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TECHNICAL MEMORANDUM

DATE: 7 March 2023

TO: Amanda Rohrbaugh, Remedial Project Manager

FROM: Dana Ramquist, EA Project Manager

SUBJECT: Final Technical Memorandum: 2022 Naval Base Kitsap Keyport Institutional Controls Inspection and Vapor Intrusion Monitoring Results, Naval Base Kitsap, Keyport, Washington
Contract No. N4425520D60006
DCIN: EA-LTM/OM-6006-23-0051

This technical memorandum has been prepared by EA Engineering, Science, and Technology, Inc., PBC (EA) to document the findings of the 2022 institutional control (IC) inspections and vapor intrusion (VI) monitoring conducted at Naval Base Kitsap (NBK) Keyport. The inspections were completed at Operable Unit (OU) 1 Area 1, OU 2 Area 2, OU 2 Area 8, Area 22, Area 7, and Site 23 (Figure 1) following the requirements presented in the 2020 Land Use Controls Plan, Operable Unit 1, Operable Unit 2, Areas 22 and 7, and Site 23 (2020 LUC Plan; Department of the Navy [DON], 2020). The VI monitoring was completed at OU 2 Area 8 following the requirements presented in the 2021 VI Long-Term Monitoring and Building Inspection Plan (2021 VI Inspection Plan; DON, 2021).

1. Institutional Control Inspection Process

The inspection process included:

- Visually inspecting the sites with ICs to ensure controls remain protective.
- Identifying current land users and documenting any changes.
- Interviewing appropriate Keyport personnel to ensure that the various administrative controls are appropriately implemented.

Additional information on the IC inspection process can be found in the 2020 LUC Plan (DON, 2020).

2. Institutional Control Inspection Results

The following subsections discuss the results of the IC inspections conducted at NBK Keyport. The visual inspection of each of the IC sites was conducted on 30 August 2022. Interviews with NBK Keyport personnel and Naval Undersea Warfare Center (NUWC) Division Keyport personnel (the primary tenant of NBK Keyport) were conducted via email and telephone and included the following individuals:

- Mr. Jared Peterson – NUWC Division Keyport, Facilities Branch Head: construction, excavation, permitting, administrative controls
- Mr. Kenney Eiford – NUWC Division Keyport, Environmental Engineer
- Mr. Philip Firth – NBK Security, Physical Security Specialist: access and site security

Completed IC Checklists are provided as Attachment A. Summaries of the IC inspection findings are presented below.

2.1 OU 1 Area 1

OU 1 Area 1, the former landfill (Figure 2), is covered by asphalt and gravel surfaced parking areas, two phytoremediation plantations, equipment and material laydown areas, and several storage structures. A portion of the paved area is used occasionally for motorcycle training. A marsh system, marsh pond, tide flats, vegetated areas, and nature trails are located adjacent to the former landfill. Land use is primarily light industrial and open space, consistent with past inspections.

Based on observations and interviews, administrative procedures in place to control intrusive activities (digging) at OU 1 have been followed. No full-time occupancy of the buildings located on the landfill has occurred. Signs of past excavation were not observed at the time of inspection. No excavation or construction were completed in or around the marsh area. Construction and/or maintenance activities have not appeared to disturb the marsh and marsh pond system. Required remedy components, such as plantations, fencing, asphalt covers, and monitoring wells have not been damaged or compromised.

No new drinking water wells have been installed within 1,000 feet of the landfill. Since the 2021 inspection, the only new wells installed at and around Area 1 were in support of remedial investigation activities.

The asphalt surface covering the former landfill at OU 1 Area 1 is generally intact and is functioning as intended by the OU 1 Record of Decision (DON, Environmental

Protection Agency [EPA], and Washington State Department of Ecology [Ecology] 1998). Cracks from general wear, root damage, and alligatoring were noted in various parts of the asphalt cover in Area 1.

Access controls are maintained through limiting installation access to authorized personnel with appropriate badging at the main installation access gate. No unauthorized personnel are reported to have gained access to the installation.

2.2 OU 2 Area 2

OU 2 Area 2, the Van Meter Road Spill/Drum Storage Area, includes a recycling facility/material storage center, asphalt-covered laydown/storage areas, undeveloped areas, and adjacent creek and wetland areas. The land use at OU 2 Area 2 remains light industrial, consistent with past inspections.

No signs of current or past excavation were observed during the inspection in the vicinity of OU 2 Area 2 covered by ICs. Based on interview responses, administrative controls have been followed.

No installation of drinking water wells or other water wells has occurred at Area 2. Since the 2021 inspection, the only new wells installed at and around Area 2 were in support of remedial investigation activities.

Installation access controls have been maintained and no unauthorized personnel are reported to have gained access to the installation. Site access to the recycling and storage facility is also controlled by a locked gate maintained by Fleet Logistics Center, the NBK Keyport tenant who operates the recycling and storage facility.

2.3 OU 2 Area 8

OU 2 Area 8, the former Plating Shop Waste/Oil Spill Area, consists of an asphalt-covered parking area surrounded by light industrial activities to the north and west, with an adjacent beach to the east and south. Land use at OU 2 Area 8 remains consistent with past inspections.

No indications of current or recent excavation were observed at the site during the inspection. Based on interviews, the excavation permit process is in place and effective in control of site excavations.

No drinking water wells or other water wells have been installed at Area 8 in the past year.

Installation access controls have been maintained. No unauthorized personnel are reported to have gained access to the installation.

2.4 Area 22

Land use in Area 22, the former landfill extension area, remains light industrial and is consistent with past inspections. Current land uses include a hazardous waste handling and storage facility, otto fuel storage and dispensing area, other light industrial operations, and asphalt-covered parking areas, gravel driveways and asphalt-paved streets.

No indications of current or recent excavations were observed at the site during the inspection. Based on interviews, the excavation permit process is in place and effective in control of site excavations. Several potholes, alligatoring, and cracks were noted throughout the asphalt cover in Area 22.

No drinking water wells or other water wells have been installed at the site in the past year.

Installation access controls have been maintained and no unauthorized personnel are reported to have gained access to the installation.

2.5 Area 7

Area 7, the peninsula fill area, is composed of light industrial facilities, asphalt-covered parking areas, and a boat ramp/dock. Light industrial land uses remain consistent with past inspections.

No indications of current or recent excavations were observed at the site. Based on interviews, the excavation permit process is in place and effective in control of site excavations. Minor root damage to the asphalt cover was noted throughout portions of Area 7.

No drinking water wells or other water wells have been installed within Area 7 during the past year.

Installation access controls have been maintained and no unauthorized personnel are reported to have gained access to the installation.

2.6 Site 23

Site 23, former Building 21 Area is comprised of a light industrial unpaved flat area, currently used for parking.

No indications of current or recent excavations were observed at the site during the inspection. Based on interviews, the excavation permit process is in place and effective in control of site excavations.

No drinking water wells or other water wells have been installed within Site 23 during the past year.

Installation access controls have been maintained and no unauthorized personnel are reported to have gained access to the installation.

3. Completed Corrective Action

The OU 1 Record of Decision (DON, EPA, and Ecology, 1998) does not require a landfill cap, and only requires an asphalt cover to prevent contact with the waste body. Therefore, cracks from general wear and root damage in Area 1, Area 22, and Area 7should continue to be monitored and will be repaired if/when the cracks expand or worsen. Furthermore, additional investigations are ongoing at Area 1 which may result in changes to the remedy at OU1. The need for replacement/repair of the asphalt cover will be evaluated once changes to the remedy are decided. Additionally, the open soil understory of the plantations at Area 1 allows for potential infiltration of precipitation to the waste body, which should be considered in the future Focused Feasibility Study (FFS). No other corrective actions were identified or completed in 2022.

4. Vapor Intrustion Building Inspections

Annual VI inspection of buildings and building foundations was performed at Buildings 82, 85, and 98, immediately adjacent to OU 2 Area 8. The following tasks were performed and observations documented:

- Visual inspection of the integerity of the entire building floor slab, floor coverings, and condition, noting any changes that could potentailly increase soil vapor entry rates.

- Identification of changes in building ventilation that could potentailly increase the soil vapor entry rate or decrease the building air flow rate (i.e., ceiling height and/or air exchange rate).
- Identification of changes in building use or occupancy that could change receptors.
- Identification of changes to building footprint or square footage that could require reevaluation of VI assumptions.
- Identification of changes to a buildings inventory of identified chemicals that could be potential sources of indoor air contaminants.
- Inspection of areas where previous sub-slab VI samples were collected (sampling of indoor air and sub-slab vapor to occur every 5 years with the next sampling event planned in 2024 under separate contract).
- Production of an annotated map of the building with description of current floor plans and identification of possible soil vapor entry point locations.

Additional information on the VI monitoring and inspection process can be found in the 2021 VI Inspection Plan (DON, 2021).

5. Vapor Intrusion Building Inspection Results

The following subsections discuss the results of the VI inspections conducted at select buildings in the immediate vicinity of OU 2 Area 8 on NBK Keyport. Visual inspections of Buildings 82, 85, and 98 were conducted on 29 August 2022. Ms. Amanda Rorhbaugh, Naval Facilities Engineering System Command Northwest (NAVFAC NW) Remedial Project Manager (RPM), joined EA personnel during these building inspections. Interviews with NBK Keyport personnel and NUWC Division Keyport personnel (the primary tenant of NBK Keyport) were conducted in person between EA personnel and Mr. Jared Patterson, Facilities Branch Head for NBK Keyport. VI inspection forms are included in Attachment B.

5.1 Building 82

Building 82 consists of a concrete slab on grade construction with partial second and third stories, epoxy-coated concrete, carpet, and tile covered floors, with natual gas and electric heating, and central air conditioning. The second story is primarly office work stations and the third floor consists of only a meeting room. The first floor of the building was the only floor inspected, since the VI issues would arise from subslab contaminant concentrations. The building is currently occupied and primarily used for electronics and materials testing, with testing rooms, office cubicles, and open space. No changes in building occupancy or use were observed at the time of inspection. There were no

changes in the condition of the building floor slab, floor coverings, or ventilation from the previous assessment conducted in 2018 or from the prior VI inspection conducted in 2021. The current condition of Building 82 is shown on Figure 3.

5.2 Building 85

Building 85 consists of a concrete slab on grade construction with infrared and electric heating, and mechanical ceiling fans, windows, and roll-up doors for ventilation. It is currently not occupied and primarily used for storage. No changes in building occupancy or use were oberved at the time of the inspection. Although minor cracks were observed in several areas, there were no changes in the condition of the building floor slab or building ventilation from the previous assessment conducted in 2018 or from the prior VI inspection conducted in 2021. The current condition of Building 85 is shown on Figure 4.

5.3 Building 98

Building 98 consists of a two story concrete slab on grade construction with epoxy-coated concrete floors, carpet, and tile covered floors. Hot air circulation and electric space heaters are used for heating and central air conditioning and windows for ventilation. A natural gas heater and mini-split air conditioner have been added to the shop area. It is currently occupied and primarily utilized as mixed use for electronics and materials manufacturing and testing, with testing rooms, office cubicles, storage, and open space. The second story is primarly office work stations; however, a vapor degreaser, identified in 2018 as a potential indoor air contaminant source remains on the second floor of the building, as it is a mission-critical piece of equipment for operations in the building. According to occupant interviews, building occupancy hours have changed from the previous 8 hour shift to occasional 9 to 10 hour shifts. There were no changes in the condition of the building floor slab, floor covering, or ventilation from the previous assessment conducted in 2018 or from the prior VI inspection conducted in 2021. The current condition of Building 82 is shown on Figure 5.

6. Summary and Conclusions

Based on the results of the inspections and interviews performed in 2022, ICs have been adequately implemented, have prevented exposure to residual contamination, and have controlled, limited, or prohibited activities that may interfere with the integrity of the completed remedial actions. At OU 1 Area 1 required remedy components, such as plantations, fencing, and monitoring wells, have not been damaged or compromised. Minor damage to asphalt from general wear and root damage at Area 1, Area 22, and

Area 7 should continue to be monitored and will be repaired if/when the cracks expand or worsen. Furthermore, additional investigations are ongoing at Area 1 which may result in changes to the remedy at OU1. The need for replacement/repair of the asphalt cover will be evaluated once changes to the remedy are decided. Additionally, the open soil understory of the plantations at Area 1 allows for potential infiltration of precipitation to the waste body, which should be considered in the future FFS. No unauthorized uses were observed in IC controlled areas.

IC inspections of OU 1 Area 1, OU 2 Area 2 and Area 8, Area 7, Area 22, and Site 23 should continue as described in the 2020 LUC Plan until ICs are removed from these areas. Annual VI inspection of buildings and foundations at OU 2 Area 8, Buildings 82, 85, and 98 did not reveal changes to building occupancy other than occasional increase in work hours at Building 98, or use since the previous 2021 VI inspection, nor were there changes in conditions of flooring, ventilation, or other potential pathways for vapor intrusion into these buildings. Annual VI inspections should continue at OU 2 Area 8, Buildings 82, 85, and 98, as described in the 2021 VI Inspection Plan (DON, 2021), provided as Attachment C.

7. References

Department of the Navy (DON), Environmental Protection Agency (EPA), and Washington State Department of Ecology (Ecology). 1998. Record of Decision for Operable Unit 1, Naval Undersea Warfare Center Division, Keyport, Washington. September 30.

DON. 2020. Final Land Use Controls Plan, Operable Unit 1, Operable Unit 2, Areas 22 and 7, and Site 23, Naval Base Kitsap, Keyport, Washington. August 6.

DON. 2021. Final Vapor Intrusion Long-Term Monitoring and Building Inspection Plan, Operable Unit 2, Area 8, Naval Base Kitsap, Keyport, Washington. July 17.

Figures

Attachments

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Figures

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LEGEND

PollutionSite

NUWC Keyport Boundary

FIGURE 1
LOCATIONS OF OU1 AND OU2
AREAS 22 AND 7
AND FORMER SITE 23
TECHNICAL MEMORANDUM
2022 NAVAL BASE KITSAP KEYPORT
INSTITUTIONAL CONTROL INSPECTION RESULTS
NAVAL BASE KITSAP KEYPORT
KEYPORT, WA

U.S. NAVY
Map Date: 11/2/2022

Source: Sealaska 2019

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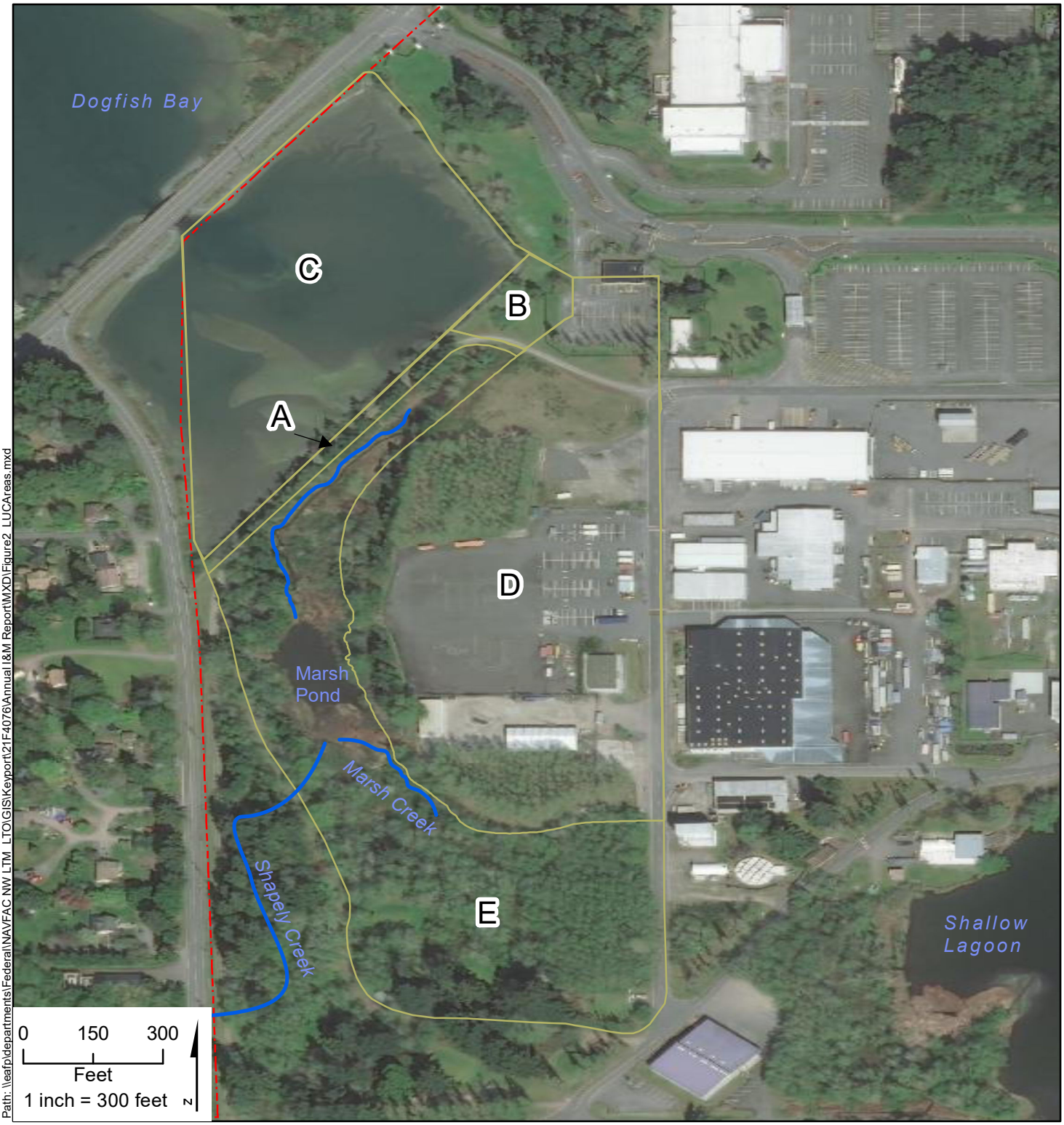

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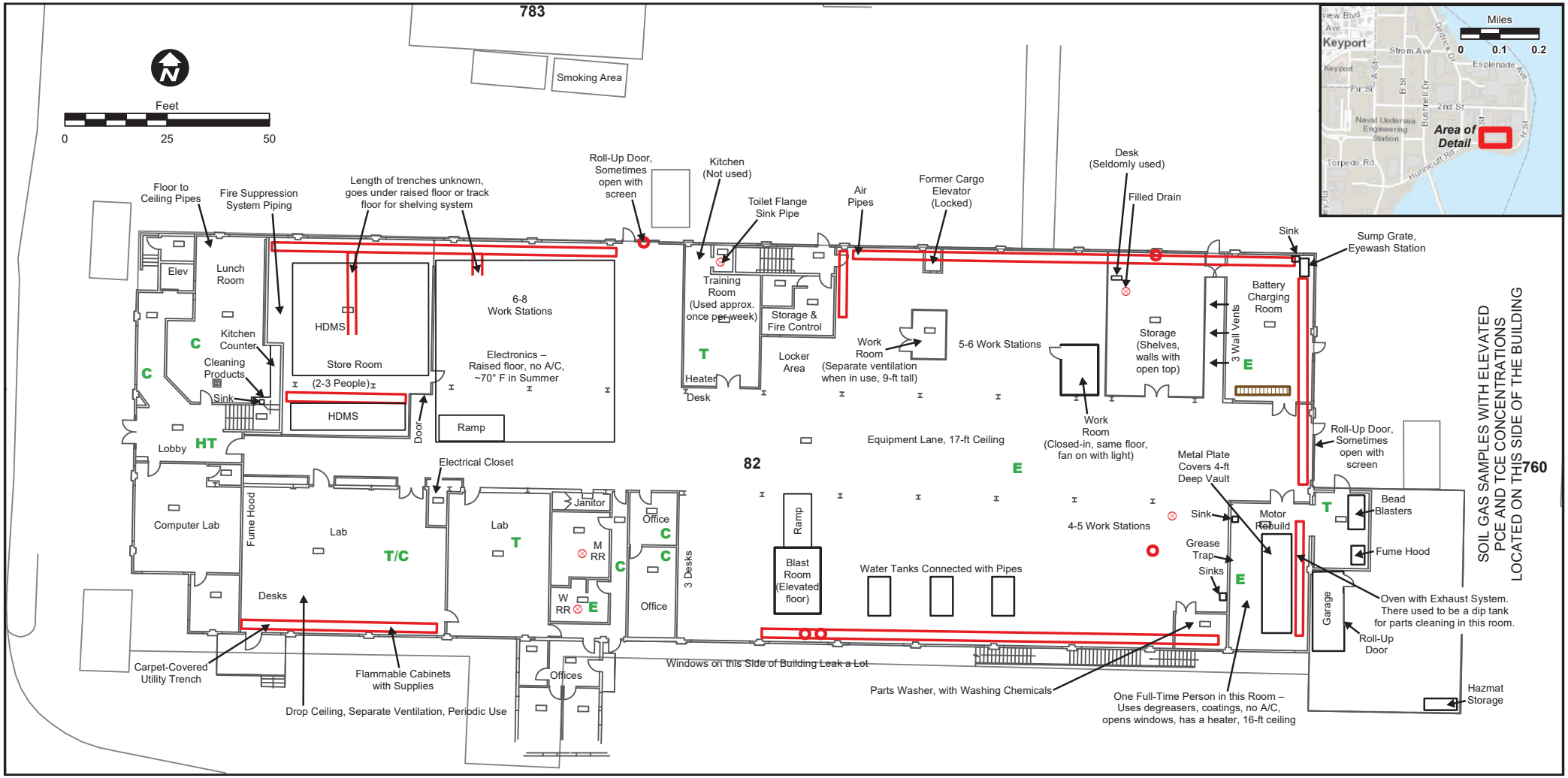
LEGEND

- NUWC Keyport Boundary
- A Land Between Tide Flats
- B Land Between Tide Flats and Pass & ID Building
- C Tide Flats and Adjacent Shoreline
- D Landfill Area
- E Marsh Pond and Marsh System

FIGURE 2
OU 1 LUC AREAS
TECHNICAL MEMORANDUM
2022 NAVAL BASE KITSAP KEYPORT
INSTITUTIONAL CONTROL INSPECTION RESULTS
NAVAL BASE KITSAP KEYPORT
KEYPORT, WA

U.S. NAVY
Map Date: 11/2/2022



LEGEND

- Floor Drain
- Open Pipe Through Floor
- Strip Drain or Sump
- Utility Corridor w/Gaps Through Floor*

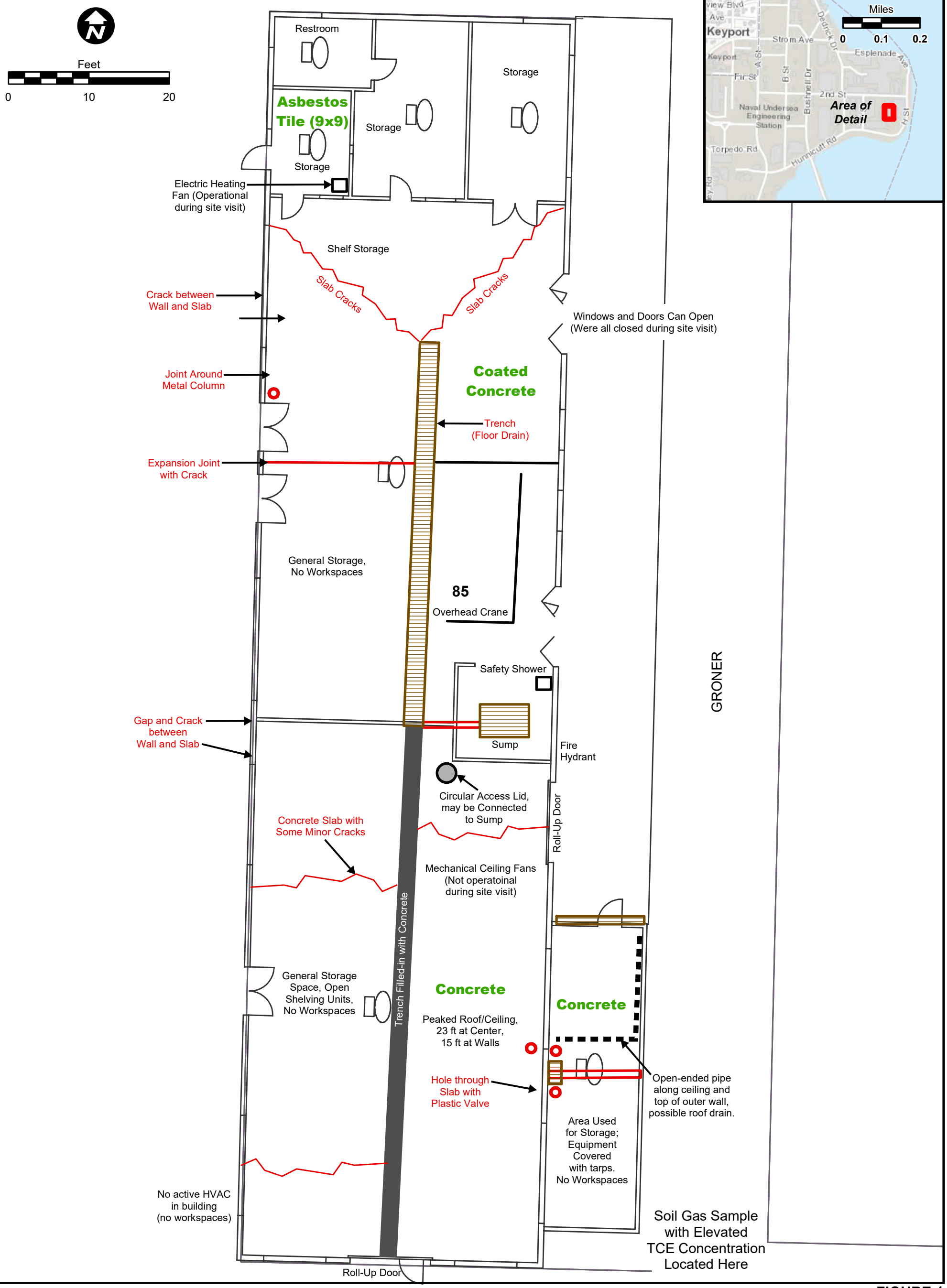
- E – Epoxy-Coated Concrete Floor
- C – Carpet Floor
- T – Tile Floor (vinyl, linoleum)
- HT – Hard Tile Floor (ceramic)
- HDMS – High-Density Mobile Shelving

**Possibly Former Steam Lines*

FIGURE 3
BUILDING 82 FLOOR PLAN
TECHNICAL MEMORANDUM
2022 NAVAL BASE KITSAP KEYPORT
INSTITUTIONAL CONTROL INSPECTION
RESULTS NAVAL BASE KITSAP KEYPORT
KEYPORT, WA

U.S. NAVY

Map Date: 10/1/2021



LEGEND

- Open Pipe Through Floor
- Strip Drain or Sump
- Utility Corridor w/Gaps Through Floor*

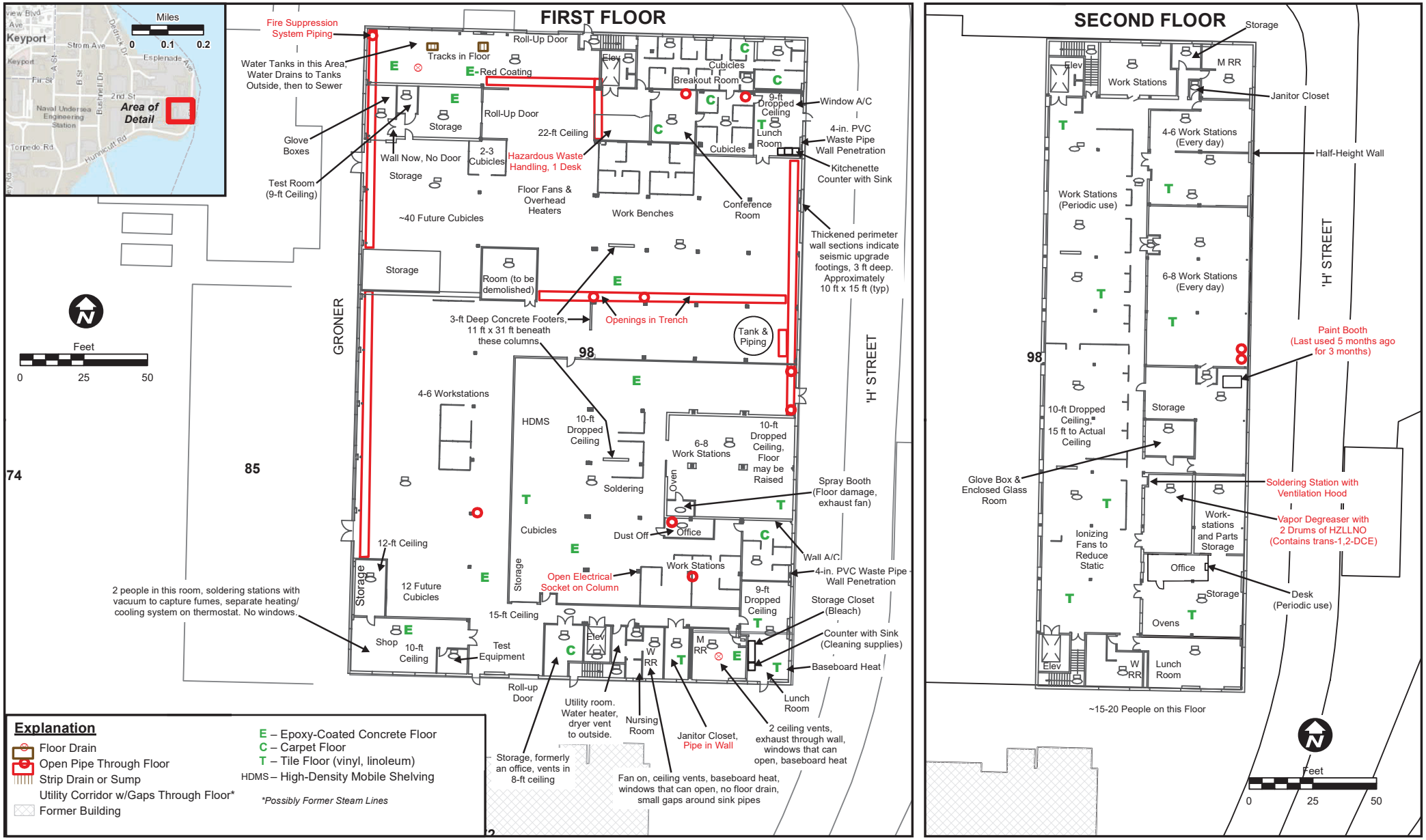
**Possibly Former Steam Lines*

FIGURE 4
BUILDING 85 FLOOR PLAN

TECHNICAL MEMORANDUM
2022 NAVAL BASE KITSAP KEYPORT
INSTITUTIONAL CONTROL INSPECTION
RESULTS NAVAL BASE KITSAP KEYPORT
KEYPORT, WA

U.S. NAVY

Map Date: 10/1/2021



U.S. NAVY

Map Date: 10/1/2021

FIGURE 5
BUILDING 98 FLOOR PLAN
TECHNICAL MEMORANDUM
2022 NAVAL BASE KITSAP KEYPORT INSTITUTIONAL CONTROL INSPECTION RESULTS NAVAL BASE KITSAP KEYPORT
KEYPORT, WA

Attachment A

IC Inspection Forms

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Naval Base Kitsap Keyport
Institutional Controls Inspection Checklist

Operable Unit 1, Area 1 Former Landfill

Inspected by: Brooke Haines, Sam Stamper

Date of inspection: 8/30/22

Land Uses: Tide flats, grass, monitoring wells, paved parking, storage structures and containers

Land Users: Keyport employees, government contractors, recreational users, parking

Inspector's Checklist	Y/N NA/NC	Findings/Comments	Finding No.
Has access to OU 1 been maintained (have security procedures for base entry served to maintain a restricted access)?	Y	Person Contacted: Philip Frith -9/22/22 (Security) Findings: No instances where security protocols were not maintained.	
Have drinking water wells been installed on Navy property within 1,000 feet of the landfill?	N	Person Contacted: Jared Peterson - 9/27/22(Facilities Branch Head), Kenny Eiford-9/22/22 (Environmental Engineer) Findings: None	
For **Area A,** the land between the tide flats and the marsh, have water wells been installed, except those for monitoring or remedial action purposes?	N	Findings: None	
For **Area B,** the land between the tide flats and the Pass and ID Building parking lot, have water wells been installed, except those for monitoring or remedial action purposes?	N	Findings: None	
For **Area C,** the tide flats and adjacent shoreline owned by the Navy, have any activities occurred that could interfere with or compromise monitoring or remedial actions?	N	Findings: None	
For **Area D,** the former landfill, have water wells been installed, except those for monitoring or remedial action purposes?	N	Findings: None	
For **Area D**, the former landfill, are any employees permanently assigned to work in buildings within this area?	N	Findings: None	
For Area D, the former landfill, have there been any land use activities other than remedial activities, storage, parking, and facilities that involve only occasional occupancy by workers?	Y	Occasional outdoor motorcycle training course; designated employee smoking area	
For **Area D,** the former landfill, have activities that involve digging and construction within this area been controlled by the base excavation/dig permit procedure and other pertinent base instructions?	Y	Person Contacted: Jared Peterson-9/27/22 (Facilities Branch head), Kenny Eiford-9/22/22 (Environmental	

		Engineer) Findings: None; dig permit procedures effective	

Naval Base Kitsap Keyport
Institutional Controls Inspection Checklist

Operable Unit 1, Area 1 Former Landfill

Inspected by: Brooke Haines, Sam Stamper

Date of inspection: 8/30/22

Land Uses: Tide flats, grass, monitoring wells, paved parking, storage structures and containers

Land Users: Keyport employees, government contractors, recreational users, parking

Inspector's Checklist	YIN NA/NC	Findings/Comments	Finding No.
For **Area D,** the former landfill, is there significant damage (e.g., cracking, seam separation, root damage, etc.) to asphalt surfaces that permits direct-contact exposure of people to underlying soils or that may significantly increase infiltration of surface water/stormwater?	Y	Large cracks throughout parking lot, Approximately 1-2 inches wide.	1
For **Area D,** the former landfill, if activities requiring an excavation/dig permit were conducted, were there any instances in which the permit requirements were not effective in maintaining the requirements of the Institutional Controls Plan?	N	Person Contacted: Jared Peterson-9/27/22 (Facilities Branch Head), and Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None; dig permit procedures effective	
For **Area E,** the marsh pond and marsh system, have there been any new construction or maintenance activities that disturbed the wetlands adjacent to the landfill and resulted in an exposure hazard?	N	Person Contacted: Jared Peterson- 9/27/22 (Facilities Branch head), Kenny Eiford (Environmental Engineer_ Findings: None	
For **Area E,** the marsh pond and marsh system, have there been any new construction or maintenance activities that interfere with or compromise the monitoring or remedial actions for the landfill?	N	Person Contacted: Jared Peterson-9/27/22 (Facilities Branch head), Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None. No activities resulted in exposure, disturbance, or interfered with monitoring	

I certify that the conditions of Operable Unit 1 on the inspection date were as reported above.

Inspector

8/3022
Date

Naval Base Kitsap Keyport
Institutional Controls Inspection Checklist

Operable Unit 2 Area 2, Van Meter Road Spill/Drum Storage Area

Inspected by: Brooke Haines, Sam Stamper

Date of inspection: 8/30/22

Land Uses: Materials storage, wetlands, natural area, dirt/asphalt road, parking

Land Users: Keyport employees, walkers/runners

Inspector's Checklist	Y/N NA/NC	Comments	Finding No.
Has access to OU 2 Area 2 been maintained (have security procedures for base entry served to maintain a restricted access)?	Y	Person Contacted: Philip Frith -9/22/22 (Security) Findings: No instances where security protocols were not maintained.	
Have activities that involve digging and construction within OU 2 Area 2 been controlled by the base excavation/dig permit procedure and other pertinent base instructions?	Y	Person Contacted: Jared Peterson -9/27/22 (Facilities Branch head), Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None. Dig permit procedures effective in enforcing controls	
If activities requiring an excavation/dig permit were conducted within OU 2 Area 2, were there any instances in which the permit requirements were not effective in maintaining the requirements of the Institutional Controls Plan?	N	Person Contacted: Jared Peterson -9/27/22 (Facilities Branch head), Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None	
Have water wells been installed at OU 2 Area 2, except those for monitoring or remedial actions?	N	Findings: None	
Has residential development occurred in OU 2 Area 2?	N	Findings: None	

I certify that the conditions of Operable Unit 2 Area 2 on the inspection date were as reported above.

Inspector

8/30/22

Date

Naval Base Kitsap Keyport
Institutional Controls Inspection Checklist

Operable Unit 2 Area 8, Plating Shop Waste/Oil Spill Area

Inspected by: Brooke Haines, Sam Stamper

Date of inspection: 8/30/22

Land Uses: Industrial, occupied buildings, asphalt parking/roadways

Land Users: Keyport employees, walker/joggers

Inspector's Checklist	Y/N NA/NC	Comments	Finding No.
Has access to OU 2 Area 8 been maintained (have security procedures for base entry served to maintain a restricted access)?	Y	Person Contacted: Philip Frith -9/22/22 (Security) Findings: No instances where security protocols were not maintained.	
Have activities that involve digging and construction within OU 2 Area 8 been controlled by the base excavation/dig permit procedure and other pertinent base instructions?	Y	Person Contacted: Jared Peterson-9/27/22 (Facilities Branch head), Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None. No construction or digging in OU2 Area 8	
If activities requiring an excavation/dig permit were conducted below the water table within OU 2 Area 8, were there any instances in which the permit requirements were not effective in maintaining the requirements of the Institutional Controls Plan?	N	Person Contacted: Jared Peterson -9/27/22 (Facilities Branch head), Kenny Eiford-9/22/22 (Environmental Engineer) Findings: None	
Have water wells been installed at OU 2 Area 8, except these for monitoring or remedial actions?	N	Findings: None	
Has residential development occurred in OU 2 Area 8?	N	Findings: None	

I certify that the conditions of Operable Unit 2 Area 8 on the inspection date were as reported above.

Inspector

8/3022

Date

Naval Base Kitsap Keyport
Institutional Controls Inspection Checklist

Area 22

Inspected by: Brooke Haines, Sam Stamper

Date of inspection: 8/30/22

Land Uses: light industrial, offices, parking, streets

Land Users: Keyport employees, base walkers/joggers

Inspector's Checklist	Y/N NA/NC	Comments	Finding No.
Has access to Area 22 been maintained (have security procedures for base entry served to maintain a restricted access)?	Y	Person Contacted: Philip Frith -9/22/22 (Security) Findings: No instances where security protocols were not maintained.	
Have activities that involve digging and construction within Area 22 been controlled by the base excavation/dig permit procedure and other pertinent base instructions?	Y	Person Contacted: Jared Peterson -9/27/22 (Facilities Branch head), Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None. Dig permit effective in enforcing controls	
If activities requiring an excavation/dig permit were conducted within Area 22, were there any instances in which the permit requirements were not effective in maintaining the requirements of the Institutional Controls Plan?	N	Person Contacted: Jared Peterson -9/27/22 (Facilities Branch head), Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None. In all cases the requirements were effective in maintaining the requirements of the LUC Plan.	
Have water wells been installed in Area 22, except those for monitoring or remedial actions?	N	No	
Is pavement still in place at Area 22?	Y	Alligatoring, cracks, and potholes throughout	2
Has land use at Area 22 changed?	N	No	

I certify that the conditions of Area 22 on the inspection date were as reported above.

Inspector

8/3022

Date

Naval Base Kitsap Keyport
Institutional Controls Inspection Checklist

Area 7

Inspected by: Brooke Haines, Sam Stamper

Date of inspection: 8/30/22

Land Uses: light industrial, offices, paved parking, streets, boat dock, shoreline

Land Users: Keyport Employees, base walkers

Inspector's Checklist	Y/N NA/NC	Comments	Finding No.
Has access to Area 7 been maintained (have security procedures for base entry served to maintain a restricted access)?	Y	Person Contacted: Philip Frith -9/22/22 (Security) Findings: No instances where security protocols were not maintained.	
Have activities that involve digging and construction within Area 7 been controlled by the base excavation/dig permit procedure and other pertinent base instructions?	Y	Person Contacted: Jared Peterson -9/27/22 (Facilities Branch head), Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None. Dig permit effective in enforcing controls, base environmental involved in planning and execution of excavation activities.	
If activities requiring an excavation/dig permit were conducted within Area 7, were there any instances in which the permit requirements were not effective in maintaining the requirements of the Institutional Controls Plan?	N	Person Contacted: Jared Peterson -9/27/22 (Facilities Branch head), Kenny Eiford -9/22/22 (Environmental Engineer) Findings: None. In all cases the requirements were effective in maintaining the requirements of the LUC Plan.	
Have water wells been installed in Area 7, except those for monitoring or remedial actions?	N	No	
Is pavement still in place at Area 7?	Y	Root damage/cracking throughout	3
Has land use at Area 7 changed?	N	No	

I certify that the conditions of Area 7 on the inspection date were as reported above.

Inspector

8/3022
Date

Attachment B

VI Inspection Forms

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NBK KEYPORT OU 2, AREA 8 BUILDING SURVEY

Survey Completed by: S. Stamper **Date:** 08/29/2022

Building #: 82 **Building Name:** Torpedo Assembly/Shipping **Year Built:** 1940

Navy Contact/Escort: Amanda Rohrbaugh / Terry Hyatt

Navy Contact/Escort Contact Information: 360 396 0248

Personnel Interviewed: Fred Smith

General Building Description:

Refer to map for conditions documented during last inspection. Note any changes on this form and on map.

Has the 1st Floor description changed? (Torpedo workstations and open offices)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Has the 2nd Floor description changed? (Office space, cubicles, and small offices)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Has the 3rd Floor description changed? (Conference room)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Building Use:

Refer to map for usage conditions documented during last inspection. Note any changes on this form and on map.

Document changes to activities conducted on each level of the building (e.g., office work, storage, machine repair, metal shop, painting, degreasing/cleaning)?

Have there been changes to 1st Floor uses? (Torpedo workstation/assembly/testing/motor shop)

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Have there been changes to 2nd Floor uses? (Office space; enclosed offices along walls, cubicles, electronics workstations)

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Have there been changes to 3rd Floor uses? (Conference room with deck; staircase on outside of building with roof access)

☑ No Changes:

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Building Occupants:

1st Floor: 20-25 **2nd Floor: 100-120** **3rd Floor: 0 full time, temporary only**

☐ No Changes

☑ Changes (Describe, include interviewee name and contact information): Click or tap here to enter text. 1ST floor 40-50 with everyone - part still remote
2ND floor mostly remote with about 30% lead

Working Hours:

What are the normal working hours? (Occupied from 0700 to 1700, but can run three 8-hour shifts when necessary to meet mission)

☐ No Changes

☑ Changes (Describe, include interviewee name and contact information): Click or tap here to enter text. 0600 - 1530

Have alternative work schedules been used in the past year?

☐ No

☑ Yes (Describe, include dates and duration, and interviewee name and contact information): Click or tap here to enter text. some weekend work a few times a year

Building Characteristics:

Refer to map for building characteristics documented during last inspection. Note any changes on this form and on map

Irrigation (Sprinkler system inside building with water main water line in back of building):

☑ No changes

☐ Changes (Describe): Click or tap here to enter text.

Evidence of additions or expansion in the last year?

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Are there currently any plans for additions, expansions, or remodeling?

~~☑ No~~ ES 8/29

☒ Yes (Describe, including projected dates and duration, and interviewee name and contact information): Click or tap here to enter text.
Possible filling of pit in motor shop. one person ~~said~~ 8/20 said it's happening another said it's not.

Above grade construction (Concrete with Steel Beams):

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Lowest level depth level below grade? ___ feet or inches (bold/circle one)

Foundation walls: ☒ Poured ☐ Block ☐ Stone ☐ Other Click or tap here to enter text.

Is the building insulated? ☐ No ☒ Yes (Describe): Click or tap here to enter text.

Are there gaps between footings and floor slab? (As shown on map - First floor has gaps through the concrete slab along the perimeter of the north, east, and south sides of the building)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

<u>Heating, Ventilation, and Air Conditioning (HVAC):</u>

Note any changes on this form and on map
What type of HVAC system(s) are used in this building? (As shown on map - Separate HVAC system on first floor. Motor shop and zinc battery charging rooms are on separate HVACs. Main workstations contain space heaters. Laboratories on first floor have fume hoods. Drop ceiling has AC/heat. Second floor appears to be on one centralized HVAC system): ☒Hot air circulation ☐ Heat pump ☐ Hot water baseboard ☒ Space heaters ☐ Steam radiation ☐ Hot air radiation ☐ Radiant floor ☐ Electric baseboard ☐ Wood stove ☐ Outdoor wood boiler ☐ None ☐ Other: Click or tap here to enter text.

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Primary type of fuel used is: ☒ Natural gas ☐ Fuel oil ☐ Kerosene ☒ Electric ☐ Propane ☐ Solar ☐ Wood ☐ Coal

Hot water tank fueled by: N/A

Air conditioning ventilation (Window units, mechanical fans in warehouse; battery changing room on separate HVAC with negative pressure; rollup door with screen and windows are open during summer mornings, but then closed in the afternoon; no AC in summer in the main warehouse, but one AC window unit present on 2nd floor.): ☐ Central Air ☒ Window Units ☐ Open Windows ☐ Open Doors ☒ Mechanical Fans ☐ None ☐ Other Click or tap here to enter text.

Are there distribution ducts? ☒ Yes ☐ No ☐ N/A

☑ No Changes

☑ Changes (Describe): Click or tap here to enter text.

HVAC Operations

Current HVAC Operation: The HVAC in the building is operated on weekdays only. During summer months, windows and doors are temporarily opened, and window air conditioning units are used.

Describe changes to HVAC conditions/operation:

Are HVAC systems operated only during normal working hours? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.

Are HVAC systems shut down on weekends? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.

Does system operation change from summer to winter? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.

Have unusual circumstances caused HVAC system shutdown (e.g., maintenance shutdown, weather)? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.

Are windows, doors, or loading dock doors left open? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.

Indicate locations on map, along with type, size, frequency, and duration of time

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

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Building 82

Outside Contaminant Sources:
Note any changes on this form and on map

List nearby land use (industrial/commercial/residential):

North: Navy Buildings 1074 and 234
South: Road and Port Orchard Bay
East: Parking lot, Area 8, and Port Orchard Bay
West: Navy Buildings 763 and 1058

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Other stationary sources nearby (gas stations, emission stacks, other manufacturing facilities, etc.): (Parking lot to east)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Heavy vehicular traffic or area where vehicles idle nearby (or other mobile sources): (Parking lot to east and road to south)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Indoor Contaminant Sources:

Identify all potential indoor sources and products that have the potential to affect indoor air sample quality. Indicate whether the item can be removed from the building prior to indoor air sampling event.

Potential Background Sources	**Present?** (Yes / No)		**If Present, Description** (location, size, condition*, ingredients)	**Removable prior to Sampling?** (Yes / No)
	Previous	Current		
Gasoline storage cans	No	NO		
Gas-powered equipment (e.g., forklift)	No	No		
Paints/thinners/strippers	No	No		
Solvents	Yes	Yes	Failure analysis test area. Lectra Clean – CRC (TCE) 79-01-6, Power Buster (1-1-difluoroethane), Small engine oil	NO
Dry cleaned clothing	No	NO		

NBK KEYPORT OU 2, AREA 8 BUILDING SURVEY
Building 82

Potential Background Sources	**Present?** (Yes / No)		**If Present, Description** (location, size, condition*, ingredients)	**Removable prior to Sampling?** (Yes / No)
	Previous	Current		
Pesticides/herbicides (e.g., applied around bldg. foundation)	No	NO		
Moth balls	No	NO		
Cleaning products	Yes	Yes	Various general household cleaners	Yes
Air fresheners	No	No		
Kitchen cleaners	Yes	Yes	1st floor- kitchen disinfectant and soaps, 2nd floor- disinfectant, cleaners, and soaps	Yes
Waste storage	No	NO		
New furniture or upholstery	No	No		
New carpeting or flooring	No	NO		
Glues	No	No		
Heavy duty degreaser	Yes	Yes	In motor shop, CRC Industries Inc. green bottle. Aerosol N.O. 03095, PCE, TCE, 1-2-Butylene Oxide	NO
Primer coating	Yes	Yes	In motor shop	NO
Zinc dust petrolatum	Yes	Yes	In motor shop	NO
Greaseless lubricant	Yes	Yes	In motor shop	NO
HumiSeal	Yes	Yes	In motor shop	NO
Chemical closets	Yes	Yes	4 – 6 chemical closets in main warehouse	NO
Lens cleaning solution	No	NO		
CreteCleaner	No	NO		

* Describe the condition of the product containers as Unopened (UO), Used (U), or Deteriorated (D)

Any known spills of a chemical immediately outside or inside the building over the last year?

☑ No

☐ Yes (Specify location and describe, including interviewee name and contact information): Click or tap here to enter text.

Has the building had a fire in the last year?

☑ No

☐ Yes (Specify location and describe, including interviewee name and contact information): Click or tap here to enter text.

Building Map Changes:

Has the ground cover around outside of building changed? (Asphalt)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has the storm drain system near the building changed? (Compare current conditions to storm drains as shown on map)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Flooring type inside building:

Has flooring changed on 1st floor? (Sealed concrete)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has flooring changed on 2nd floor? (Carpet)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has flooring changed on 3rd floor? (Carpet)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Tunnels? (None)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Sumps? If present, indicate whether there is water in the sump. (Sump in zinc battery charging area; water observed in sump)

☒ No

☐ Yes (Describe): Click or tap here to enter text.

Change in potential soil vapor entry points and approximate sizes? Include cracks, utility ports, drains, gaps in floor slab. (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Have there been changes to HVAC components in the building including blowers, intake, and/or exhaust vents? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Boiler/Furnace? (Not present)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Change in bathroom exhaust fans? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Change in manufacturing process vents? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Additional building vents? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Are there any building windows or doors that are left open? Include location, type, size, frequency, and duration of time. (As shown on map - building is secure, so windows/doors are opened temporarily, but are secured at end of each workday)

☐ No

☑ Yes (Describe and document on map): Click or tap here to enter text.
same as before

Are there areas that have little or no air exchange? (None identified)

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Building 82

☒ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Have location(s) of designated or common smoking areas changed? (As shown on map - directly north of the building across the street)

☒ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

* Sept - December filling Pit in Motor Shop (might happen, conflicting statements from different parties)

NBK KEYPORT OU 2, AREA 8 BUILDING SURVEY

Survey Completed by: S. Stamper **Date:** 08/29/2022

Building #: 85 **Building Name:** NAVSUP (Storage) **Year Built:** 1944

Navy Contact/Escort: Amanda Rohrbaugh / Terry Wyatt

Navy Contact/Escort Contact Information: 360 396 0248

Personnel Interviewed: Jared Peterson

General Building Description:

Refer to map for conditions documented during last inspection. Note any changes on this form and on map.

Has the 1st Floor description changed? (General storage and former battery shop)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Has the 2nd Floor description changed? (Office space, cubicles, and small offices)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Has the 3rd Floor description changed? (Conference room)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Building Use:

Refer to map for conditions documented during last inspection. Note any changes on this form and on map.

Document changes to activities conducted on each level of the building (e.g., office work, storage, machine repair, metal shop, painting, degreasing/cleaning)?

Have there been changes to 1st Floor uses? (NAVSUP Storage; South side: Parts and equipment, accessed one time per week; North side: Warehouse for excess office desks and cubicles, not accessed frequently)

☒ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Have there been changes to 2nd Floor uses? (N/A)

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Have there been changes to 3rd Floor uses? (N/A)

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Building Occupants:

1st Floor: 0 **2nd Floor: N/A** **3rd Floor: N/A**

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information,): Click or tap here to enter text.

Working Hours:

What are the normal working hours? (Access limited to 0700 to 1700)

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information): Click or tap here to enter text.

Have alternative work schedules been used in the past year?

☑ No

☐ Yes (Describe, include dates and duration, and interviewee name and contact information): Click or tap here to enter text.

Building Characteristics:

Refer to map for building characteristics documented during last inspection. Note any changes on this form and on map

Irrigation (Not noted in previous inspection):

☑ No changes

☐ Changes (Describe): Click or tap here to enter text.

Evidence of additions or expansion in the last year?

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Are there currently any plans for additions, expansions, or remodeling?

☑ No

☐ Yes (Describe, including projected dates and duration, and interviewee name and contact information): Click or tap here to enter text.

Above grade construction (Wood frame):

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Lowest level depth below grade: ___ feet or inches (bold/circle one)

Foundation walls: ☒ Poured ☐ Block ☐ Stone ☒ Other Outside of building lined with asbestos containing shield

Is the building insulated? ☐ No ☒ Yes (Describe): Click or tap here to enter text.

Are there gaps between footings and floor slab? (Not indicated during previous inspection)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

<u>Heating, Ventilation, and Air Conditioning (HVAC):</u>

Note any changes on this form and on map
What type of HVAC system(s) are used in this building? (As shown on map – Heating system in use on north side of the building although building is not occupied): ☐Hot air circulation ☐ Heat pump ☐ Hot water baseboard ☒ Space heaters ☐ Steam radiation ☐ Hot air radiation ☐ Radiant floor ☐ Electric baseboard ☐ Wood stove ☐ Outdoor wood boiler ☐ None ☑ Other: Click or tap here to enter text.

Natural gas overhead heaters

☒ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Primary source of fuel used is: ☑ Natural gas ☐ Fuel oil ☐ Kerosene ☒ Electric ☐ Propane ☐ Solar ☐ Wood ☐ Coal

NBK KEYPORT OU 2, AREA 8 BUILDING SURVEY
Building 85

Hot water tank fueled by: N/A

Air conditioning ventilation (One ceiling fan on south side, one electrical fan in back room on north side): ☐ Central air ☐ Window units ☐ Open windows ☐ Open doors
☒ Mechanical fans ☐ None ☐ Other Click or tap here to enter text.

Are there distribution ducts? ☐ Yes ☐ No ☒ N/A

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

HVAC Operations

Current HVAC Operation: No HVAC in use in building

Describe changes to HVAC conditions/operation: NO HVAC IN building

Are HVAC systems operated only during normal working hours? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text. NA

Are HVAC systems shut down on weekends? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.
NA

Does system operation change from summer to winter? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.
NA

Have unusual circumstances caused HVAC system shutdown (e.g., maintenance shutdown, weather)? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.
NA

Are windows, doors, or loading dock doors left open? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text. NA

Indicate locations on map, along with type, size, frequency, and duration of time

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Outside Contaminant Sources:
Note any changes on this form and on map

List nearby land use (industrial/commercial/residential):

North: Navy Building 40
South: Navy Building 82 and parking lot
East: Navy Building 98
West: Navy Building 1074

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Other stationary sources nearby (gas stations, emission stacks, other manufacturing facilities, etc.): N/A

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Heavy vehicular traffic or area where vehicles idle nearby (or other mobile sources): (Parking lot to south)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Indoor Contaminant Sources:

Identify all potential indoor sources and products that have the potential to affect indoor air sample quality. Indicate whether the item can be removed from the building prior to indoor air sampling event.

Potential Background Sources	Present? (Yes / No)		If Present, Description (location, size, condition*, ingredients)	Removable prior to Sampling? (Yes / No)
	Previous	Current		
Gasoline storage cans	No	NO		
Gas-powered equipment (e.g., forklift)	No	NO		
Paints/thinners/strippers	No	NO		
Solvents	No	NO		
Dry cleaned clothing	No	NO		
Pesticides/herbicides (e.g., applied around bldg. foundation)	No	NO		
Moth balls	No	NO		
Cleaning products	No	NO		
Air fresheners	No	NO		
Waste storage	No	NO		
New furniture or upholstery	No	NO		
New carpeting or flooring	No	NO		

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Building 85

Potential Background Sources	Present? (Yes / No)		If Present, Description (location, size, condition*, ingredients)	Removable prior to Sampling? (Yes / No)
	Previous	Current		
Glues	No	NO		
Heavy duty degreaser	No	NO		
Primer coating	No	NO		
Zinc dust petrolatum	No	NO		
Greaseless lubricant	No	NO		
HumiSeal	No	NO		
4-6 Chemical closets in main warehouse	No	NO		
Lens cleaning solution	Yes	Yes	(Isopropyl alcohol)	Yes
CreteCleaner	Yes	Yes		Yes

* Describe the condition of the product containers as Unopened (UO), Used (U), or Deteriorated (D)

Any known spills of a chemical immediately outside or inside the building over the last year?

☒ No

☐ Yes (Specify location and describe, including interviewee name and contact information): Click or tap here to enter text.

Has the building had a fire in the last year?

☑ No

☐ Yes (Specify location and describe, including interviewee name and contact information): Click or tap here to enter text.

Building Map Changes:

Has the ground cover around outside of building changed? (Concrete, asphalt)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has the storm drain system near the building changed? (Compare current conditions to storm drains as shown on map)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Flooring type inside building:

Has flooring changed on 1st floor? (Unsealed concrete)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has flooring changed on 2nd floor? (N/A)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has flooring changed on 3rd floor? (N/A)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Tunnels? (None)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Sumps? If present, indicate whether there is water in the sump. (Yes; Water not noted during previous inspection)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Change in potential soil vapor entry points and approximate sizes? Include cracks, utility ports, drains, gaps in floor slab. (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Have there been changes to HVAC components in the building including blowers, intake, and/or exhaust vents? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

NBK KEYPORT OU 2, AREA 8 BUILDING SURVEY

Survey Completed by: S. Stamper **Date:** 08/29/2022

Building #: 98 **Building Name:** Click or tap here to enter text. **Year Built:** 1940

Navy Contact/Escort: Amanda Rohrbaugh / Terry Hyatt

Navy Contact/Escort Contact Information: 360 396 0248

Personnel Interviewed: Jared Peterson

General Building Description:

Refer to map for conditions documented during last inspection. Note any changes on this form and on map.

Has the 1st Floor description changed? (General work areas, storage, and shipping)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Has the 2nd Floor description changed? (Workstations)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Has the 3rd Floor description changed? (N/A)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Building Use:

Refer to map for conditions documented during last inspection. Note any changes on this form and on map.

Document changes to activities conducted on each level of the building (e.g., office work, storage, machine repair, metal shop, painting, degreasing/cleaning)?

Have there been changes to 1st Floor uses? (General work areas, cubicles, storage, work benches, torpedo storage, and shipping near back of building)

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Have there been changes to 2nd Floor uses? (Work areas and workstations consisting of soldering and electrical work in addition to miscellaneous work from staff on a daily basis)

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Have there been changes to 3rd Floor uses? (N/A)

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Building Occupants:

1st Floor: 45-60 **2nd Floor**: 20-30 **3rd Floor**: N/A

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information): Click or tap here to enter text.

Working Hours:

What are the normal working hours? (Access limited to 0600 to 1600)

☐ No Changes

☑ Changes (Describe, include interviewee name and contact information): Click or tap here to enter text. 9 hour Shift same 10

Have alternative work schedules been used in the past year?

☑ No

☐ Yes (Describe, include dates and duration, and interviewee name and contact information, if applicable): Click or tap here to enter text.

Building Characteristics:

Refer to map for building characteristics documented during last inspection. Note any changes on this form and on map

Irrigation (Not noted in previous inspection):

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Building 98

☑ No changes

☐ Changes (Describe): Click or tap here to enter text.

Evidence of additions or expansion in the last year?

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Are there currently any plans for additions, expansions, or remodeling?

☑ No

☐ Yes (Describe, including projected dates and duration, and interviewee name and contact information, if applicable): Click or tap here to enter text.

Above grade construction (Wood frame, concrete, brick, slab on grade):

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Lowest level depth below grade: ___ feet or inches (bold/circle one)

Foundation walls: ☐ Poured ☐ Block ☐ Stone ☒ Other Brick exterior with large beams inside and some wood support

Is the building insulated? ☐ No ☒ Yes (Describe): Click or tap here to enter text.

Are there gaps between footings and floor slab? (Not indicated during previous inspection)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

<u>Heating, Ventilation, and Air Conditioning (HVAC):</u>

Note any changes on this form and on map
What type of HVAC system(s) are used in this building? (Exploder shop has separate HVAC, heat lamps in work areas): ☐Hot air circulation ☒ Heat pump ☐ Hot water baseboard ☐ Space heaters ☐ Steam radiation ☐ Hot air radiation ☐ Radiant floor ☐ Electric baseboard ☐ Wood stove ☐ Outdoor wood boiler ☐ None ☒ Other: Heat Lamps,

SS 8/22/2022
☑ No Changes

☒ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text. Natural gas heat, mini split added in exploder shop

Primary source of fuel used is: ☑ Natural gas ☐ Fuel oil ☐ Kerosene ☒ Electric ☐ Propane ☒ Solar ☐ Wood ☐ Coal

Hot water tank fueled by: N/A

Air conditioning ventilation (Window units in work areas and kitchen): ☐ Central air ☒ Window units
☐ Open windows ☒ Open doors
☐ Mechanical fans ☐ None ☒ Other Click or tap here to enter text.

Are there distribution ducts? ☐ Yes ☐ No ☒ N/A

☒ No Changes

☐ Changes (Describe): Click or tap here to enter text.

HVAC Operations

Current HVAC Operation: HVAC not used in use in building, but is present. 1st floor – Central HVAC with window units in kitchens and workspaces. 2nd floor – Central HVAC and heating, windows can open but usually are not. Rollup door in back (north) is occasionally opened for shipments and receiving

Describe changes to HVAC conditions/operation: Click or tap here to enter text. HVAC in exploder shop - mini split

Are HVAC systems operated only during normal working hours? ☑ Yes ☐ No ☐ Other (Describe): Click or tap here to enter text.

Are HVAC systems shut down on weekends? ☐ Yes ☑ No ☐ Other (Describe): Click or tap here to enter text.

Does system operation change from summer to winter? ☑ Yes ☐ No ☑ Other (Describe): Click or tap here to enter text. Heaters off during warm days

Have unusual circumstances caused HVAC system shutdown (e.g., maintenance shutdown, weather)? ☐ Yes ☒ No ☐ Other (Describe): Click or tap here to enter text.

Are windows, doors, or loading dock doors left open? ☑ Yes ☐ No ☐ Other (Describe): Click or tap here to enter text. loading dock doors left often during summer

Indicate locations on map, along with type, size, frequency, and duration of time

☒ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Outside Contaminant Sources:

Note any changes on this form and on map

List nearby land use: (industrial/commercial/residential):

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Building 98

North: Buildings
South: Parking lot and Area 8
East: Port Orchard Bay
West: Navy Building 85

☑ No Changes

☐ Changes (Describe, include interviewee name and contact information, if applicable): Click or tap here to enter text.

Other stationary sources nearby (gas stations, emission stacks, other manufacturing facilities, etc.): (Parking lot to south and road to east)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Heavy vehicular traffic or area where vehicles idle nearby (or other mobile sources): (Parking lot to south and road to east)

☑ No Changes

☐ Changes (Describe): Click or tap here to enter text.

Indoor Contaminant Sources:

Identify all potential indoor sources and products that have the potential to affect indoor air sample quality. Indicate whether the item can be removed from the building prior to indoor air sampling event.

Potential Background Sources	**Present?** (Yes / No)		**If Present, Description** (location, size, condition*, ingredients)	**Removable prior to Sampling?** (Yes / No)
	Previous	Current		
Gasoline storage cans	No	No		
Gas-powered equipment (e.g., forklift)	No	NO		
Paints/thinners/strippers	No	NO		
Solvents	No	Yes	55 gallon upstairs	NO
Dry cleaned clothing	No	NO		
Pesticides/herbicides (e.g., applied around bldg. foundation)	No	No		
Moth balls	No	No		
Cleaning products	Yes	Yes	Men's restroom: PureBright Bleach, Disinfectant cleaner, Lemon Eze	yes

NBK KEYPORT OU 2, AREA 8 BUILDING SURVEY
Building 98

Potential Background Sources	**Present?** (Yes / No)		**If Present, Description** (location, size, condition*, ingredients)	**Removable prior to Sampling?** (Yes / No)
	Previous	Current		
			Cleaner, Consume Nature's Way (alcohol), Spar Cling (hydrogen chloride). Lunchroom: Dawn dish soap, wipes, bleach cleaner, disinfecting cleaner. Skilcraft concentrated power green cleaner. Office (Jeff Stoch) – Powerduster (Skilcraft), 1,1-difluroethane. Vapor degreaser room (2nd floor), trans 1,2-DCE, in drum with secondary containment	
Moth balls	No	NO		
Air fresheners	No	NO		
Waste storage	No	NO		
New furniture or upholstery	No	NO		
New carpeting or flooring	No	NO		
Glues	No	NO		
Heavy duty degreaser	No	NO		
Primer coating	No	NO		
Zinc dust petrolatum	No	NO		
Greaseless lubricant	No	NO		
HumiSeal	No	NO		
4-6 Chemical closets in main warehouse	No	NO		
Lens cleaning solution	No	NO		
CreteCleaner	No	NO		
Paint	Yes	Yes	Small paint room with fume hood. MSDS codes: HDQQBR, HDLKNM, DDMHGK, HDJBEY, HDMJVB	NO

* Describe the condition of the product containers as Unopened (UO), Used (U), or Deteriorated (D)

Any known spills of a chemical immediately outside or inside the building over the last year?

☑ No

☐ Yes (Specify location and describe, including interviewee name and contact information): Click or tap here to enter text.

Has the building had a fire in the last year?

☑ No

☐ Yes (Specify location and describe, including interviewee name and contact information): Click or tap here to enter text.

Building Map Changes:

Has the ground cover around outside of building changed? (Asphalt)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has the storm drain system near the outside of the building changed? (Compare current conditions to the storm drains as shown on map)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Flooring type inside building:

Has flooring changed on 1st floor? (Sealed concrete)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has flooring changed on 2nd floor? (Sealed concrete)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Has flooring changed on 3rd floor? (N/A)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Tunnels? (None)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Sumps? If present, indicate whether there is water in the sump. (None)

☑ No

☐ Yes (Describe): Click or tap here to enter text.

Change in potential soil vapor entry points and approximate sizes? Include cracks, utility ports, drains, gaps in floor slab. (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Have there been changes to HVAC components in the building including blowers, intake, and/or exhaust vents? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Boiler/Furnace? (Not present)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Change in bathroom exhaust fans? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Change in manufacturing process vents? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Additional building vents? (As shown on map)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Are there any building windows or doors that are left open? Include location, type, size, frequency, and duration of time. (As shown on map – windows not left open)

☐ No

☑ Yes (Describe and document on map): Click or tap here to enter text.
2-3 months a year weather defendant

Are there areas that have little or no air exchange? (None identified)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Have location(s) of designated or common smoking areas changed? (None identified)

☑ No

☐ Yes (Describe and document on map): Click or tap here to enter text.

Attachment C

2021 VI Long-Term Monitoring Plan, Operable Unit 2, Area 8, NBK Keyport, Keyport, Washington

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NAVFAC
Naval Facilities Engineering Systems Command
NAVFAC Northwest

FINAL
17 July 2021

Vapor Intrusion Long-Term Monitoring and Building Inspection Plan

Operable Unit 2, Area 8

Naval Base Kitsap

Keyport, Washington

Department of the Navy
Naval Facilities Engineering Systems Command
Engineering Field Activity, Northwest
1101 Tautog Circle
Silverdale, WA 98315-1101

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Department of the Navy
Naval Facilities Engineering Systems Command Northwest

Draft

Vapor Intrusion Long-Term Monitoring and Building Inspection Plan
Operable Unit 2, Area 8
NAVAL BASE KITSAP KEYPORT WASHINGTON

July 2021

Prepared for NAVFAC Northwest by
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N3943016D1802
CTO N3943018F4355

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CONTENTS

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ABBREVIATIONS AND ACRONYMS

1,1-DCE	1,1-dichloroethene
AF	attenuation factor
BSAF	building-specific attenuation factor
bgs	below ground surface
cDCE	cis-1,2-dichloroethene
COC	contaminant of concern
CSM	conceptual site model
cVOC	chlorinated volatile organic compound
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency, United States
ESD	explanation of significant difference
HVAC	heating, ventilation, and air conditioning
IC	institutional control
ID	identification
LTM	long-term monitoring
mg/kg	milligram per kilogram
MMA	Management and Monitoring Approach
msl	mean sea level
MTCA	Model Toxics Control Act
NAVFAC	Naval Facilities Engineering Systems Command
NAVSEA	Naval Sea Systems Command
Navy	United States Department of the Navy
NBK	Naval Base Kitsap
NW	Northwest
OU	Operable Unit
PAL	project action limit
PCE	tetrachloroethene
QAPP	quality assurance project plan
RAO	remedial action objective
RG	remediation goal
ROD	record of decision
RPM	remedial project manager
SVOC	semi-volatile organic compound
TCE	trichloroethene
tDCE	trans-1,2-dichloroethene
U.S.	United States
UST	underground storage tank
VC	vinyl chloride
VI	vapor intrusion
VISL	Vapor Intrusion Screening Level
VOC	volatile organic compound

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1. Introduction

This Management and Monitoring Approach (MMA) Plan was developed to support vapor intrusion (VI) monitoring activities at buildings north and west of the former plating shop comprising Operable Unit (OU) 2, Area 8 of Naval Base Kitsap (NBK) in Keyport, Washington (Figure 1 and Figure 2). This MMA Plan provides details for inspections and indoor air and sub-slab vapor sampling at Buildings 82, 85, and 98 to monitor the VI pathway and collect information to support the consideration of monitoring program adjustments or mitigation, if required.

This Plan was prepared by AECOM Technical Services under subcontract to Battelle Memorial Institute through United States (U.S.) Department of the Navy (Navy) contract N3943016D1802, Task Order N3943018F4355.

NBK Keyport is the west coast Naval Undersea Warfare Center for the Navy. NBK Keyport occupies 340 acres (including tidelands) adjacent to Keyport in Kitsap County, Washington, on a small manmade peninsula in the central portion of the Puget Sound. The peninsula is surrounded by Dogfish and Liberty Bays to the northwest and Port Orchard bay to the north and east. Marine and brackish water bodies on and near the site consist of Liberty Bay, Dogfish Bay, the tide flats, a marsh, and a shallow lagoon. Freshwater bodies include two creeks discharging into the marsh pond and two creeks discharging into the lagoon. The topography of the site rises gently from the shoreline to an average of 25 to 30 feet above mean sea level (msl), and then rises steeply at the southeast corner of the facility to approximately 130 feet above msl.

The OU 2 Record of Decision (ROD) was executed in September 1994. At Area 8, the OU 2 ROD requires long-term monitoring (LTM) of groundwater and a groundwater seep, and institutional controls (ICs) (Navy, U.S. Environmental Protection Agency [EPA], and Washington State Department of Ecology [Ecology] 1994). The vapor pathway is currently not considered in the OU 2 ROD. In 2015, a VI study was recommended in the Fourth Five-Year Review following new EPA risk-based VI Guidance (EPA 2015). A soil vapor investigation was completed in 2017 (Navy 2018a), and a VI study was completed in 2019 (Navy 2020a).

Recommendations made in the 2019 VI study (Navy 2020a) have been incorporated in this MMA Plan.

1.1 Site Location and History of OU 2, Area 8

Area 8 occupies approximately 1 acre on the eastern portion of NBK Keyport (Figure 2), encompassing the location of the former plating shop (Building 72). Area 8 is located on a manmade peninsula in a heavily industrialized part of the base. The area is predominantly flat and almost entirely paved or covered by buildings. A parking lot is currently present on the site of the former plating shop (former Building 72), which was demolished in 1999. From Hunnicutt Street and H Street, the shoreline drops steeply approximately 12 feet to the intertidal area of the adjacent beach (Figure 2). The embankment is reinforced by an armor rock wall to the south, beyond Hunnicutt Street, and transitions to a concrete seawall to the east beyond H Street.

Past releases at Area 8 include chrome plating solutions spilling onto the ground; plating wastes discharging to a utility trench; and plating solutions leaking through cracks in the Building 72 plating shop floor, waste disposal pipes, and sumps during plating shop operations. These chrome plating solutions and plating wastes contained chlorinated volatile organic compounds (cVOCs) and metals. Petroleum hydrocarbons (diesel and heavy oil) were also released to the environment from leaky underground storage tanks (USTs) and underground concrete vaults located within Area 8.

The OU 2 ROD was signed in 1994 (Navy, EPA, and Ecology 1994), and identified volatile organic compounds (VOCs) and metals (arsenic, cadmium, and chromium) as the contaminants of concern (COCs) associated with Area 8.

VOCs and metals were identified as COCs for groundwater, based on residential use of groundwater as drinking water and inhalation of water vapor during household use. Selected remedies for the site include removal of vadose zone soil hot spots for offsite disposal, continued groundwater, seep water, sediment, and tissue monitoring, and ICs to restrict residential use of the site.

Arsenic and cadmium concentrations in subsurface soil were identified as major contributors to future resident's risk during household use and ingestion of produce grown in the soil.

Semi-volatile organic compounds (SVOCs) associated with the petroleum release were detected in soil at concentrations below Washington State Model Toxics Control Act (MTCA) Method B cleanup levels based on soil ingestion, protection of drinking water, and protection of surface water standards, and were not included as COCs.

Following the signing of the OU 2 ROD, the Navy performed the following remedial actions:

1. Demolition of Building 72, the former plating shop, and removal/disposal of soil hot spots above the water table in July 1998 and March 1999. Soil removal was based on cadmium and chromium concentrations exceeding 1999 MTCA Method B cleanup levels for soil ingestion (80 milligrams per kilogram [mg/kg] for cadmium and 400 mg/kg for chromium) (Navy 1999).
2. Removal of USTs northeast and south of former Building 72 and excavation of petroleum-contaminated soil associated with these USTs. Slurry walls were constructed at the location of the former USTs (immediately northeast and south of the former plating shop) to provide shoring during excavations. These slurry walls impact contaminant migration in their vicinity.
3. Implementation of ICs, beginning in 2000, to prevent exposure to soil and groundwater containing site COCs at concentrations exceeding the thresholds for residential use.
4. Installation and LTM of four groundwater wells starting in 1995.
5. Sediment and tissue LTM in the intertidal zone of the beach adjacent to Area 8 starting in 1996 and continuing every 4 years or less thereafter, including 2000, 2004, 2008, 2012 (sediment only), 2015, and 2016.
6. Evaluation of human health and ecological risks associated with site groundwater contamination discharging to the adjacent beach using tissue and sediment data.
7. Execution of independent remedial actions under MTCA related to past petroleum releases (Navy 2000).

The OU 2 ROD also calls for implementation of contingent groundwater control actions if Area 8 groundwater is found to present an unacceptable risk to human health or the environment based on sediment and tissue monitoring on the adjacent beach. A human health and ecological risk assessment encompassing sediments and clam tissue was completed in 2015 and 2016 (Navy 2018a). No risk to human health was identified, but a potential ecological risk was identified. The 2019 ecological risk assessment addendum (Navy 2020b) found that acute and chronic exposure to accumulated site COCs in intertidal zone sediment on the beach adjacent to OU 2 Area 8 poses a current hazard to benthic

organisms based on the bioassay results/endpoints. As a result, the Navy is conducting a supplemental remedial investigation to support selection of a contingent groundwater control action.

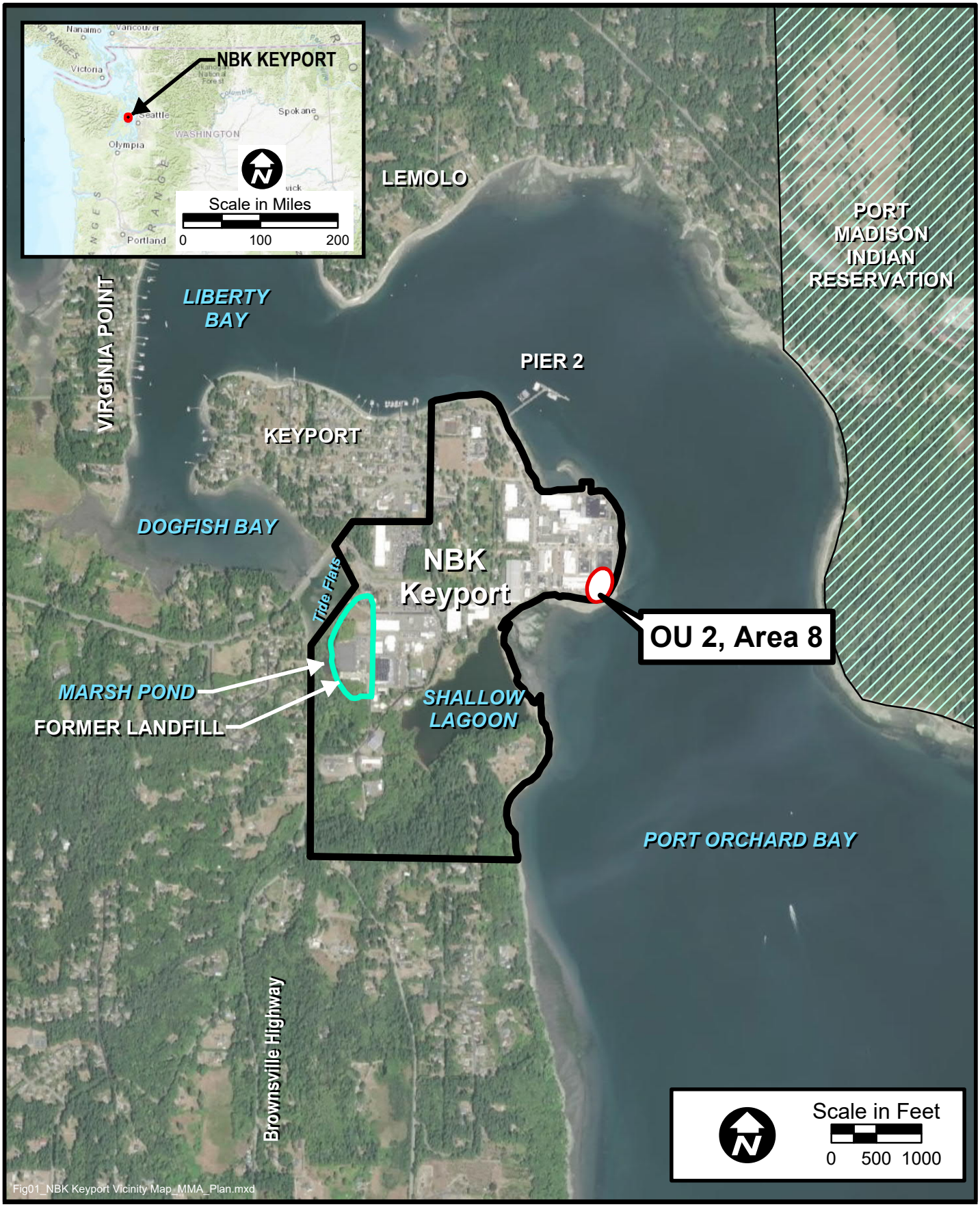
Starting in 1995, groundwater samples were analyzed for inorganics, including arsenic, cadmium, chromium (total), hexavalent chromium, copper, lead, mercury, nickel, silver, thallium, zinc, and cyanide. Although an explanation of significant differences (ESD) was signed in 1996 that directed: "In determining the quantity of soils to be excavated during Phase 1, total chromium will be tested for and assumed to be all hexavalent chromium (Cr VI)" (Navy, EPA and Ecology 1996), chromium speciation was not discontinued until after the sampling event in 2000, when recommended. Subsequently, all measured total chromium values have been assumed to be 100 percent hexavalent chromium (Navy 2001). Following the 2002 sampling event, analysis of groundwater for cyanide was discontinued because it had not been detected since 1998.

The Fourth Five-Year Review (Navy 2015) concluded that a VI study was warranted based on new EPA risk-based VI Guidance (EPA 2015) requiring a VI study when VOC compounds in groundwater exceedance current Ecology MTCA Method C (Industrial) groundwater VI screening levels and are within 100 feet of occupied buildings. The primary potential human health VI pathway receptors for Area 8 are workers in buildings within 100 feet of contaminated groundwater, including Buildings 82 and 98. Although over 100 feet away, Buildings 1074 and 85 were included in the VI study, in an abundance of caution. Building 1074 houses a large number of employees and, although Building 85 is currently used for storage, the Navy believed that VI data was necessary for future planning purposes.

In November 2017, a soil vapor investigation was conducted at Area 8 (Navy 2018b). Six soil vapor wells were installed and sampled at locations adjacent to Buildings 82 and 98, nearest the cVOC exceedances in groundwater. The soil vapor wells were designed as dual-completion wells, screened immediately above the first occurrence of groundwater (typically 10 feet below ground surface [bgs]), and at 5 feet bgs. Due to shallower-than-expected groundwater conditions observed during well installation, only five of the six deeper wells were installed. Ultimately, a deep sample was collected at just one of the five locations due to higher than expected groundwater levels. Shallower samples were collected successfully from all six locations at approximately 5 feet bgs. Soil vapor samples were analyzed for a list of VOCs based on the COCs associated with Area 8, as documented in the OU 2 ROD, and also for 1,4-dioxane based on more recent detections in groundwater. Detected concentrations of VOCs exceeded their respective project action limits (PALs) in five of seven samples. The 2017 soil vapor investigation report recommended additional investigation of the VI pathway at Area 8, including VOC migration along preferential pathways.

In 2019, an indoor VI study was conducted at Buildings 82, 95, 98, and 1074 (Navy 2020a). Indoor air, outdoor air, and sub-slab vapor samples were collected, and differential pressure was monitored in both early spring (April 2019) and summer (July 2019) to account for the seasonal variability of VI potential. Indoor air samples were collected from areas regularly occupied by workers and each was collocated with a sub-slab vapor sample to the extent possible, while outdoor air samples were collected to be representative of upwind outdoor air. The April 2019 sampling event included six outdoor air samples, 30 indoor air samples, and 28 sub-slab vapor samples. The July 2019 sampling event included four outdoor air samples, 29 indoor air samples, and 28 sub-slab vapor samples. Detected concentrations of VOCs exceeded their respective PALs in sub-slab vapor samples in Buildings 82, 85, and 98; however, VOCs were not detected in the paired indoor air samples, with the exception of trans-1,2-dichloroethene (tDCE) which exceeded its PAL in Building 98 indoor air. The investigation concluded that the trans-1,2-dichloroethene concentration detected exceeding the PAL in indoor air was the result of an indoor background sources. While the VI pathway is not currently a

complete exposure pathway, additional inspections and sampling were recommended to ensure no future risks go undetected. Annual use monitoring was recommended for Building 85, which is used for general storage and is not regularly occupied. Annual building and foundation inspections and paired sub-slab vapor and indoor air monitoring every 5 years were recommended for Buildings 82 and 98. No further actions were recommended for Building 1074, where no indoor air or sub-slab vapor exceedances were observed.



U.S. NAVY	Figure 1 NBK Keyport Vicinity Map	CTO N3943018F4355 NBK Keyport, Area 8 Indoor Vapor MMA Plan

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U.S. NAVY	**Figure 2** **Area 8 Plan View**	CTO N3943018F4355 NBK Keyport, Area 8 Indoor Vapor MMA Plan

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2. Current Conceptual Site Model

Area 8 occupies approximately 1 acre on the eastern portion of NBK Keyport, on a manmade peninsula within a heavily industrialized area and currently encompasses a parking lot. The parking lot is on the site of a former plating shop (former Building 72), which was demolished in 1999. The area is predominantly flat, almost entirely paved, and surrounded by industrial buildings.

The five geologic units identified at Area 8 are described in a site-wide geologic cross-section in the OU 2 ROD (Navy, EPA, and Ecology 1994). The upper unit consists primarily of silty gravelly sand fill and is approximately 3 to 13 feet thick. The unit below that, the Vashon Advance Outwash, consists of dense sand, gravel, and some silt. The depth to groundwater at Area 8 is generally less than 10 feet bgs. The upper aquifer is thought to be 50 to 154-feet thick. Water elevations from wells screened at the bottom and the top of the aquifer show a vertical groundwater gradient that indicates a potential for upward flow. Horizontal groundwater flow is generally eastward toward the shore, though intermittent reversals near the shore are inferred due to tidal influences.

Two classes of contaminants have been identified as COCs for Area 8: VOCs and metals. The SVOC 1,4-dioxane was added to the LTM program as an emergent COC for the site following the Third Five-Year Review (Navy 2010), after having been identified in site groundwater.

The current conceptual site model (CSM) identifies VOCs and metals as COCs due to risks associate with exposure to soil, groundwater, and produce by future hypothetical residents and the potential for human health and ecological exposure from contaminants discharging to Port Orchard Bay impacting marine sediment and tissue (Navy 2015). VOCs and metal concentrations above OU 2 ROD Remediation Goals (RGs) remain in the upper aquifer. Concentration trends are generally stable or decreasing, except at two locations where trichloroethene (TCE) is exhibiting increasing trends (Navy 2015). Continued monitoring of groundwater and an intertidal seep is intended to confirm the effectiveness of the remedies (source removal, monitored natural attenuation, and ICs) and document progression toward achieving RGs.

Data generated to date indicate that solvents used in former Building 72 or other former adjacent buildings and metals from plating activities conducted in former Building 72 have impacted shallow groundwater, subsurface soils, and downgradient groundwater seeps, surface water, and sediments in Port Orchard Bay. The 2017 soil vapor investigation and 2019 indoor VI study identified cVOCs in soil gas and sub-slab vapor adjacent to and beneath Buildings 82 and 98, indicating that previously unknown sources may be present.

The vapor pathway is currently not considered in the OU 2 ROD. Consideration of the vapor pathway began in 2017, following publication of new EPA risk-based VI Guidance (EPA 2015). A VI CSM was developed for Buildings 82, 85, and 98 after interpretation of the 2019 VI study results. No further action was required for Building 1074 because both indoor and sub-slab vapor concentrations were below PALs, therefore, a VI CSM was not developed.

2.1 BUILDING 82

Figure 3 presents a VI CSM for Building 82. The evidence collected to date suggests a source of VOCs is present in groundwater near the building, with TCE detected above its groundwater Vapor Intrusion Screening Level (VISL) at several nearby groundwater wells and tetrachloroethene (PCE) and 1,1-dichloroethene (1,1-DCE) also detected above their groundwater VISLs, but at lower frequencies. The nearest monitoring well is located approximately 100 feet to the east of Building 82 and within the former plating shop area. No groundwater wells are located to the west, north, or south of the

building. Thus, there is some uncertainty as to the distribution of cVOC concentrations in groundwater adjacent to and directly below Building 82.

TCE, PCE, and tDCE were detected above their respective PALs at one nearby exterior soil vapor sample location (SV-1), and TCE was detected above its PAL at a second nearby exterior soil vapor sample location. TCE also was detected above its PAL at five sub-slab vapor locations and above its building-specific screening level (based on the building-specific attenuation factor [BSAF]) at three locations. tDCE detections above its indoor air PAL at six locations during the July sampling event were attributed to an indoor background source rather than VI (Figure 3-18, [Navy 2019 and 2020a]). TCE and PCE were not detected above their indoor air PALs.

Based on this evidence, the VI pathway at Building 82 is currently not of concern. However, given the presence of sub-slab vapor concentrations of TCE above its building-specific screening level in certain locations, ICs are recommended, such as periodic (e.g., annual) inspection of the integrity of the entire building floor slab and identification of any changes in building ventilation that could potentially increase the soil vapor entry rate or decrease the building air flow rate (i.e., ceiling height and/or air exchange rate). Inspections should focus on those areas where sub-slab vapor TCE concentrations were detected above the building-specific screening level, which includes the east side of the building. In addition, sampling of indoor air and sub-slab vapor every 5 years is recommended in support of five-year review reporting. Sampling will be conducted during conditions favorable to VI (i.e., naturally depressurized conditions, as may occur during the heating season) and approximately two years prior to the next five-year review due date. These ICs should remain in place until completion of the groundwater remedy or demolition of the building. A description of the Building Inspection and Monitoring Plan is provided in Section 3.

Due to the lack of groundwater or exterior soil vapor data on the north, west, and south sides of the building, some additional characterization may be warranted to determine if there is a source of sub-slab vapors in addition to the former plating shop area.

2.2 BUILDING 85

Figure 4 presents a VI CSM for Building 85. The evidence collected to date suggests a source of VOCs is present in groundwater near/beneath the building, with TCE detected above its groundwater VISL at groundwater wells to the southeast, and PCE and 1,1-DCE also detected above their groundwater VISLs, but to a lesser degree. The nearest monitoring well is located approximately 200 feet to the southeast of Building 85 and within the former plating shop area. No groundwater wells are located to the west and north of the building. Thus, there is some uncertainty as to the distribution of cVOC concentrations in groundwater adjacent to and directly below Building 85.

TCE was detected above its PAL in one nearby exterior soil vapor sample location (SV-3) in 2017, and TCE and PCE were detected above their respective PALs at one sub-slab vapor sample location at the north end of the building; however, all sub-slab vapor concentrations were below the building-specific screening levels. Indoor air sampling showed that all target VOCs were below PALs, including TCE and PCE.

Based on this evidence, the VI pathway at Building 85 is currently not of concern. Because of the presence of sub-slab vapor concentrations of PCE and TCE above PALs, ICs are recommended, such as annual monitoring of building use. If the building use is revised to include human occupation of the north end of the building, then annual building inspection and indoor air and sub-slab vapor sampling every 5 years are recommended. If implemented based on a change in building occupancy at Building 85, building inspections should include inspection of the integrity of the building floor slab and identification of any changes in building ventilation that could potentially increase the soil vapor entry

rate or decrease the building air flow rate (i.e., ceiling height and/or air exchange rate). These inspections will focus on those areas where sub-slab vapor TCE and PCE concentrations were detected above the PALs (the northern portion of Building 85). Periodic indoor air and sub-slab vapor sampling at locations where sub-slab vapor concentrations exceeded the PALs for TCE and PCE will also be performed to assess the potential for future exceedances. The sampling events will be limited to every 5 years in support of five-year review reporting. Sampling will be conducted during conditions favorable to VI (i.e., naturally depressurized conditions, as may occur during the heating season) and approximately two years prior to the next five-year review due date. ICs should remain in place until completion of the groundwater remedy or demolition of the building. A description of the Building Inspection and Monitoring Plan is provided in Section 3.

Due to the lack of groundwater or exterior soil vapor data on the north and west sides of the building, some additional characterization may be warranted to determine if there is a source of sub-slab vapors unrelated to the former plating shop area.

2.3 BUILDING 98

Figure 5 presents a VI CSM for Building 98. The evidence collected to date suggests a source of VOCs is present in groundwater near the building, with TCE detected above its groundwater VISL at several nearby groundwater wells and PCE and 1,1-DCE also detected above their groundwater VISLs, but at lower frequencies. The nearest monitoring well is located less than 100 feet to the south of Building 98 and within the former plating shop area. No groundwater wells are located to the west, north, or east of the building. Thus, there is some uncertainty as to the distribution of cVOC concentrations in groundwater adjacent to and directly below Building 98.

TCE was detected above its PAL in two nearby exterior soil vapor sample locations (SV-3 and SV-4). TCE also was detected above its PAL at seven sub-slab vapor sample locations and above its building-specific screening level (based on the BSAF) at four locations. PCE was detected above its PAL at one sub-slab vapor sample location, but this detection was below its building specific screening level. tDCE detections above its indoor air PAL at four locations over the two sampling events were attributed to an indoor background source (the vapor degreaser) rather than VI (as indicated by the empirical attenuation factors [AFs] for tDCE being greater than Ecology's default generic AF). TCE and PCE were not detected above their indoor air PALs.

Based on this evidence, the VI pathway at Building 98 is currently not of concern. Due to the presence of sub-slab vapor concentrations of TCE above its building-specific screening level in certain locations, ICs are recommended, such as annual inspection of the integrity of the entire building floor slab and identification of any changes in building ventilation that could potentially increase the soil vapor entry rate or decrease the building air flow rate (i.e., ceiling height and/or air exchange rate). Inspections should focus on those areas where sub-slab vapor TCE concentrations were detected above the building-specific screening level, which includes the main workshop area and the large enclosed workshop in the southeast quadrant of the building. In addition, sampling of indoor air and sub-slab vapor every 5 years is recommended in support of the five-year reviews. Sampling will be conducted during conditions favorable to VI (i.e., naturally depressurized conditions, as may occur during the heating season) and approximately two years prior to the next five-year review due date. ICs should remain in place until completion of the groundwater remedy or demolition of the building. A description of the Building Inspection and Monitoring Plan is provided in Section 3.

Due to the lack of groundwater or exterior soil vapor data on the east, north, and west sides of the building and the higher sub-slab vapor concentrations in areas of the building that are farther from the former plating shop area, additional characterization is being conducted under a different Task Order to determine if there is an additional source of sub-slab vapor.

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VI Pathway Questions	PCE	TCE	11DCE	cDCE	tDCE	VC
Indoor sources?	Yes	Potential	No	Suspected	Yes	No
Detected in Indoor Air?	< PAL_{IA}	< PAL_{IA}	< PAL_{IA}	Yes (NE)	> PAL_{IA} (6 locations, July only)	No
Empirical Sub-Slab AF?	**> 0.03**	**> 0.03**	< 0.03	**> 0.03**	**> 0.03**	NA
	BSAF = 0.006					
Detected in Sub-Slab Vapor?	< $SL_{SS,BSAF}$	> $SL_{SS,BSAF}$ (3 locations)	< $SL_{SS,BSAF}$	Yes (NE)	< $SL_{SS,BSAF}$	No
	< PAL_{SS}	> PAL_{SS} (5 locations)	< PAL_{SS}	Yes (NE)	< PAL_{SS}	No
Detected in Nearby Soil Gas? (2017)	> PAL_{SS}	> PAL_{SS}	< PAL_{SS}	Yes (NE)	> PAL_{SS}	No
Detected in Site Groundwater? (1991-2016)	> $VISL_{GW}$ (10 of 287 samples)	> $VISL_{GW}$ (218 of 278 samples)	> $VISL_{GW}$ (1 of 277 samples)	Yes (NE)	< $VISL_{GW}$	< $VISL_{GW}$
Likely Source of Indoor Exceedance(s)	None	None	None	None	**Indoor**	None
Likely Source of Soil Gas Exceedance(s)	**Groundwater Source**	**Groundwater Source**	None	None	**Vadose Zone Source**	None

Building Factors		
Building Ventiliation	Slab Condition	Preferential Pathways
various	good, mostly coated concrete	utility corridors, trench drain, vault

Subsurface Factors		
Soil Type	Depth to groundwater	Preferential Pathways
silty, gravelly sand fill	< 10 ft bgs	utility lines

Legend

< PAL_{IA}	Indoor air concentrations less than MTCA Method C (Industrial) indoor air screening level
> PAL_{IA}	Indoor air concentrations greater than MTCA Method C (Industrial) indoor air screening level
	Vadose zone
> PAL_{SS} or > $SL_{SS,BSAF}$	Sub-slab or soil vapor concentrations greater than MTCA Method C (Industrial) sub-slab screening level or the building-specific screening level
	Groundwater
> $VISL_{GW}$	Groundwater concentrations greater than MTCA Method C (Industrial) groundwater VI screening levels

Empirical sub-slab AF = (indoor air concentration)/(sub-slab vapor concentration) for collocated samples, if maximum is greater than the default generic AF of 0.03, suggests an indoor source

AF - attenuation factor

BSAF - building-specific attenuation factor

ft bgs - feet below ground surface

NA - not applicable

NE - PAL or screening level not established

PAL_{SS} - project action limit for sub-slab vapor or shallow soil vapor

$SL_{SS,BSAF}$ - building-specific screening level for sub-slab vapor

$VISL_{GW}$ - vapor intrusion screening level for groundwater

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Figure 3
Building 82 Vapor Intrusion Conceptual Site Model

CTO N3943018F4355
NBK Keyport, Area 8
Indoor Vapor MMA Plan

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VI Pathway Questions	PCE	TCE	11DCE	cDCE	tDCE	VC
Indoor sources?	No	No	No	No	No	No
Detected in Indoor Air?	< PAL_{IA}	< PAL_{IA}	No	No	< PAL_{IA}	No
Empirical Sub-Slab AF?	< 0.03	< 0.03	< 0.03	NA	NA	NA
	BSAF = 0.0001					
Detected in Sub-Slab Vapor?	< $SL_{SS,BSAF}$	< $SL_{SS,BSAF}$	< $SL_{SS,BSAF}$	No	No	No
	> PAL_{SS} (1 location)	> PAL_{SS} (1 location)	< PAL_{SS}	No	No	No
Detected in Nearby Soil Gas? (2017)	< PAL_{SS}	> PAL_{SS}	No	Yes (NE)	< PAL_{SS}	No
Detected in Site Groundwater? (1991-2016)	> $VISL_{GW}$ (10 of 287 samples)	> $VISL_{GW}$ (218 of 278 samples)	> $VISL_{GW}$ (1 of 277 samples)	Yes (NE)	< $VISL_{GW}$	< $VISL_{GW}$
Likely Source of Indoor Exceedance(s)	None	None	None	None	None	None
Likely Source of Soil Gas Exceedance(s)	**Groundwater Source**	**Groundwater Source**	None	None	None	None

Building Factors

Building Ventiliation	Slab Condition	Preferential Pathways
none	fair, some large cracks	former and currently present trench drain, sump

Subsurface Factors

Soil Type	Depth to groundwater	Preferential Pathways
silty, gravelly sand fill	< 10 ft bgs	utility lines

Legend

< PAL_{IA}	Indoor air concentrations less than MTCA Method C (Industrial) indoor air screening level
> PAL_{IA}	Indoor air concentrations greater than MTCA Method C (Industrial) indoor air screening level
	Vadose zone
> PAL_{SS} or > $SL_{SS,BSAF}$	Sub-slab or soil vapor concentrations greater than MTCA Method C (Industrial) sub-slab screening level or the building-specific screening level
	Groundwater
> $VISL_{GW}$	Groundwater concentrations greater than MTCA Method C (Industrial) groundwater VI screening levels

Empirical sub-slab AF = (indoor air concentration)/(sub-slab vapor concentration) for collocated samples, if maximum is greater than the default generic AF of 0.03, suggests an indoor source

AF - attenuation factor

BSAF - building-specific attenuation factor

ft bgs - feet below ground surface

NA - not applicable

NE - PAL or screening level not established

PAL_{SS} - project action limit for sub-slab vapor or shallow soil vapor

$SL_{SS,BSAF}$ - building-specific screening level for sub-slab vapor

$VISL_{GW}$ - vapor intrusion screening level for groundwater

U.S. NAVY

Figure 4
Building 85 Vapor Intrusion Conceptual Site Model

CTO N3943018F4355
NBK Keyport, Area 8
Indoor Vapor MMA Plan

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VI Pathway Questions	*PCE*	*TCE*	*11DCE*	*cDCE*	*tDCE*	*VC*
Indoor sources?	No	Potential	No	Suspected	Yes	No
Detected in Indoor Air?	< PAL_{IA}	< PAL_{IA}	< PAL_{IA}	< PAL_{IA}	> PAL_{IA} (4 locations)	< PAL_{IA}
Empirical Sub-Slab AF?	**> 0.03**	**> 0.03**	NA	**> 0.03**	**> 0.03**	NA
			BSAF = 0.005			
Detected in Sub-Slab Vapor?	< $SL_{SS,BSAF}$	>$SL_{SS,BSAF}$ (4 locations)	No			No
	> PAL_{SS} (1 location)	> PAL_{SS} (7 locations)	No	< PAL_{SS}	< PAL_{SS}	No
Detected in Nearby Soil Gas? (2017)	< PAL_{SS}	> PAL_{SS}	< PAL_{SS}	Yes (NE)	< PAL_{SS}	No
Detected in Site Groundwater? (1991-2016)	> $VISL_{GW}$ (10 of 287 samples)	> $VISL_{GW}$ (218 of 278 samples)	> $VISL_{GW}$ (1 of 277 samples)	Yes (NE)	< $VISL_{GW}$	< $VISL_{GW}$
Likely Source of Indoor Exceedance(s)	*None*	*None*	*None*	*None*	***Indoor***	*None*
Likely Source of Soil Gas Exceedance(s)	***Groundwater Source***	***Groundwater Source***	*None*	*None*	*None*	*None*

Building Factors

Building Ventiliation	*Slab Condition*	*Preferential Pathways*
various	good, mostly coated concrete	utility corridors

Subsurface Factors

Soil Type	*Depth to groundwater*	*Preferential Pathways*
silty, gravelly sand fill	< 10 ft bgs	utility lines

Legend

< PAL_{IA}	Indoor air concentrations less than PAL
> PAL_{IA}	Indoor air concentrations greater than PAL
	Vadose zone
> PAL_{SS} or > $SL_{SS,BSAF}$	Sub-slab or soil vapor concentrations greater than MTCA Method C (Industrial) sub-slab screening level or the building-specific screening level
	Groundwater
> $VISL_{GW}$	Groundwater concentrations greater than MTCA Method C (Industrial) groundwater VISL

Empirical sub-slab AF = (indoor air concentration)/(sub-slab vapor concentration) for collocated samples, if maximum is greater than the default generic AF of 0.03, suggests an indoor source

AF - attenuation factor

BSAF - building-specific attenuation factor

ft bgs - feet below ground surface

NA - not applicable

NE - PAL or screening level not established

PAL_{SS} - project action limit for sub-slab vapor or shallow soil vapor

$SL_{SS,BSAF}$ - building-specific screening level for sub-slab vapor

$VISL_{GW}$ - vapor intrusion screening level for groundwater

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Figure 5
Building 98 Vapor Intrusion Conceptual Site Model

CTO N3943018F4355
NBK Keyport, Area 8
Indoor Vapor MMA Plan

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3. Management and Monitoring Approach

3.1 SELECTED MONITORING APPROACH

As stated above, the vapor pathway was not considered in the OU 2 ROD. Therefore, there are no ROD-specified remedial action objectives (RAOs) or RGs applicable to vapor. Consideration of the vapor pathway began in 2017, following a new EPA risk-based VI Guidance.

The 2019 VI study (Navy 2020a) recommended periodic monitoring of Buildings 82, 85, and 98, and the regulator/stakeholder team concurred with this recommendation, which establishes the requirement for monitoring. The required periodic monitoring includes an annual assessment of building use, annual inspection of buildings and foundations, and sampling of indoor air and sub-slab vapor every 5 years in Buildings 82 and 98. The VI pathway associated with Building 85 is currently not of concern, as there is a low potential for VI under current building conditions. Building 85 is primarily used for storage, and no employees work full time in the building. Therefore, only annual building use/occupation monitoring is required to assess whether building use has been or is planned to be revised. If a change in building use that includes occupation of the north end of the Building 85 is identified, then sampling of indoor air and sub-slab vapor every 5 years will be added to the monitoring program. The VI pathways associated with Buildings 82 and 98 are also currently not of concern. However, sub-slab vapor TCE concentrations exceed building-specific screening levels, indicating there is a potential for VI under current conditions. Therefore, annual building inspections, along with sub-slab vapor and indoor air monitoring every 5 years, are being implemented for both Building 82 and Building 98.

A Building Inspection and Monitoring Plan has been developed as part of this Plan and includes a checklist for inspecting the floor slab condition and building ventilation as part of the annual building inspections. Sub-slab vapor and indoor air sampling will be conducted every 5 years, approximately two years prior to five-year review due dates, in January (representing winter conditions) and July (representing summer conditions). With this schedule, the next sampling event would take place in 2023. The Building Inspection and Monitoring Plan includes the possibility of conducting monitoring sooner than every 5 years, if an event that could change building conditions, such as an earthquake, takes place. If the results from the two seasons of sampling are equivalent for decision-making purposes for the 2023 sampling event, then the monitoring program may be reduced to winter only for subsequent monitoring events. Results and findings of the monitoring events will be documented in a report as described in Section 4. Inspection and indoor vapor monitoring frequency are summarized in Table 1.

Table 1: Inspection and Sampling Schedule

2021	2022	2023
• Assess use/occupation at Buildings 82, 85, and 98 • Inspect Buildings 82 and 98	• Assess use/occupation at Buildings 82, 85, and 98 • Inspect Buildings 82 and 98	• Assess use/occupation at Buildings 82, 85, and 98 • Inspect Buildings 82 and 98 • Conduct indoor vapor and sub-slab sampling at Buildings 82 and 98, one event during winter and one event during summer

3.1.1 Contaminants of Concern and Project Action Limits

Contaminants identified as VI COCs and their associated PALs are described in this section.

CONTAMINANTS

Indoor air and sub-slab vapor samples will be analyzed for target compounds:

- PCE
- TCE
- 1,1-DCE
- cis-1,2-Dichloroethene (cDCE)
- tDCE
- Vinyl Chloride (VC)

PROJECT ACTION LIMITS

The objective of this Plan is to guide annual visual inspections and interviews, as agreed to by the Keyport Project Team; therefore, PALs do not apply to the work being completed under this Plan. PALs will be developed for future indoor air and sub-slab sampling events based on the guidance and action levels at the time.

3.2 MONITORING IMPLEMENTATION AND EVALUATION

The three buildings at NBK Keyport Area 8 subject to VI inspections and sampling are controlled by the Naval Sea Systems Command (NAVSEA) and are some of the most secure buildings on the installation. Staff in these buildings also have a strong union structure that must be respected during inspection and sampling. Navy contractors performing VI inspections and sampling must be aware of, and comply with, the latest versions of the following guidelines:

- Separate badging for both the region (NBK) and NAVSEA is required to pass the main gate and enter buildings, respectively.
- Escorts are required when working inside these buildings, including both a Naval Facilities Engineering Systems Command (NAVFAC) Northwest (NW) representative and a NAVSEA escort, coordinated in advance through the NAVFAC NW remedial project manager (RPM). NAVSEA personnel are typically limited to their normal work hours for escort duty, and this can particularly impact deployment and retrieval of sampling devices that must collect samples for a full eight hours.
- Walking through workspaces or placing sampling devices (such as Summa canisters, which look suspicious) within work areas requires advance notification and planning through both installation security and the unions. Union representatives must be provided with notification language that can be disseminated to all employees in the workspace in advance of the work. An example of this notification is provided in Appendix A.
- The parking at Area 8 near these buildings is assigned to union employees and an outage request must be approved in advance for Navy contractors to occupy parking spaces during VI inspections and/or sampling. The parking area can fill completely, so it is often necessary to block off the needed and approved spaces the night before field work, with the blocked spaces displaying a copy of the approved outage request.

3.2.1 Foundation and Building Inspections

On-site building inspections will be conducted annually at Buildings 82 and 98. During each building inspection, the following information will be collected for comparison to the equivalent information collected during the building inspections conducted on November 14 and 15, 2018:

- Current building use/occupation.
- Changes to building footprint or square footage.
- Current approximate number of employees and typical working hours.
- Changes to building structure description (i.e., number of floors, location of utilities, etc.).
- Visual inspection of the slab conditions and floor covering types, including new or changed cracks or perforations.
- Heating, ventilation, and air conditioning (HVAC) types, operation, and any other pertinent ventilation notes (i.e., mechanical fans or open roll up door, etc.).
- Inventory of identified chemicals that could be sources of indoor air contaminants (i.e., cleaning supplies, paints, solvents, fuels, and other chemicals).
- Annotated map of the building with a depiction of the current floor plan, locations of possible soil vapor entry points, such as drains, vents, sinks, and utility penetrations, etc., as compared to Figures 6 through 8, which are based on the 2018 building inspections.
- To support this annual inspection, interviews will be conducted with building managers, the NAVFAC NW RPM, and the Keyport environmental manager. Interviewees will be asked to provide information relevant to the building inspections, as described in the previous bullets, including building foundation condition, changes to building use, occupation or layout, and changes to HVAC systems.
- Current building use/occupation will also be evaluated annually for Building 85. The findings of these annual building inspections will be recorded on the field form provided in Appendix A.

3.2.2 Indoor Air and Sub-slab Vapor Sampling

Indoor air and sub-slab vapor sampling and analysis will be conducted once every 5 years at Buildings 82 and 98. Indoor air and sub-slab vapor were sampled in 2019 as part of the initial VI study, with the next event planned for 2023. Indoor air and sub-slab vapor samples are collected from seven locations in Building 82 and 13 locations in Building 98. Sampling locations are summarized for Buildings 82 and 98 on Figures 9 and 10, respectively. An individual Quality Assurance Project Plan (QAPP) will be prepared for each round of indoor air and sub-slab vapor sampling.

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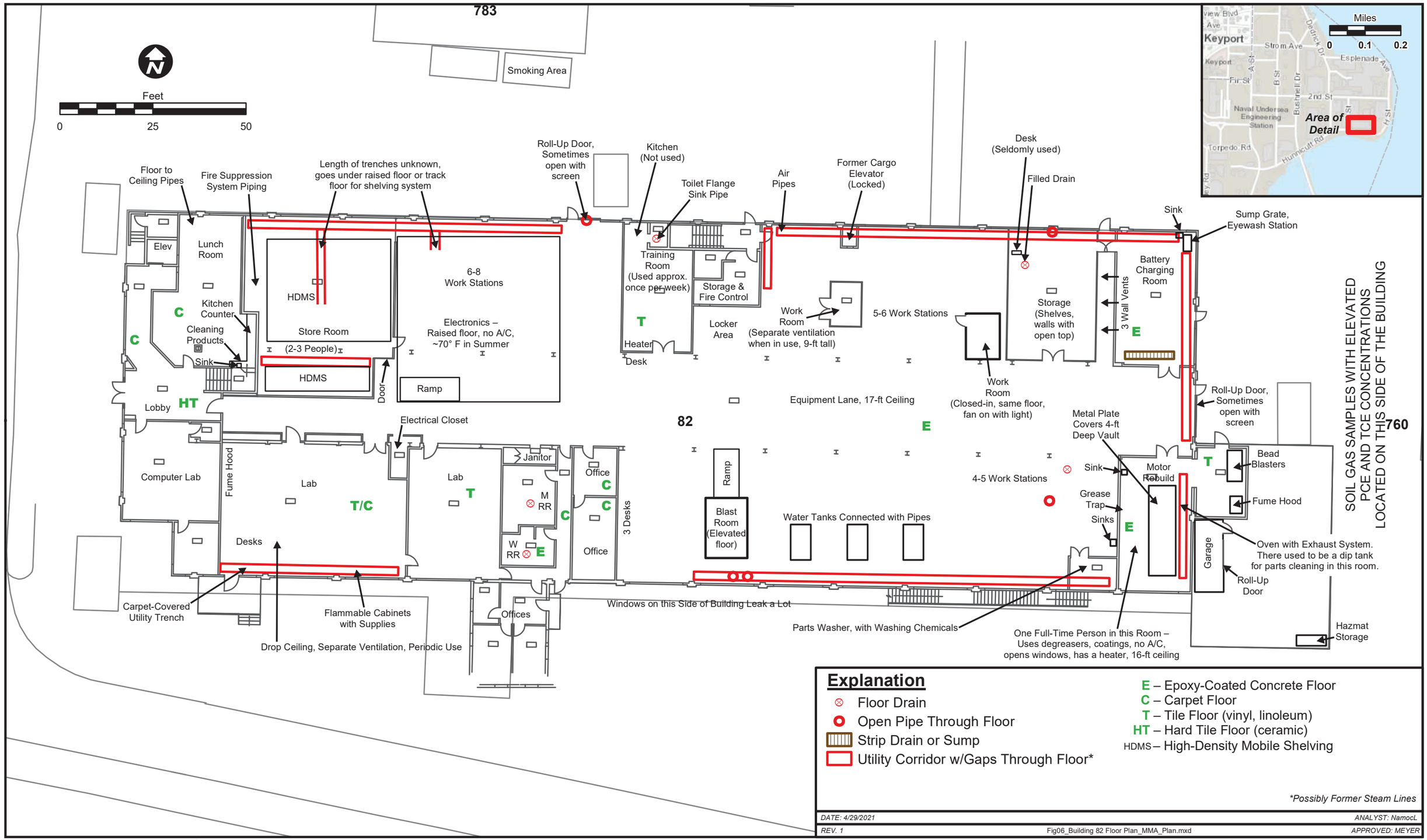

Explanation

- Floor Drain
- Open Pipe Through Floor
- Strip Drain or Sump
- Utility Corridor w/Gaps Through Floor*

- E – Epoxy-Coated Concrete Floor
- C – Carpet Floor
- T – Tile Floor (vinyl, linoleum)
- HT – Hard Tile Floor (ceramic)
- HDMS – High-Density Mobile Shelving

*Possibly Former Steam Lines

DATE: 4/29/2021 | ANALYST: NamocL

REV. 1 | Fig06_Building 82 Floor Plan_MMA_Plan.mxd | APPROVED: MEYER

U.S. NAVY

Figure 6
Building 82 Floor Plan

CTO N3943018F4355
NBK Keyport, Area 8
Indoor Vapor MMA Plan

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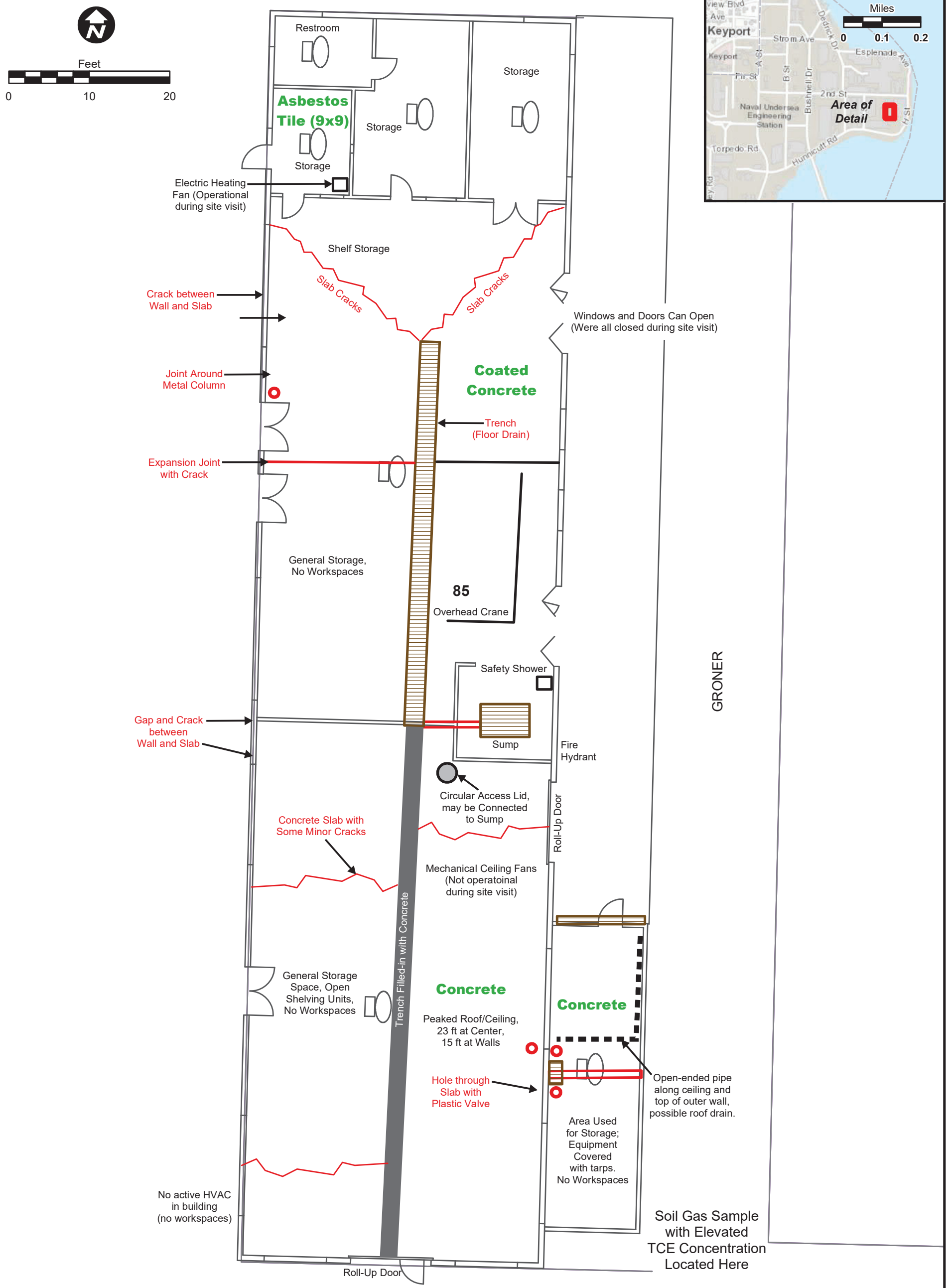

U.S. NAVY	Figure 7 Building 85 Floor Plan	CTO N3943018F4355 NBK Keyport, Area 8 Indoor Vapor MMA Plan

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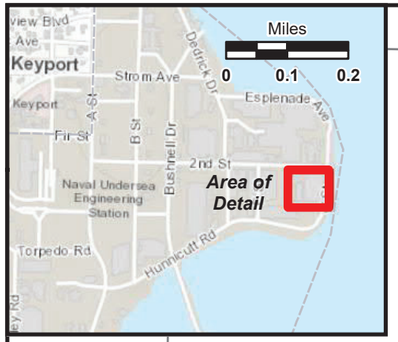
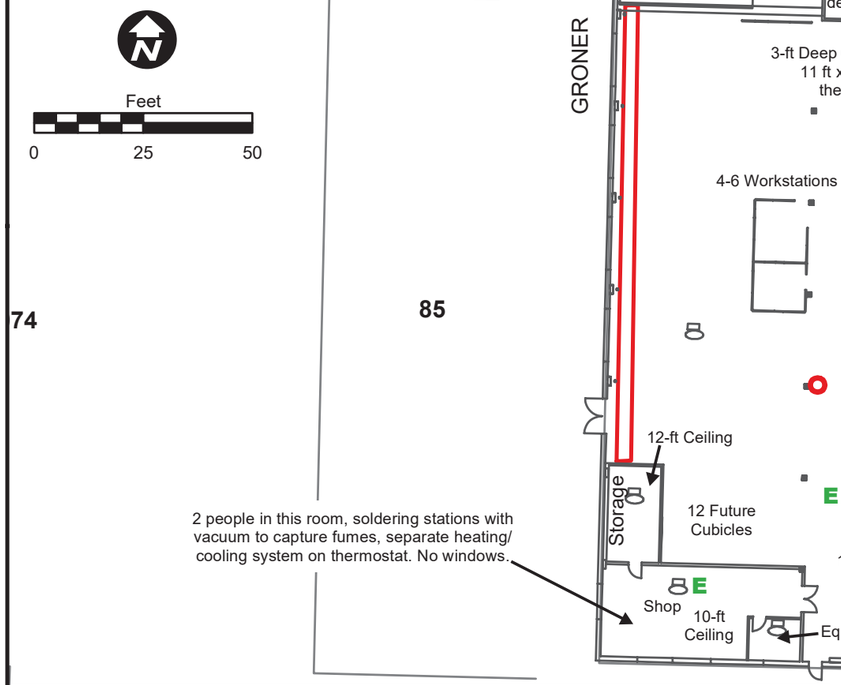


FIRST FLOOR

Fire Suppression System Piping
Water Tanks in this Area; Water Drains to Tanks Outside, then to Sewer
Tracks in Floor
Roll-Up Door
E-Red Coating
Elev
Cubicles
Breakout Room
9-ft Dropped Ceiling
Window A/C
Lunch Room
4-in. PVC Waste Pipe Wall Penetration
Kitchenette Counter with Sink
Glove Boxes
Test Room (9-ft Ceiling)
Storage
Roll-Up Door
Wall Now, No Door
2-3 Cubicles
Hazardous Waste Handling, 1 Desk
22-ft Ceiling
Storage
Floor Fans & Overhead Heaters
~40 Future Cubicles
Work Benches
Conference Room
Thickened perimeter wall sections indicate seismic upgrade footings, 3 ft deep. Approximately 10 ft x 15 ft (typ)
Storage
Room (to be demolished)
GRONER
'H' STREET
3-ft Deep Concrete Footers, 11 ft x 31 ft beneath these columns
Openings in Trench
Tank & Piping
98
4-6 Workstations
HDMS
10-ft Dropped Ceiling
Soldering
6-8 Work Stations
10-ft Dropped Ceiling, Floor may be Raised
Oven
Spray Booth (Floor damage, exhaust fan)
Cubicles
Dust Off
Office
Wall A/C
12-ft Ceiling
Storage
12 Future Cubicles
Open Electrical Socket on Column
Work Stations
4-in. PVC Waste Pipe Wall Penetration
9-ft Dropped Ceiling
Storage Closet (Bleach)
2 people in this room, soldering stations with vacuum to capture fumes, separate heating/ cooling system on thermostat. No windows.
15-ft Ceiling
Shop
10-ft Ceiling
Test Equipment
Elev
W RR
M RR
Counter with Sink (Cleaning supplies)
Baseboard Heat
Roll-up Door
Utility room. Water heater, dryer vent to outside.
Nursing Room
Janitor Closet, Pipe in Wall
Lunch Room
2 ceiling vents, exhaust through wall, windows that can open, baseboard heat
Storage, formerly an office, vents in 8-ft ceiling
Fan on, ceiling vents, baseboard heat, windows that can open, no floor drain, small gaps around sink pipes
74
85
72



DATE: 4/29/2021 | ANALYST: NamocL
REV. 1 | Fig08_Building 98 Floor Plan_MMA_Plan.mxd | APPROVED: MEYER

SECOND FLOOR

Storage
Elev
Work Stations
M RR
Janitor Closet
4-6 Work Stations (Every day)
Half-Height Wall
Work Stations (Periodic use)
6-8 Work Stations (Every day)
'H' STREET
98
Paint Booth (Last used 5 months ago for 3 months)
10-ft Dropped Ceiling, 15 ft to Actual Ceiling
Storage
Glove Box & Enclosed Glass Room
Soldering Station with Ventilation Hood
Vapor Degreaser with 2 Drums of HZLLNO (Contains trans-1,2-DCE)
Work-stations and Parts Storage
Ionizing Fans to Reduce Static
Office
Storage
Desk (Periodic use)
Ovens
Elev
W RR
Lunch Room
~15-20 People on this Floor

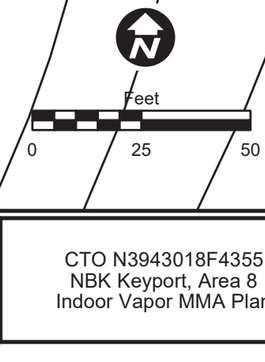


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Figure 8
Building 98 Floor Plan

CTO N3943018F4355
NBK Keyport, Area 8
Indoor Vapor MMA Plan

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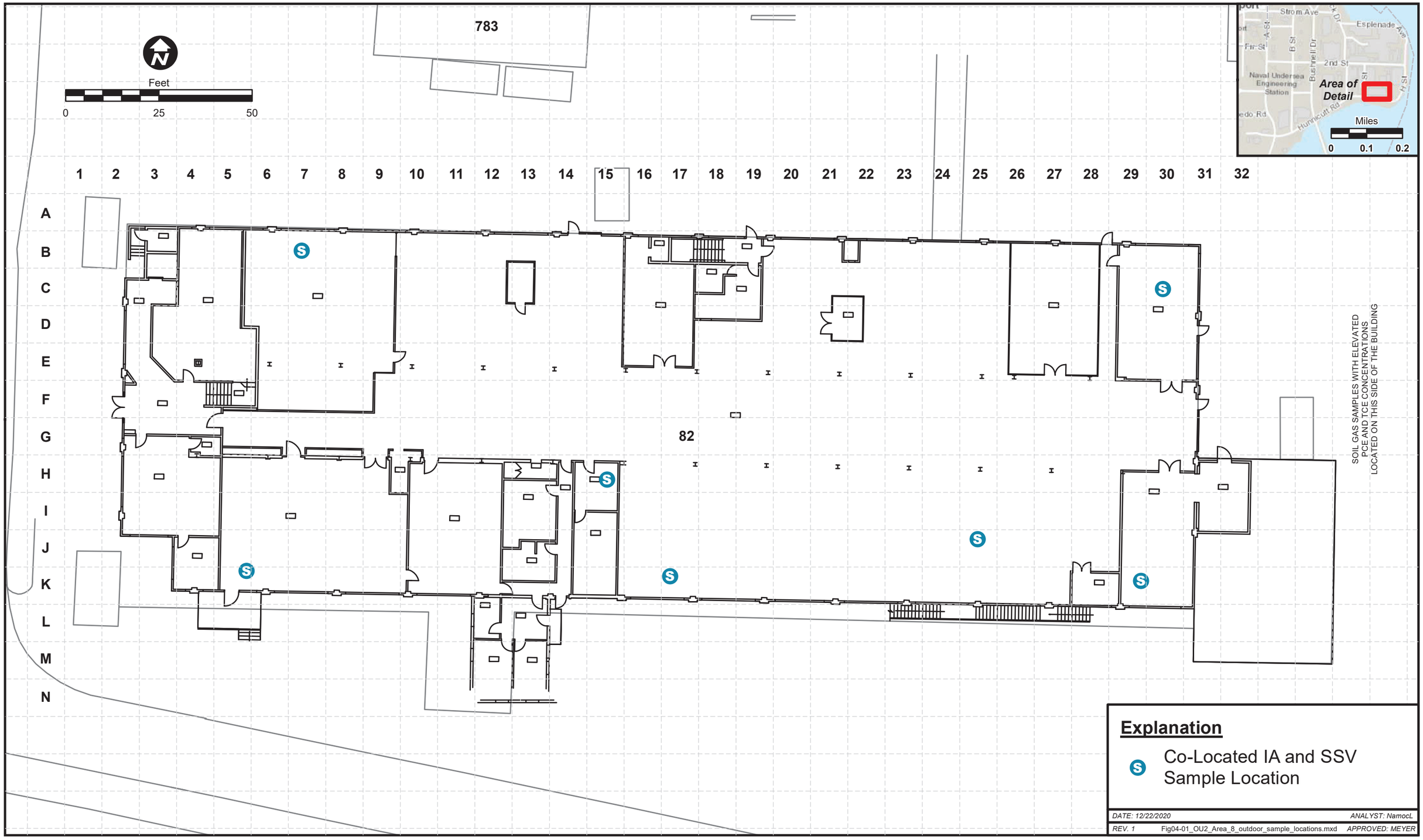

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Figure 9
Building 82 First Floor Sample Locations

CTO N3943018F4355
NBK Keyport, Area 8
Indoor Vapor MMA SAP

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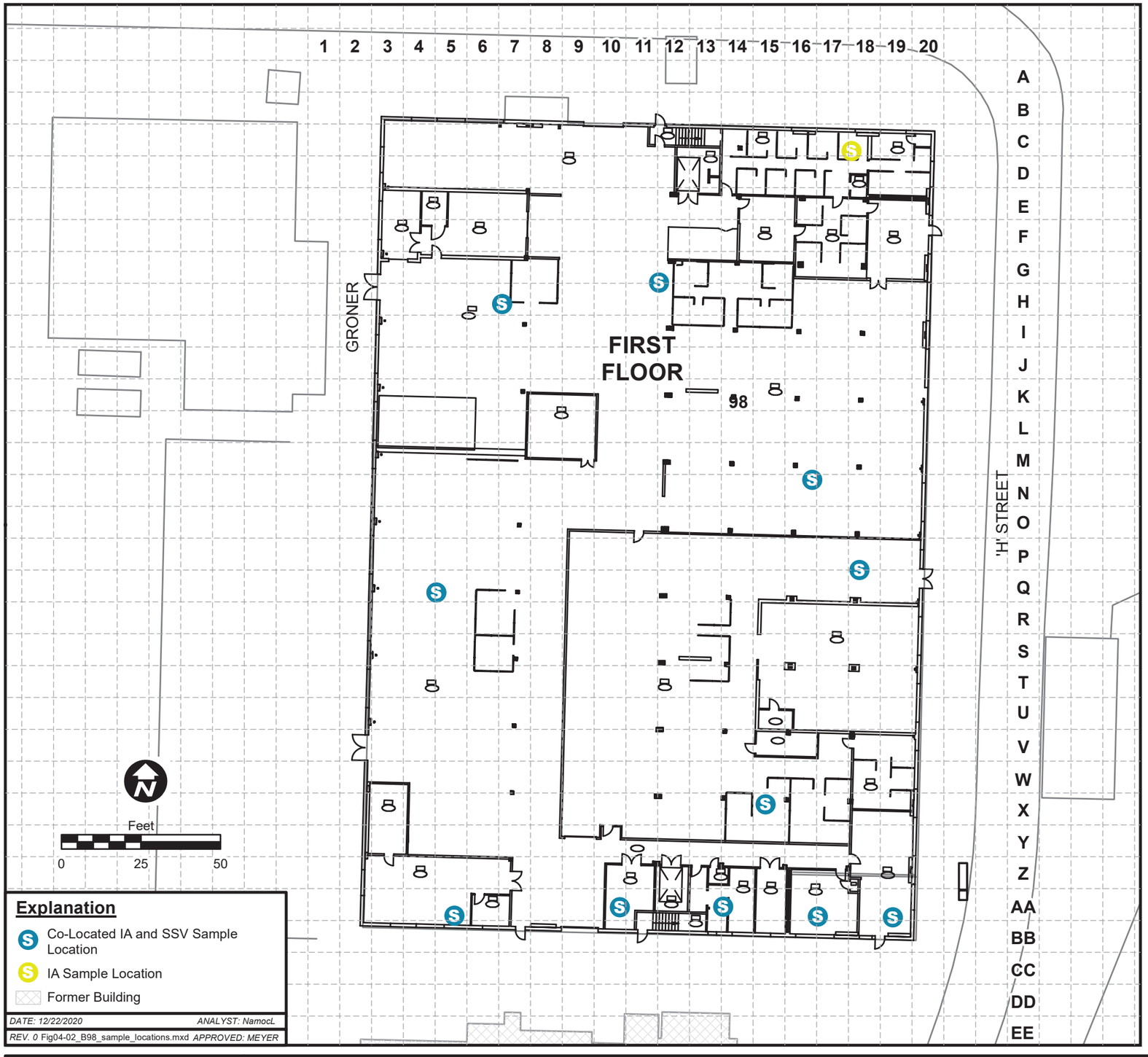

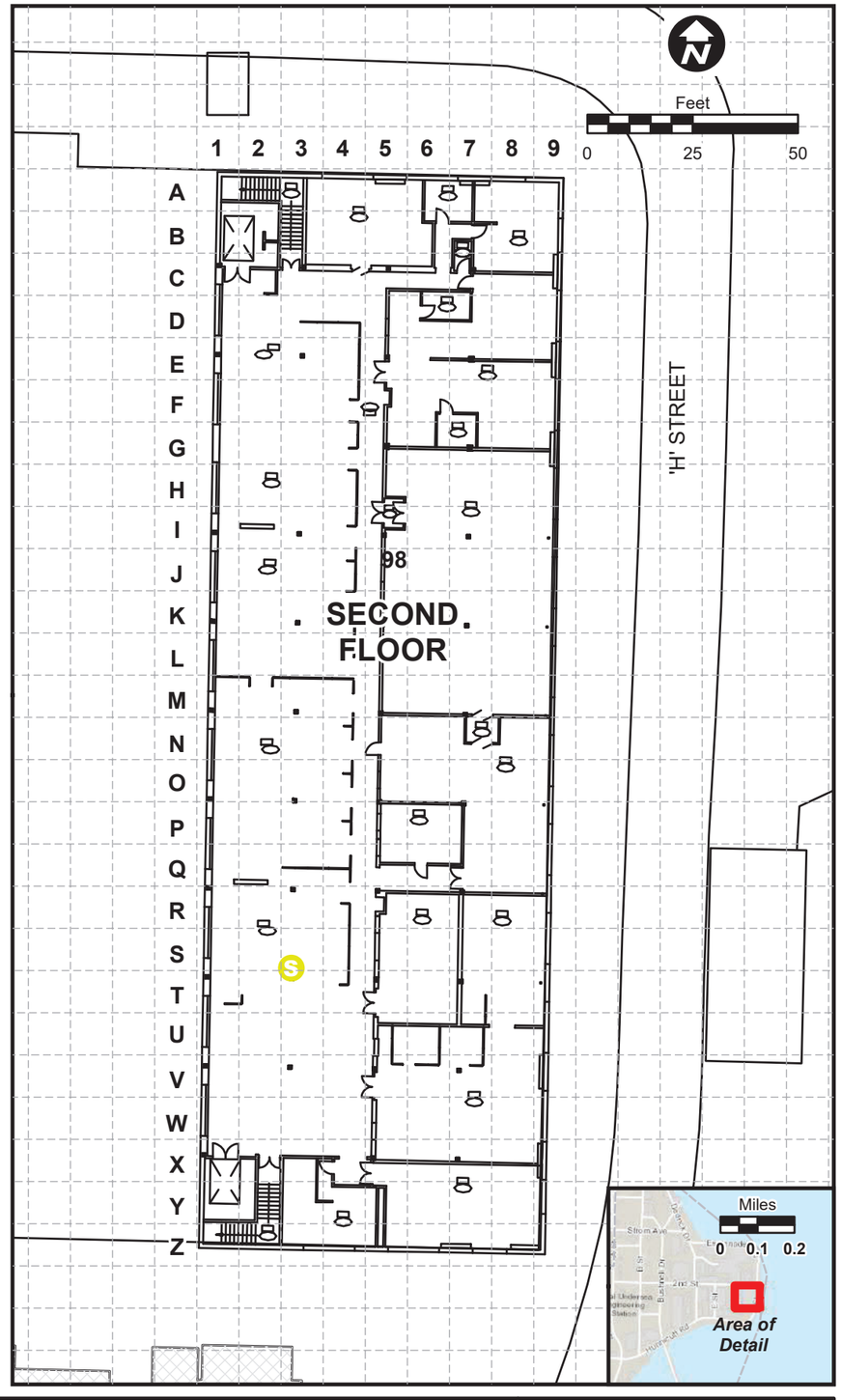

U.S. NAVY

Figure 10
Building 98 Sample Locations

CTO N3943018F4355
NBK Keyport, Area 8
Indoor Vapor MMA SAP

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4. Reporting

One report will be prepared following each annual building inspection-only event. For years where both annual building inspections and sub-slab and indoor air sampling occur, separate reports will be prepared for each event. The building inspection reporting format will follow the Management and Monitoring Report format, which in general follows this MMA Plan, or as prescribed by the Navy RPM. The report will contain the site history and CSM sections, as presented in this MMA Plan, along with a summary of field activities and figures showing findings, as applicable.

Indoor air and sub-slab soil vapor sampling results from both the winter and summer will be reported together following sampling, in the year immediately prior to the 5-year review report. The report will contain figures showing indoor air and sub-slab soil vapor sampling locations and results, as applicable, and analytical results will be compared to MTCA Method C and/or other appropriate screening levels, as agreed upon in collaboration with the Keyport Project Team.

5. References

Department of the Navy (Navy). 1999. Closure Report, Remedial Action, Area 8, Building 72 Plating Shop Demolition and Soil Hot Spot Removal, Naval Undersea Warfare Center Division, Keyport, Washington. Prepared by Foster Wheeler Environmental Corporation for EFA Northwest. Keyport, WA.

———. 2000. Final Independent Remedial Action Report, TPH Soil Removal and Demolition of Building 804, Area 8, Operable Unit 2, Naval Undersea Warfare Division, Keyport, Washington. Prepared by Foster Wheeler Environmental Corporation. Keyport, WA.

———. 2001. Long-Term Monitoring Data Report, Former Plating Shop/Waste Oil Spill Area, Area 8, Operable Unit 2, Naval Undersea Warfare Center Division Keyport, Washington. Prepared by CH2M HILL Constructors, Inc., and TEC LTM Team.

———. 2010. Final Third Five-Year Review, Naval Base Kitsap Keyport, Operational Units 1 and 2, Keyport, Washington. Keyport, WA.

———. 2015. Fourth Five-Year Review, Naval Base Kitsap Keyport, Washington. Prepared by URS Group, Inc. Naval Facilities Engineering Command, Northwest.

———. 2018a. OU 2 Area 8 Human Health and Ecological Risk Assessment, Naval Base Kitsap Keyport, Keyport Washington. Prepared by Resolution Consultants, a Joint venture of AECOM and EnSafe. Keyport, WA: Naval Facilities Engineering Command, Northwest.

———. 2018b. Final 2017 Investigation Report, Vapor Intrusion Study, Operable Unit 2, Area 8, Naval Base Kitsap, Keyport, Washington. Prepared by Battelle Memorial Institute and Trihydro Corporation.

———. 2019. Final Sampling and Analysis Plan for Fiscal Year 2018 Keyport Area 8 Indoor Vapor Intrusion Study at Naval Base Kitsap Keyport, Keyport, Washington. Prepared by Battelle Memorial Institute and Geosyntec Consultants. Keyport, WA.

———. 2020a. Final Indoor Vapor Intrusion Study, Operable Unit 2, Area 8, Naval Base Kitsap, Keyport, Washington. Prepared by Battelle Memorial Institute and Geosyntec Consultants. Keyport, WA.

———. 2020b. Final Ecological Risk Assessment Addendum, Operable Unit 2, Area 8, Naval Base Kitsap, Keyport, Washington. Prepared by AECOM. Keyport, WA.

Navy, Environmental Protection Agency (EPA), and Washington State Department of Ecology (Ecology). 1994. Final Record of Decision for Operable Unit 2, Naval Undersea Warfare Center Division, Keyport, Washington. Keyport, WA.

———.1996. Explanation of Significant Differences for the Record of Decision for Operable Unit 2, Naval Undersea Warfare Center Division, Keyport, Washington. Keyport, WA. March 15 (revised June 1).

Environmental Protection Agency, United States (EPA). 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. OSWER 9200.2-154. Office of Solid Waste and Emergency Response. June.

Appendix A:
Field Forms and Procedures

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ANNUAL BUILDING INSPECTION FORM **AECOM**

SITE INFORMATION

Site name: Keyport OU 2 Area 8	Person & company performing inspection:
Building Number:	
Navy Contact/Escort:	Date:
Contact's Phone:	Time:
Contact's Email:	Weather & temperature:

INTERVIEWS

Personnel	Title	Date
Interviewed: at site / at office / by phone		
Problems, suggestion, recommendations:		

Personnel	Title	Date
Interviewed: at site / at office / by phone		
Problems, suggestion, recommendations:		

Personnel	Title	Date
Interviewed: at site / at office / by phone		
Problems, suggestion, recommendations:		

Personnel	Title	Date
Interviewed: at site / at office / by phone		
Problems, suggestion, recommendations:		

ANNUAL BUILDING INSPECTION FORM **AECOM**

BUILDING USE

General Building Description _____

_____

_____

What types of activities take place on each level of the building (e.g., office work, storage, machine repair, metal shop, painting, degreasing/cleaning?)

1st Floor _____

2nd Floor _____

3rd Floor _____

Rooftop _____

Building occupants (approximate number)"

Adults: _____ Office Staff: _____ Non-Office Staff: _____

Working Hours:

What are the normal working hours (e.g., 0700-1500, three 8-hour shifts)?

_____

Are different work schedules ever used? _____

_____

Building Characteristics (circle all that apply)

Irrigation present: Yes / Yes (but not used) / No

Age of Building: _____

Age and description of separate additions or expansion: _____

_____

Above grad construction: wood frame/ concrete/ stone/ brick / steel

Slab on grade / basement /crawlspace / other _____

Lowest level depth below grade: _____ ft

Foundation walls: poured / block / stone / other _____

Foundation walls: unsealed / sealed, sealed with _____

Is the building insulated? Yes / No

Are there gaps between footing and floor slab: Yes / No / NA

ANNUAL BUILDING INSPECTION FORM **AECOM**

Heating, Ventilation and Air Conditioning (HVAC)

What type of HVAC system(s) are used in this building (circle all that apply - note primary, indicate location on map):

Hot air circulation / Heat pump / Hot water baseboard / Space Heaters / Steam Radiation / Hot air radiation / Radiant floor / Electric baseboard / Wood stove / outdoor wood boiler / None / Other

The primary type of fuel used is: Natural Gas / Fuel Oil / Kerosene / Electric / Propane / Solar / Wood / Coal

Hot water tank fueled by: _____

Air conditioning/ ventilation: Central Air / Window units / Open Windows / Open Doors / Mechanical / Fans / None / Other _____

Are there air distirbution ducts? Yes/ No

Are windows, doors, or loading dock doors left open? Yes/ No

Indicate location(s) on map, along with type, size, frequency, and duration of time

_____

_____

Describe changes to HVAC conditions/operation: a) at end of normal woring hours:

_____

_____

b) from weekday to weekends (does system shut down?):

_____

_____

c) from summer to winter (does system shut down?):

_____

_____

d) based on unusual circumstances (e.g., maintenance shutdown, weather):

_____

_____

ANNUAL BUILDING INSPECTION FORM **AECOM**

OUTSIDE CONTAMINANT SOURCES

List nearby land use: (industiral / commerical / residential)

North: _____ South: _____

West: _____ East: _____

Other stationary sources nearby (gas stations, emission stacks, other manufacturing facilities, etc):

_____

_____

Heavy vehicular traffic or area where vehicles idle nearby (or other mobile sources):

_____

_____

SITE HISTORY

Any known spills of a chemical immediately outside or inside the building? Yes/ No

Describe (with location): _____

_____

_____

Has the building ever had a fire? Yes/ NO

Describe: _____

_____

Building inspection checklist is on the following page. Please use this space for additional notes.

ANNUAL BUILDING INSPECTION FORM **AECOM**

BUILDING INSPECTION CHECKLIST

Compare building map to current conditions. Annotate discrepancies / changes as necessary

- ☐ Ground Cover around outside of building (grass / concrete / asphalt)
- ☐ Storm drains near outside of building
- ☐ Floor type inside building (unsealed concrete/sealed concrete/wood/tile/carpet/other)
- ☐ Tunnels
- ☐ Load bearing walls, roof support, columns, and isolated piers
- ☐ Sumps (if present, indicate whether there is water in the sump)
- ☐ Potential soil vapor entry points and approximate the size (e.g., cracks, utility ports, drains, gaps in floor slab)
- ☐ HVAC components in the building including blowers, intake and exhaust vents
- ☐ Boiler/Furnace
- ☐ Bathroom exhaust fans
- ☐ Manufacturing process vents
- ☐ Additional building vents
- ☐ Location of any building windows or doors that are left open (include type, size, frequency, and duration of time)
- ☐ Areas that have little or no air exchange
- ☐ Location of designated or common smoking areas
- ☐ Cracks - note length, width and depth
- ☐ Settlement (low spots) - note areal extent and depth
- ☐ Floor Penetrations (holes, cuts, utility installations/ repairs, etc) - note areal extent and depth
- ☐ Wet areas / water damage (wet areas / ponding / seeps/ soft subgrade) - note areal extent

Notes:

ANNUAL BUILDING INSPECTION FORM **AECOM**

INDOOR CONTAMINANT SOURCES

Identify all potential sources and products that have the potential to affect indoor air sample quality. Indicate whether the item can be removed from the building prior to the indoor air sampling event

Potential Background sources	Present? (Yes/No)	If present, description (location, size, condition*, ingredients)	Removable prior to sampling? (Yes / No)
Gasoline storage cans			
Gas-powered equipment (e.g., forklift)			
Paints/thinners/strippers			
Solvents			
Dry cleaned clothing			
Pesticides/herbicides (e.g., applied around bldg. foundation)			
Moth balls			
Cleaning products			
Air fresheners			
Kitchen cleaners			
Waste storage			
New furniture of upholstery			
New carpeting or flooring			
Glues			

* Describe the condition of the product containers as Unoped (UO), Used (U), or Deteriorated (D)

FACILITY OUTAGE REQUEST **Date:**

NAVBASEKITSAPINST 11300.1

PERMIT NUMBER

***A Scheduled Facility Outage** is a temporary discontinuance of utility service to a part of a facility and is planned, accepted, and approved in advance. See instructions on last page!*

REQUESTER

From (Requesters name): Organization: Email:	Phone & Fax #'s: P F	To: **Building Manager; BOSC; PWD** Via: **NBK-Bangor PWD** Outage Coordinator nbkbangpwdrequests@navy.mil
Government Representative Name: Email:	Phone & Fax #'s: P F	Requesters Signature:

Subj: Request for Facility Outage **(Requester complete items 1 – 5)**

1. Location of outage (Street, Bldg #, CMD; **attach** DWG(s) showing where work will be performed):
2. Justification/Description of work being performed (Detailed, be specific, room/panel/valve #, etc.):
   a. List the Impacts of this outage:
   b. What are the required work steps to complete this outage?
   c. Is this outage request to perform PM's? ☐ **YES** ☐ **NO** (If **Yes** list PM's being performed):
   d. Have Safety requirements been developed and accepted? ☐ **YES** ☐ **NO** (Attach a copy of the AHA for this work) ☐ (N/A BOSC)
3. Facility System(s) needing to be Locked Out/Tagged Out (Check those applicable):

☐ Electricity	☐ Potable Water	☐ Hot Water - Heating	☐ ICS/HVAC
☐ Steam	☐ Intrusion Alarms	☐ Back Flow Prevention	☐ Fire Protection/Suppression System
☐ Gas	☐ Compressed Service Air	☐ Emergency Power	☐ Other:
☐ Sewer	☐ PA System/Comms	☐ Fire Alarms	

4. Reference # (Contract#/Work Order#/Task Order#/MAXIMO#):
5. Length & Date of Outage: **1st Choice:** From-Date: Time: To-Date: Time:

   2nd Choice: From-Date: Time: To-Date: Time:

GOVERNMENT ACTION

1. **Government Technical Representative** will coordinate all required BOSC Support Services.
   a. Is the Requesters scope, description, and outage impacts correct? ☐ **YES** ☐ **NO**
   b. BOSC Support required: ☐ **YES** ☐ **NO**
   c. If YES, Type of BOSC Support required (Be specific):
   d. If YES, How will this service be paid for and contracted (FFP, Bullet, task order, GPC, other):
   e. Will a generator(s) need to be provided? ☐ **YES** ☐ **NO**

Government Rep. Signature: Date:

2. **Building Manager/Area Outage Coordinator/Facility Management Specialist**: Notification, Coordination and Approval:
   a. Name of BM/AOC/FMS notified: Date:
   b. Approved Length and Date of Outage:

   From Date: Time: To Date: Time:

Approved, BM/AOC/FMS signature: Date:

FINAL Approval Notification

From: NBK-BANGOR OUTAGE COORDINATOR,

Date of **APPROVED Scheduled Outage:** From Date/Time: To Date/Time:

NBK PWD OUTAGE COORDINATOR: **Date:**

Distribution: Approved request Distribution List (Available upon Request) Minimum: Requestor, Government Technical Representative, Building Manager, Fire, Security, N6, Unions

FACILITY OUTAGE REQUEST **Date:**

NAVBASEKITSAPINST 11300.1

PERMIT NUMBER

Instructions

- Provide the Requester contact information. Please provide both an email address and a fax number. We must have a way to provide you with an approved signed copy of the request before work begins.
- Provide the Government Representative Contact information. This person is the first POC for all questions/concerns and/or explanations of task requirements. This is typically the Engineering Technician assigned to the project. For BOSC Firm Fixed Price (FFP) work, a BOSC Representative serves as the Government Representative.
- Items 1 through 5 under the **REQUESTER** section are to be completed by the Requester and submitted to the Government Representative. Two requested outage dates and times must be requested. Times should be selected to cause the least amount of disruption to the customers.
- Item 1 under the **GOVERNMENT ACTION** section is to be completed by the Government Representative.
- Item 2 under the **GOVERNMENT ACTION** is to be completed and signed by the Building Manager or Facility Management Specialist.
- Area Outage Coordinators (AOC) shall ensure Commands and CDO's are notified of all approved outage requests as required.
- **NOTE:** No outage shall begin without an approved outage form in-hand. In the event a Building Manager is not available, the cognizant Facility Management Specialist can approve the outage.

Distribution: Approved request Distribution List (Available upon Request) Minimum: Requestor, Government Technical Representative, Building Manager, Fire, Security, N6, Unions

REQUEST NUMBER

PARKING LOT CLOSURE/DISRUPTION/DISLOCATION **Date:**

NAVBASEKITSAPINST 5560.13C

REQUESTER

THIS REQUEST IS FOR NAVAL BASE KITSAP AND TENANT COMMANDS ONLY

In the event employees must be dislocated from their assigned lot, they will be notified at least five working days in advance, unless notification is not practical because of emergency repairs or events. These employees will be temporarily accommodated in other parking areas on a space available basis.

From (Requester's Name): Organization: Email:	Phone & Fax #: P F	To: **NBK BANGOR OPSO** Via: **NBK BANG PWD REQUESTS** nbkbangpwdrequests@navy.mil
Via: Government Representative Name: Email:	Phone & Fax #: P F	Requester's Signature:

To: NBK OPSO via NBK PARKING MANAGER

Subj: REQUEST FOR: ☐ PARKING LOT ☐ PARKING SPACE

☐ CLOSURE ☐ DISRUPTION

1. Justification for Closure/Disruption/Dislocation (Be Specific):

2. Location (Street Name/Building#/Lot#/Space#):

3. Date of Closure/Disruption:

1st Choice: From – Date: Time: To - Date: Time:

2nd Choice: From – Date: Time: To - Date: Time:

NOTIFY

Distribution List: (list affected customers)

NBK Operations Officer (OPSO) who will notify: NBK-Brem Precinct Commander C/N3222, PSNS Security Director C/1120, Security Operations Division C/N32221, NBK-Brem Parking Office C/N3222P, Industrial Security Officer C/1122.2,), NBK Parking Manager, Public Works Officer (PWO) NAVFACNW, and all affected customers.

BM's/FMS's: Date:

APPROVAL

From: NBK OPSO

To: Requester and Government Representative

The above request: ☐ is **APPROVED** For: ☐ 1st Choice ☐ 2nd Choice ☐ Other (Explain in comments)

☐ is **NOT** APPROVED

1. Comments:

NBK OPSO-Government Representative:

Signature: Date:

Dist: Distribution List: (Available upon request), BOSC, Requester, Government Representative

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Appendix B:
Responses to Comments on Draft Plan

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From: Meyer, Michael (US)
To: Burgess, Greg; Palmieri, Anthony
Subject: [EXTERNAL] RE: NBK Keyport Area 8 - Submittal of Draft Building Inspection Plan for Review
Date: Tuesday, July 6, 2021 15:42:34

Greg and Anthony,

During a meeting today I confirmed with Harry and Denice that they also do not have any comments on the building inspection plan. Nice work!

Could you please generate a final version of the document, with the typical final electronic deliverable native files for the Navy's use?

We'll probably need Navy direction regarding the number of hard copies to send to each recipient and where they want them send. The pandemic upended standard practice for hardcopy submittals.

Michael Meyer, PMP, RG, LEG, LHG
Lead, Environmental Science and Site Investigation Team
Environment Division
Office/Mobile: 206.601.1309 | Fax: 614.458.2934
meyerm@battelle.org

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From: Cellucci, Carlotta CIV USN NAVFAC NW SVD WA (USA) <carlotta.cellucci.civ@us.navy.mil>
Sent: Thursday, July 01, 2021 10:06 AM
To: Meyer, Michael (US) <meyerm@battelle.org>; Burgess, Greg <greg.burgess@aecom.com>; Anthony Palmieri (anthony.palmieri@aecom.com) <anthony.palmieri@aecom.com>
Cc: amanda.rohrbaugh@navy.mil
Subject: RE: NBK Keyport Area 8 - Submittal of Draft Building Inspection Plan for Review

Great Job everyone!!!

C.

Carlotta Cellucci, LG
Remedial Project Manager
Naval Facilities Engineering Systems Command (NAVFAC) Northwest
206-595-6711
Carlotta.cellucci.civ@us.navy.mil

From: Alam, Mahbub (ECY) <MALA461@ECY.WA.GOV>
Sent: Tuesday, June 29, 2021 4:59 PM
To: carlotta.cellucci@navy.mil; amanda.rohrbaugh@navy.mil
Cc: Harry Craig (Craig.harry@epamail.epa.gov) <Craig.harry@epamail.epa.gov>; Denice Taylor (dtaylor@suquamish.nsn.us) <dtaylor@suquamish.nsn.us>; Meyer, Michael (US) <meyerm@battelle.org>; travis.b.lewis@navy.mil; Burgess, Greg <greg.burgess@aecom.com>; Anthony Palmieri (anthony.palmieri@aecom.com) <anthony.palmieri@aecom.com>
Subject: [Non-DoD Source] RE: NBK Keyport Area 8 - Submittal of Draft Building Inspection Plan for Review

Hello, Amanda:
Ecology reviewed the draft VI LTM plan for Keyport OU 2 Area 8.
Ecology does not have any comments on the plan.
Take care,

Mahbub Alam, PhD, PE
Senior Environmental Engineer
~~360 407 6913 (O)~~; 360 280 6274(C)

From: Meyer, Michael (US) <meyerm@battelle.org>
Sent: Wednesday, May 12, 2021 2:38 PM
To: Alam, Mahbub (ECY) <MALA461@ECY.WA.GOV>; Denice Taylor (dtaylor@suquamish.nsn.us) <dtaylor@suquamish.nsn.us>; Harry Craig (Craig.harry@epamail.epa.gov) <Craig.harry@epamail.epa.gov>
Cc: Rohrbaugh, Amanda L CIV USN NAVFAC NW SVD WA (USA) <amanda.rohrbaugh@navy.mil>; Lewis, Travis B CIV NAVFAC, EV31 <travis.b.lewis@navy.mil>; Cellucci, Carlotta CIV NAVFAC NW, EV31 <carlotta.cellucci@navy.mil>; Anthony Palmieri (anthony.palmieri@aecom.com) <anthony.palmieri@aecom.com>; Burgess, Greg <greg.burgess@aecom.com>
Subject: NBK Keyport Area 8 - Submittal of Draft Building Inspection Plan for Review

Denice, Mahbub, and Harry,

Attached please find the *Draft Vapor Intrusion Long-Term Monitoring and Building Inspection Plan for Operable Unit 2, Area 8, Naval Base Kitsap, Keyport, Washington,* for your review. This plan was

prepared by Battelle's subcontractor, AECOM.

We would appreciate receiving your comments in 30 calendar days, by June 11, 2021. A comment/response table is provided for your convenience.

Please direct any comments or questions regarding this document to Carlotta Cellucci of NAVFAC NW.

Best regards,

Michael Meyer, PMP, RG, LEG, LHG
Lead, Environmental Science and Site Investigation Team
Environment Division
Office/Mobile: 206.601.1309 | Fax: 614.458.2934
meyerm@battelle.org

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