and locked gates shall occur during construction activities where free product is encountered. PPE shall be inspected for damage and defects before personnel don the PPE. If respiratory protection is required, a daily positive pressure respirator fit test shall be performed at the start of each day, and filter cartridges for air-purifying respirators shall be replaced regularly as described in the Contractor's site-specific HASP.

Excavations, including infiltration pits if onsite dewatering is conducted, shall be inspected daily for the presence of free product on the water. If present, the free product shall be removed to the extent feasible using absorbent pads, skimming with a vacuum truck, or applying other means such as processing through an oil-water separator.

11.4 FREE PRODUCT CONTINGENCY PLAN

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

11.4.1 Open Excavations

If free product is encountered during subsurface work (e.g., on groundwater in excavations used for utility corridors or other subsurface structures) that could pose a direct exposure hazard to onsite workers, the following actions are required:

- Immediately notify the DOTA Project Manager or Tenant Representative, AIR-EE, and the DOH-HEER Office.
- If site conditions warrant, PPE shall be upgraded from Level D as needed. Follow the Vapor Management Plan (Section 12) and Contractor's site-specific HASP for respiratory protection and vapor monitoring.
- If the volume of free product encountered is too great for absorbent pads to handle effectively, use a vacuum truck to pump the free product out of the excavation and dispose offsite properly.

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

11.4.2 Dewatering Pits

If dewatering is conducted and free product is encountered that could pose a direct exposure hazard to onsite workers, the following actions are required:

- If site conditions warrant, PPE shall be upgraded from Level D as needed. Follow the Vapor Management Plan (Section 12) and Contractor's site-specific HASP for respiratory protection and vapor monitoring.
- If the volume of free product encountered is too great for absorbent pads to handle effectively, use a vacuum truck to pump the free product out of the dewatering pit and dispose offsite properly.
- If appropriate, dewatering shall be discontinued until the free product is recovered.
- Under no circumstances shall water contaminated with free product be discharged from a dewatering pit.

11.5 RECORD KEEPING AND REPORTING

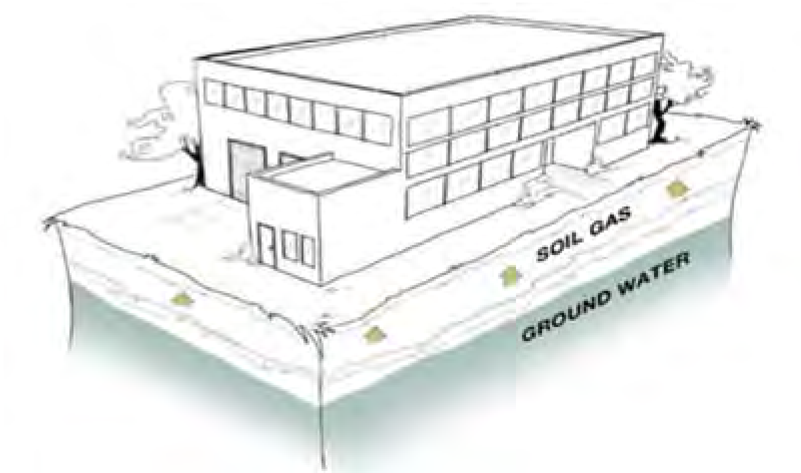
Detailed workspace monitoring records shall be maintained, including LEL measurements, product recovery, and response activities. Significant issues shall be communicated to site workers on a regular basis. Activities shall be described and well documented in the Close-out Report (Section 14) to be provided to the DOTA Project Manager or Tenant Representative and AIR-EE. A copy of the Close-out Report shall also be submitted to the DOH-HEER Office.

12 Vapor Management Plan

The purpose of the Vapor Management Plan is to identify and ensure proper handling and management of VOC vapors and toxic gases that could adversely affect air quality during subsurface work; describe the necessary controls for minimizing the exposure of onsite workers and the general public offsite to hazardous vapors created as a result of construction activities; describe procedures for identifying and mitigating potential physical hazards posed by the generation of explosive vapors; and describe general procedures for monitoring hazardous vapors and gases during field activities. Use this plan in conjunction with the Contractor's site-specific HASP, which shall describe procedures and equipment for monitoring hazardous vapor and gas concentrations, PPE, and engineering controls.

Principal hazards posed by VOC vapors at levels below LELs are direct exposure and gross contamination. The areas within which these hazards potentially pose the greatest concern are where contaminated soil, contaminated groundwater, and free product have been previously encountered.

Results of past assessments at the Airports indicate that soil vapor in some areas has been impacted by one or more COPCs. Principal sources of contaminated soil vapor at the Airports are PCS, contaminated groundwater, and free product. Methane, hydrogen sulfide, and carbon monoxide are also associated with free product.



Methane or other soil vapors can intrude into buildings.

12.1 VAPOR MANAGEMENT

If VOC vapors are encountered during subsurface work, take appropriate response actions that conform to DOH and EPA regulatory requirements and guidelines. Anticipated tasks associated with managing VOC vapor exposure are summarized as follows:

- Ensure that onsite workers have the appropriate level of PPE and that the general public is not adversely affected. Minimum PPE requirement is Level D PPE.
- Field oversight shall be provided by a QEP to identify VOC vapors and provide health and safety guidance related to the potential exposure of workers to COPCs.
- Air monitoring shall be conducted during subsurface work and when workers are required to enter excavations regardless of whether PCS or free product is present. VOC vapors shall be screened using a PID and a multi-gas meter shall be used to monitor LEL and toxic gases. Both workspace (onsite) and perimeter (offsite) air monitoring shall be conducted.

- If warranted by air monitoring results, upgrade onsite workers' respiratory protection.
- The contractor responsible for construction shall conduct air monitoring for confined space entry if required. Confined space entry and associated air monitoring requirements shall be described in the Contractor's site-specific HASP.
- Because anaerobic degradation of petroleum products will continue in the area for many years, methane gas, hydrogen sulfide, and carbon monoxide have the potential to be a problem for indoor workers, particularly in underground vaults. In addition, THP-g, TPH-d, and BTEX remain potential soil vapor COPCs in the area. Underground vaults shall be tested for LEL, methane, and toxic gases before entry. All new vaults shall be properly sealed to prevent soil vapor intrusion that could cause an explosion hazard during work in the vaults.

12.2 ENGINEERING AND ADMINISTRATIVE CONTROLS

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

Level D PPE is anticipated to be appropriate for workers during subsurface work. If site conditions warrant, as described above, PPE shall be upgraded as needed.

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, having workers stand upwind of VOC vapor sources whenever possible, or instituting a modified work schedule.

A natural control is that vapors originating from sites 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 and reducing the potential for vapor emissions.

12.3 PERIODIC INSPECTIONS AND PREVENTIVE MAINTENANCE

A key component of the plan is routine inspections and air monitoring. Daily or more frequent, if appropriate, air monitoring shall occur at all locations where exposure of onsite workers to hazardous vapors is possible (e.g., open excavations, soil stockpiles). PPE shall be inspected for damage and defects before personnel don the PPE. If respiratory protection is required, a daily positive pressure respirator fit test shall be performed at the start of each day, and filter cartridges for air-purifying respirators shall be replaced regularly.

All instruments used for air monitoring require calibration at the start of each work shift, at a minimum. The PID shall be calibrated using a 100 parts per million isobutylene standard. Measurements of the standard, or bump tests, shall be performed to confirm that the calibration is maintained. Recalibration may be necessary if the instrument performance is compromised by humidity or other factors. Records of the recalibrations shall be maintained. The organic vapor monitor for LEL shall be calibrated with a methane standard and zero calibration according to the manufacturer's specifications.

12.4 RECORD KEEPING AND REPORTING

Detailed workspace monitoring records including daily monitoring results and sampling locations and changes to PPE requirements shall be maintained. Significant issues shall be communicated to site workers on a regular basis. Activities shall be described and well documented in the Close-out Report (Section 14) to be provided to the DOTA Project Manager or Tenant Representative and AIR-EE. A copy of the Close-out Report shall also be submitted to the DOH-HEER Office.

13 Stormwater Management Plan

The purpose of the stormwater management plan is to provide procedures to prevent stormwater runoff from coming into contact with contaminated soil or groundwater and to provide contingencies in the event that such contact does occur. Principal hazards posed by stormwater runoff are direct exposure, gross contamination, and aquatic ecotoxicity. If contaminated stormwater leaves a project site, the general public and ecological receptors downgradient could be exposed to COPCs. Areas in which these hazards potentially pose the greatest concern are where contaminated soil, contaminated groundwater, and free product have been encountered and exposed at the surface.

Preventing stormwater from coming into contact with contaminated media is the principal concern. The most common way stormwater is exposed to contaminated media is when:

- Subsurface work exposes contaminated subsurface soil and/or groundwater to stormwater
- Contaminated soil stockpiles are exposed to stormwater
- Contaminated groundwater is exposed to stormwater when dewatering utilizes an onsite infiltration pit

13.1 STORMWATER MANAGEMENT

If contaminated soil or groundwater is encountered, take appropriate response actions that conform to DOH and EPA regulatory requirements and guidelines. Anticipated tasks associated with managing stormwater are summarized as follows:

- Limit the exposure of contaminated media to stormwater and prevent contaminated stormwater from discharging from the project area.
- Field oversight shall be provided by a QEP to identify contaminated media that could be exposed to stormwater runoff and to provide guidance related to controlling stormwater at the site.
- Monitor the weather throughout each workday for signs of approaching storms and/or heavy rains.
- Perform routine inspections to ensure all BMPs are in place and functioning properly and upgrade BMPs as needed.
- All construction activities, including clearing, grading, and excavation, that disturb one or more acres of total land area shall comply with the conditions of a DOH-approved NPDES permit for stormwater discharge associated with construction activity. Conditions of the permit include the preparation of a Storm Water Pollution Prevention Plan. Projects that include a utility connection to the Municipal Separate Storm Sewer System, hydrotesting, dewatering, or stormwater discharges from a utility connection or sheet flow shall obtain a DOTA Construction Connection, Discharge, and Surface Runoff Permit.

13.2 ENGINEERING AND ADMINISTRATIVE CONTROLS AND CONTINGENCY PLAN

In the absence of engineering and administrative controls, exposed contaminated soil and/or groundwater could come into contact with and contaminate stormwater with COPCs. To prevent this, the following activities are required:

13.2.1 Erosion and Sediment Control

Erosion and sediment control measures shall be in place and functional before construction activities commence and maintained throughout the construction period. If stormwater discharge from the site is anticipated, implement the following preventive measures:

- Stormwater flowing towards active construction areas shall be diverted away using appropriate control measures.
- Erosion control measures shall be designed to handle the size of the disturbed or drainage area to detain runoff and trap sediment.
- Height of the work area perimeter can be increased using sandbags as necessary.
- Additional silt fencing shall be added to affected site boundaries as necessary.
- Berms surrounding soil stockpiles shall be increased as necessary.
- Moveable booms shall be available to contain spills.
- Absorbent pads shall be employed if free product is observed in stormwater runoff.

13.2.2 Open Excavations

- Backfill excavations as soon as practicable to limit the time they are open and potentially exposed to stormwater runoff and direct precipitation.
- Berm the edges of excavations where practicable to prevent stormwater runoff from entering.
- Inspect open excavations each day to minimize the potential for direct precipitation to cause the excavation to overflow.

If a rain event is more severe than anticipated that could result in stormwater runoff entering an excavation causing it to overflow, one or more of the following actions are required:

- Increase the height of the berm along the edges of the excavation to prevent stormwater runoff from entering the excavation.
- Divert stormwater runoff away from the excavation.
- Cover the excavation with plastic sheeting to prevent the entry of direct precipitation or stormwater runoff.

13.2.3 Soil Stockpiles

- Properly stockpile all contaminated soil on plastic sheeting or impermeable liner, covered with plastic sheeting, and place sediment control devices along the entire toe of the stockpile. Stockpiles shall be located away from drainage features, surface waters, and stormwater drainage paths.
- At the end of each day, and/or before a rain event, cover the soil stockpiles with plastic sheeting to prevent contact with direct precipitation.
- Inspect the soil stockpiles daily to ensure the plastic sheeting is intact.

- Soil stockpiles shall be limited to a manageable size to prevent breaches of BMPs so that BMPs are effective.

If a rain event is more severe than anticipated that could result in stormwater runoff coming into contact with soil stockpiles, one or more of the following actions are required:

- Repair or replace berms surrounding soil stockpiles if damaged by the rain event. Additional plastic sheeting may be necessary.
- Increase the height of the berm surrounding the stockpile as necessary.
- Divert stormwater runoff away from soil stockpiles.
- Repair or replace plastic sheeting covering soil stockpiles if damaged by the rain event. Additional plastic sheeting may be necessary.

13.2.4 Dewatering Infiltration Pits

- Backfill infiltration pits as soon as practicable to limit the time they are open and potentially exposed to stormwater runoff and direct precipitation.
- Berm the edges of infiltration pits where practicable to prevent the entry of stormwater.
- Inspect Infiltration pits daily or more frequently as appropriate to minimize the potential for direct precipitation to cause the pit to overflow.

If a rain event is more severe than anticipated that could result in stormwater runoff entering a dewatering pit, causing it to overflow, one or more of the following actions are required:

- Increase the height of the berm along the edges of the dewatering pit to prevent stormwater runoff from entering the excavation.
- Divert stormwater runoff away from the dewatering pit.

13.2.5 Stormwater Run-on

Stormwater run-on could enter the work area and come into contact with contaminated soil or groundwater. If a rain event is more severe than anticipated that could result in stormwater run-on entering the work area, one or more of the following actions are required:

- Increase the height of the work area perimeter using sandbags.
- Divert stormwater run-on away from the work area.

13.2.6 Offsite Discharge of Contaminated Stormwater

If stormwater comes into contact with contaminated soil or groundwater and is not contained, contaminated stormwater could discharge offsite beyond the work area. If a rain event is more severe than anticipated that could result in the discharge of contaminated stormwater offsite, one or more of the following actions are required:

- Increase the height of the work area perimeter using sandbags.
- Divert stormwater runoff away from the site boundary.

- Deploy moveable, petroleum-absorbent booms along the affected site boundary and/or in front of offsite storm drain entrances in the immediate vicinity of the site.
- Use absorbent pads if free product is observed on stormwater runoff.
- If stormwater mixed with contaminated soil or groundwater is accidentally discharged offsite (outside of the project boundaries), report the spill to the DOH-HEER Office and AIR-EE.

13.3 INSPECTION AND PREVENTIVE MAINTENANCE

A key component of the plan is routine inspections. All locations of possible stormwater contact with contaminated media (e.g., open excavations, soil stockpiles, dewatering pits) shall be inspected daily. During prolonged rainfall, more frequent inspections may be necessary. During rain events, inspections shall occur to minimize the possibilities of stormwater runoff, contact of direct precipitation with soil stockpiles, and entry of stormwater runoff into open excavations or infiltration pits. If stormwater run-on occurs, accumulated water on the site shall 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 could come into contact with stormwater shall be inspected regularly to ensure proper functioning. Signs of deterioration or leaks that could lead to an unanticipated release of petroleum-based products or hazardous substances shall be reported immediately, and corrective measures taken. If a release occurs, follow the release reporting procedures in Section 6.

General site inspections shall occur periodically and shall be documented. Engineering controls shall be inspected and repaired as necessary. Accumulated sediment at the silt fence shall be removed once accumulation reaches one-third the height of the fence. If damaged, repair or replace the silt fence within 24 hours. During rain events, stormwater runoff shall be inspected to assess whether it has been impacted by COPCs or contaminants associated with construction activities.

13.4 RECORD KEEPING AND REPORTING

Detailed records of rain events, inspections of engineering controls, response activities, and corrective actions shall be maintained. Significant issues shall be communicated to site workers and the onsite project representative on a regular basis. If applicable, reporting requirements of the NPDES stormwater discharge permit shall be strictly followed. Activities shall be described and well documented in a Close-out Report (Section 14) to be provided to the DOTA Project Manager or Tenant Representative and AIR-EE. A copy of the Close-out Report shall also be submitted to the DOH-HEER Office.

14 Close-Out Report

The Close-out Report shall summarize all of the environmental activities that were conducted during the work. A copy of the Close-out Report shall be submitted to AIR-EE for review and approval and to the DOH-HEER Office to fulfill reporting requirements. The Close-out Report shall contain the following applicable contents:

- A signed letter certifying that the removal and disposal of all contaminated materials were completed in accordance with this Programmatic EHE-EHMP, as well as all applicable Federal, State, and local rules and regulations
- All testing and laboratory results, including chain of custody, for soil/sediment, groundwater, soil vapor, or other media sampling and analysis
- Any results from air monitoring
- Record of field observations, including location map with GPS coordinates, limits, and depths of any contaminated media (soil, groundwater, soil vapor) encountered at previously unknown sources or sites on the project. Include a copy of the completed Hawaii Hazardous Substance Written Follow-up Notification form submitted to DOH and all other associated documents.
- If contaminated soil was disposed of offsite (off airport property), include the following:
  - A copy of the signed agreement from the receiving facility acknowledging the sample test results and indicating acceptance of the soil
  - Documentation of the quantity of soil received by the facility
  - Copies of the test results of the soil sampling
  - All certifications, disposal forms, waste manifests, and summary logs
- If any soil was approved for reuse onsite (within the construction site boundaries) or offsite within Airport Property, at a minimum, include the following:
  - Copies of the test results of the soil sampling
  - The quantity of soil that was reused onsite
  - Location map of the reused soil including GPS coordinates of its emplaced limits
  - A brief description of the purpose of the reused soil (e.g., general fill, utility trench backfill material, etc.), including the depth and thickness of its placement
  - Photos of the site after placement of the reuse soil has been completed
- Record of field observations of any unanticipated UST or pipeline discovered during construction activities, including a copy of the completed DOH Notice of Intent to Close Underground Storage Tanks form, UST Closure Report, and all other associated documents.

The Close-out Report may be distinct for each contaminated media type/source. For sites with multiple contaminated media types/sources, Close-out Reports for each contaminated media type can be submitted separately or combined into a project-wide compilation of reports.

15 References

The latest versions of the documents listed below shall be referenced.

DOTA Construction Site Runoff/PBMP Program

- https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program/
- DOTA Construction BMP Manual

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program/construction-bmp-field-manual/
- DOTA Spill Response Reporting Form and Fact Sheets

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/spill-reporting-form/

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/hnl-environmental-compliance/hnl-spill-reporting-fact-sheet/

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/ogg-environmental-compliance/ogg-spill-reporting-fact-sheet/

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/all-other-airports-environmental-compliance/jrf-hdh-spill-reporting-fact-sheet/

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/all-other-airports-environmental-compliance/mkk-spill-reporting-fact-sheet/

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/lih-environmental-compliance/lih-spill-reporting-fact-sheet/

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/all-other-airports-environmental-compliance/ito-koa-spill-reporting-fact-sheet/

  https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/all-other-airports-environmental-compliance/all-other-airports-spill-reporting-fact-sheet/

DOH-HEER

- https://health.hawaii.gov/heer/
- TGM for Implementation of the State Contingency Plan (including updates). https://health.hawaii.gov/heer/tgm/
- Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material, October 2017. https://health.hawaii.gov/heer/files/2021/06/HDOH2017d.pdf
- Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater, Spring 2024 (draft). https://health.hawaii.gov/heer/guidance/ehe-and-eals/
- Construction EHMP and EHMP Addendum Templates: https://health.hawaii.gov/heer/guidance/environmental-hazard-management-plans/

- How to Report a Release/Spill:

  https://health.hawaii.gov/heer/reporting/how-to-report-a-release-spill/

DOH-SHWB

- Guidance for Construction and Demolition Waste Disposal, October 2013.
- https://health.hawaii.gov/shwb/files/2013/10/constdemguid.pdf

State of Hawaii Administrative Rules, Title 11, DOH

https://health.hawaii.gov/opppd/department-of-health-administrative-rules-title-11/

- Chapter 23 Underground Injection Control
- Chapter 54 Water Quality Standards
- Chapter 58.1 Solid Waste Management Control
- Chapter 59 Ambient Air Quality Standards
- Chapter 11-260.1-279.1 Hazardous Waste Management: General Provisions
- Chapter 280.1 Underground Storage Tanks
- Chapter 451 State Contingency Plan

The Hawaii Environmental Response Law (Hawaii Revised Statutes [HRS] Chapter 128D) and the State Contingency Plan (Hawaii Administrative Rules [HAR] Title 11, Chapters 451-1–451-24).

CFR, Title 40: Protection of the Environment

https://www.ecfr.gov/current/title-40

- Part 50, "National Primary and Secondary Ambient Air Quality Standards A".
- Part 122, "EPA Administered Permit Program: The National Pollutant Discharge Elimination System".
- Part 261, "Identification and Listing of Hazardous Waste".
- Part 263, "Standards Applicable to Transporters of Hazardous Waste".
- Part 302, "Designation, Reportable Quantities, and Notification".

CFR, Title 49: Transportation

https://www.ecfr.gov/current/title-49

- Part 171, "General Information, Regulations, and Definitions".
- Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans".

U.S. EPA Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA), Section 107(1), exemption for cleanup of legally applied pesticide products.

https://www.epa.gov/enforcement/superfund-enforcement-authorities

United States Code of Federal Regulations (CFR), Title 29: Labor

https://www.ecfr.gov/current/title-29

Department of Labor and Industrial Relations HIOSH: https://labor.hawaii.gov/hiosh/

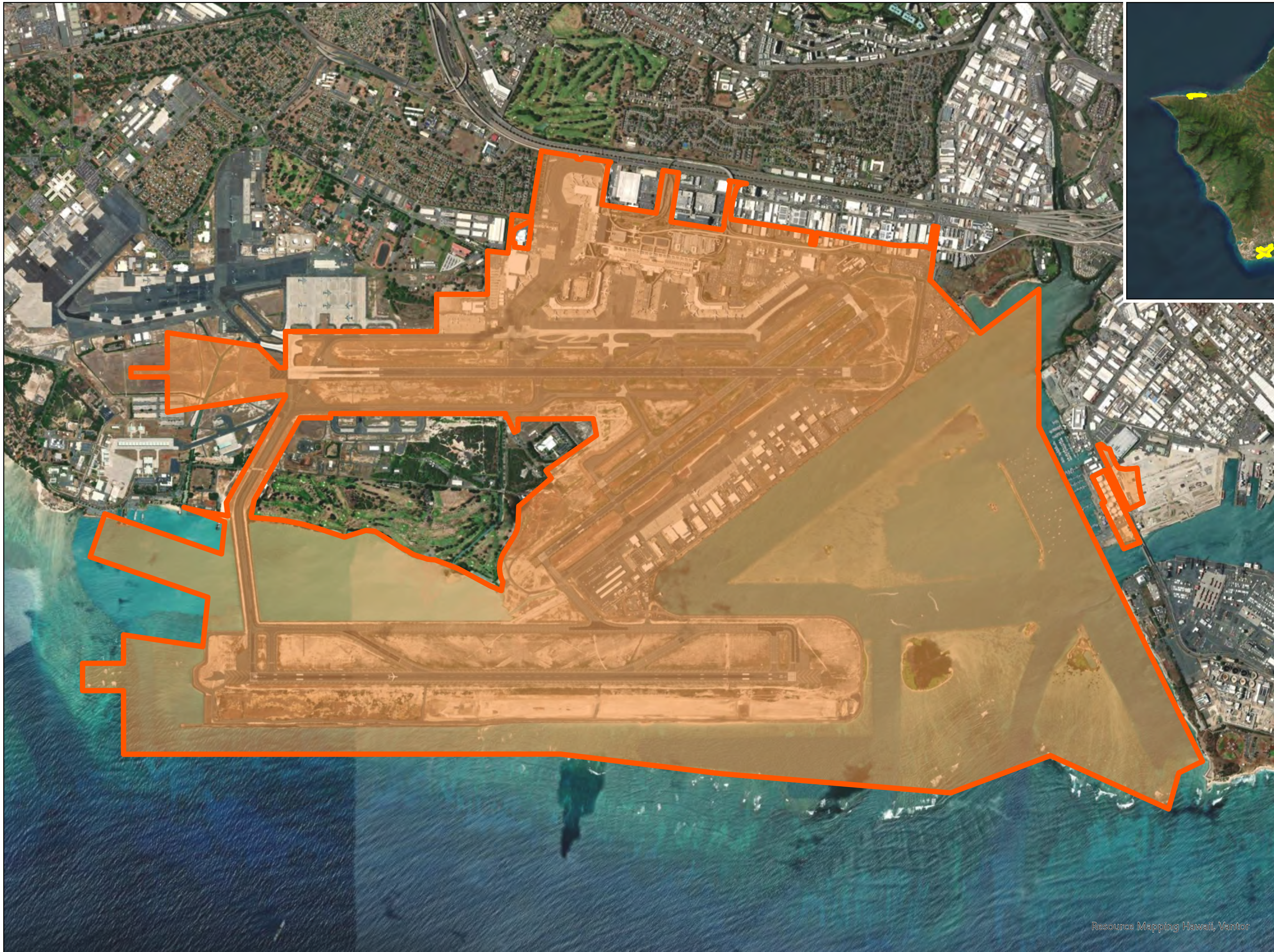
FIGURES

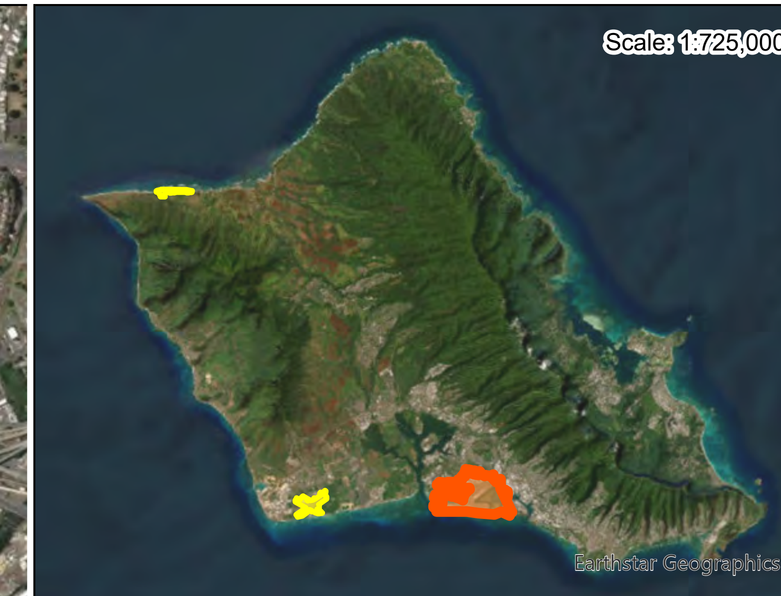
FIGURE 1

AIRPORT LOCATION MAP

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL





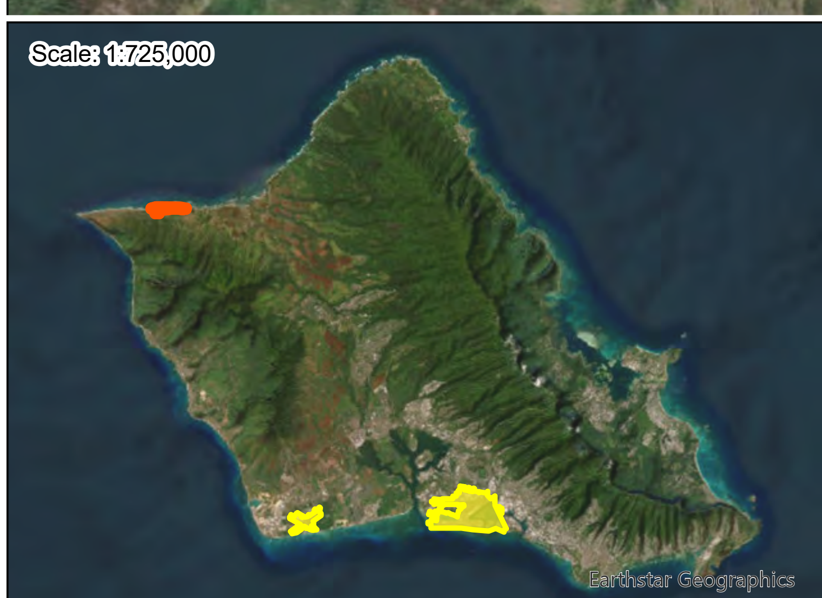
OAHU DISTRICT

0 0.2 0.4 0.8
Scale in Miles

FIGURE 2
DANIEL K. INOUYE INTERNATIONAL AIRPORT [HNL]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL



OAHU DISTRICT

0 0.07 0.15 0.3

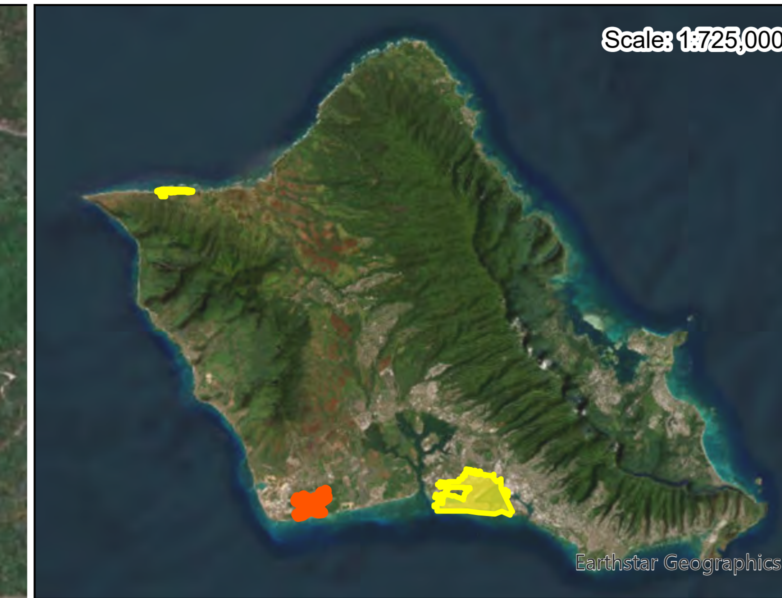
Scale in Miles

FIGURE 3

KAWAIHAPAI AIRFIELD [HDH]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL



OAHU DISTRICT

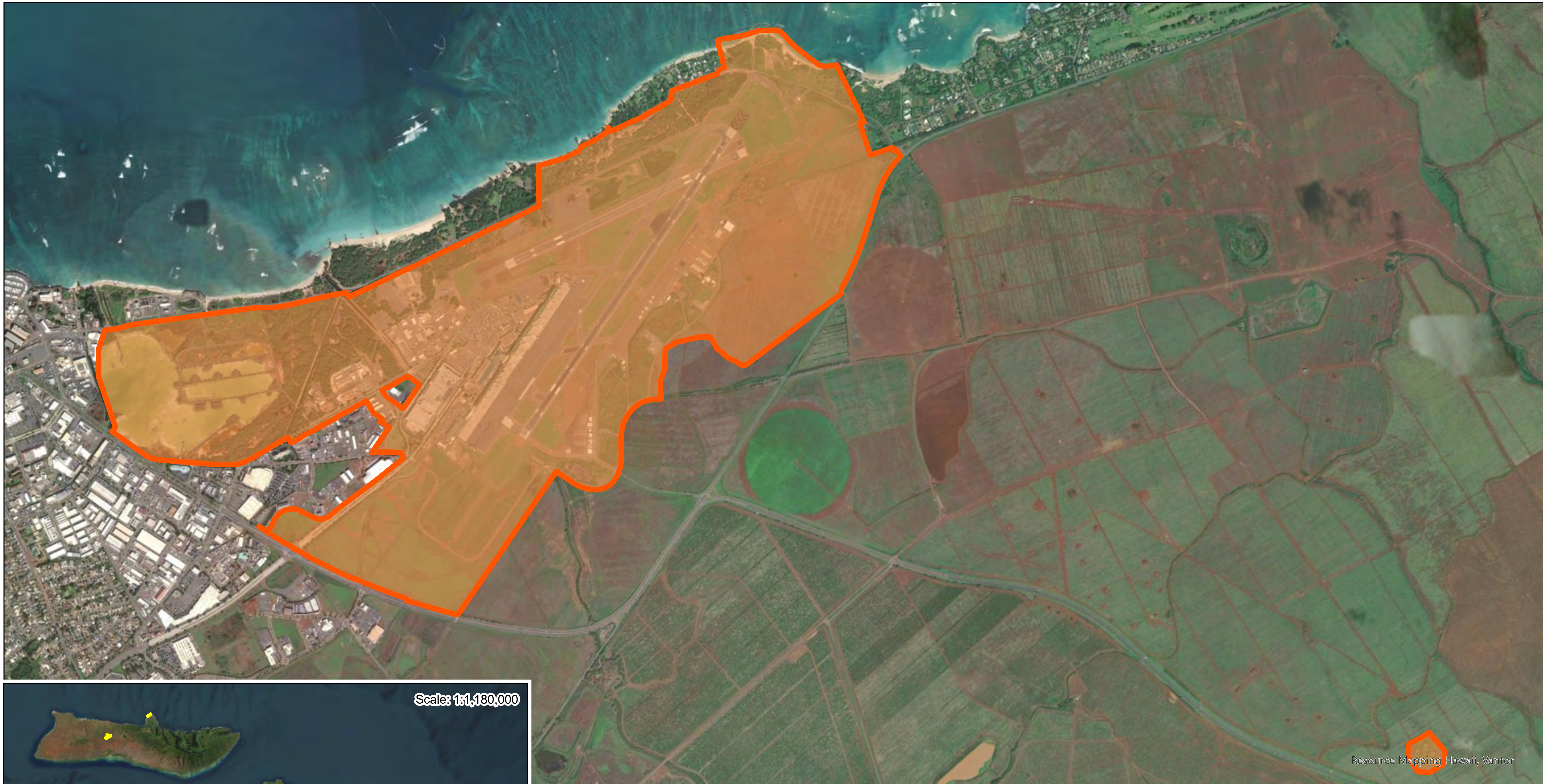
0 0.1 0.2 0.4
Scale in Miles

FIGURE 4

KALAELOA AIRPORT [JRF]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL



MAUI DISTRICT

0 0.17 0.35 0.7
Scale in Miles

FIGURE 5
KAHULUI AIRPORT [OGG]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL

MAUI DISTRICT

FIGURE 6
KAPALUA AIRPORT [JHM]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL

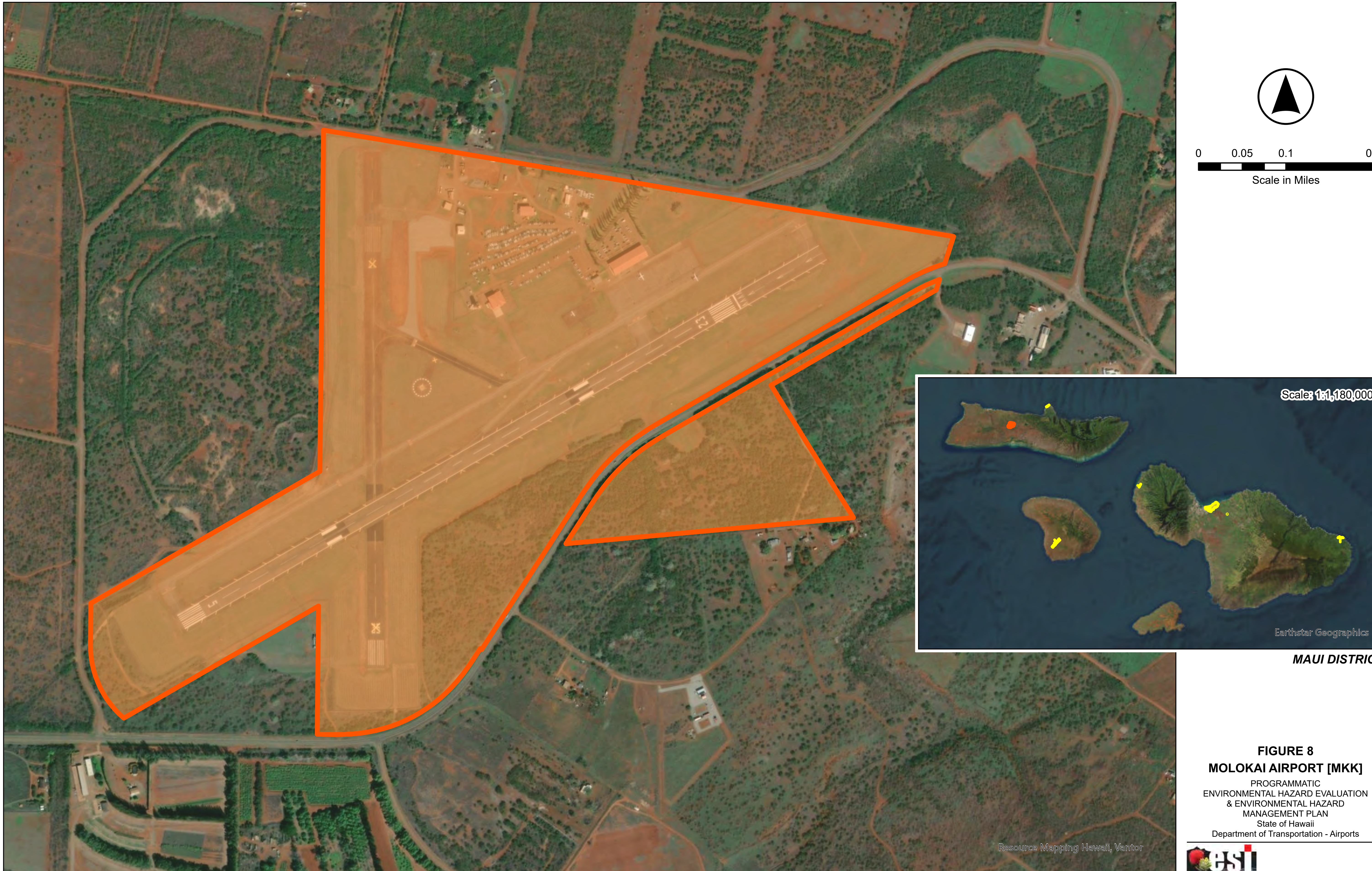
MAUI DISTRICT

0 0.1 0.2 0.4
Scale in Miles

FIGURE 7
LANAI AIRPORT [LNY]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL



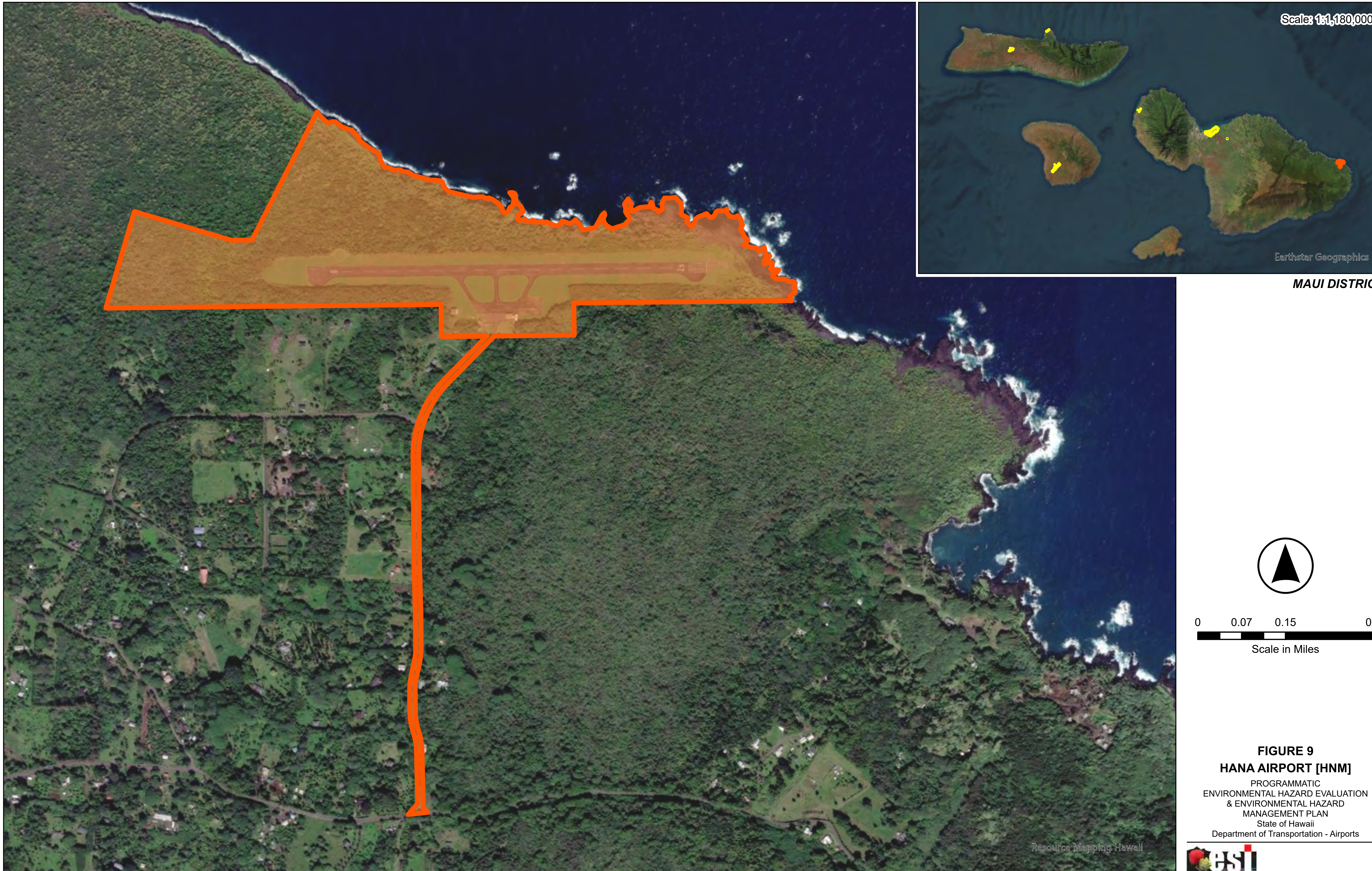
MAUI DISTRICT

FIGURE 8

MOLOKAI AIRPORT [MKK]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL



MAUI DISTRICT

0 0.07 0.15 0.3

Scale in Miles

FIGURE 9

HANA AIRPORT [HNM]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL

0 0.03 0.07 0.13

Scale in Miles

MAUI DISTRICT

FIGURE 10

KALAUPAPA AIRPORT [LUP]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL

KAUAI DISTRICT

0 0.15 0.3 0.6

Scale in Miles

FIGURE 11

LIHUE AIRPORT [LIH]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL

KAUAI DISTRICT

0 0.04 0.09 0.17

Scale in Miles

FIGURE 12

PORT ALLEN AIRPORT [PAK]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL

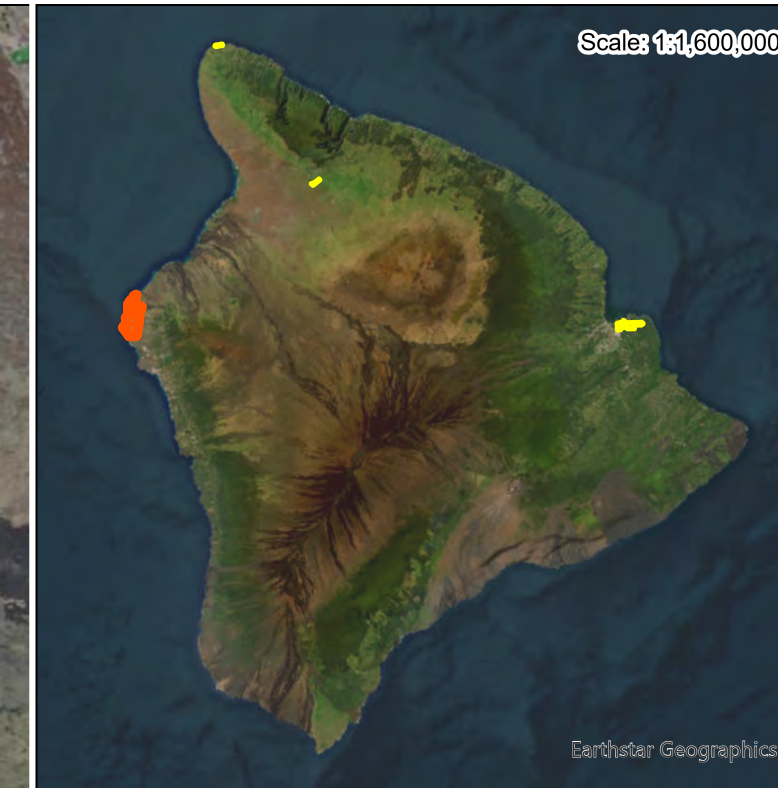
HAWAII DISTRICT

0 0.13 0.25 0.5
Scale in Miles

FIGURE 13
HILO INTERNATIONAL AIRPORT [ITO]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL



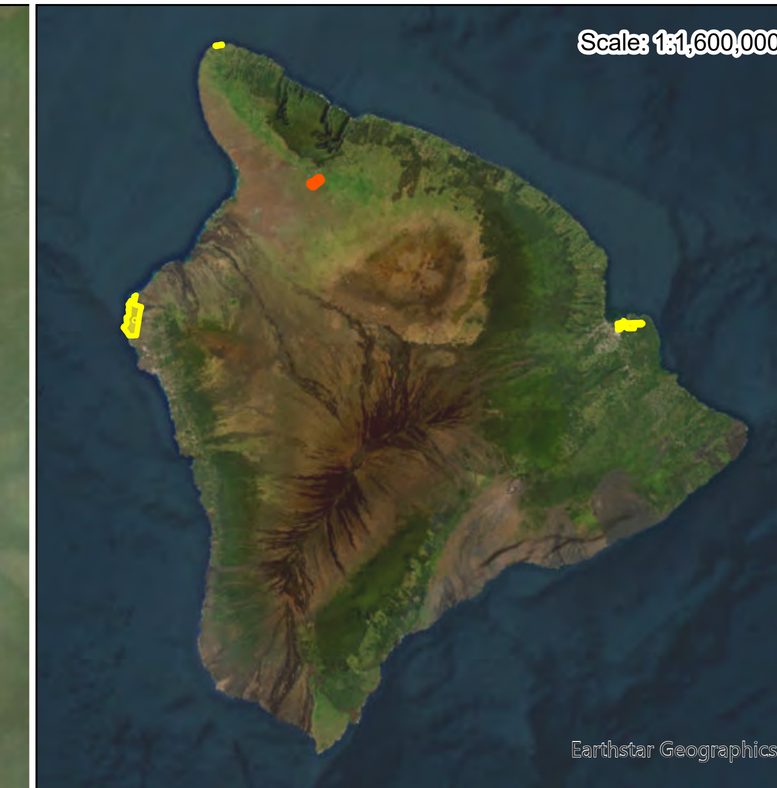
HAWAII DISTRICT

0 0.3 0.6 1.2
Scale in Miles

FIGURE 14
ELLISON ONIZUKA
KONA INTERNATIONAL
AIRPORT [KOA]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL



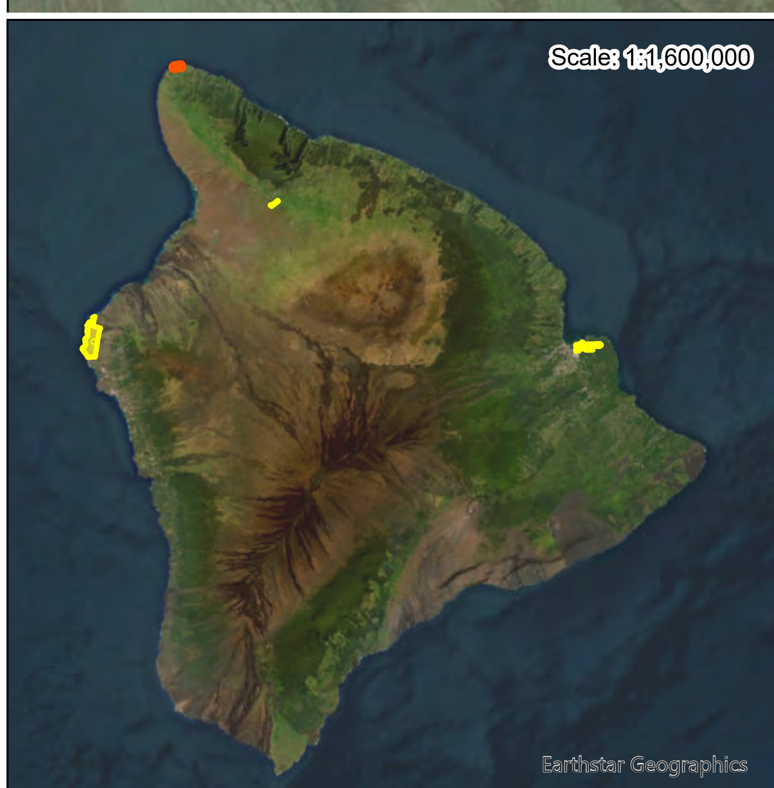
HAWAII DISTRICT

0 0.05 0.1 0.2
Scale in Miles

FIGURE 15
WAIMEA-KOHALA
AIRPORT [MUE]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL



HAWAII DISTRICT

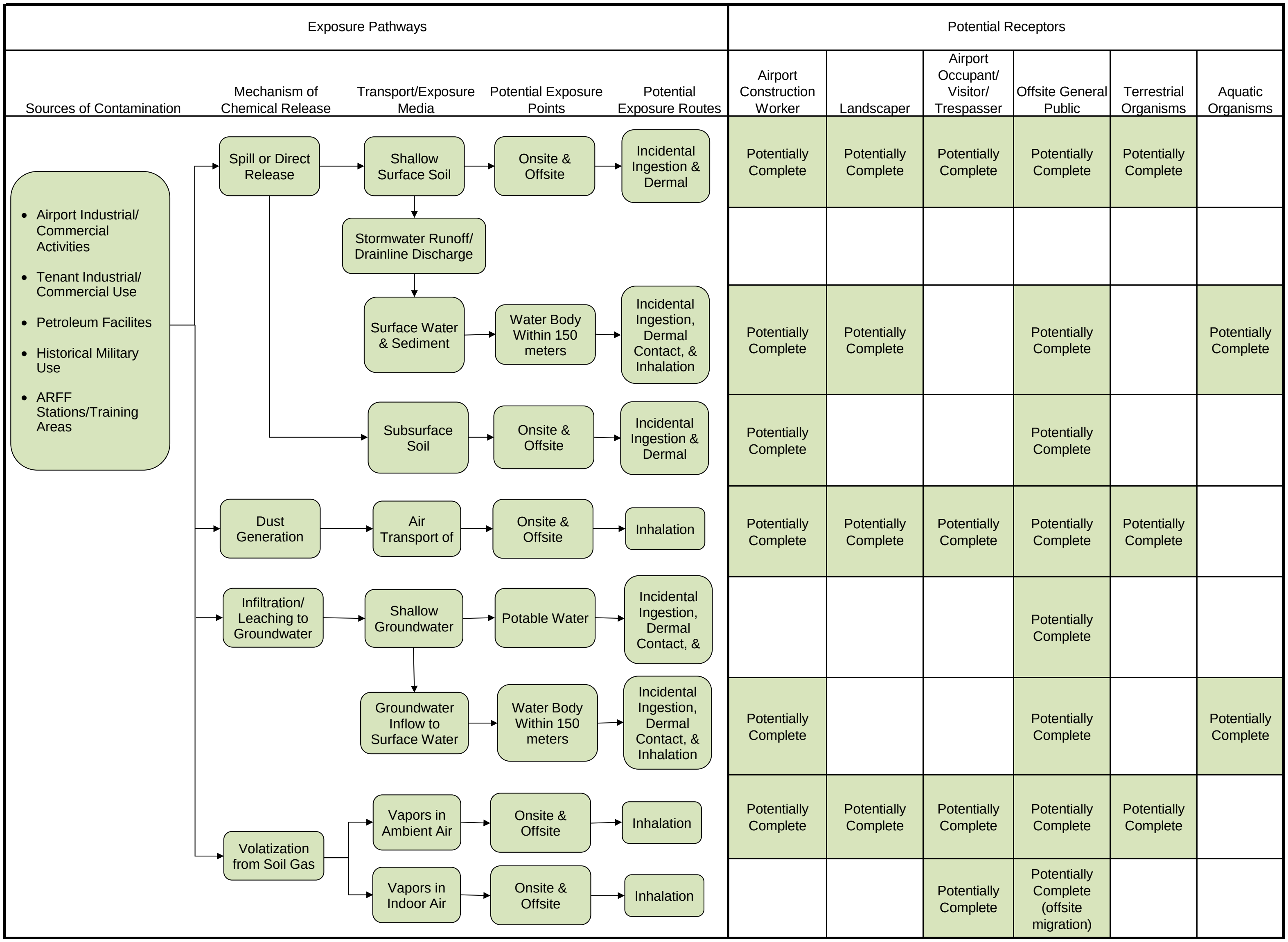
0 0.04 0.07 0.15
Scale in Miles

FIGURE 16
UPOLU AIRPORT [UPP]

PROGRAMMATIC
ENVIRONMENTAL HAZARD EVALUATION
& ENVIRONMENTAL HAZARD
MANAGEMENT PLAN
State of Hawaii
Department of Transportation - Airports

ENVIRONMENTAL SCIENCE INTERNATIONAL

Figure 17
Conceptual Site Model for Potential Human and Ecological Receptors
Programmatic EHE-EHMP
State of Hawaii
Department of Transportation, Airports



Note:

Potentially Complete Source Interaction Pathway

ESI/122008:DO-07