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**FINAL
LAND USE CONTROL PLAN FOR SITES 302, 303, 304 AND TANK 50
NAVAL BASE KITSAP MANCHESTER
MANCHESTER, WASHINGTON**

**Prepared by
Battelle
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**Prepared for
Naval Facilities Engineering Command Northwest
Silverdale, Washington**

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EC	engineering control
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ESG	Environmental Safety Guide
FISC	Fleet and Industrial Supply Center
GIS	geographic information system
IC	institutional control
LUC	land use control
MTCA	Model Toxics Control Act
NAPL	Non-Aqueous Phase Liquid
NAVFAC	Naval Facilities Engineering Command
NAVSUP	Naval Supply Systems Command
NBK	Naval Base Kitsap
NFA	no further action
NPDES	National Pollutant Discharge Elimination System
OWS	oil/water separator
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
ROD	record of decision
RPM	Remedial Project Manager
TPH	total petroleum hydrocarbon
UST	underground storage tank
yd ³	cubic yard

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1.0 INTRODUCTION

This Land Use Control (LUC) Plan describes the approach to ensure that institutional controls (ICs) and engineering controls (ECs) are properly applied and are effective at specified sites at Naval Base Kitsap (NBK) Manchester, Manchester, Washington. This Plan was prepared by Battelle under Contract No. N44255-14-D-9013, Delivery Order No. 0011 for Naval Facilities Engineering Command (NAVFAC) Northwest.

Per the No Further Action (NFA) letters (Washington State Department of Ecology [Ecology], 1998, 2000 and 2001), specific LUC requirements were identified for the following sites to ensure continued protection of human health and the environment:

- Site 302 – Polychlorinated Biphenyl (PCB) Site
- Site 303 – D-Tunnel Tanks
- Site 304 – Industrial Area
- Tank 50 – Underground Storage Tank (UST) Release Site

Additional LUCs for these sites were also recommended in the *Third Five-Year Review for Sites 302, 303, and 304, Fleet Logistics Center Puget Sound, Naval Base Kitsap Manchester, Washington* (NAVFAC Northwest, 2015) based on site observations.

In general, this Plan was prepared in accordance with the guidance provided in the *Institutional Controls: A Guide to Preparing Institutional Control Implementation and Assurance Plans at Contaminated Sites* (United States Environmental Protection Agency [EPA], 2012) and *Sample Federal Facility Land Use Control ROD Checklist with Suggested Language* (LUC Checklist; EPA, 2013).

1.1 Purpose

The purpose of this Plan is to: 1) identify the sites at NBK Manchester requiring LUCs and the site-specific conditions that prevent unlimited use and unrestricted exposures; 2) define the type of LUC requirements, including ICs and ECs, at each site; and 3) establish responsibilities and requirements for maintaining the LUCs.

1.2 Facility Description and Background

The Navy is the current owner and occupant of all property encompassing Sites 302, 303, 304 and Tank 50 located at NBK Manchester. (Note that at the time the NFA letters were issued for these sites [Ecology, 1998, 2000 and 2001], the facility was referred to as the Manchester Fleet and Industrial Supply Center.) NBK Manchester is located in eastern Kitsap County, 1 mile north of Manchester, near Rich Passage and Clam Bay (see Figure 1-1). NBK Manchester was developed into a major fuel storage facility in the early 1940s at the beginning of World War II. The majority of the facility is currently used for fuel storage, including underground and aboveground petroleum storage tanks, associated pipelines, and a fuel pier. An industrial area with support and administrative buildings is located adjacent to the fuel pier. Fuel products that have been or are currently stored at the fuel depot include Navy Special Fuel (No. 6 fuel oil [Bunker C]), marine diesel fuel, jet fuel, lubricant oil, and aviation gasoline.

Several areas of the facility have been impacted by past releases of petroleum products, including Site 302 (i.e., PCB Site, which has also been a dumping ground for various industrial wastes), Site 303 (i.e.,

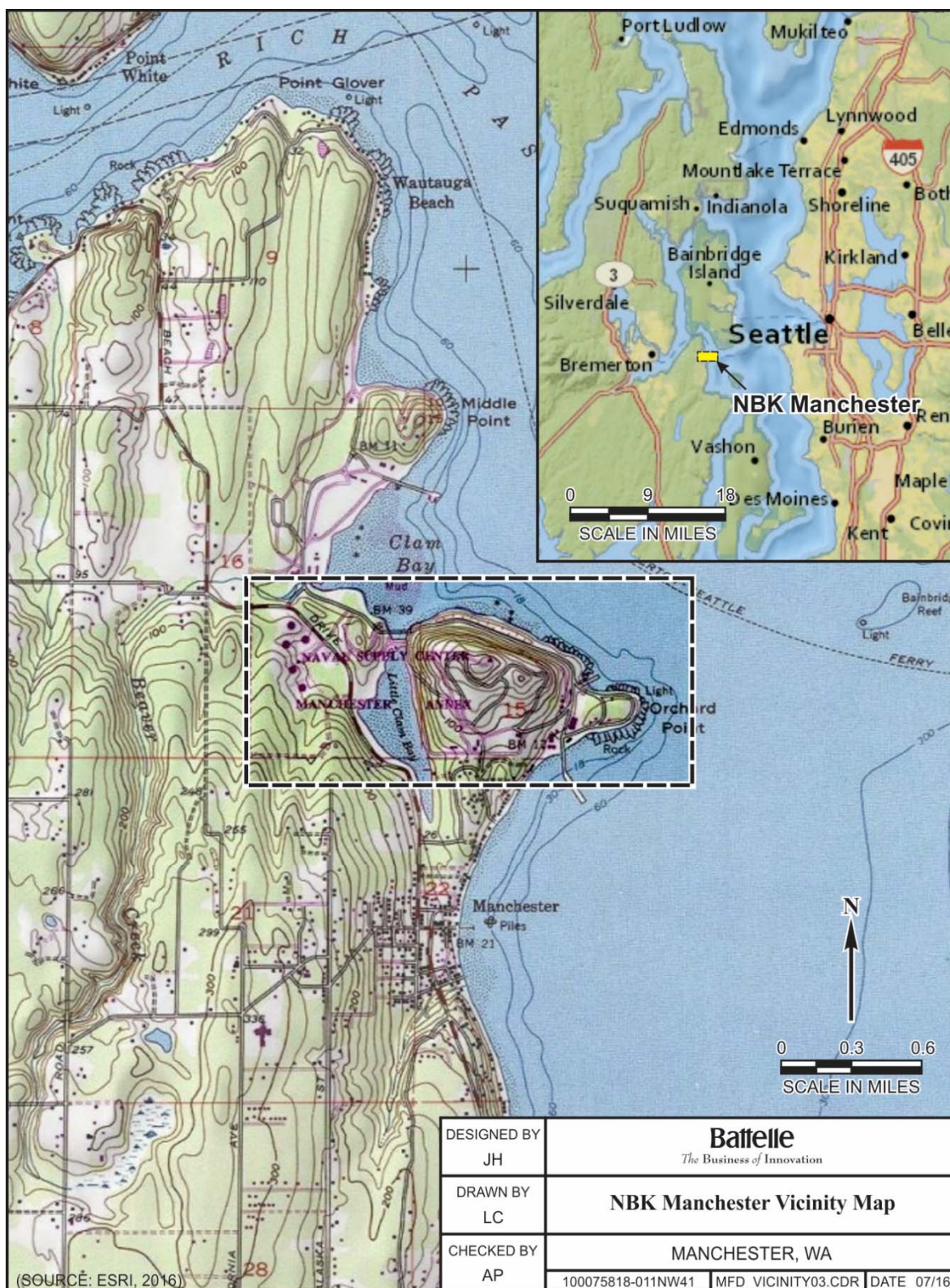


Figure 1-1. NBK Manchester Vicinity Map

D-Tunnel Tanks), Site 304 (i.e., Industrial Area) and Tank 50 (i.e., release site). A site plan of NBK Manchester depicting the locations of these four sites is shown in Figure 1-2. Sites 302, 303, 304 and Tank 50 have received NFA status and the resulting letters from Ecology state that the sites are “either properly remediated or do not pose a risk to human health or the environment” based on the current and future land use (Ecology, 1998, 2000 and 2001). However, LUC requirements are identified or referred to in the NFA letters to ensure continued protection of human health and the environment.

1.3 Roles and Responsibilities

NAVFAC Northwest is responsible for ensuring the effectiveness of the LUCs through inspections, as long as the Navy controls the property or until LUCs are no longer needed. NAVFAC Northwest will work together with NBK Manchester regarding any LUC maintenance or corrective actions, as required. NBK Manchester will educate site personnel and contractors on the LUC requirements through the *Contractor Environmental and Safety Guide Fleet Logistics Center Puget Sound* (ESG; Naval Supply Systems Command [NAVSUP], 2015). Ecology is responsible for regulatory review of the required LUCs detailed in the NFA letters (Ecology, 1998, 2000 and 2001) during each five-year review period. NAVFAC Northwest will communicate the LUC status by providing the completed LUC inspection checklists for each site on an annual basis to the project stakeholders, specifically Ecology, EPA, and the Suquamish Tribe. The key stakeholders and points of contact, at the time of this report, are identified in Table 1-1, along with a brief summary of their roles and responsibilities.

Table 1-1. Contact Information and Roles and Responsibilities for NBK Manchester

Name & Title	Organization	Contact Information	Roles/Responsibilities
Carlotta Cellucci Remedial Project Manager (RPM) for Sites 302, 303, and 304	NAVFAC Northwest	carlotta.cellucci@navy.mil (360) 396-1518	- To ensure the effectiveness of the LUCs by performing annual LUC inspections. - To coordinate with NBK Manchester regarding any LUC maintenance or corrective actions, as required.
Charles Escola Navy Technical Representative	NAVFAC Northwest	charles.escola@navy.mil (360) 396-0069	
Steven Skeehan Navy Technical Representative	NAVFAC Northwest	steve.skeehan@navy.mil (253) 279-0212	
Doug Tailleux Environmental Specialist	NBK Manchester	douglas.tailleux@navy.mil (360) 476-2664	- To coordinate with NAVFAC Northwest regarding LUC maintenance or corrective actions, as required. - To educate site personnel and contractors on the LUC requirements.
Mahbub Alam Ecology Cleanup Project Manager	Ecology	mahbub.alam@ecy.wa.gov (360) 407-6913	- To provide regulatory review of the LUC requirements detailed in the NFA letters at each five-year review. - To provide review of this Plan. - To receive completed LUC checklists for each site on an annual basis.
Dennis Faulk EPA RPM	EPA Region 10	Faulk.Dennis@epamail.epa.gov (509) 376-8631	- To provide review of this Plan. - To receive completed LUC checklists for each site on an annual basis.
Denice Taylor Suquamish Tribe Representative	Suquamish Tribe	dtaylor@suquamish.nsn.us (360) 981-0102	- To provide review of this Plan. - To receive completed LUC checklists for each site on an annual basis.

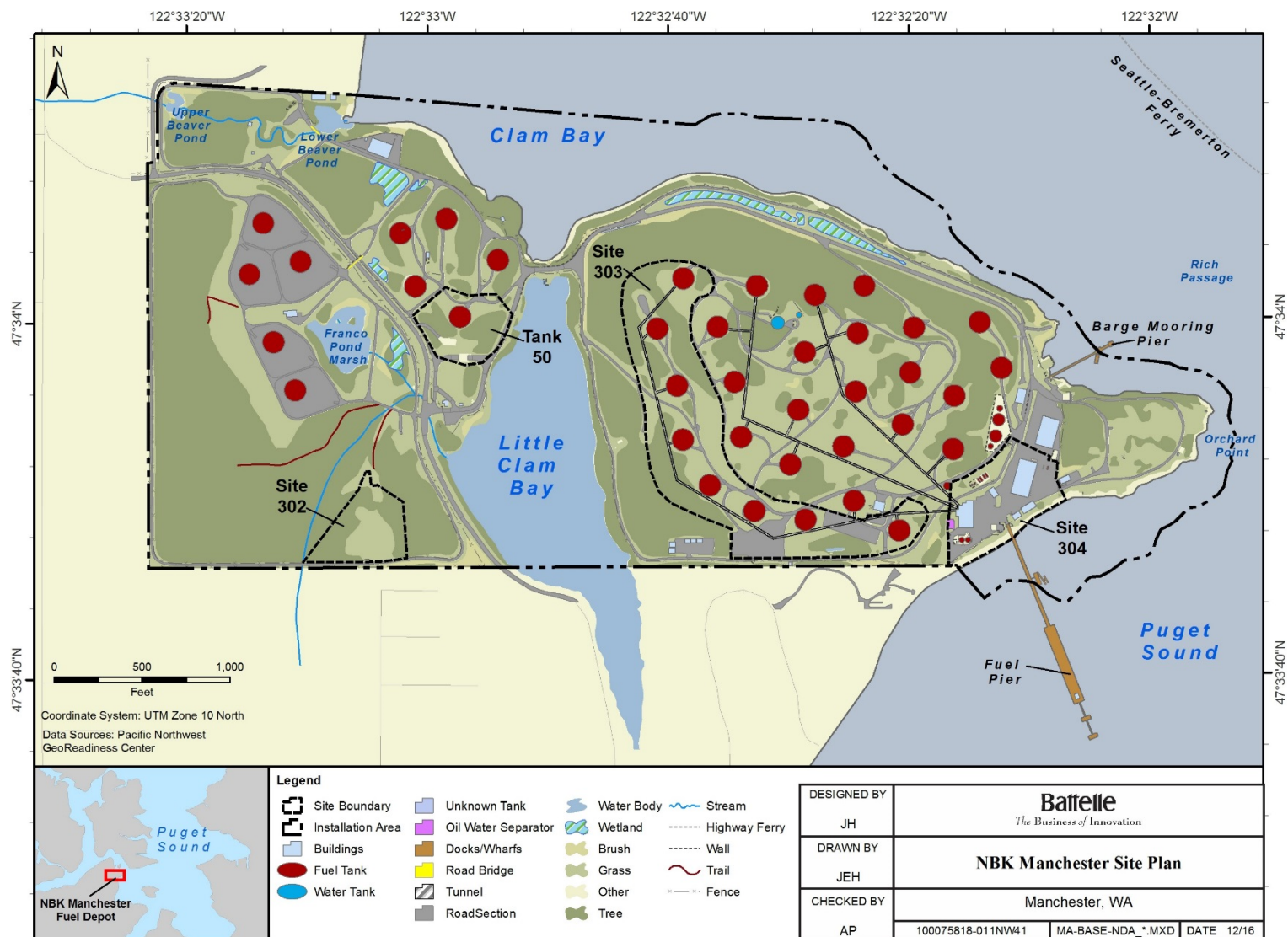


Figure 1-2. NBK Manchester Site Plan

1.4 Contents and Use of the LUC Plan

This LUC Plan contains the following:

- Section 1.0 Introduction: purpose of this Plan; the facility description and background along with a site plan; and a listing of the key stakeholders and their roles and responsibilities related to LUCs at NBK Manchester.
- Section 2.0 Site Description: a brief summary of the history and condition of Sites 302, 303, 304 and Tank 50 at NBK Manchester along with maps showing the areas subject to LUCs.
- Section 3.0 Description and Administration of Land Use Controls: a description of the LUCs (i.e., both ICs and ECs) required at NBK Manchester Sites 302, 303, 304 and Tank 50; and access control, LUC inspection, LUC maintenance, LUC modification and LUC termination procedures.
- Appendix A, LUC Inspection Checklists for Sites 302, 303, 304 and Tank 50: to guide the LUC inspections at each site and ensure the effectiveness of the LUCs.
- Appendix B, Monitoring Well Visual Inspection Checklist: to guide inspection or condition assessment of the groundwater and/or vapor monitoring wells in place at each site.

This LUC Plan is to be used as a reference for Navy personnel and/or Navy contractors tasked with enforcing, implementing, inspecting, and maintaining the LUC requirements at Sites 302, 303, 304 and Tank 50 located at NBK Manchester.

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2.0 SITE DESCRIPTION

LUCs have been prescribed for Sites 302, 303, 304 and Tank 50 located at NBK Manchester. This section provides a brief site history and describes the site-specific conditions that prevent unlimited use and unrestricted exposure for each site, as well as maps to show the extent of the areas subject to LUCs. A layer is within the geographic information system (GIS) database for NBK Manchester to identify these sites with LUCs and their boundaries.

2.1 Site 302 – PCB Site

Site 302 is a 1.4 acre area located in the southwest portion of NBK Manchester (see Figures 1-2 and 2-1). The site was used as a dumping area for ship bilge waste, transformer oil, and other petroleum waste from local naval facilities from about 1955 through 1976. No estimate of the volume of waste disposed at the site is available. PCBs were identified as a contaminant of concern at Site 302.

The remedial actions at the site began in 1993 with the removal and off-site incineration of approximately 3,000 cubic yards (yd³) of contaminated soil. Excavated areas then received a minimum of 1 foot of granular fill material followed by capping with 4 inches of topsoil over the entire site. Certain areas received an additional foot of topsoil in 1998.

Ecology issued a NFA letter in 2000 stating “contaminants found during investigation of this property were either properly remediated or do not pose a risk to human health or the environment.” This determination was based primarily on the current and future land use at the site. LUC requirements were identified in the NFA letter to guard against exposure to residual petroleum- and PCB-contaminated soil (Ecology, 2000). A map of Site 302, with site boundaries showing the area subject to LUCs, is provided in Figure 2-1.

2.2 Site 303 – D-Tunnel Tanks

Site 303 consists of eight 20,000 to 50,000 barrel (840,000 to 2,100,000 gallons) concrete USTs used to store marine diesel fuel (see Figures 1-2 and 2-2). The current Naval fuel stored and dispensed at NBK Manchester is designated as F-76. The USTs are located adjacent to the D-tunnel line, which extends from Tank D-30 to Building 12 in the Industrial Area (i.e., Site 304) as shown on Figure 2-2. The USTs are typically covered with 4 to 6 feet of soil with the base of the tanks extending from 30 to 32 feet below ground surface (bgs). The USTs are surrounded by a drain field extending approximately 6 to 8 feet outside the exterior tank wall. The groundwater that is collected by the curtain drains around Tanks D-22 to D-25 enters into Tunnel D, flows through oil/water separator (OWS) 1D and discharges through outfall OF-001B to Puget Sound near the fuel pier. Tanks D-26 through D-30 can drain groundwater either through French drains to the tunnel drain system or into OWS 8, which then discharges to Little Clam Bay via outfall OF-008A. These discharges to Puget Sound and Little Clam Bay are authorized under an EPA National Pollutant Discharge Elimination System (NPDES) permit (i.e., number WA-000278-0).

Two significant fuel spills were previously documented at Site 303. A spill at Tank D-30 (see Figure 2-2) in February 1990 involved the release of approximately 38,000 to 40,000 gallons of diesel fuel. Most of the spill was apparently contained by the footing drainage system under the tank and directed to an OWS where it was recovered. Fuel was also recovered from the north dike. Collection sumps and sorbent pads were used to collect fuel from the beach areas to the north of Tank D-30. Non-aqueous phase liquid

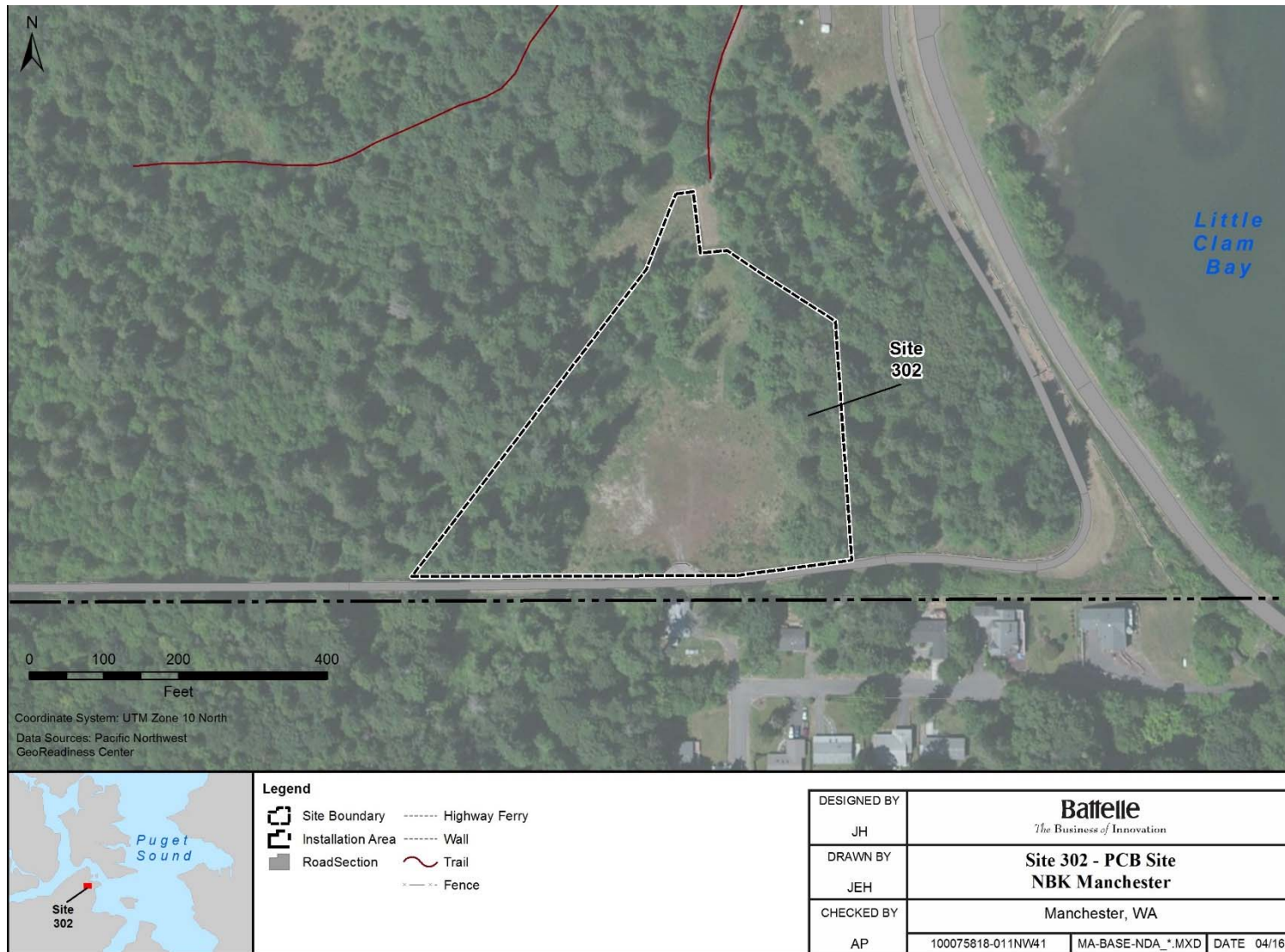


Figure 2-1. Site 302 - PCB Site

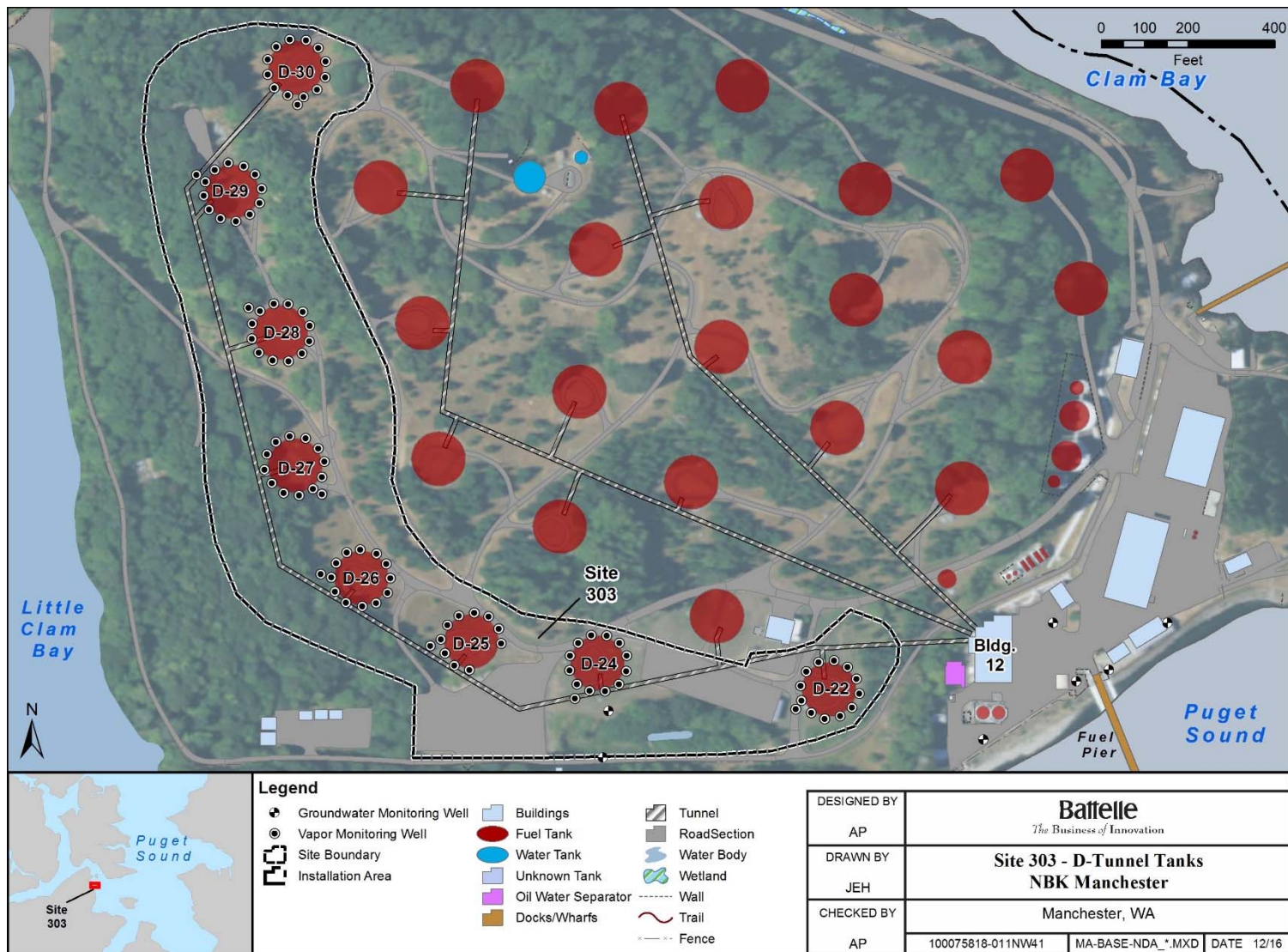


Figure 2-2. Site 303 - D-Tunnel Tanks

(NAPL) and/or sheens were observed in monitoring wells and test pits installed along the beach to the north and test pits along Pine Road to the west.

Another spill at Tank D-24 (see Figure 2-2) in March 1990 involved the release of approximately 10,000 gallons of diesel fuel. Most of the spill was apparently recovered on the Base. Approximately 100 to 200 gallons leaked off base into the marsh area adjacent to Corliss Lane. A subsequent environmental investigation in the marsh area indicated that natural attenuation processes had decreased the petroleum concentrations in the marsh to below cleanup standards. An underground vapor monitoring system was installed around the D-Tunnel tanks in 1995. Soil samples that were collected during the system installation indicated that petroleum-contaminated soil was present in the immediate vicinity of all eight tanks.

Ecology issued a NFA letter in 2001 stating “contaminants found during investigation of this property were either properly remediated or do not pose a risk to human health or the environment.” This determination was based primarily on the current and future land use at the site. LUC requirements are identified in the NFA letter to guard against exposure to residual petroleum-contaminated soil (Ecology, 2001). A map of Site 303, with site boundaries showing the area subject to LUCs, is provided in Figure 2-2.

2.3 Site 304 – Industrial Area

Site 304 (Industrial Area) is located in the eastern portion of NBK Manchester as shown in Figures 1-2 and 2-3. It is comprised of maintenance, administration, fuel pumping, and water treatment buildings. Site 304 is the central transfer point for most of the petroleum products stored at NBK Manchester. Petroleum products (including marine diesel, jet fuels, aviation gasoline, and lube oil) are transported through a network of pipelines running from the fuel pier to storage tanks located throughout the facility. Bunker C fuel oil was historically stored at NBK Manchester, but is no longer stored at the site. The original pipelines were drained and closed in place in 1982. New pipelines are contained in concrete underground trunks and utility corridors.

A site assessment was performed in 1993 to support the closure and removal of three USTs located near Building 1 (UST P-3) and Building 12 (USTs T-4 and T-5). Diesel was detected in soil samples above cleanup levels. Approximately 120 yd³ of contaminated soil was excavated. Soil concentrations remaining in the excavation were below cleanup levels.

An expedited removal action was performed in 1996 to support construction of a secondary containment boom around oily waste tanks 115 and 116 after a subsurface investigation yielded concentrations of total petroleum hydrocarbon (TPH) concentrations in soil and groundwater above cleanup levels. Free product oil and approximately 174 tons of visibly contaminated soil were removed from the area. No confirmation soil sampling was conducted following the removal action.

Ecology issued a NFA letter in 2001 stating “contaminants found during investigation of this property were either properly remediated or do not pose a risk to human health or the environment.” This determination was based primarily on the current and future land use at the site. LUC requirements are identified in the NFA letter to guard against exposure to residual petroleum-contaminated soil (Ecology, 2001). A map of Site 304, with site boundaries showing the area subject to LUCs, is provided in Figure 2-3.

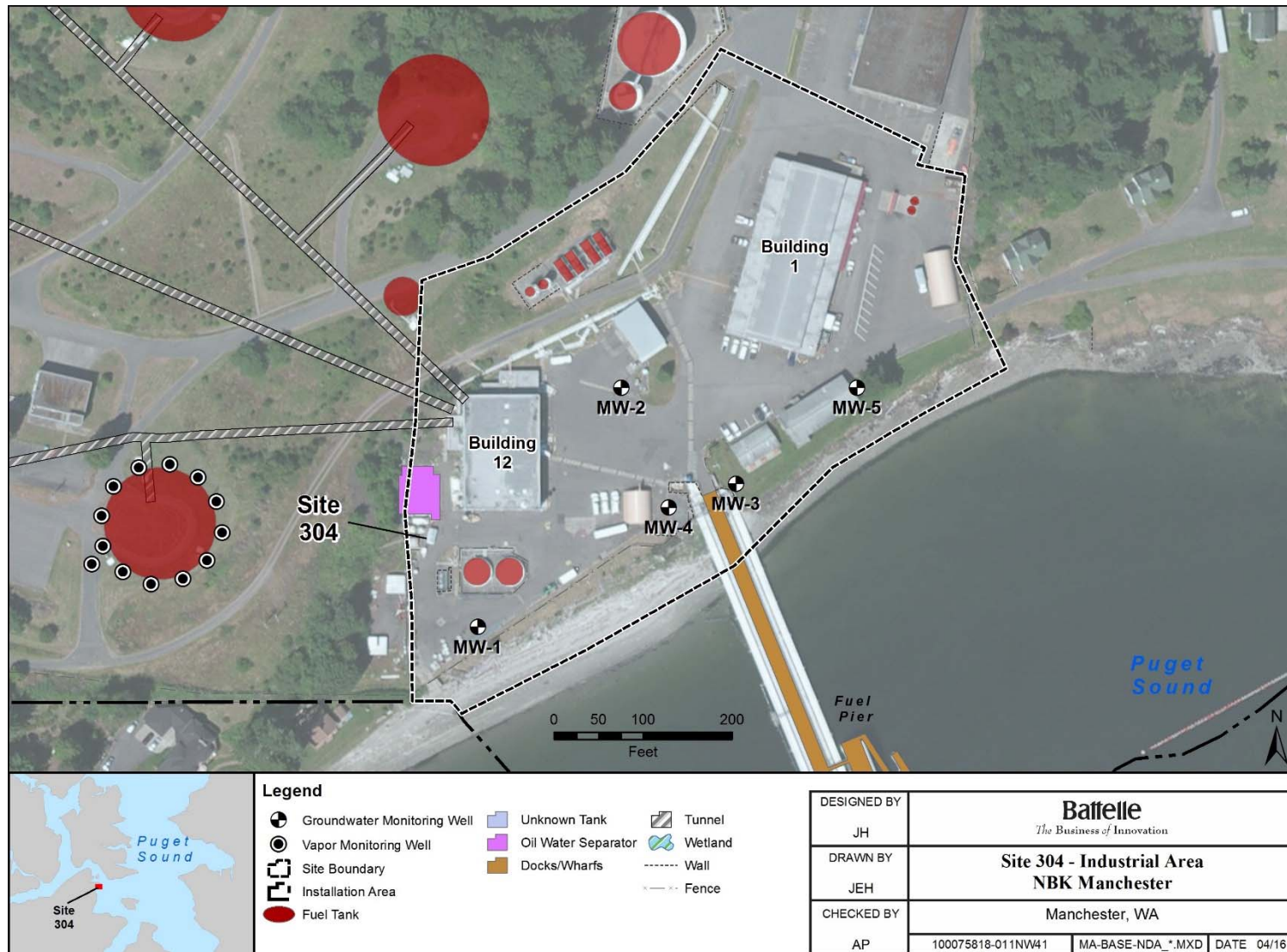


Figure 2-3. Site 304 - Industrial Area

2.4 Tank 50 – Release Site

Tank 50 is the southernmost of a set of four USTs built on the top of a small knoll located on the west side of Little Clam Bay (refer to Figure 1-2). The tank is believed to have been constructed in the early 1950s. The tank is a steel cylinder approximately 100 feet in diameter and 22 feet tall with a capacity of approximately 27,000 barrels (1.1 million gallons). The tank was field constructed and covered with approximately 4 feet of earth fill after completion.

In late 1996, the Navy hired a contractor to clean and line fuel storage tanks. Following cleaning and preparation for application of epoxy-based liner compound, the contractor identified an approximately 2-inch-diameter hole in the steel wall on the southwest side of Tank 50. The contractor reported that the hole was located approximately 12 feet above the bottom of the UST. Tank 50 was used to store JP-8 at the time. A steel patch was welded into the wall of Tank 50 to repair the hole. The steel around the hole in the tank wall reportedly was not rusted suggesting that the hole may have been an artifact of the construction of the tank or work performed on the tank after construction. Cleaning and lining was then completed and the tank was restored to service.

A soil sample collected from a depth of 6 inches below the damaged area during repair of the tank hole contained a TPH concentration of 1,000 mg/kg and a total combined benzene, toluene, ethylbenzene, and xylenes (BTEX) concentration of 60 mg/kg, both over the Model Toxics Control Act (MTCA) Method A cleanup criteria at the time.

Based on these results, a site assessment was conducted by Hart Crowser in 1997 to determine the nature and extent of petroleum contamination in soil near the tank and whether groundwater had been impacted by petroleum hydrocarbons released from this tank (Hart Crowser, 1997). Results of the site assessment indicated that TPH, identified as JP-8, was present at concentrations exceeding the MTCA Method A criteria at the time in soil adjacent to the hole found in the tank; approximately 75 feet downgradient of the hole found in the tank; and along the eastern perimeter of the tank at depths of roughly 16 to 32 feet below ground surface. Based on sample results and the nature of the TPH product, BTEX, polycyclic aromatic hydrocarbons (PAHs) and lead were determined not to be associated with the release. Although TPH was also detected above MTCA Method A criteria in groundwater, only one boring could be advanced to groundwater and the sample collected was unfiltered.

Based on the uncertainties with regard to the presence of groundwater contamination, Hart Crowser performed additional well installation and sampling (Hart Crowser, 1998a). The findings of this investigation concluded that:

- While TPH concentrations in several soil samples exceed Ecology's residential direct contact standard of 200 mg/kg, there is little potential for ingestion of petroleum hydrocarbons from this site because the higher concentrations were observed at depth (generally more than 10 feet below ground surface), and the site has restricted access with few people visiting on a regular basis.
- Off-site migration of petroleum hydrocarbons at concentrations above Ecology cleanup goals is unlikely and the closest drinking water wells are located more than a 1/4 mile northwest of the site, across a groundwater divide, and are screened at considerably greater depth than shallow groundwater encountered near Tank 50.
- The source of the petroleum release, the hole in the tank, has been repaired.

Based on a meeting with Ecology, Hart Crowser performed the following actions and collected the additional information summarized below specifically to support a determination of NFA for the site by Ecology (Hart Crowser, 1998b):

- A Hart Crowser field representative installed 1-foot-high by 2-foot-wide aluminum warning signs at two locations near Tank 50 reading "PRIOR TO DIGGING IN THIS AREA CONTACT FACILITIES ENGINEER OR ENVIRONMENTAL DEPARTMENT."
- Fleet and Industrial Supply Center (FISC) modified the Manchester Fuel Department Facility map with notation that reads "Area of Oil Contamination" indicating the area of concern to prevent contractors and base personnel working in the area from disturbing potential petroleum-contaminated soil without obtaining proper authorization and reviewing health and safety procedures with the facility environmental personnel.
- Hart Crowser collected one additional groundwater sample and TPH was not detected above MTCA Method A criteria.

Based on the results of these investigations and the land use controls implemented at the site. Ecology issued a NFA letter in 1998 stating "Based upon the information in the reports listed above and institutional controls placed at the facility, Ecology has determined that, at this time, the release of total petroleum hydrocarbons into the soil and groundwater near Tank 50 no longer appears to pose a threat to human health or the environment." The LUC requirements are referred to in the NFA letter are to guard against exposure to residual petroleum-contaminated soil (Ecology, 1998). A map of Tank 50, with site boundaries showing the area subject to LUCs, is provided in Figure 2-4.

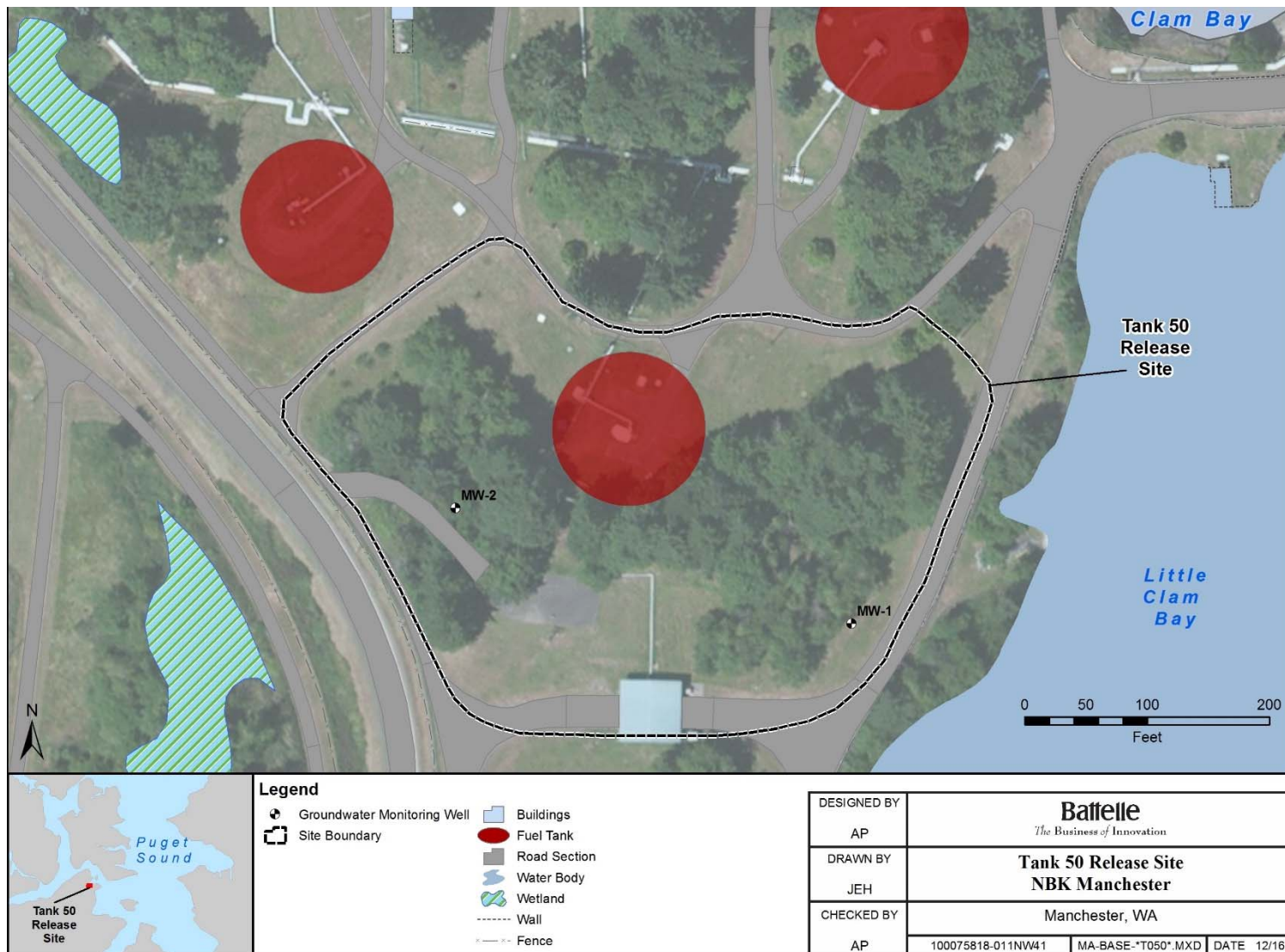


Figure 2-4. Tank 50 Release Site

3.0 DESCRIPTION AND ADMINISTRATION OF LAND USE CONTROLS

This LUC Plan formalizes site-specific LUCs, as detailed in the NFA letters (Ecology, 1998, 2000 and 2001), that prevent unlimited use and unrestricted exposures due to contaminated soil and/or groundwater at Sites 302, 303, 304 and Tank 50 located at NBK Manchester. It also incorporates recommendations from the *Third Five-Year Review for Sites 302, 303, and 304, Fleet Logistics Center Puget Sound, Naval Base Kitsap Manchester, Washington* (NAVFAC Northwest, 2015) regarding additional LUCs at these sites.

3.1 Description of LUCs

The LUCs outlined in this Plan are intended to protect all site personnel, workers, visitors, and/or potential trespassers from exposure to unacceptable levels of soil and/or groundwater contamination at Sites 302, 303, 304 and Tank 50. These sites are defined by the boundaries described in Section 2.0 and shown in Figures 2-1, 2-2, 2-3, and 2-4 respectively. Table 3-1 lists the specific LUCs at each of these sites.

Table 3-1. LUC Descriptions for Sites at NBK Manchester

Site	Title	LUCs
302	PCB Site	• <i>Ensure that site signage is readable and adequate.</i> • Ensure that land use remains for industrial purposes. • Ensure that there has been no unauthorized soil excavation or disturbance. • Ensure that there has been no unauthorized placement of excess soil from another location. • Ensure integrity of the soil cover vegetation, so that any excavation or improper disposal is apparent. • Ensure that any soil excavated from the site is properly characterized and disposed off-site and that on-site workers are protected during such activities. • <u>Ensure that site fencing is intact and that gates are secured and locked.</u>
303	D-Tunnel Tanks	• <i>Ensure that land use remains for industrial purposes. Coordinate with Ecology prior to change in property ownership or land use concerning the need for remedial actions.</i> • <i>Ensure that warnings are posted for workers to guard against exposure to residual petroleum contaminated soil.</i> • <i>Identify remaining areas of concern on facility maps and specify in facility excavation permit instruction.</i> • Ensure no production wells are installed and groundwater is not used except for monitoring and/or remediation. • Protect existing vapor monitoring wells until formally abandoned. • Ensure that there has been no unauthorized soil excavation or disturbance. • Confine authorized reusable material* to approved staging area. • Ensure that any soil excavated from the site is properly characterized and disposed off-site and that on-site workers are protected during such activities.

Table 3-1. LUC Descriptions for Sites at NBK Manchester (Continued)

Site	Title	LUCs
304	Industrial Area	• <i>Ensure that land use remains for industrial purposes. Coordinate with Ecology prior to change in property ownership or land use concerning the need for remedial actions.</i> • <i>Ensure that warnings are posted for workers to guard against exposure to residual petroleum contaminated soil.</i> • <i>Identify remaining areas of concern on facility maps and specify in facility excavation permit instruction.</i> • Ensure no production wells are installed and groundwater is not used except for monitoring and/or remediation. • Protect existing monitoring wells until formally abandoned. • Ensure that there has been no unauthorized soil excavation or disturbance. • Ensure that any soil excavated from the site is properly characterized and disposed off-site and that on-site workers are protected during such activities.
Tank 50	Release Site	• <i>Ensure that warnings are posted for workers to guard against exposure to residual petroleum contaminated soil.</i> • <i>Identify remaining areas of concern on facility maps and specify in facility excavation permit instruction.</i> • Ensure that land use remains for industrial purposes. Coordinate with Ecology prior to change in property ownership or land use concerning the need for remedial actions. • Ensure no production wells are installed and groundwater is not used except for monitoring and/or remediation. • Protect existing monitoring wells until formally abandoned. • Ensure that there has been no unauthorized soil excavation or disturbance. • Ensure that any soil excavated from the site is properly characterized and disposed off-site and that on-site workers are protected during such activities.

Note: LUCs that are italicized are required LUCs from the NFA letters (Ecology 1998, 2000 and 2001).

*Those materials for which on-site placement has been coordinated with the Ecology Cleanup Project Manager and that have been characterized in collaboration with the Ecology Cleanup Project Manager.

As outlined in Table 3-1, unauthorized soil excavations or disturbances are prohibited at all sites for which LUCs have been implemented. An authorized soil excavation or disturbance indicates that the already established, formal process as detailed in the ESG (NAVSUP, 2015) has been followed, including development of plans and analytical testing, and ultimately approved by the NBK Manchester Excavation Coordinator. As part of the approval process, NBK Manchester Environmental (who has knowledge of the LUC requirements) reviews the application with respect to the LUCs. If the activities are to be conducted within an area with LUC requirements, NBK Manchester Environmental directs the contractor or Navy personnel conducting the excavation with regard to the processes required to control the activities in a way that is protective of human health and the environment. Ecology will be informed of any unauthorized soil excavation or disturbance activities as part of the annual LUC inspections and reporting (see Section 3.3).

3.2 Access Control

Access control for NBK Manchester is the responsibility of NBK Manchester Base Security or site personnel. NBK Manchester is an active facility, so access is restricted to authorized personnel only. All sites for which LUCs have been implemented are within the installation fence line of NBK Manchester, while Site 302 is also surrounded by additional fencing. Site 303, Site 304, and Tank 50 are located within highly active areas of NBK Manchester, where any fencing or barriers would prevent efficient entry/egress that is necessary for facility operations. Warning signs are installed at site access points

(i.e., vehicle and pedestrian access points) delineating the areas and prohibiting any type of ground disturbance without prior site notification and approval. In addition, security personnel patrol the fence line every 4 hours.

3.3 LUC Inspections

NAVFAC Northwest (or the NAVFAC Northwest contractor) will perform LUC inspections on an annual basis for Sites 302, 303, 304 and Tank 50 located at NBK Manchester. Annual inspections will include field inspections, documentation of the current land use, review of documents, review of administrative controls in place (e.g., the approval of projects), and condition assessment of ECs, including fencing, gates, signage, monitoring wells, and soil covers.

The site-specific LUC Inspection Checklists (see Appendix A) and Monitoring Well Visual Inspection Checklist (see Appendix B) will be completed and used as tools to guide the annual inspections. The results of the LUC inspections (i.e., as provided by the completed checklists) will be submitted to stakeholders, specifically Ecology, EPA, and the Suquamish Tribe, to communicate the status of the LUCs on an annual basis.

LUC inspections will continue until NAVFAC Northwest and Ecology determine that inspections are no longer needed as a component of the selected remedy to maintain the protectiveness of the remedy, and that site conditions allow for unlimited use and unrestricted exposures based on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Model Toxics Control Act (MTCA) or specified regulatory criteria, as applicable.

3.4 LUC Maintenance

Maintenance of the LUCs as described in this Plan will be achieved by: 1) NAVFAC Northwest (or the NAVFAC Northwest contractor) conducting the annual inspections to verify that the LUCs are implemented and effective; 2) NBK Manchester educating site personnel and contractors on the LUC requirements through the ESG (NAVSUP, 2015); and 3) NAVFAC Northwest coordinating with NBK Manchester regarding any maintenance or corrective actions required.

3.5 LUC Modification and Termination

NAVFAC Northwest and Ecology understand that a change in property ownership or land use would result in consultation with Ecology concerning the need for remedial actions. As recommended in the *Third Five-Year Review for Sites 302, 303, and 304, Fleet Logistics Center Puget Sound, Naval Base Kitsap Manchester, Washington* (NAVFAC Northwest, 2015), the continued use of LUCs at NBK Manchester will be evaluated at the time of each five-year review. The annual LUC inspection checklists (see Appendices A and B) will be the basis for evaluating the effectiveness of the LUCs as part of this five-year review process.

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4.0 REFERENCES

- Ecology. 2000. No Further Action Determination at PCB Site Letter. September 25.
- Ecology. 2001. No Further Action Determination at Fleet and Industrial Supply Center Site 303/304 Letter. January 17.
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APPENDIX A
LUC Inspection Checklists for Sites 302, 303, 304 and Tank 50

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NBK Manchester
Site 302 - PCB Site
Naval Facilities Engineering Command Northwest

LAND USE CONTROLS (LUCs) INSPECTION CHECKLIST

DATE(S) (MM|DD|YY):

INSPECTOR(S):

COMPANY:

LUCs

- *ENSURE THAT SITE SIGNAGE IS READABLE AND ADEQUATE.*
- ENSURE THAT LAND USE REMAINS FOR INDUSTRIAL PURPOSES.
- ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED SOIL EXCAVATION OR DISTURBANCE.
- ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED PLACEMENT OF EXCESS SOIL FROM ANOTHER LOCATION.
- ENSURE INTEGRITY OF THE SOIL COVER VEGETATION, SO THAT ANY EXCAVATION OR IMPROPER DISPOSAL IS APPARENT.
- ENSURE THAT ANY SOIL EXCAVATED FROM THE SITE IS PROPERLY CHARACTERIZED AND DISPOSED OFF-SITE AND THAT ON-SITE WORKERS ARE PROTECTED DURING SUCH ACTIVITIES.
- ENSURE THAT SITE FENCING IS INTACT AND THAT GATES ARE SECURED AND LOCKED.

NOTE: LUCs THAT ARE ITALICIZED ARE REQUIRED LUCs FROM THE NFA LETTER.

LUCs INSPECTION ACTIONS

HAS SITE OR ADJACENT LAND USE CHANGED SINCE LAST INSPECTION?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF SOIL EXCAVATION OR DISTURBANCE?
 IF SO, DETERMINE IF SITE APPROVAL PROCESS HAS BEEN FOLLOWED.

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF THE UNAUTHORIZED PLACEMENT OF EXCESS SOIL FROM ANOTHER LOCATION?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

HAS THE INTEGRITY OF THE VEGETATIVE COVER AT THE SITE BEEN MAINTAINED?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

HAS ACCESS CONTROL BEEN MAINTAINED?

☐ YES ☐ NO, EXPLAIN _____

SECURITY POC: _____

IS SIGNAGE READABLE AND ADEQUATE?

☐ YES ☐ NO ☐ NA

IS FENCING INTACT AND SECURE?

☐ YES ☐ NO ☐ NA

ARE BOTH THE NORTH AND SOUTH GATES SECURED AND LOCKED

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:



NBK Manchester
Site 302 - PCB Site
Naval Facilities Engineering Command Northwest

LUCs INSPECTION CHECKLIST (CONTINUED)

WERE PICTURES TAKEN? ☐ YES
☐ NO

PHOTO IDs _____

ADDITIONAL NOTES:

I CERTIFY THAT THE CONDITIONS OF THE AREA ON THE INSPECTION DATES(S) WERE AS REPORTED ABOVE.

INSPECTOR SIGNATURE:

DATE:



NBK Manchester
Site 303 - D-Tunnel Tanks
Naval Facilities Engineering Command Northwest

LAND USE CONTROLS (LUCs) INSPECTION CHECKLIST

DATE(S) (MM|DD|YY):

INSPECTOR(S):

COMPANY:

LUCs

- *ENSURE THAT LAND USE REMAINS FOR INDUSTRIAL PURPOSES. COORDINATE WITH ECOLOGY PRIOR TO CHANGE IN PROPERTY OWNERSHIP OR LAND USE CONCERNING THE NEED FOR REMEDIAL ACTIONS.*
- *ENSURE THAT WARNINGS ARE POSTED FOR WORKERS TO GUARD AGAINST EXPOSURE TO RESIDUAL PETROLEUM CONTAMINATED SOIL.*
- *IDENTIFY REMAINING AREAS OF CONCERN ON FACILITY MAPS AND SPECIFY IN FACILITY EXCAVATION PERMIT INSTRUCTION.*
- ENSURE NO PRODUCTION WELLS ARE INSTALLED AND GROUNDWATER IS NOT USED EXCEPT FOR MONITORING AND/OR REMEDIATION.
- PROTECT EXISTING VAPOR MONITORING WELLS UNTIL FORMALLY ABANDONED.
- ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED SOIL EXCAVATION OR DISTURBANCE.
- CONFINE AUTHORIZED REUSABLE MATERIAL* TO APPROVED STAGING AREA.
- ENSURE THAT ANY SOIL EXCAVATED FROM THE SITE IS PROPERLY CHARACTERIZED AND DISPOSED OFF-SITE AND THAT ON-SITE WORKERS ARE PROTECTED DURING SUCH ACTIVITIES.

NOTE: LUCs THAT ARE ITALICIZED ARE REQUIRED LUCs FROM THE NFA LETTER.

*THOSE MATERIALS FOR WHICH ONSITE PLACEMENT HAS BEEN COORDINATED WITH THE ECOLOGY SITE MANAGER AND THAT HAVE BEEN CHARACTERIZED IN COLLABORATION WITH THE ECOLOGY SITE MANAGER.

LUC INSPECTION ACTION

HAS SITE OR ADJACENT LAND USE CHANGED SINCE LAST INSPECTION?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

DO FACILITY MAPS IDENTIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

DOES THE FACILITY EXCAVATION PERMIT INSTRUCTION SPECIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

IS THERE VISUAL EVIDENCE OF UNAUTHORIZED ON-SITE WELL INSTALLATION OR GROUNDWATER USE?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS

☐ OTHER _____

ARE ALL MONITORING WELLS IN GOOD CONDITION AND ACCESSIBLE? (REFER TO COMPLETED MONITORING WELL INSPECTION CHECKLISTS)

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS

☐ OTHER _____

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF SOIL EXCAVATION OR DISTURBANCE? IF SO, DETERMINE IF SITE APPROVAL PROCESS HAS BEEN FOLLOWED.

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:



NBK Manchester
Site 303 - D-Tunnel Tanks
Naval Facilities Engineering Command Northwest

LUCs INSPECTION CHECKLIST (CONTINUED)

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF THE UNAUTHORIZED PLACEMENT
EXCESS SOIL, FILL, OR SEDIMENT FROM ANOTHER LOCATION?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS: _____

HAS ACCESS CONTROL BEEN MAINTAINED?

☐ YES ☐ NO, EXPLAIN _____

SECURITY POC: _____

IS SIGNAGE READABLE AND ADEQUATE?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS: _____

WERE PICTURES TAKEN? ☐ YES
☐ NO

PHOTO IDs _____

ADDITIONAL NOTES:

I CERTIFY THAT THE CONDITIONS OF THE AREA ON THE INSPECTION DATES(S) WERE AS REPORTED ABOVE.

INSPECTOR SIGNATURE:

DATE:



NBK Manchester
Site 304 - Industrial Area
Naval Facilities Engineering Command Northwest

LAND USE CONTROLS (LUCs) INSPECTION CHECKLIST

DATE(S) (MM|DD|YY):

INSPECTOR(S):

COMPANY:

LUCs

- *ENSURE THAT LAND USE REMAINS FOR INDUSTRIAL PURPOSES. COORDINATE WITH ECOLOGY PRIOR TO CHANGE IN PROPERTY OWNERSHIP OR LAND USE CONCERNING THE NEED FOR REMEDIAL ACTIONS.*
- *ENSURE THAT WARNINGS ARE POSTED FOR WORKERS TO GUARD AGAINST EXPOSURE TO RESIDUAL PETROLEUM CONTAMINATED SOIL.*
- *IDENTIFY REMAINING AREAS OF CONCERN ON FACILITY MAPS AND SPECIFY IN FACILITY EXCAVATION PERMIT INSTRUCTION.*
- *ENSURE NO PRODUCTION WELLS ARE INSTALLED AND GROUNDWATER IS NOT USED EXCEPT FOR MONITORING AND/OR REMEDIATION.*
- *PROTECT EXISTING MONITORING WELLS UNTIL FORMALLY ABANDONED.*
- *ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED SOIL EXCAVATION OR DISTURBANCE.*
- *ENSURE THAT ANY SOIL EXCAVATED FROM THE SITE IS PROPERLY CHARACTERIZED AND DISPOSED OFF-SITE AND THAT ON-SITE WORKERS ARE PROTECTED DURING SUCH ACTIVITIES.*

NOTE: LUCs THAT ARE ITALICIZED ARE REQUIRED LUCs FROM THE NFA LETTER.

LUC INSPECTION ACTIONS

HAS SITE OR ADJACENT LAND USE CHANGED SINCE LAST INSPECTION?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

DO FACILITY MAPS IDENTIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

DOES THE FACILITY EXCAVATION PERMIT INSTRUCTION SPECIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

IS THERE VISUAL EVIDENCE OF UNAUTHORIZED ON-SITE WELL INSTALLATION OR GROUNDWATER USE?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS
☐ OTHER _____

ARE ALL MONITORING WELLS IN GOOD CONDITION AND ACCESSIBLE? (REFER TO COMPLETED MONITORING WELL INSPECTION CHECKLISTS)

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS
☐ OTHER _____

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF SOIL EXCAVATION OR DISTURBANCE? IF SO, DETERMINE IF SITE APPROVAL PROCESS HAS BEEN FOLLOWED.

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:



NBK Manchester
Site 304 - Industrial Area
Naval Facilities Engineering Command Northwest

LUCs INSPECTION CHECKLIST (CONTINUED)

HAS ACCESS CONTROL BEEN MAINTAINED?

☐ YES ☐ NO, EXPLAIN _____

SECURITY POC: _____

IS SIGNAGE READABLE AND ADEQUATE?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS: _____

WERE PICTURES TAKEN? ☐ YES
☐ NO

PHOTO IDs _____

ADDITIONAL NOTES:

I CERTIFY THAT THE CONDITIONS OF THE AREA ON THE INSPECTION DATES(S) WERE AS REPORTED ABOVE.

INSPECTOR SIGNATURE:

DATE:



NBK Manchester
Tank 50 Release Site
Naval Facilities Engineering Command Northwest

LAND USE CONTROLS (LUCs) INSPECTION CHECKLIST

DATE(S) (MM|DD|YY):

INSPECTOR(S):

COMPANY:

LUCs

- *ENSURE THAT WARNINGS ARE POSTED FOR WORKERS TO GUARD AGAINST EXPOSURE TO RESIDUAL PETROLEUM CONTAMINATED SOIL.*
- *IDENTIFY REMAINING AREAS OF CONCERN ON FACILITY MAPS AND SPECIFY IN FACILITY EXCAVATION PERMIT INSTRUCTION.*
- ENSURE THAT LAND USE REMAINS FOR INDUSTRIAL PURPOSES. COORDINATE WITH ECOLOGY PRIOR TO CHANGE IN PROPERTY OWNERSHIP OR LAND USE CONCERNING THE NEED FOR REMEDIAL ACTIONS.
- ENSURE NO PRODUCTION WELLS ARE INSTALLED AND GROUNDWATER IS NOT USED EXCEPT FOR MONITORING AND/OR REMEDIATION.
- PROTECT EXISTING MONITORING WELLS UNTIL FORMALLY ABANDONED.
- ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED SOIL EXCAVATION OR DISTURBANCE.
- ENSURE THAT ANY SOIL EXCAVATED FROM THE SITE IS PROPERLY CHARACTERIZED AND DISPOSED OFF-SITE AND THAT ON-SITE WORKERS ARE PROTECTED DURING SUCH ACTIVITIES.

NOTE: LUCs THAT ARE ITALICIZED ARE REQUIRED LUCs FROM THE NFA LETTER.

LUC INSPECTION ACTION

HAS SITE OR ADJACENT LAND USE CHANGED SINCE LAST INSPECTION?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

DO FACILITY MAPS IDENTIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

DOES THE FACILITY EXCAVATION PERMIT INSTRUCTION SPECIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

IS THERE VISUAL EVIDENCE OF UNAUTHORIZED ON-SITE WELL INSTALLATION OR GROUNDWATER USE?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS

☐ OTHER _____

ARE ALL MONITORING WELLS IN GOOD CONDITION AND ACCESSIBLE? (REFER TO COMPLETED MONITORING WELL INSPECTION CHECKLISTS)

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS

☐ OTHER _____

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF SOIL EXCAVATION OR DISTURBANCE? IF SO, DETERMINE IF SITE APPROVAL PROCESS HAS BEEN FOLLOWED.

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:



**NBK Manchester
Tank 50 Release Site
Naval Facilities Engineering Command Northwest**

LUCs INSPECTION CHECKLIST (CONTINUED)

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF THE UNAUTHORIZED PLACEMENT
EXCESS SOIL, FILL, OR SEDIMENT FROM ANOTHER LOCATION?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS: _____

HAS ACCESS CONTROL BEEN MAINTAINED?

☐ YES ☐ NO, EXPLAIN _____

IS SIGNAGE READABLE AND ADEQUATE?

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

SECURITY POC: _____

☐ YES ☐ NO ☐ NA

FINDINGS: _____

WERE PICTURES TAKEN? ☐ YES
☐ NO

PHOTO IDs _____

ADDITIONAL NOTES:

I CERTIFY THAT THE CONDITIONS OF THE AREA ON THE INSPECTION DATES(S) WERE AS REPORTED ABOVE.

INSPECTOR SIGNATURE:

DATE:

APPENDIX B
Monitoring Well Visual Inspection Checklist

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NBK Manchester
Naval Facilities Engineering Command Northwest

MONITORING WELL CHECKLIST FOR LUC INSPECTION

DATE (MM DD YY):		TIME (HH:MM):	WEATHER/TEMPERATURE:
INSPECTOR:		COMPANY:	
SITE:	DESCRIPTION:		
WELL ID:	NORTHING:	EASTING:	
INSPECTION CHECKLIST:			
TYPE OF MONITORING WELL: ☐ GROUNDWATER ☐ SOIL VAPOR			
MONITORING WELL LOCATED?		☐ YES	☐ NO
IS THE WELL CLEARLY LABELED?		☐ YES	☐ NO
IS THE MONUMENT IN GOOD CONDITION?		☐ YES	☐ NO
TYPE OF WELL CASING: ☐ STICK-UP ☐ FLUSH-MOUNT		SIZE & NUMBER OF BOLTS ON FLUSH-MOUNT LID:	
☐ OTHER _____		_____	
CASING DIAMETER ☐ 2" ☐ 4" ☐ 6" ☐ 8" ☐ OTHER _____			
IS THE CASING IN GOOD CONDITION?		☐ YES	☐ NO
IS THERE A CAP ON THE MONITORING WELL?		☐ YES	☐ NO
TYPE OF CAP: ☐ PVC SLIP CAP ☐ J-PLUG ☐ EXPANSION ☐ PRODUCTION W/TUBING ☐ OTHER _____			
IS THERE ANY EVIDENCE OF TAMPERING WITH THE WELL CASING OR CAP?		☐ YES	☐ NO
ARE THERE ANY ODORS?		☐ YES	☐ NO
IF YES, DESCRIBE ODOR: ☐ SOLVENT ☐ SULFIDE/ROTTEN EGGS ☐ PETROLEUM ☐ OTHER _____			
WERE PICTURES TAKEN? ☐ YES		PHOTO IDs: _____	
☐ NO		_____	
_____		_____	

ADDITIONAL NOTES OR COMMENTS:	GENERAL CONDITION (CHECK ONE):
	☐ GOOD CONDITION
	☐ MODERATE CONDITION
	☐ POOR CONDITION