

Record of Decision

Forty-Five Transformer Sites

PEARL HARBOR NAVAL COMPLEX
OAHU, HAWAII

September 2007

Commander
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Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0004

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ACRONYMS AND ABBREVIATIONS

$\mu\text{g}/100\text{ cm}^2$	microgram per 100 square centimeters
AOPC	areas of potential contamination
AM	action memorandum
AR	administrative record
ARAR	applicable or relevant and appropriate requirement
bcy	bank cubic yard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CSM	conceptual site model
cy	cubic yard
DOH	State of Hawaii Department of Health
ECC	Environmental Chemical Corporation
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ERC	ERC Environmental and Energy Services Company
FFA	Federal Facilities Agreement
GSA	geographic study area
IAS	initial assessment study
IMF	Intermediate Maintenance Facility
mg/kg	milligram per kilogram
NAS	Naval Air Station
NAVFAC Hawaii	Naval Facilities Engineering Command, Hawaii
NAVFAC PAC	Naval Facilities Engineering Command, Pacific
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCTAMSPAC	Naval Computer and Telecommunications Area Master Station Pacific
NEESA	Naval Energy and Environmental Support Activity
NPL	National Priorities List
NRTF	Naval Radio Transmitting Facility
NTCRA	non-time-critical removal action
PCB	polychlorinated biphenyls
PHNC	Pearl Harbor Naval Complex
PWC	Public Works Center
RAB	restoration advisory board
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
ROD	record of decision
RVR	remediation verification report
SAL	soil action level
SARA	Superfund Amendments and Reauthorization Act
SI	site inspection
SSE	site summary evaluation
TBC	to-be-considered
TSCA	Toxic Substances Control Act

1. Declaration

1.1 SITE NAME AND LOCATION

This record of decision (ROD) has been prepared for 45 individual transformer sites located at Pearl Harbor Naval Complex (PHNC) located on Oahu, Hawaii (Figure 1).

For administration and management, PHNC has been subdivided into 18 geographical study areas (GSA). Eight GSAs are discussed in this ROD and include: Ford Island, Halawa-Main Gate, Naval Housing, Public Works Center (PWC) Main Complex, Pearl Harbor Naval Shipyard, Iroquois Point, Waipio Peninsula, and West Loch. The transformer sites within each GSA are listed below.

- Ford Island: TA-01, TC-01, TC-04, TC-06D, TC-07D, TD-01, TD-02, TD-03, TD-05, TD-07, TF-01/TF-01D, TF-04, TF-05, TF-07, TF-09, TF-17, TF-18, TG-01, TG-03, TG-06, TI-03, TI-04D
- Halawa-Main Gate: Former Building 653, H-2, H-3, J-12, J-16, J-17, J-21, J-29, K-15, K-20
- Naval Housing: M-3
- PWC Main Complex: M-5
- Pearl Harbor Naval Shipyard: A-4, A-8, C-8, C-13, E-11, E-25, K
- Iroquois Point: I-4
- Waipio Peninsula: W-11
- West Loch: FS11, Former Building 33

The U.S. Navy completed several Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) non-time-critical removal actions (NTCRA) at these sites. PHNC is currently on the National Priorities List (NPL) maintained by the U.S. Environmental Protection Agency (EPA). This facility (Comprehensive Environmental Response, Compensation and Liability Information System [CERCLIS] ID Number HI4170090076) was placed on the NPL on October 14, 1992.

1.2 STATEMENT OF BASIS AND PURPOSE

This ROD presents the no further action decision for 45 transformer sites at PHNC. The final decision was chosen in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and the Office of the President of the United States, Executive Orders 12088 and 12580. Information supporting the decisions leading to the selected remedy is contained in the administrative record (AR) files for these sites. The Navy and EPA, with concurrence by the State of Hawaii Department of Health (DOH), select no further action as the final remedy for these transformer sites. Concurrence is indicated by the signature in Section 1.6.

1.3 ASSESSMENT OF SITE

Polychlorinated biphenyl (PCB)-contaminated surface and subsurface soil and concrete were identified at the 45 transformer sites at PHNC. Removal actions were necessary for each of these transformer sites to protect human health and the environment from PCBs in soil and concrete. After the removal actions, the Navy and EPA have concluded that no further action is necessary to protect public health or welfare or the environment.

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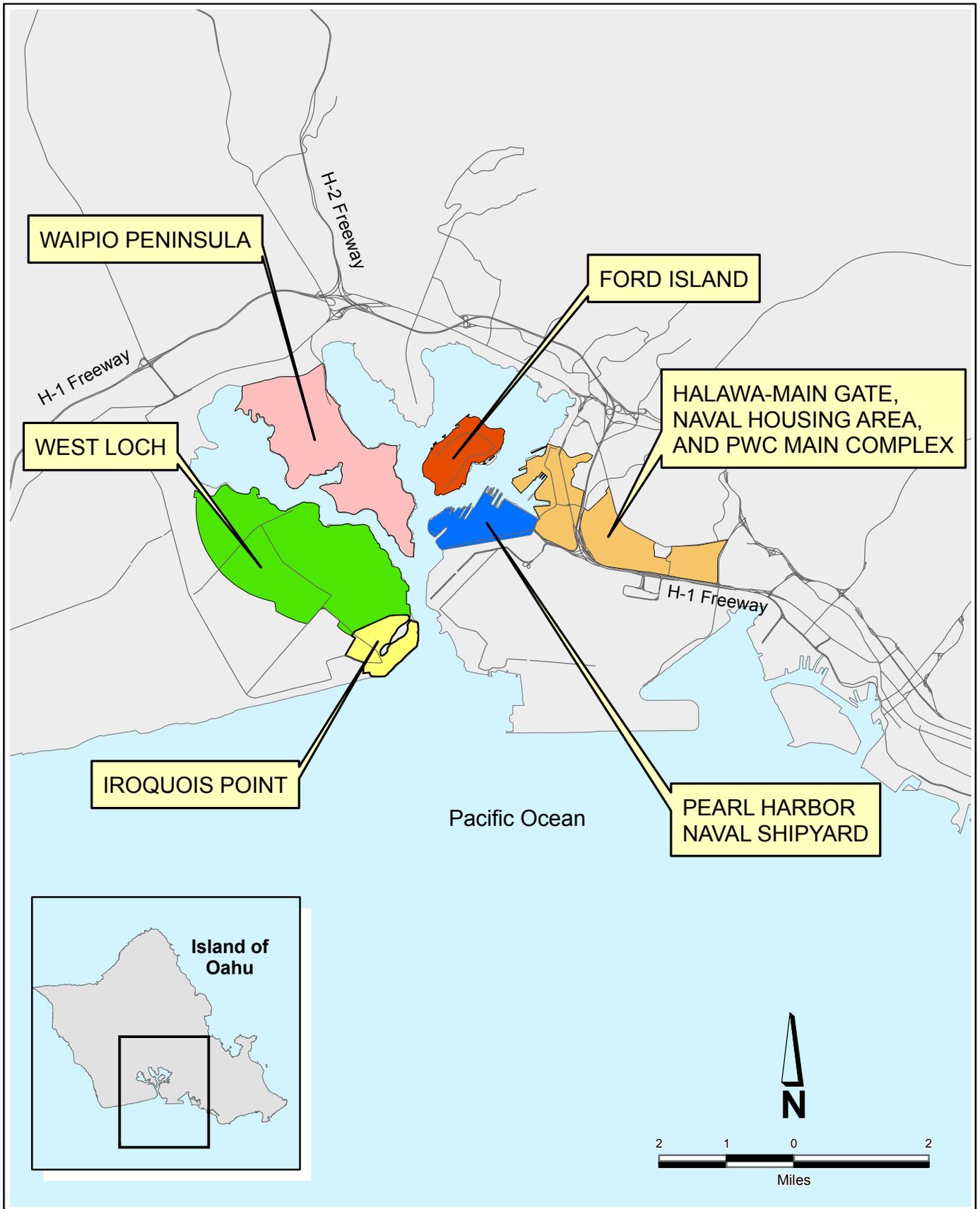


Figure 1
Facility Location Map
Pearl Harbor Naval Complex GSAs
PHNC, Oahu, Hawaii

1.4 DESCRIPTION OF THE SELECTED REMEDY

The Navy and EPA have selected no further action as the final remedy for the 45 transformers sites at PHNC. A CERCLA NTCRA was conducted at transformers TC-01 and J-16 from December 2000 to August 2001, consisting of excavation and on-island thermal desorption treatment of PCB-contaminated soil. A total of 154 cubic yards (cy) of PCB-containing soil was removed. Excavated soil was treated by thermal desorption at former Naval Air Station (NAS) Barbers Point, and the excavated areas were then backfilled with the treated soil, compacted, and restored (such as landscaping, concrete and asphalt paving).

A NTCRA was also conducted at the 43 remaining sites from January 2004 to July 2004 to remove PCB-contaminated soil and concrete. A total of 10,391.5 cy of PCB-contaminated soil and concrete was excavated from these sites and treated at the on-island thermal desorption treatment unit at former NAS Barbers Point. The excavated concrete was crushed and treated as bulk material in the thermal desorption unit. All treated soil was used as fill at the excavated sites.

The NTCRAs were conducted to reduce potential risks to human and ecological receptors to acceptable levels. Post-excavation confirmation sampling verified that PCB-contaminated soil and concrete had been removed and confirmed that established cleanup levels had been achieved. The removal of PCB-contaminated soil and concrete at concentrations that exceeded the cleanup levels achieved the removal action objective of protecting human health and the environment. As a result, all 45 transformers sites at PHNC are in a protective state for human health and the environment for unrestricted use, and no further action is necessary at these sites.

This decision is supported by documents in the AR files for PHNC. The restoration advisory board (RAB), composed of representatives of the DOH, EPA, Navy, and the community, provided review and comment that led to the selection of this no further action decision.

1.5 STATUTORY DETERMINATIONS

The Navy is the lead agency for environmental cleanup at Pearl Harbor pursuant to Executive Order 12080 and 12580, which authorizes the Navy to conduct CERCLA response actions such as the removal of PCB-contaminated soil and concrete at PHNC in accordance with CERCLA Section 120. Pursuant to 10 U.S.C. sec. 2705 and Section 11.4 of the PHNC Federal Facilities Agreement (FFA), EPA and DOH are afforded an opportunity for timely review and comment before the Navy undertakes a removal action, and CERCLA Section 120 provides for the joint selection of remedial actions by the Navy and EPA. The DOH has also provided oversight during the environmental investigations and cleanup activities on PHNC.

The Navy and EPA jointly have determined that no further action is needed following CERCLA NTCRAs at all 45 transformer sites, and that these transformer sites are in a protective state for human health and the environment and meet criteria for unrestricted use; therefore, no further action is planned. This decision is reached because residual PCBs in soil present at the sites do not exceed the Toxic Substances Control Act (TSCA) high-occupancy cleanup levels (1 milligram per kilogram [mg/kg] for soil and 10 micrograms per 100 square centimeters [$10\mu\text{g}/100\text{ cm}^2$] for concrete) at 40 Code of Federal Regulations (CFR) 761.61(a)(4) and the DOH Tier 1 soil action level (SAL) (1 mg/kg) for unrestricted use (DOH 2005). The TSCA high-occupancy cleanup level (1 mg/kg) is an applicable or relevant and appropriate requirement (ARAR), and the DOH Tier 1 SAL (1 mg/kg) is a "to-be-considered" (TBC) criterion for the response action completed at this site. Through the removal action at these sites, the toxicity, volume, and mobility of PCBs were reduced by excavating the soil or by removing and crushing the contaminated concrete, then treating the soil and crushed concrete by thermal desorption.

The results of the completed NTCRA indicate the sites are environmentally suitable for unrestricted reuse, and the 5-year review requirement under CERCLA Section 121 (c) is not applicable.

1.6 AUTHORIZING SIGNATURES

The Navy and EPA have jointly selected the remedy described in this ROD, and have determined that the no further action decision allows unrestricted land use at the 45 transformer sites presented below, which are located at PHNC, Oahu, Hawaii.

- Ford Island: TA-01, TC-01, TC-04, TC-06D, TC-07D, TD-01, TD-02, TD-03, TD-05, TD-07, TF-01/TF-01D, TF-04, TF-05, TF-07, TF-09, TF-17, TF-18, TG-01, TG-03, TG-06, TI-03, TI-04D
- Halawa-Main Gate: Former Building 653, H-2, H-3, J-12, J-16, J-17, J-21, J-29, K-15, K-20
- Naval Housing: M-3
- PWC Main Complex: M-5
- Pearl Harbor Naval Shipyard: A-4, A-8, C-8, C-13, E-11, E-25, K
- Iroquois Point: I-4
- Waipio Peninsula: W-11
- West Loch: FS11, Former Building 33



Aaron Y. Poentis
Regional Environmental Program Manager

9/25/07

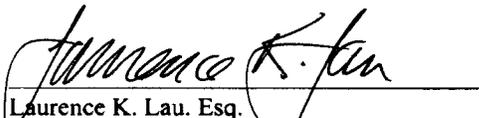
Date

By direction of
Commander, Navy Region Hawaii

Michael Montgomery
Chief, Federal Facilities and Site Cleanup Branch
Superfund Division, U.S. Environmental Protection Agency, Region 9

Date

The State of Hawaii DOH concurs with the selected remedy as documented in the ROD.



Laurence K. Lau, Esq.
Deputy Director of Environmental Health
State of Hawaii, Department of Health

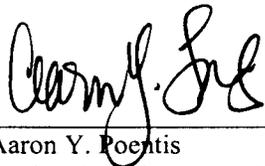
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Date

The results of the completed NTCRA indicate the sites are environmentally suitable for unrestricted reuse, and the 5-year review requirement under CERCLA Section 121 (c) is not applicable.

1.6 AUTHORIZING SIGNATURES

The Navy and EPA have jointly selected the remedy described in this ROD, and have determined that the no further action decision allows unrestricted land use at the 45 transformer sites presented below, which are located at PHNC, Oahu, Hawaii.

- Ford Island: TA-01, TC-01, TC-04, TC-06D, TC-07D, TD-01, TD-02, TD-03, TD-05, TD-07, TF-01/TF-01D, TF-04, TF-05, TF-07, TF-09, TF-17, TF-18, TG-01, TG-03, TG-06, TI-03, TI-04D
- Halawa-Main Gate: Former Building 653, H-2, H-3, J-12, J-16, J-17, J-21, J-29, K-15, K-20
- Naval Housing: M-3
- PWC Main Complex: M-5
- Pearl Harbor Naval Shipyard: A-4, A-8, C-8, C-13, E-11, E-25, K
- Iroquois Point: I-4
- Waipio Peninsula: W-11
- West Loch: FS11, Former Building 33



Aaron Y. Poentis
Regional Environmental Program Manager

9/25/07

Date

By direction of
Commander, Navy Region Hawaii



Michael Montgomery
Chief, Federal Facilities and Site Cleanup Branch
Superfund Division, U.S. Environmental Protection Agency, Region 9

9/30/07

Date

The State of Hawaii DOH concurs with the selected remedy as documented in the ROD.

Laurence K. Lau, Esq.
Deputy Director of Environmental Health
State of Hawaii, Department of Health

Date

2. Decision Summary

2.1 SITE NAME, LOCATION, AND DESCRIPTION

PHNC encompasses 12,600 acres of land and water on the southern shore of the island of Oahu, Hawaii. PHNC has been subdivided into 18 GSAs, of which eight GSAs are discussed in this ROD and include: Ford Island, Halawa-Main gate, Naval Housing, PWC Main Complex, Pearl Harbor Naval Shipyard, Iroquois Point, Waipio Peninsula, and West Loch.

Ford Island is a 450-acre island surrounded by water, located within Pearl Harbor. Twenty-two transformer sites are located in this GSA (Figure 2):

- TA-01: Located at Building S286, the site includes the surrounding area of vegetation to the east, concrete to the southeast, and an asphalt patch to the west.
- TC-01: The site includes a concrete pad located between Buildings 11 and S-32, and its surrounding area.
- TC-04: This site consists of Building S257 and the surrounding area, which consists of grass, old asphalt, and gravel.
- TC-06D: The site is located across the street from Building 54 and includes an elevated concrete pad surrounded by pavement and grass.
- TC-07D: This location consists of Building S258 and the surrounding area including grass and concrete pavement.
- TD-01: The site is located near Wasp Boulevard and includes the transformer area and surrounding concrete pavement and grass.
- TD-02: Located adjacent to Building 169. The fenced site includes the transformer pad and surrounding grass.
- TD-03: The site is adjacent to Building 164 and includes the transformer pad and surrounding area, including grass on the north side of the transformer.
- TD-05: The site includes Building 176 and surrounding grass and concrete sidewalk.
- TD-07: This site includes Building 175 and surrounding grass and a concrete sidewalk.
- TF-01/TF-01D: This collocated site adjacent to Building 77 includes the concrete pads and surrounding grass and pavement.
- TF-04: The site includes Building 208 and its surrounding area, including grass to the southwest.
- TF-05: This site includes Building S295, the concrete sidewalk to the east, and grass to the south and north.
- TF-07: The site is adjacent to Building 37 and consists of the concrete pad and surrounding grass and concrete.
- TF-09: This site includes Building S99 and surrounding concrete pavement.
- TF-17: The site includes Building 75 and surrounding gravel and concrete sidewalk.
- TF-18: The site is adjacent to Building 87 and includes the concrete pad and surrounding area (a concrete driveway is located northwest, and grass is located southwest).

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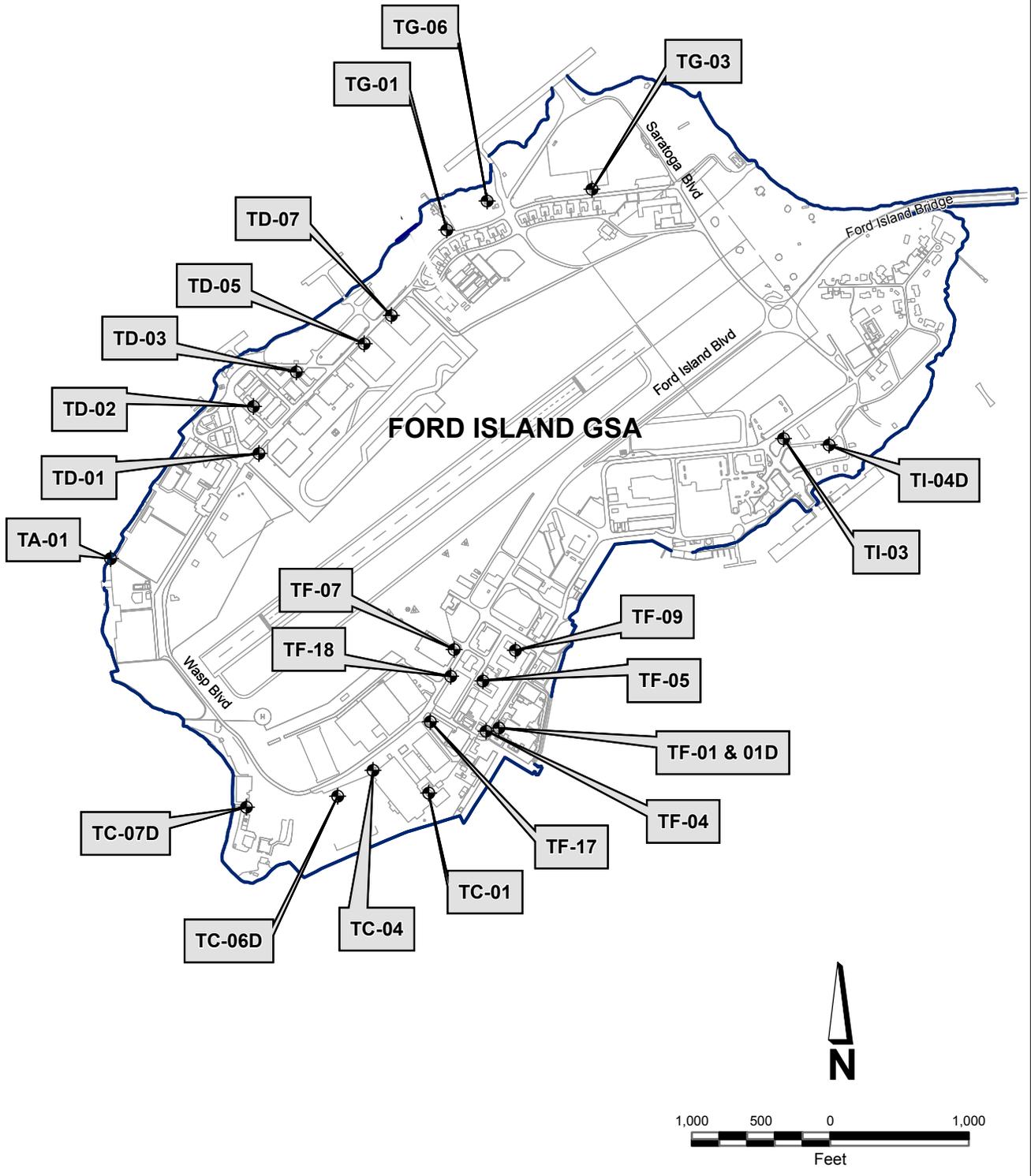


Figure 2
Transformer Site Location Map
Ford Island GSA
PHNC, Oahu, Hawaii

- TG-01: This site includes Building S253 and surrounding grass on the north, east, and south sides.
- TG-03: This site includes Building S254, the surrounding concrete slab to the west and north, and grass to the north and east. Yorktown Boulevard is to the south.
- TG-06: The site is adjacent to Building 453 and includes a concrete pad and surrounding asphalt.
- TI-03: The site includes Building S251 and the surrounding area. A concrete slab is located south and southwest of the building; the concrete slab is surrounded by grass.
- TI-04D: The site includes the area adjacent to Langley Avenue and surrounding concrete. Grass is beyond the concrete.

Halawa-Main Gate encompasses the region west of the shoreline of Pearl Harbor to Kamehameha Highway. The 10 transformer sites located in this GSA are listed below (Figure 3):

- Former Building 653: The site includes Building 653 and its surrounding soil and grass.
- H-2: The site is adjacent to Building 1377 and includes a concrete pad surrounded by gravel and grass.
- H-3: The site is near Building 1333 and includes a concrete pad surrounded by grass and soil and a concrete sidewalk.
- J-12: The site is adjacent to Building 1613 and includes a concrete pad surrounded by grass and soil.
- J-16: The site includes Building 662 and surrounding concrete and soil.
- J-17: The site includes Building S-967, which is located on a concrete pier, and surrounding asphalt and concrete.
- J-21: This site includes a concrete block building surrounded by soil, vegetation, and gravel.
- J-29: The site includes a concrete pad surrounded by soil and vegetation and a concrete fence.
- K-15: The site is next to Building 427 and includes the transformer area and surrounding soil and vegetation.
- K-20: This site is next to Building 484 and includes the transformer area and surrounding asphalt, vegetation, and gravel.

Naval Housing is located between Kamehameha Highway and the H-1 freeway. One transformer site is located in this GSA (Figure 3):

- M-3: This site includes an outdoor concrete pad surrounded by a fence. The fenced area is bordered by soil on three sides and asphalt on the remaining side

PWC Main Complex is located on the east side of the H-1 freeway in a residential and commercial area of PHNC. One transformer site is located in this GSA (Figure 3):

- M-5: This site consists of an outdoor concrete pad surrounded by a fence and soil and asphalt drive.

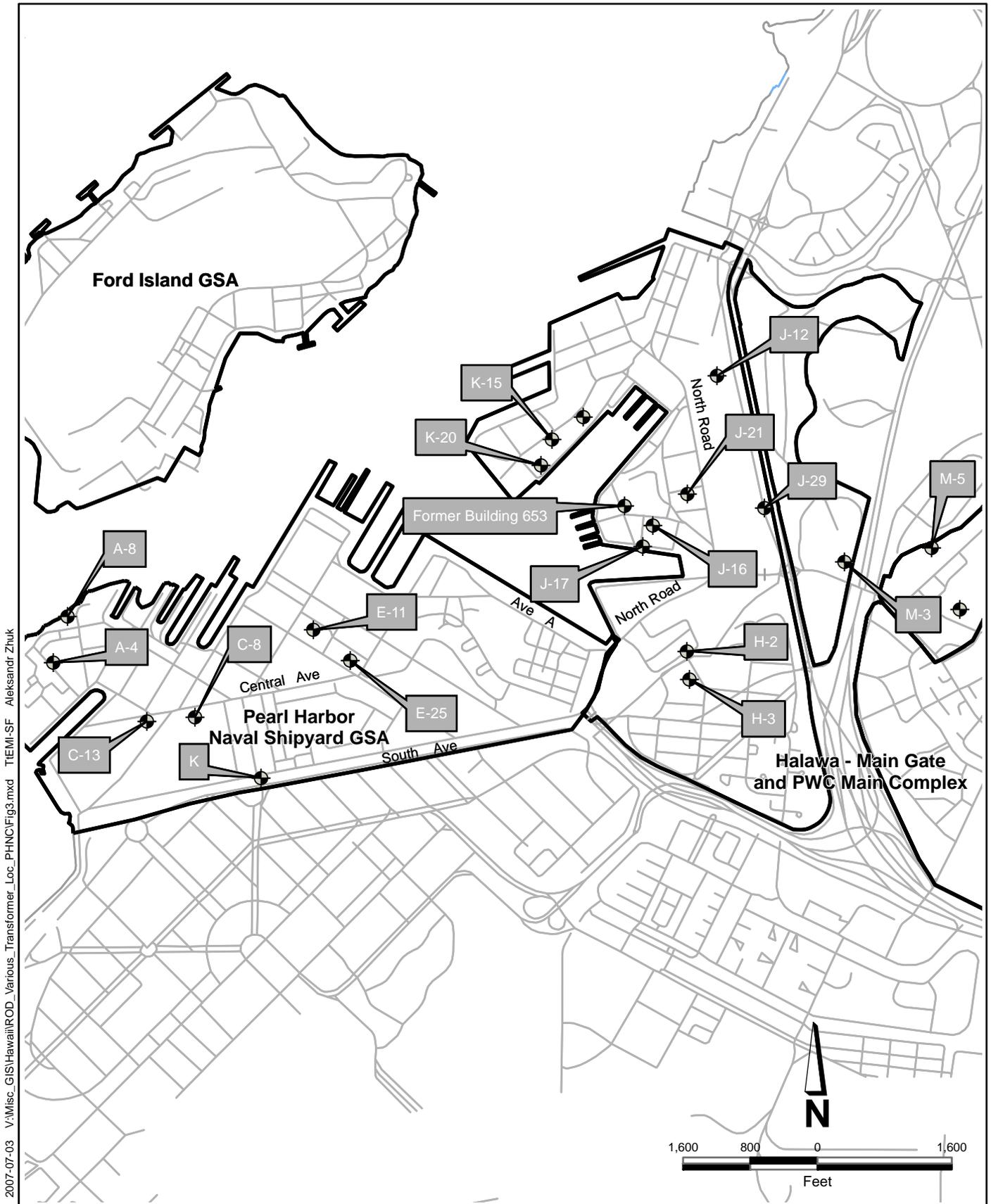


Figure 3
Transformer Site Location
Halawa-Main Gate, Naval Housing, PWC,
and Pearl Harbor Naval Shipyard GSAs
PHNC, Oahu, Hawaii

Pearl Harbor Naval Shipyard is located within PHNC. It is bounded by the waters of Pearl Harbor on its north and western boundaries and by Hickam Air Force Base to the south. Seven transformer sites are located in this GSA (Figure 3):

- A-4: The site consists of an outdoor concrete pad and surrounding fence, soil, and grass.
- A-8: This site consists of an outdoor concrete pad and surrounding asphalt to a fence line, with grass outside the fence.
- C-8: The site is adjacent to Building 1673 and consists of an outdoor concrete pad and surrounding asphalt.
- C-13: This site consists of an outdoor concrete pad and surrounding fence. The fence is surrounded by soil.
- E-11: The site includes Building 53 and surrounding asphalt and concrete.
- E-25: This site includes an outdoor concrete pad surrounded by asphalt and a fence.
- K: This site includes Building 42 and surrounding gravel and grass.

Iroquois Point is located on the western side of Pearl Harbor near the mouth of the harbor. It is the location of the Puuloa military housing area. One transformer site is located in this GSA (Figure 4):

- I-4: The site includes an outdoor concrete pad and surrounding area that is fenced off from the general public.

Waipio Peninsula separates the Middle and West Lochs of Pearl Harbor. One transformer site is located in this GSA (Figure 5):

- W-11: The site consists of an outdoor concrete pad and surrounding gravel and fence.

West Loch is located on the western side of Pearl Harbor. Two transformer sites are located in this GSA (Figure 5):

- FS11: The site includes an outdoor concrete pad surrounded by a tall, concrete brick wall, which is surrounded by grass.
- Former Building 33: The site includes Building 33 and its surrounding concrete and soil.

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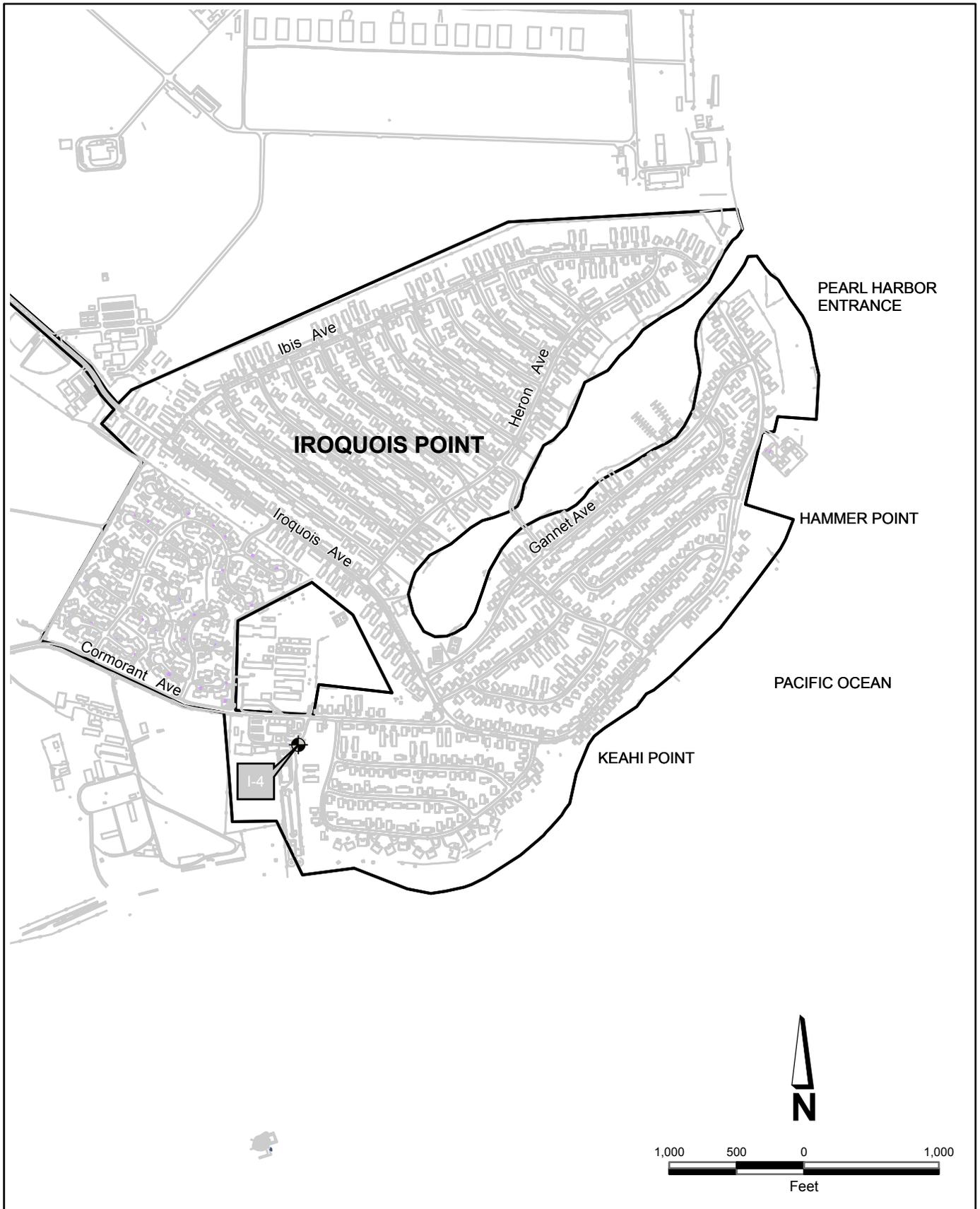


Figure 4
Iroquois Point GSA
Transformer Location

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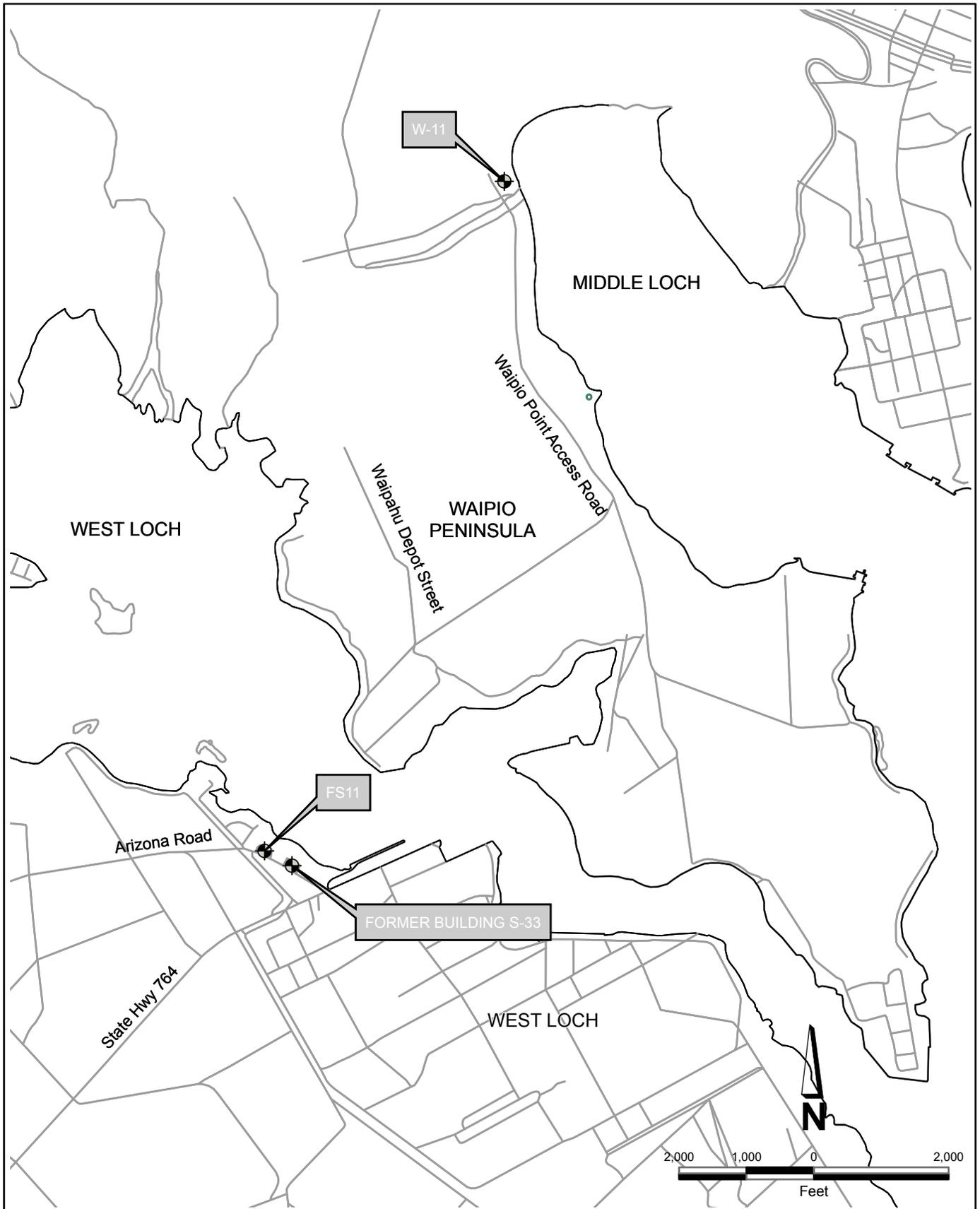


Figure 5
Transformer Site Location Map
Waipio Peninsula and West Loch
PHNC, Oahu, Hawaii

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.2.1 Site History

Available historical records at PHNC indicate that PCBs were present in the dielectric fluid used in many of the former and existing transformers. The PCB-containing fluids may have been released to concrete surfaces or surface soil by leaking directly from the transformers or during regular transformer testing and maintenance. Transformer maintenance included periodic sampling to test the dielectric properties of the transformer fluid. Once testing was completed, the fluid was reportedly poured onto the adjacent areas, such as the grass, concrete pad, or building wall. All active transformers at PHNC have been replaced or retro filled with non-PCB-containing dielectric fluid.

The following investigations were completed for the 45 transformer sites at PHNC:

Initial Assessment Study (IAS) of Pearl Harbor, 1983. An IAS was conducted in 1983 at 30 potentially contaminated sites at PHNC. The assessment of sites was based on records of past hazardous waste storage operations and disposal practices. The study concluded that three sites warranted further investigation to assess potential long-term impacts to human health or the environment. Sampling was not included in the IAS (NEESA 1983).

1991 Site Inspection (SI). An SI was conducted at PHNC in December 1990 to inspect 20 transformer locations. The SI identified PCB-contaminated soil at seven transformer locations that required further evaluation (ERC Environmental and Energy Services Company [ERC] 1991). Two additional transformer locations were later investigated by PWC in 1991 as part of a separate SI. Transformer locations TC-01 and J-16 were identified as PCB-contaminated and required further evaluation (PWC 1991).

Engineering Evaluation/Cost Analysis (EE/CA) and Action Memorandum (AM). In 1996, an EE/CA (Ogden 1996) was prepared for various transformer substations at PHNC. The EE/CA recommended excavation of PCB-contaminated soil at transformer sites TC-01 and J-16. An AM (DON 2000) documented the Navy's decision to conduct removal actions at the transformer sites. This EE/CA and AM did not include the remaining transformers discussed in this ROD.

NTCRA. A NTCRA was conducted for transformer sites TC-01 and J-16 from December 2000 to August 2001. SI sampling defined the lateral and vertical extent of PCB contamination in soils at concentrations that exceeded the cleanup levels before the removal action. A total of 154 cy of PCB-containing soil was excavated from TC-01 and J-16. The soil from the two transformer sites was stockpiled at former NAS Barbers Point until it was transported to the thermal desorption unit for treatment in 2003 and 2004.

Additional SIs and Remedial Investigations (RI). An RI for the Ford Island GSA was conducted between December 1999 and June 2000 to evaluate the impact of PCB-contaminated dielectric fluid that may have been released to surface soil and concrete surfaces (Earth Tech 2001a). The RI concluded that following sites required further evaluation:

- TA-01, TC-04, TC-06D, TC-07D, TD-01, TD-02, TD-03, TD-05, TD-07, TF-01/TF-01D, TF-04, TF-05, TF-07, TF-09, TF-17, TF-18, TG-01, TG-03, TG-06, TI-03, and TI-04D

In 2001, an SI report, field sampling plan, quality assurance project plan, and health and safety plan were prepared for transformer sites located at Halawa-Main Gate GSA, Naval Housing, PWC Main Complex, Waipio Peninsula and West Loch GSAs. The plans include inspection and environmental

sampling guidelines that were used to evaluate the presence or absence of PCB contamination. The following sites were identified as requiring further evaluation (Earth Tech 2001c):

- Halawa-Main Gate: Former Building 653, H-2, H-3, J-12, J-17, J-21, J-29, K-15, and K-20
- Naval Housing: M-3
- PWC Main Complex: M-5
- Pearl Harbor Naval Shipyard: A-4, A-8, C-8, C-13, E-11, E-25, and K
- Waipio Peninsula: W-11
- West Loch: FS11, Former Building 33

An additional SI of transformer sites was conducted between November and December 2001 at PHNC. Biased field sampling was conducted to determine the presence or absence of PCBs at each transformer site. Sampling results were used to classify each site for further evaluation or for “no further action.” In addition to the sites listed above at Halawa-Main Gate, PWC Main Complex, and Pearl Harbor Naval Shipyard, site J-16 at Halawa-Main Gate was identified as requiring further evaluation (Earth Tech 2003).

An SI for Iroquois Point in 2001 concluded the site I-4 required further evaluation (Earth Tech 2001b).

Treatment EE/CA and AM. In 2000, the Navy, in consultation with EPA and DOH, determined that soil from multiple transformer sites from multiple naval facilities across Oahu could be consolidated for treatment and this action could be considered an on-site action. Based on this decision, treatment alternatives were evaluated in a treatment EE/CA prepared in September 2000 (Earth Tech 2000) for the combined sites. The EE/CA recommended consolidating soils from three facilities (former NAS Barbers Point, PHNC, and Naval Computer and Telecommunications Area Master Station Pacific [NCTAMSPAC]) and treating the soil with thermal desorption.

Prior to implementation of the treatment process, soil that was already excavated was stockpiled either at former NAS Barbers Point or Naval Radio Transmitting Facility (NRTF) Lualualei. Once the treatment process began, these stockpiles were transported to the treatment unit at former NAS Barbers Point. An AM (DON 2000) documented the Navy’s decision to undertake removal actions at these facilities. Various alternatives were evaluated against the nine criteria in the NCP. Excavation and on-island thermal desorption was the alternative selected to address soil containing PCB concentrations greater than the TSCA cleanup level for high-occupancy areas (1 mg/kg) and the DOH Tier 1 SAL (1 mg/kg); it complied with ARARs and TBC criteria; it was protective; and it was capable of meeting the established treatment objectives for PCB-contaminated media.

In 2002, an AM addendum (DON 2002) documented procedures for excavation, treatment, and final placement of PCB-contaminated soil and concrete from transformer sites that had not originally been considered in the 2000 AM (DON 2000) or any of the previous AMs or EE/CAs prepared for former NAS Barbers Point, PHNC, and NCTAMSPAC. The AM addendum proposed site selection criteria for new sites that will be remediated using the removal action alternatives selected in the previous AMs because the conditions at these new sites are consistent with the conditions at the sites in the previous AMs. The following transformer sites were identified for PHNC:

- Ford Island: TA-01, TC-04, TC-06D, TC-07D, TD-01, TD-02, TD-03, TD-05, TD-07, TF-01/TF-01D, TF-04, TF-05, TF-07, TF-09, TF-17, TF-18, TG-01, TG-03, TG-06, TI-03 and TI-04D

- Iroquois Point: I-4

The AM addendum presented the aforementioned sites as well as general criteria for inclusion of additional transformer sites. Site-specific information was to be included as an attachment to the AM addendum and thereby “plugged in” to the document. This “plug-in” AM addendum allowed for the selection of a protective, presumptive cleanup action (excavation, treatment, and placement) at future PCB transformer sites, provided that the sites met the selection criteria.

Plug-In AM. In 2003, a “plug-in” to the AM addendum (DON 2003) was prepared, recommending that additional sites undergo a NTCRA consisting of excavation of contaminated soil and concrete followed by on-island thermal desorption treatment, and transport and placement of treated media back at the excavation site (DON 2003). The following transformer sites were identified:

- Halawa-Main Gate: Former Building 653, H-2, H-3, J-12, J-17, J-21, J-29, K-15, and K-20
- Naval Housing: M-3
- PWC Main Complex: M-5
- Pearl Harbor Naval Shipyard: A-4, A-8, C-8, C-13, E-11, E-25 and K
- Waipio Peninsula: W-11
- West Loch: FS11 and Former Building 33

All 45 transformer sites in this ROD were identified by one of the AMs (DON, 2000, 2002, 2003) as meeting the site selection criteria for remediation by excavation and thermal desorption treatment.

Removal Action Design Support and Confirmation Sampling. From 2003 to 2004, preliminary sampling was conducted to support the design efforts for the removal actions the transformer locations at PHNC. Pre-excavation samples were collected to define the lateral and vertical extent of PCB contamination in soils that exceeded the cleanup level (1 mg/kg) before soil was excavated and treated at former NAS Barbers Point (Earth Tech 2003).

NTCRAs. From January 2004 to July 2004, NTCRAs were conducted for the 43 remaining sites (An NTCRA was conducted for transformer sites TC-01 and J-16 from December 2000 to August 2001.) SI sampling defined the lateral and vertical extent of PCB contamination in soils at concentrations that exceeded the cleanup levels before the removal action. A total of 10,391.5 cy of PCB-containing soil was excavated from these sites. The soil from the transformer sites was transported directly to the thermal desorption unit for treatment. During the thermal desorption treatment process, four confirmation samples of the treated material were collected for every 100 tons treated. Once confirmation was received, the excavated areas were then backfilled with treated soil from the treatment system and then were compacted and restored (such as landscaping, concrete and asphalt paving) (Environmental Chemical Corporation [ECC] 2007). All material that initially did not meet cleanup levels was retreated and resampled until cleanup levels were met.

2006 SI Addendum. In 2006, a SI addendum was prepared to provide an update on removal action activities that had occurred at the various transformer locations at PHNC since 2001 (Earth Tech 2006b). The 2006 SI addendum concluded that cleanup levels for PCBs were met and no further action is necessary for the following transformer sites at PHNC.

- Halawa-Main Gate: Former Building 653, H-2, H-3, J-12, J-16, J-17, J-21, J-29, K-15, K-20
- Naval Housing: M-3
- PWC Main Complex: M-5

- Pearl Harbor Naval Shipyard: A-4, A-8, C-8, C-13, E-11, E-25, K

Remediation Verification Reports (RVR). After the NTCRAs were completed, two RVRs (ECC 2007, Earth Tech 2007) were prepared to document that the NTCRA were completed successfully and that the cleanup level (1 mg/kg) was achieved at the transformer sites, as established in the AMs (DON 2002, 2003) and in accordance with the TSCA high-occupancy cleanup level (1 mg/kg) and the DOH Tier 1 SAL (1 mg/kg). Both RVRs were ultimately included in a consolidated RVR prepared to document removal and treatment at all sites included in the treatment system (Earth Tech 2007).

2.2.2 Enforcement Activities

There have been no enforcement activities at the 45 transformer sites at PHNC.

2.3 COMMUNITY PARTICIPATION

Public participation in decision-making for environmental activities at PHNC has been encouraged continuously throughout the environmental restoration and site closure processes. A RAB was established in an effort to involve the public in the decision-making process. The Pearl Harbor RAB is composed of representatives from the DOH, EPA, Navy, and the community. The Navy has held periodic RAB meetings and other public meetings, and has issued fact sheets to the community that summarize the site investigations and cleanups. In addition, the Navy established contacts for the public at Naval Facilities Engineering Command, Hawaii (NAVFAC Hawaii).

A notice of availability for the proposed plan (DON 2006) for the transformer sites was published in the *Honolulu Advertiser* and *Star Bulletin* on June 25, 2006. The proposed plan was made available for public comment during a 30-day review period from June 27, 2006, to July 26, 2006. In addition, a public meeting was conducted on July 20, 2006, to present the proposed plan. At this meeting, the Navy answered questions about the transformer sites and the no further action decision. No written comments were received during the comment period.

Project documents, including work plans, technical reports, fact sheets, and other materials relating to PHNC investigation activities can be found in the information repository for PHNC, at the following locations:

Ewa Beach Public and School Library
91-950 North Road
Ewa Beach, Hawaii 96706
Reference Desk Telephone: (808) 689-1204

Pearl City Public Library
1138 Waimano Home Road
Pearl City, Hawaii 96782
Telephone: (808) 453-6566

Aiea Public Library
99-143 Moanalua Road
Aiea, Hawaii 96701
Telephone: (808) 483-7333

Additional project information is included in the administrative record file located at NAVFAC Pacific (NAVFAC PAC) in Pearl Harbor:

Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Attn: NAVFAC PAC EV4
Pearl Harbor, Hawaii 96860-3134

2.4 SCOPE AND ROLE OF THE NO FURTHER ACTION DECISION

The 45 transformer sites are located in eight GSAs at PHNC. As previously discussed, these GSAs were created for both administrative and management purposes to group these sites. Removal actions were necessary for each of these transformer sites to protect human health and the environment from PCBs in soil and concrete.

PHNC is listed on the NPL, which identifies priorities among known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The Navy, EPA, and DOH, through a FFA (DON 2004), have agreed to:

- Ensure that environmental impacts associated with past and present activities conducted are thoroughly investigated and appropriate remedial actions taken, as necessary, to protect public health, welfare, and the environment;
- Establish a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions in accordance with CERCLA, SARA, the NCP, Superfund guidance and policy, Resource Conservation and Recovery Act (RCRA) guidance and policy, and applicable State of Hawaii law;
- Facilitate cooperation, exchange of information, and participation of the Navy, EPA, and DOH; and
- Ensure adequate assessment of potential injury to natural resources necessary to ensure that response actions appropriate for achieving suitable cleanup levels are implemented.

The cleanup activities and no further action decision for the 45 transformer sites identified in this ROD are designed to fulfill the objectives of the FFA for PHNC. In accordance with the FFA, no further action is appropriate for sites where no current or potential unacceptable risk to human health or the environment exists. The Navy, EPA, and DOH concluded that the CERCLA removal actions have successfully lowered risks to human health and the environment, and that the no further action decision allows unrestricted use at this site. This decision was based on results for soil and concrete bulk samples presented in the RVRs (Earth Tech 2006a, 2007; ECC 2007) that document the removal actions, as well as the proposed plan (DON 2006).

2.5 SITE CHARACTERISTICS

2.5.1 Site Location and Description

Initial military development of Pearl Harbor and Ford Island occurred between 1912 and 1919. NAS Ford Island and Army Air Station Luke Field were established on Ford Island in 1917. Ford Island underwent considerable development and expansion in the 1930s and 1940s. Before and during World War II, Ford Island provided moorage and support to most of the Pacific Fleet and was home of the NAS Ford Island. Use of Ford Island as a military air station ceased with the advent of jet aircraft. Pearl Harbor Naval Station assumed ownership of the island when the NAS was deactivated in 1962, and the airfield was leased to the State of Hawaii, Department of Transportation, for limited use by civilian aircraft. The airfield has been inactive since mid-1999, when the state opened Kalaeola Airport (at former NAS Barbers Point). Currently, Ford Island provides housing and recreational facilities for Navy personnel.

PHNC is located on the island of Oahu, Hawaii, about 4 miles west of the city of Honolulu (Figure 1). The Waipio and Pearl City peninsulas separate the harbor into three lochs: West Loch, Middle Loch, and Southeast Loch. Activities and land use at PHNC include Naval Shipyard and Intermediate Maintenance Facility (IMF), Naval Submarine Base, Naval Station, Fleet and Industrial Supply Center, Navy PWC, and Inactive Ship Maintenance Facility.

The Navy initially subdivided PHNC into 18 GSAs to evaluate the PHNC property. These GSAs were designed and created to manage the large amount of environmental sites that are located in PHNC. By sorting and classifying the sites by geography, field activities from removal actions to confirmation sampling could be carried out in a much more efficient and cost-effective manner. The Navy, EPA, and Hawaii DOH initially concluded that six of the GSAs were adequately addressed under current Navy environmental programs. A site summary evaluation (SSE) was prepared for the remaining 12 GSAs. After the SSE, various response actions have been conducted at the PHNC GSAs. After those response actions, additional evaluation and action was required for transformer sites at eight GSAs that are the subject of this ROD: Ford Island, Halawa-Main Gate, Naval Housing, PWC Main Complex, Pearl Harbor Naval Shipyard, Iroquois Point, Waipio Peninsula and West Loch.

An EE/CA (Earth Tech 1998) was prepared in January 1998 to evaluate removal action alternatives to address PCBs in soil and concrete at several transformer sites. The 1998 EE/CA recommended removal actions consisting of excavation of PCB-contaminated soil and concrete and disposal in an off-island landfill; however, since the EE/CA was finalized and after discussions with EPA and DOH, the Navy determined that soil from multiple transformer sites, including at the eight PHNC GSAs, could be consolidated for treatment. Based on this decision, treatment alternatives were evaluated in the treatment EE/CA prepared in September 2000 (Earth Tech 2000). The 45 transformer sites at PHNC that are represented in this ROD were consolidated since they fulfilled the requirements for NTCRAs that were laid out in the AM and its subsequent addendums (DON 2000, 2002, 2003).

As part of the 1998 EE/CA, conceptual site models (CSM) were developed for each of the transformer sites based on the following:

- Location and type of transformers located at each site;
- Known or suspected mechanism of PCB release into the environment;
- Known or suspected media (soil and concrete) that may be affected; and
- Potential migration pathways to human and ecological receptors.

The CSMs developed for the transformers identified the following site characteristics:

Location and Type of Transformers. The physical setting of the original transformer sites identified in the 1998 EE/CA was based on descriptions provided by previous investigations, reviews of as-built or plan drawings, and site reconnaissance. None of the 45 transformer sites discussed in this ROD was part of this 1998 EE/CA. However, based on similar site characteristics, these transformers were consolidated as part of the PCB treatment EE/CA, and the 1998 CSM was considered applicable to all consolidated sites.

Sources of PCB Contamination. Sources of PCB contamination at these transformer sites are a result of: (1) testing and previously disposing of PCB dielectric fluid from the transformers onto the surrounding soils; and (2) leaking PCB dielectric fluid from the transformers onto the surrounding soil or concrete pad. These sources are considered the principal mechanisms that released PCBs at these transformer sites. PCBs are generally insoluble and tend to sorb to soil particles, making PCB

transport by leaching unlikely. The primary mechanism for the transport of PCBs was erosion by surface runoff. Transport of PCBs sorbed to soil particles was possible in areas eroded by surface runoff; however, surface erosion was minimal in the areas surrounding these transformers sites because of the gentle slopes and vegetative cover.

Affected Media. The potentially affected media were surface and subsurface soil and concrete in the immediate vicinity of the transformer sites. Depth of contamination was measured during excavation and verification sampling. Contamination of surface water and groundwater was considered unlikely because of the low solubility of PCBs and the depth of groundwater. As a result, groundwater samples were not collected because there was no indication that PCBs had migrated to groundwater based on the depth of PCB contamination in soil and the depth to groundwater.

Following removal actions at these 45 transformer sites, PCB concentrations do not exceed cleanup levels established for these sites; therefore, there are no affected surface or subsurface soils or concrete at the 45 transformer sites.

Known and Potential Routes of Exposure. The primary route of exposure was direct contact with contaminated soil or concrete, either through the skin or by incidental ingestion. Contact with contaminated airborne dust or eroded soil particles in surface runoff was unlikely because of the vegetative or asphalt cover; however, dust generated by construction or removal was of concern. Controls were implemented to minimize airborne PCB transport if vegetation or asphalt was disturbed through construction or removal. Given the low volatility of PCBs, transport in the gaseous phase was not considered a significant mechanism. PCBs are nearly insoluble and have a strong tendency to sorb to soil particles, making it unlikely that PCBs have impacted the groundwater. Exposure to PCB-contaminated groundwater was therefore considered unlikely.

Following removal actions at these 45 transformer sites, PCB concentrations do not exceed cleanup levels established for these sites; therefore, there are no known or potential routes of exposure at the 45 transformer sites.

Known or Potential Human and Environmental Receptors. Access to PHNC is restricted to employees of the Navy, their dependents, and contractors. Employees and contractors who routinely enter the vicinity of the transformer sites were potentially exposed to contaminated soil through incidental ingestion, direct dermal contact, or dust inhalation. Human exposure to contaminated air was possible if work generates fugitive dust. Surrounding areas at PHNC support a limited ecological environment.

Following removal actions at these 45 transformer sites, PCB concentrations do not exceed cleanup levels established for these sites; therefore, there are no exposure concerns to any known or potential human or environmental receptors at the 45 transformer sites.

Nature and Extent of Contamination at the 45 Transformer Sites. The nature and extent of contamination was determined by incorporating the physical setting and conceptual site model for the transformer sites with results of available previous sampling results to estimate the areas of potential contamination (AOPC) at each of the 45 transformer sites. In cases where the sampling data were insufficient or nonexistent, assumptions were made on the extent of contamination. Since the 1998 EE/CA was finalized and after discussions with EPA and DOH, the Navy concluded that soil from multiple transformer sites could be consolidated for treatment based on similar characteristics to the sites evaluated in the 1998 EE/CA. Therefore, the evaluations in the 1998 EE/CA would apply to the additional transformer sites identified for treatment.

Removal actions were conducted at these 45 transformer sites. Based on post-excavation confirmation sampling results, PCB concentrations remaining at these sites do not exceed the cleanup levels established for these sites; therefore, the 45 transformer sites are suitable for unrestricted use.

2.5.2 Sensitive Habitats

Surrounding areas at PHNC support a limited ecological environment. No sensitive plants and animals or protected bird species have been seen in the vicinity of the transformer sites.

2.6 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Current Use. The pre-removal action land use for the 45 transformer sites at PHNC was low-occupancy (restricted) use. PHNC operates as a Naval Shipyard and IMF, Naval Submarine Base, Naval Station, Fleet and Industrial Supply Center, Navy Public Works Center, and Inactive Ship Maintenance Facility. This Naval facility is currently active. All 45 transformer sites at PHNC were active prior to removal actions, although PCBs were no longer used.

Future Use. The post-removal action and future land use of the 45 transformer sites at PHNC is anticipated to remain unchanged from current conditions. The Navy will maintain the current use of PHNC, which is considered low-occupancy (restricted) use; however, the potential for high-occupancy (unrestricted) use was also considered at these 45 transformer sites. Potential future on-site populations will be limited to Navy contractor personnel performing routine maintenance and periodic inspections of the transformers, and performing any necessary repairs. Currently, there are no plans to change the current land use status of the 45 transformer sites at PHNC.

2.7 SUMMARY OF SITE RISKS

The primary risks to human health and the environment at these 45 transformer sites are posed by the presence of PCBs in soil and concrete. The PCB-containing fluids may have been released to concrete surfaces or surface soil by leaking directly from the transformers, or during regular transformer testing and maintenance. Transformer maintenance included periodic sampling to test the dielectric properties of the transformer fluid. Once testing was completed, the fluid was reportedly poured onto the adjacent areas, such as the grass, concrete pad, or building wall. Data from samples previously collected by the Navy confirmed the presence of PCB contamination at these sites.

PCBs are listed and regulated as hazardous substances under CERCLA. Human and animal exposure to PCBs can result in adverse health effects, including chloracne (a dermal reaction), liver damage, suppression of development and reproduction, and possible cancer. PCBs accumulate in plant tissue, but are not known to adversely affect plants.

The health risk posed by PCB exposure takes into account contaminant concentrations, potential exposure pathways, and current land use. The risk evaluation conducted in the initial EE/CA (Earth Tech 1998) concluded that a removal action was justified to eliminate any actual or potential risk of human exposure to PCBs. Since the 1998 EE/CA was finalized after discussions with EPA and DOH, the Navy concluded that soil from multiple transformer sites, including at PHNC, could be consolidated for treatment based on similar site characteristics.

The 45 transformer sites at PHNC that are represented in this ROD were consolidated since they fulfilled the requirements for NTCRAs that were laid out in the AM and its subsequent addenda (DON 2000, 2002, 2003).

The NTCRAs included removal of soil and cleaning of concrete with PCB concentrations above the cleanup levels and thermal desorption treatment. Afterward, post-excavation confirmation samples were collected to evaluate whether the cleanup level had been achieved for the excavated soil and to confirm that the transformer sites are suitable for unrestricted use (Earth Tech 2006a). All PCB concentrations detected in the post-excavation confirmation soil samples did not exceed the cleanup level of 1 mg/kg as established in the AM (DON 2002) and in accordance with the TSCA high-occupancy cleanup level (1 mg/kg) and DOH Tier 1 SAL (1 mg/kg) (Earth Tech 2006a). As a result of the removal actions, these transformer sites no longer pose a risk to human health or the environment, and all 45 transformer sites at PHNC are suitable for unrestricted use.

2.8 RESPONSE ACTION SUMMARY

The 45 transformer sites at PHNC were identified as a potential concern based on available historical records and information on PCBs in the dielectric fluid and potential leaks and historical maintenance practices. Elevated concentrations of PCBs in soils were confirmed in the previous investigations at the sites. NTCRAs were conducted at the transformer sites, as presented in Table 1. The table incorporates the conclusions documented in the RVRs (Earth Tech 2006a, 2007; ECC 2007). Detailed information, including site-specific activities, verification sample laboratory reports, and validated data, is presented in the RVRs.

When the NTCRAs were completed at the 45 transformer sites, post-excavation confirmation soil samples verified that PCB concentrations in the soil do not exceed cleanup levels established for these sites. A cleanup level of 1 mg/kg for soil was established in the AM (DON 2002) and complies with the TSCA high-occupancy cleanup level (1 mg/kg for soil) and the DOH Tier 1 SAL (1 mg/kg).

Table 1: Summary of Removal Actions at 45 Transformer Sites at PHNC

GSA	Site	Excavation Dates	Removal Action Summary	Removal Action Final Volume ¹	Soil Cleanup Levels and Concrete Action Levels for PCBs	Cleanup Level Results
Ford Island	TA-01	08Jan04 - 19Jan04	One excavation event was conducted at this site.	In total, 250.3 bcy of soil was excavated and 325.4 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
		16Aug04	Underground vault was cleaned.	N/A	N/A	N/A
Ford Island	TC-01	07Dec00 – 20Dec00; 24Jan01; 02Aug01 – 27Aug01	Three excavation events were conducted at this site.	Approximately, 116 cy of soil was stockpiled on site.	1 mg/kg (soil) 10 µg/100 cm ² (concrete)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg). All initial concrete wipe samples were below the action level of (10 µg/100 cm ²).
		03Aug01-04Aug01	Sewer line broke and was repaired.	N/A		
		19Nov01	Stockpiled soil was removed.	Approximately, 5 cy of stockpiled soil was excavated.		
		06Feb02	One drainage structure was cleaned and sampled. PCB concentrations do not exceed the cleanup level (10 µg/100 cm ²); therefore, no further action was necessary.	N/A		
		03Aug01-04Aug01	Sewer line broke and was repaired.	N/A		
		09 Dec 03-21 Jan 04; 3 Mar 04; 29 Mar 04; 21Apr 04; 25 May 04; 03 Jun 04; 08 Jun 04; 11 Jun 04	Excavation and overexcavation were conducted at the site. ²	In total, 93 bcy of soil was excavated and 121 lcy treated (includes overexcavated volume).		
Ford Island	TC-04	04Nov03 - 05Nov03	One excavation event was conducted at this site.	In total, 31.1 cy of soil was excavated and 40.4 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TC-06D	04Nov03 - 06Nov03; 02Mar04	Excavation and overexcavation were conducted at this site. ²	In total, 81.9 bcy of soil was excavated and 106.5 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TC-07D	23Dec03 –29Dec03; 29Mar04	Excavation and overexcavation were conducted at this site. ²	In total, 48 bcy of soil was excavated and 62.4 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).

Table 1: Summary of Removal Actions at 45 Transformer Sites at PHNC (Continued)

GSA	Site	Excavation Dates	Removal Action Summary	Removal Action Final Volume ¹	Soil Cleanup Levels and Concrete Action Levels for PCBs	Cleanup Level Results
Ford Island	TD-01	18Dec03 – 22Dec03	One excavation event was conducted at this site.	In total, 51.3 bcy of soil was excavated and 66.7 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TD-02	04Nov03 – 06Nov03; 02Mar04	Excavation and overexcavation were conducted at this site. ²	In total, 58.9 bcy of soil was excavated and 76.6 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TD-03	03Dec03 – 04Dec03	One excavation event was conducted at this site.	In total, 62.3 bcy of soil was excavated and 81 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TD-05	15Dec03 – 16Dec03	One excavation event was conducted at this site.	In total, 30 bcy of soil was excavated and 39 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TD-07	16Dec03 – 18Dec03; 01Mar04	Excavation and overexcavation were conducted at this site. ²	In total, 104.6 bcy of soil was excavated and 136 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TF-01/ TF-01D	24Dec03 – 06Jan04; 21Jan04; 02Mar04	Excavation and overexcavation were conducted at this site. ²	In total, 60.8 bcy of soil was excavated and 79 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TF-04	06Jan04 – 12Jan04; 03Mar04; 29Mar04; 04May04; 03Jun04; 16Jun04; 15Jul04; 10Aug04	Excavation and overexcavation were conducted at this site. ²	In total, 583.8 bcy of soil was excavated and 758.9 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TF-05	09Dec03 – 15Dec03; 02Mar04; 29Apr04	Excavation and overexcavation were conducted at this site. ²	In total, 115.8 bcy of soil was excavated and 150.5 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TF-07	22Dec03 – 23Dec03	One excavation event was conducted at this site.	In total, 73.9 bcy of soil was excavated and 96.1 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).

Table 1: Summary of Removal Actions at 45 Transformer Sites at PHNC (Continued)

GSA	Site	Excavation Dates	Removal Action Summary	Removal Action Final Volume ¹	Soil Cleanup Levels and Concrete Action Levels for PCBs	Cleanup Level Results
Ford Island	TF-09	03Dec03 – 04Dec03	One excavation event was conducted at this site.	In total, 23.7 bcy of soil was excavated 30.8 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TF-17	08Dec03	One excavation event was conducted at this site.	In total, 7.9 bcy of soil was excavated 10.3 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TF-18	17Dec03 – 18Dec03	One excavation event was conducted at this site.	In total, 27.8 bcy of soil was excavated 36.1 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TG-01	09Dec03	One excavation event was conducted at this site.	In total, 17.5 bcy of soil was excavated and 22.8 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TG-03	08Dec03	One excavation event was conducted at this site.	In total, 25.3 bcy of soil was excavated 32.9 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TG-06	02Dec03	One excavation event was conducted at this site.	In total, 14.5 bcy of soil was excavated and 18.9 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TI-03	02Dec03 – 03Dec03; 21Jan04; 03Mar04	Excavation and overexcavation were conducted at this site. ²	In total, 18.5 bcy of soil was excavated and 24.1 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Ford Island	TI-04D	05Jan04 – 08Jan04	One excavation event was conducted at this site.	In total, 166.7 bcy of soil was excavated and 216.7 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	Former Building 653	19Jan04 – 21Jan04	One excavation event was conducted at this site.	In total, 6.1 bcy of soil was excavated and 7.9 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).

Table 1: Summary of Removal Actions at 45 Transformer Sites at PHNC (Continued)

GSA	Site	Excavation Dates	Removal Action Summary	Removal Action Final Volume ¹	Soil Cleanup Levels and Concrete Action Levels for PCBs	Cleanup Level Results
Halawa-Main Gate	H-2	22Jan04; 26Feb04	Excavation and overexcavation were conducted at this site. ²	In total, 9.8 bcy of soil was excavated and 12.7 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	H-3	21Jan04; 03May04; 07Jun04	Excavation and overexcavation were conducted at this site. ²	In total, 1.3 bcy of soil was excavated and 1.7 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	J-12	26Jan04 – 27Jan04; 30Mar04; 03May04; 25May04	Excavation and overexcavation were conducted at this site. ²	In total, 40.8 bcy of soil was excavated and 53 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	J-16	22Feb01 – 26Feb01; 19Mar01 – 30Mar01; 06Jun01; and 20Jun01 – 25Jun01	Four excavation events were conducted at this site.	Approximately, 38 cy of soil was excavated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	J-17	22Jan04; 30Mar04; 03Jun04	Excavation and overexcavation were conducted at this site. ²	In total, 4.8 bcy of soil was excavated and 6.2 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	J-21	22Jan04	One excavation event was conducted at this site.	In total, 17.4 bcy of soil was excavated and 22.6 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	J-29	28Jan04	One excavation event was conducted at this site.	In total, 22.5 bcy of soil was excavated and 29.3 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	K-15	22Jan04	One excavation event was conducted at this site.	In total, 1.7 bcy of soil was excavated and 2.2 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Halawa-Main Gate	K-20	28Jan04 – 29Jan04; 07Jun04	Excavation and overexcavation were conducted at this site.	In total, 21.6 bcy of soil was excavated and 28.1 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).

Table 1: Summary of Removal Actions at 45 Transformer Sites at PHNC (Continued)

GSA	Site	Excavation Dates	Removal Action Summary	Removal Action Final Volume ¹	Soil Cleanup Levels and Concrete Action Levels for PCBs	Cleanup Level Results
Naval Housing	M-3	29Jan04 – 03Feb04; 03May04	Excavation and overexcavation were conducted at this site. ²	In total, 53.4 bcy of soil was excavated and 69.4 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
PWC Main Complex	M-5	29Jan04	One excavation event was conducted at this site.	In total, 1.9 bcy of soil was excavated and 2.5 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Pearl Harbor Naval Shipyard	A-4	13Apr04	One excavation event was conducted at this site.	In total, 0.8 bcy of soil was excavated and 1 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Pearl Harbor Naval Shipyard	A-8	19Apr04	One excavation event was conducted at this site.	In total, 48.8 bcy of soil was excavated and 63.4 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Pearl Harbor Naval Shipyard	C-8	19Apr04	One excavation event was conducted at this site.	In total, 4 bcy of soil was excavated and 5.2 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Pearl Harbor Naval Shipyard	C-13	20Apr04; 19May04	Excavation and overexcavation were conducted at this site. ²	In total, 25.6 bcy of soil was excavated and 33.3 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Pearl Harbor Naval Shipyard	E-11	20Apr04	One excavation event was conducted at this site.	In total, 1.4 bcy of soil was excavated and 1.8 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Pearl Harbor Naval Shipyard	E-25	16Dec03; 09Mar04; 16Mar04	Excavation and overexcavation were conducted at this site. ²	In total, 251.1 bcy of soil was excavated and 326.4 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).

Table 1: Summary of Removal Actions at 45 Transformer Sites at PHNC (Continued)

GSA	Site	Excavation Dates	Removal Action Summary	Removal Action Final Volume ¹	Soil Cleanup Levels and Concrete Action Levels for PCBs	Cleanup Level Results
Pearl Harbor Naval Shipyard	K	19Apr04	One excavation event was conducted at this site.	In total, 8.2 bcy of soil was excavated and 10.7 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Iroquois Point	I-4	21Apr04 – 27Apr04; 13May04; 19May04; 15Jun04	Excavation and overexcavation were conducted at this site. ²	In total, 140.6 bcy of soil was excavated and 182.8 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
Waipio Peninsula	W-11	11Feb04 – 08Jul04; 17Jun04; 29Jun04; 15Jul04; 22Jul04	Excavation and overexcavation were conducted at this site. ²	In total, 7,148 bcy of soil was excavated 9,292.4 lcy treated (includes overexcavated volume).	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
West Loch	FS11	21Apr04	One excavation event was conducted at this site.	In total, 4.3 bcy of soil was excavated and 5.6 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).
West Loch	Former Building 33	26Jul04 – 28Jul04	One excavation event was conducted at this site.	In total, 430.8 bcy of soil was excavated and 560 lcy treated.	1 mg/kg (soil)	All soil confirmation sample results do not exceed the cleanup level (1 mg/kg).

Notes:

¹ The volume difference between excavation (measured in bcy) and treated (measured in lcy) is a result of the thermal desorption process that increases the pore spaces and voids within the soil.

² Overexcavation was conducted when post excavation confirmation sampling results were above the cleanup levels. This consisted of collecting soil samples laterally and vertically at the site until the cleanup levels were achieved and then excavating the site to the newly established excavation limits.

µg/100 cm² = microgram per 100 square centimeters

bcy = bank cubic yard

ft² = square feet

lcy = loose cubic yard

mg/kg = milligram per kilogram

PCB = polychlorinated biphenyl

PWC = U.S. Navy Public Works Center

RA = removal action

2.9 NO FURTHER ACTION REQUIRED

No further action is required at the 45 transformer sites to be protective of human health and the environment. Removal actions have met the objectives of removing PCBs to acceptable cleanup levels. Removal of PCB-contaminated soil exceeding their cleanup levels mitigated risks of potential exposure to PCBs by future residents and industrial workers, prevented offsite migration of PCBs, and reduced harm to human health and the environment from bioaccumulation of PCBs in the food chain. The removal action objectives have been met, and no further action is required to be protective of human and ecological receptors.

2.10 DOCUMENTATION OF SIGNIFICANT CHANGES

Transformer E-09 was previously identified in the proposed plan (DON 2006) as a no further action site at PHNC; however, further review of the 1991 SI (ERC 1991) showed a PCB exceedence above the screening criteria of 1 mg/kg; therefore, E-09 has been deleted from this no further action ROD and will be presented in a separate ROD.

3. Responsiveness Summary

The public comment period for the proposed plan was held between June 27, 2006 and July 26, 2006. A public meeting for the proposed plan was held on July 20, 2006. No written comments were received.

3.1 COMMUNITY PREFERENCES

No community preferences were requested or identified.

3.2 INTEGRATION OF COMMENTS

No public comments were received on the proposed plans.

4. References

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